Pseudodoxia epidemica: or, enquiries into very many received tenents, and commonly presumed truths / [Sir Thomas Browne].

Contributors

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BROWN'S
VULGAR
ERRORS







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Pseudodoxia Epidemica:

OR,

ENQUIRIES

INTO

Very many Received

TENENTS,

And commonly Presumed

TRUTHS.

By THOMAS BROWNE Dr of Physick.

The Second Edition,

Corrected and much Enlarged by the Author.

TOGETHER

With some Marginall Observations, and a Table Alphabeticall at the end.

JUL. SCALIG.

Ex Libris colligere quæ prodiderunt Authores longe est periculosissimum; Rerum ipsarum cognitio vera è rebus ipsis est.

LONDON,

Printed by *A. Miller*, for *Edw. Dod* and *Nath. Ekins*, at the Gunne in Ivie Lane. 1650.

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TO THE READER.

WOuld Truth dispense, we could be content, with Plato, that knowledge were but Remembrance; that Intellectuall acquisition were but Reminiscentiall evocation, and new impressions but the colourishing of old stamps which stood pale in the soul before. For, what is worse, knowledge is made by oblivion; and to purchase a clear and warrantable body of Truth, we must forget and part with much we know. Our tender Enquiries taking up Learning at large, and together with true and assured notions, receiving many, wherein our reviewing judgements doe finde no satisfaction; and therefore in this Encyclopædie and round of knowledge, like the great and exemplary wheeles of heaven, we must observe two Circles: that while we are daily carried about, and whirled on by the swinge and rapt of the one, we

may maintain a naturall and proper course, in the slow and sober wheele of the other. And this we shall more readily perform, if we timely survey our knowledge; impartially singling out those encroachments, which junior compliance and popular credulity hath admitted. Whereof at present we have endeavoured a long and serious Adviso; proposing not only a large and copious List, but from experience and reason attempting their decisions.

And first we crave exceeding pardon in the audacity of the Attempt; humbly acknowledging a work of such concernment unto Truth, and difficulty in it self, did well deserve the conjunction of many heads: And surely more advantageous had it been unto Truth, to have fallen into the endeavours of some cooperating advancers, that might have performed it to the life, and added authority thereto: which the privacie of our condition, and unequall abilities cannot expect. Whereby notwithstanding we have not been diverted, nor have our solitary attempts been so discouraged, as to despair the favourable look of Learning upon our single and unsupported endeavours.

Nor have we let fall our Penne, upon discouragement of contradiction, unbelief, and difficulty of dissuasion from radicated beliefs, and points of high prescription; although we are very sensible how hardly teaching years doe learn, what roots old age contracteth into errors, and how such as are but Acorns

in

in our younger brows, grow Oaks in our elder heads, and become inflexible unto the powerfulleſt arm of reaſon. Although we have alſo beheld, what cold requitals others have found in their ſeverall redemptions of Truth; and how their ingenious enquiries have been diſmiſſed with cenſure, and obloquie of ſingularities.

Some conſideration we hope from the courſe of our Profeſſion; which though it leadeth us into many Truths that paſſe undiſcerned by others, yet doth it diſturb their communications, and much interrupt the office of our Pens in their well intended tranſmiſſions: and therefore ſurely in this work attempts will exceed performances: it being compoſed by ſnatches of time, as medicall vacations, and the fruitleſſe importunity of Uroſcopy would permit us. And therefore alſo perhaps it hath not found that regulur and conſtant ſtile, thoſe infallible experiments, and thoſe aſſured determinations, which the ſubject ſometime requireth, and might be expected from others, whoſe quiet doors and unmoleſted hours afford no ſuch diſtractions. Although who ſhall indifferently perpend the exceeding difficulty, which either the obſcurity of the ſubject, or unavoidable paradoxologie muſt often put upon the Attemptor, will eaſily diſcern, a work of this nature is not to be performed upon one legge, and ſhould ſmell of oyle if duly and deſervedly handled. Inſpection of Urines.

Our firſt intentions conſidering the common inte-

reſt of Truth, reſolved to propoſe it unto the Latine republike and equall judges of Europe; but owing in the firſt place this ſervice unto our Countrey, and therein eſpecially unto its ingenious Gentry, we have declared our ſelf in a Language beſt conceived. Although I confeſſe, the quality of the Subject will ſometimes carry us into expreſsions beyond meer Engliſh apprehenſions; and indeed if elegancie ſtill proceedeth, and Engliſh Pens maintain that ſtream we have of late obſerved to flow from many, we ſhall within few years be fain to learn Latine to underſtand Engliſh, and a work will prove of equall facility in either. Nor have we addreſſed our Penne or ſtile unto the people, (whom Books doe not redreſſe, and are this way incapable of reduction) but unto the knowing and leading part of Learning; as well underſtanding (at leaſt probably hoping) except they be watered from higher regions, and fructifying meteors of knowledge, theſe weeds muſt loſe their alimentall ſappe and wither of themſelves; whoſe conſerving influence, could our endeavours prevent, we ſhould truſt the reſt unto the ſythe of Time, and hopefull dominion of Truth.

We hope it will not be unconſidered, that we finde no open tract, or conſtant manuduction in this Labyrinth; but are oft-times fain to wander in the America and untravelled parts of Truth: For though not many years paſt, Dr Primroſe hath made a learned and full Diſcourſe of vulgar Errors in Phyſick, yet

have

have we discussed but two or three thereof. Scipio Mercurij hath also left an excellent Tract in Italian concerning popular Errors; but confining himself only unto those in Physick, he hath little conduced unto the generality of our Doctrine. Laurentius Joubertus, by the same Title led our expectation into thoughts of great relief; whereby notwithstanding we reaped no advantage; it answering scarce at all the promise of the inscription. Nor perhaps (if it were yet extant) should we finde any farther Assistance from that ancient piece of Andreas, pretending the same Title. And therefore we are often constrained to stand alone against the strength of opinion; and to meet the Goliah and Giant of Authority, with contemptible pibbles, and feeble arguments, drawn from the scrip and slender stock of our selves. Nor have we indeed scarce named any Author whose Name we doe not honour; and if detraction could invite us, discretion surely would contain us from any derogatory intention, where highest Pens and friendiest eloquence must fail in commendation.

περὶ τῶν ἰωσῶς ψευσμένων, Athenæi lib. 7.

And therefore also we cannot but hope the equitable considerations and candour of reasonable mindes. We cannot expect the frown of Theologie *herein; nor can they which behold the present state of things, and controversie of points so long received in Divinity, condemn our sober enquiries in the doubtfull appertinancies of Arts, and Receptaries*

of

of Philosophy. Surely Philologers and Criticall Discoursers, who look beyond the shell and obvious exteriours of things, will not be angry with our narrower explorations. And we cannot doubt, our brothers in Physick (whose knowledge in Naturals will lead them into a nearer apprehension of many things delivered) will friendly accept, if not countenance our endeavours. Nor can we conceive, it may be unwelcome unto those honoured Worthies, who endeavour the advancement of Learning: as being likely to finde a clearer progression, when so many rubbes are levelled, and many untruths taken off, which passing as principles with common beliefs, disturb the tranquillity of Axiomes, which otherwise might be raised. And wise men cannot but know, that Arts and Learning want this expurgation: and if the course of truth be permitted unto its self, like that of Time and uncorrected computations, it cannot escape many errours, which duration still enlargeth.

Lastly, We are not Magisteriall in opinions, nor have we Dictator-like obtruded our conceptions; but in the humility of Enquiries or disquisitions, have only proposed them unto more ocular discerners. And therefore opinions are free, and open it is for any to think or declare the contrary. And we shall so farre encourage contradiction, as to promise no disturbance, or reoppose any Penne, that shall Fallaciously refute us; that shall only lay hold of our lapses, single out Digressions, Corollaries, or Ornamentall conceptions,

conceptions, to evidence his own in as indifferent truths. And ſhall only take notice of ſuch, whoſe experimentall and judicious knowledge ſhall ſolemnly look upon it; not only to deſtroy of ours, but to eſtabliſh of his own, not to traduce or extenuate, but to explain and dilucidate, to adde and ampliate, according to the laudable cuſtome of the Ancients in their ſober promotions of Learning. Unto whom notwithſtanding, we ſhall not contentiouſly rejoin, or only to juſtifie our own, but to applaud or confirm his maturer aſſertions; and ſhall conferre what is in us unto his name and honour; Ready to be ſwallowed in any worthy enlarger: as having acquired our end, if any way, or under any name we may obtain a worke, ſo much deſired, and yet deſiderated of Truth.

THOMAS BROWNE.

An Advertiſement concerning the Marginall Annotations.

READER:

BE pleaſed to underſtand, that upon the ſecond Edition of this excellent Piece (whereto the Authour intendeth no further Additions hereafter,) ſome ſtrange hand hath attempted (yet ſparingly, and but here and there,) to affix Annotations on the Margin, not imagining thereby to adde any Luſtre to the Authours Text, but only to invite or fix the Readers eye upon ſome things (among as many other omitted) which he thought obſervable. They are diſtinguiſhed from ſome other, which the Authour himſelf hath been pleaſed to adde, by a ſmaler Character, wherein they goe printed: and (that we doe the Authour no wrong, by impoſing ſomething upon him, which it were not fit he ſhould own,) this alſo muſt be added concerning them, *viz.* That the Reader would never judge of the Authours Senſe ſolely by the Note in the Margin, but (and that principally,) by reflexion, and conſideration of the Text it ſelf; wherein, according to the variety of the Matter handled, and the Authours acute and cautious manner of diſcourſe, the attentive Reader will eaſily obſerve, in ſome things that he delivers himſelf Poſitively, or in the way of direct and reſolute aſſertion; in others more Reſervedly and with reſpect unto different Judgements; he will obſerve ſome things argued for and concluded, ſome only inſinuated or hinted at, others barely related; All which, in the right interpretation of the Authour, ought to be diſtinguiſhed, but could not well be diſtinguiſht, that is, repreſented with their peculiar and reſpective qualifications in the brevity of a Note.

There is alſo an Alphabeticall Table at the end added by the ſame hand, and capable (perhaps) in ſome paſſages of the like caution. This only is deſired of the ingenuous Reader, both that himſelf may receive better ſatisfaction by what is done, and the Learned Authour leſſe diſſervice. Farewell.

N. N.

Cal. Nov. 1649.

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March 14th 1645.

I Have perused these Learned Animadversions upon the Common Tenets and Opinions of men in former and in these present times, Entituled *Pseudodoxia Epidemica*; and finding them much transcending vulgar conceipt, and adorned with great variety of matter, and multiplicity of reading; I approve them as very worthy to be Printed and Published.

JOHN DOWNAME.

THE FIRST BOOK: OR, GENERALL PART.

Chap. I.

Of the Causes of Common Errors.

THE first and father cause of common Error, is the common infirmity of humane nature; of whose deceptible condition, although perhaps there should not need any other eviction, then the frequent errors we shall our selves commit, even in the expresse declarement hereof: Yet shall we illustrate the same from more infallible constitutions, and persons presumed as farre from us in condition, as time, that is our first and ingenerated forefathers. From whom as we derive our being, and the severall wounds of constitution; so may we in some manner excuse our infirmities in the depravity of those parts, whose traductions were pure in them, and their originals but once removed from God. Who notwithstanding (if posterity may take leave to judge of the fact, as they are assured to suffer in the punishment) were grossely deceived in their perfection; and so weakly deluded in the clarity of their understanding, that it hath left no small obscurity in ours, how error should gain upon them.

The Introduction

Matter of great dispute, how our first parents could be so deceived.

For first, They were deceived by Satan; and that not in an invisible insinuation, but an open and discoverable apparition, that is, in the form of a Serpent; whereby although there were many occasions of suspition, and such as could not easily escape a weaker circumspection, yet did the unwary apprehension of Eve take no advantage thereof. It hath therefore seemed strange unto some, she should be deluded by a Serpent, or subject her reason to a beast, which God had subjected unto hers. It hath empuzzeled the enquiries of others to apprehend, and enforced them unto strange conceptions, to make out how without fear or doubt she could discourse with such a creature, or hear a Serpent speak, without suspition of imposture. The wits of others, have been so bold as to accuse her simplicity in receiving his temptation so coldly; and when such specious effects of the fruit were promised, as to make them like gods, not to desire, at least not to wonder he pursued not that benefit himself. And had it been their own case would perhaps have replied, If the taste of this fruit maketh the eaters like gods, why remainest thou a beast? If it maketh us but like gods, we are so already. If thereby our eyes shall be opened hereafter, they are at present quick enough to discover thy deceit, and we desire them no opener to behold our own shame. If to know good and evil be our advantage, although we have free will unto both, we

desire to perform but one; we know 'tis good to obey the Commandment of God, but evil if we transgresse it.

They were deceived by one another, and in the greatest disadvantage of delusion, that is the stronger by the weaker: For Eve presented the fruit, and Adam received it from her. Thus the Serpent was cunning enough to begin the deceit in the weaker; and the weaker of strength, sufficient to consummate the fraud in the stronger. Art and fallacy was used unto her, a naked offer proved sufficient unto him: so his superstruction was his ruine, and the fertility of his sleep, an issue of death unto him. And although the condition of sex and posteriority of creation might somewhat extenuate the error of the woman: Yet was it very strange and inexcusable in the man; especially if as some affirm, he was the wisest of all men since; or if as others have conceived, he was not ignorant of the fall of the Angels, and had thereby example and punishment to deterre him.

Adam supposed by some to have been the wisest man that ever was.

They were deceived from themselves, and their own apprehensions; for Eve either mistook or traduced the Commandment of God. Of every tree of the garden thou maiest freely eat, but of the tree of knowledge of good and evil thou shalt not eat, for in the day thou eatest thereof, thou shalt surely die. Now Eve upon the question of the Serpent returned the precept in different tearms, You shall not eat of it, neither shall you touch it lest perhaps you die. In which delivery, there were no lesse then two mistakes, or rather additionall mendacities; for the commandment forbid not the touch of the fruit, and positively said ye shall surely die; but she extenuating replied, *ne forte moriamini*, lest perhaps ye die. For so in the vulgar translation it runneth, and so is it expressed in the Thargum or Paraphrase of Jonathan. And therefore although it be said, and that very truly that the devil was a liar from the beginning, yet was the woman herein the first expresse beginner; and falsified twice before the reply of Satan. And therefore also to speak strictly, the sin of the fruit was not the first offence, they first transgressed the rule of their own reason, and after, the Commandment of God.

Adam and Eve how they fell.

They were deceived through the conduct of their senses, and by temptations from the object it self; whereby although their intellectuals had not failed in the theory of truth, yet did the inservient and brutall faculties controle the suggestion of reason: Pleasure and profit already overswaying the instructions of honesty, and sensuality perturbing the reasonable commands of vertue. For so is it delivered in the text; That when the woman saw that the tree was good for food, and that it was pleasant unto the eye, and a tree to be desired to make one wise, she took of the fruit thereof and did eat. Now hereby it appeareth, that Eve before the fall, was by the same and beaten way of allurements inveigled, whereby her posterity hath been deluded ever since; that is those three delivered by S[t] John, the lust of the flesh, the lust of the eye, and the pride of life; wherein indeed they seemed as weakly to fail as their debilitated posterity, ever after. Whereof notwithstanding some in their imperfections, have resisted more powerfull temptations; and in many moralities condemned the facility of their seductions.

Adam whence (probably) induced to eat.

Again, They might for ought we know, be still deceived in the unbelief of their mortality, even after they had eat of the fruit. For Eve observing no immediate execution of the curse, she delivered the fruit unto Adam; who after the taste thereof, perceiving himself still to live, might yet remain in doubt, whether he had incurred death; which perhaps he did not indubitably beleeve, untill he was after convicted in the visible example of Abel. For he that would not beleeve the menace of God at first, it may be doubted whether before an ocular example he beleeved the curse at last. And therefore they are not without all reason, who have disputed the fact of Cain, that is although he purposed to mischief, whether he intended to murther his brother; or designed that, where-

Whether Cain intended to kill Abel.

of

of he had not beheld an example in his own kinde; there might be ſomewhat in it that he would not have done, or deſired undone, when he brake forth as deſperately as before he had done uncivilly; My iniquity is greater then can be forgiven me.

Some nicities I confeſſe there are which extenuate, but many more that aggravate this deluſion; which exceeding the bounds of our Diſcourſe, and perhaps our ſatisfaction, we ſhall at preſent paſſe over. And therefore whether the ſinne of our firſt parents were the greateſt of any ſince, whether the tranſgreſſion of Eve ſeducing, did not exceed that of Adam ſeduced, or whether the reſiſtibility of his reaſon did not equivalence the facility of her ſeduction, we ſhall referre it unto the Schoolman. Whether there were not in Eve as great injuſtice in deceiving her husband, as imprudence in being deceived her ſelf, eſpecially if foretaſting the fruit, her eyes were opened before this, and ſhe knew the effect of it, before he taſted of it, we leave it unto the Moralliſt. Whether the whole relation be not Allegoricall, that is, whether the temptation of the man by the woman, be not the ſeduction of the rationall, and higher parts by the inferiour and feminine faculties: or whether the tree in the middeſt of the garden, were not that part in the centre of the body, on which was afterward the appointment of circumciſion in males, we leave it unto the Thalmudiſt. Whether there were any policie in the devil to tempt them before conjunction, or whether the iſſue before tentation might in juſtice have ſuffered with thoſe after, we leave it unto the Lawyer. Whether Adam foreknew the advent of Chriſt, or the reparation of his error by his Saviour; how the execution of the curſe ſhould have been ordered, if after Eve had eaten, Adam had yet refuſed. Whether if they had taſted the tree of life before that of good and evil, they had yet ſuffered the curſe of mortality; or whether the efficacie of the one had not overpowred the penalty of the other, we leave it unto God. For he alone can truly determine theſe and all things elſe; who as he hath propoſed the world unto our diſputation, ſo hath he reſerved many things unto his own reſolution; whoſe determinations we cannot hope from fleſh; but muſt with reverence ſuſpend unto that great day, whoſe juſtice ſhall either condemn our curioſities, or reſolve our diſquiſitions.

The Talmudiſts Allegories upon the hiſtory of Adam and Eve's fall.

Laſtly, Man was not only deceiveable in his integrity, but the Angels of light in all their clarity. He that ſaid he would be like the higheſt did erre if in ſome way he conceived not himſelf ſo already; but in attempting ſo high an effect from himſelf, he miſ-underſtood the nature of God, and held a falſe apprehenſion of his own; whereby vainly attempting not only inſolencies, but impoſſibilities, he deceived himſelf as low as hell. In brief, there is nothing infallible but God, who cannot poſſibly erre. For things are really true as they correſpond unto his conception; and have ſo much of verity, as they hold of conformity unto that intellect, in whoſe Idea they had their firſt determinations. And therefore being the rule, he cannot be irregular; nor being truth it ſelf, conceiveably admit the impoſſible ſociety of error.

CHAP. II.

A further illuſtration of the ſame.

BEing thus deluded before the fall, it is no wonder if their conceptions were deceitfull, and could ſcarce ſpeak without an error after. For what is very remarkable (and no man I know hath yet obſerved) in the relation of Scripture before the flood, there is but one ſpeech delivered by man, wherein there is not an erronious conception; and ſtrictly examined, moſt hainouſly injurious unto truth. The penne of Moſes is brief in the account before the flood, and the ſpeeches recorded are ſix.

The first is that of Adam, when upon the expostulation of God, he replied; I heard thy voice in the garden, and because I was naked, I hid my self. In which reply, there was included a very grosse mistake, and if with pertinacity maintained, a high and capitall error. For thinking by this retirement to obscure himself from God, he infringed the omnisciency and essentiall ubiquity of his Maker; who as he created all things, so is he beyond and in them all, not only in power, as under his subjection, or in his presence, as being in his cognition, but in his very Essence, as being the soul of their causalities, and the essentiall cause of their existencies. Certainly his posterity at this distance and after so perpetuated an impairment, cannot but condemn the poverty of his conception, that thought to obscure himself from his Creator in the shade of the garden, who had beheld him before in the darkness of his Chaos, and the great obscurity of nothing; that thought to flie from God, which could not flie himself, or imagined that one tree should conceal his nakedness from Gods eye, as another had revealed it unto his own. Those tormented spirits that wish the mountains to cover them, have fallen upon desires of lesse absurdity, and chosen waies of lesse improbable concealment. Though this be also as ridiculous unto reason, as fruitlesse unto their desires; for he that laid the foundations of the earth, cannot be excluded the secrecy of the mountains, nor can there any thing escape the perspicacity of those eyes which were before light, and in whose opticks there is no opacity. This is the consolation of all good men, unto whom his ubiquity affordeth continuall comfort and security: And this is the affliction of hell, unto whom it affordeth despair, and remedilesse calamity. For those restlesse spirits that flie the face of the Almighty, being deprived the fruition of his eye, would also avoid the extent of his hand; which being impossible, their sufferings are desperate, and their afflictions without evasion; untill they can get out of Trismegistus his circle, that is, to extend their wings above the universe, and pitch beyond ubiquity.

The second is that speech of Adam unto God, The woman whom thou gavest me to be with me, she gave me of the Tree, and I did eat: this indeed was an unsatisfactory reply, and therein was involved a very impious error; as implying God the Author of sinne, and accusing his Maker of his transgression. As if he had said, If thou hadst not given me a woman I had not been deceived: Thou promisedst to make her a help, but she hath proved destruction unto me; had I remained alone, I had not sinned, but thou gavest me a consort, and so I became seduced. This was a bold and open accusation of God, making the fountain of good the contriver of evil, and the forbidder of the crime an abetter of the fact prohibited. Surely, his mercy was great that did not revenge the impeachment of his Justice; and his goodnesse to be admired, that it refuted not his argument in the punishment of his excusation, or only pursued the first transgression without a penalty of this the second.

The third was that of Eve; The Serpent beguiled me, and I did eate. In which reply there was not only a very feeble excuse, but an erroneous translating her own offence upon another. Extenuating her sinne from that which was an aggravation; that is to excuse the fact at all, much more upon the suggestion of a beast, which was before in the strictest termes prohibited by her God. For although we now do hope the mercies of God will consider our degenerated integrities unto some minoration of our offences; yet had not the sincerity of our first parents, so colourable expectations; unto whom the commandment was but single, and their integrities best able to resist the motions of its transgression. And therefore so hainous conceptions have risen hereof, that some have seemed more angry therewith then God himself; being so exasperated with the offence, as to call in question their salvation, and to dispute the eternall punishment of their Maker. Assuredly with better reason may posterity accuse them, then they the Serpent, or one another; and the displeasure of the Pelagians must needs be irreconcilable, who peremptorily

The sin of Adam and Eve lesse excusable, and why.

rily maintaining they can fulfill the whole Law, will infatisfactorily condemn the non-obſervation of one.

The fourth was that ſpeech of Cain upon the demand of God, Where is thy Brother? and he ſaid, I know not. In which negation, beſide the open impudence, there was implied a notable error; for returning a lie unto his Maker, and preſuming in this manner, to put off the ſearcher of hearts, he denied the omniſciency of God, whereunto there is nothing concealable. The anſwer of Satan in the caſe of Job, had more of truth, wiſdome and reverence, then this; Whence comeſt thou Satan? and he ſaid, from compaſſing of the earth. For though an enemy of God, and hater of all truth, his wiſdome will hardly permit him to falſifie with the Almighty. For well underſtanding the omniſcience of his nature, he is not ſo ready to deceive himſelf, as to falſifie unto him whoſe cognition is no way deludable. And therefore when in the tentation of Chriſt he played upon the fallacy, and thought to deceive the Author of truth, the method of this proceeding aroſe from the uncertainty of his divinity; whereof had he remained aſſured, he had continued ſilent; nor would his diſcretion attempt ſo unſucceedable a temptation. And ſo again at the laſt day, when our offences ſhall be drawn into accompt, the ſubtilty of that Inquiſitor ſhall not preſent unto God a bundle of calumnies or confutable accuſations; but will diſcreetly offer up unto his Omniſciencie, a true and undeniable liſt of our tranſgreſſions.

The devil knew not our Saviour to be God, when he tempted him.

The fifth is another reply of Cain upon the denouncement of his curſe, My iniquity is greater then can be forgiven: For ſo is it expreſſed in ſome tranſlations. The aſſertion was not only deſperate, but the conceit erroneous, overthrowing that glorious attribute of God, his mercy, and conceiving the ſinne of murder unpardonable. Which how great ſoever, is not above the repentance of man, but far below the mercies of God, and was as ſome conceive expiated, in that puniſhment he ſuffered temporally for it. There are but two examples of this error in holy Scripture, and they both for murder, and both as it were of the ſame perſon; for Chriſt was myſtically ſlain in Abel; and therefore Cain had ſome influence on his death as well as Judas; but the ſinne had a different effect on Cain, from that it had on Judas, and moſt that ſince have fallen into it; for they like Judas deſire death, and not unfrequently purſue it: Cain on the contrary grew afraid thereof, and obtained a ſecurement from it, Aſſuredly if his deſpair continued, there was puniſhment enough in life, and juſtice ſufficient in the mercy of his protection. For the life of the deſperate equals the anxieties of death; who in unceſſant inquietudes but act the life of the damned, and anticipate the deſolations of hell. 'Tis indeed a ſinne in man, but a puniſhment only in the devils, who offend not God but afflict themſelves, in the appointed deſpair of his mercies. And as to be without all hope is the affliction of the damned, ſo is it the happineſſe of the bleſſed; who having their expectations preſent, are not diſtracted with futurities. So is it alſo their felicity to have no faith; for enjoying the beatifical viſion there is nothing unto them inevident; and in the fruition of the object of faith, they have received the full evacuation of it.

The laſt ſpeech was that of Lamech, I have ſlain a man to my wound, and a young man to my hurt: If Cain be avenged ſeven fold, truly Lamech ſeventy and ſeven fold. Now herein there ſeems to be a very erroneous illation; from the indulgence of God unto Cain, concluding an immunity unto himſelf; that is, a regular protection from a ſingle example, and an exemption from puniſhment in a fact that naturally deſerved it. The Error of this offendor was contrary to that of Cain, whom the Rabbins conceive that Lamech at this time killed. He deſpaired of Gods mercy in the ſame fact, where this preſumed of it; he by a decollation of all hope annihilated his mercy, this by an immoderancy thereof deſtroyed his juſtice. Though the ſinne were leſſe, the error was as great; For as it is untrue that his mercy will not forgive offenders, or his benignity cooperate to their converſions;

Cain, as the Rabbins think, was the man ſlain by Lamech, Gen. 4. 23.

verſions; So is it alſo of no leſſe falſitie to affirm his Juſtice will not exact account of ſinners, or puniſh ſuch as continue in their tranſgreſſions.

Thus may we perceive, how weakly our fathers did erre before the floud, how continually and upon common diſcourſe they fell upon errors after, it is therefore no wonder we have been erroneous ever ſince: And being now at greateſt diſtance from the beginning of error, are almoſt loſt in its diſſemination, whoſe waies are boundleſſe, and confeſſe no circumſcription.

CHAP. III.

Of the ſecond cauſe of Popular Errors; the erroneous diſpoſition of the people.

HAving thus declared the fallible nature of man even from his firſt production, we have beheld the generall cauſe of error. But as for popular errors, they are more neerly founded upon an erroneous inclination of the people; as being the moſt deceptible part of mankinde, and ready with open arms to receive the encroachments of error. Which condition of theirs although deduceable from many grounds, yet ſhall we evidence it, but from a few, and ſuch as moſt neerly and undeniably declare their natures.

What Error is.

How unequall diſcerners of truth they are, and openly expoſed unto error, will firſt appear from their unquallified intellectuals, unable to umpire the difficulty of its diſſentions. For error to ſpeak ſtrictly, is a firm aſſent unto falſity. Now whether the object whereunto they deliver up their aſſent be true or falſe, they are incompetent judges.

For the aſſured truth of things is derived from the principles of knowledge, and cauſes, which determine their verities. Whereof their uncultivated underſtandings, ſcarce holding any theory, they are but bad diſcerners of verity; and in the numerous track of error, but caſually do hit the point and unity of truth.

Their underſtanding is ſo feeble in the diſcernment of falſities, and averting the errors of reaſon, that it ſubmitteth unto the fallacies of ſenſe, and is unable to rectifie the error of its ſenſations. Thus the greater part of mankinde having but one eye of ſence and reaſon, conceive the earth farre bigger then the Sun, the fixed Stars leſſer then the Moon, their figures plain, and their ſpaces equidiſtant. For thus their ſence informeth them, and herein their reaſon cannot rectifie them; and therefore hopeleſly continuing in their miſtakes, they live and die in their abſurdities; paſſing their daies in perverted apprehenſions, and conceptions of the world, derogatory unto God, and the wiſdome of the creation.

Arguments of ſenſitive quality moſt prevailing upon vulgar capacities.

Again, Being ſo illiterate in point of intellect, and their ſenſe ſo incorrected, they are farther indiſpoſed ever to attain unto truth, as commonly proceeding in thoſe waies, which have moſt reference unto ſenſe, and wherein there lieth moſt notable and popular deluſion.

Fable.

For being unable to weild the intellectuall arms of reaſon, they are fain to betake themſelves unto waſters and the blunter weapons of truth; affecting the groſſe and ſenſible waies of doctrine, and ſuch as will not conſiſt with ſtrict and ſubtile reaſon. Thus unto them a piece of Rhetorick is a ſufficient argument of Logick, an Apologue of Æſope, beyond a Syllogiſme in Barbara; parables then propoſitions, and proverbs more powerfull then demonſtrations. And therefore are they led rather by example, then precept; receiving perſwaſions from viſible inducements, before intellectuall inſtructions. And therefore alſo they judge of humane actions by the event; for being uncapable of operable circumſtances, or rightly to judge the prudentiality of affairs, they only gaze upon the viſible ſucceſſe, and thereafter condemn or cry up the whole progreſſion.

And

And ſo from this ground in the Lecture of holy Scripture, their apprehenſions, are commonly confined unto the literall ſenſe of the text; from whence have enſued the groſſe and duller ſort of hereſies. For not attaining the deuteroſcopy, and ſecond intention of the words, they are fain to omit their ſuperconſequencies, coherencies, figures, or tropologies, and are not ſometime perſwaded by fire beyond their literalities. And therefore alſo things inviſible, but unto intellectuall diſcernments, to humour the groſſeneſſe of their comprehenſions, have been degraded from their proper forms, and God himſelf diſhonoured into manuall expreſſions. And ſo likewiſe being unprovided, or unſufficient for higher ſpeculations, they will alwaies betake themſelves, unto ſenſible repreſentations, and can hardly be reſtrained the dulneſſe of Idolatry. A ſinne or folly not only derogatory unto God, but men; overthrowing their reaſon, as well as his divinity. In brief, a reciprocation, or rather an Inverſion of the creation; making God one way, as he made us another; that is, after our Image, as he made us after his.

Moreover, their underſtanding thus weak in it ſelf, and perverted by ſenſible deluſions, is yet farther impaired by the dominion of their appetite; that is, the irrationall and brutall part of the ſoul, which lording it over the ſovereign faculty, interrupts the actions of that noble part, and choaks thoſe tender ſparks, which Adam hath left them of reaſon. And therefore they do not only ſwarm with errors, but vices depending thereon. Thus they commonly affect no man any farther then he deſerts his reaſon, or complies with their aberrancies. Hence they embrace not vertue for it ſelf, but its reward; and the argument from pleaſure or utility is farre more powerfull, then that from vertuous honeſty; which Mahomet and his contrivers well underſtood, when he ſet out the felicity of his heaven, by the contentments of fleſh, and the delights of ſenſe: ſlightly paſſing over the accompliſhment of the ſoul, and the beatitude of that part which earth and viſibilities too weakly affect. But the wiſdom of our Saviour, and the ſimplicity of his truth proceeded another way; defying the popular proviſions of happineſſe from ſenſible expectations; placing his felicity in things removed from ſenſe, and the intellectuall enjoyment of God. And therefore the doctrine of the one was never afraid of Univerſities, or endeavoured the baniſhment of learning like the other. And though Galen doth ſometime nibble at Moſes, and beſide the Apoſtate Chriſtian, ſome Heathens have queſtioned his Philoſophicall part or treaty of the Creation: Yet is there ſurely no reaſonable Pagan, that will not admire the rationall and well grounded precepts of Chriſt; whoſe life as it was conformable unto his doctrine, ſo was that unto the higheſt rules of reaſon; and muſt therefore flouriſh in the advancement of learning, and the perfection of parts beſt able to comprehend it. *Iulian.*

Again, Their individuall imperfections being great, they are moreover enlarged by their aggregation; and being erroneous in their ſingle numbers once hudled together, they will be error it ſelf. For being a confuſion of knaves and fools, and a farraginous concurrence of all conditions, tempers, ſex, and ages; it is but naturall if their determinations be monſtrous, and many waies inconſiſtent with truth. And therefore wiſe men have alwaies applauded their own judgement, in the contradiction of that of the people; and their ſobereſt adverſaries, have ever afforded them the ſtile of fools and mad men; and to ſpeak impartially, their actions have often made good theſe Epithites. Had Oreſtes been Judge, he would not have acquitted that Lyſtrian rabble of madneſſe, who upon a viſible miracle, falling into ſo high a conceit of Paul and Barnabas, that they termed the one Jupiter, the other Mercurius; that they brought oxen and garlands, and were hardly reſtrained, from ſacrificing unto them; did notwithſtanding ſuddenly after fall upon Paul, and having ſtoned him, drew him for *Non ſani eſſe hominis non ſanus jurat Oreſtes.*

for dead out of the city. It might have hazarded the ſides of Democritus, had he been preſent at that tumult of Demetrius; when the people flocking together in great numbers, ſome cried one thing, and ſome another, and the aſſembly was confuſed, and the moſt part knew not wherefore they were come together; notwithſtanding, all with one voice for the ſpace of two hours cried out, Great is Diana of the Epheſians. It had overcome the patience of Job, as it did the meekneſſe of Moſes, and would ſurely have maſtered any, but the longanimity and laſting ſufferance of God, Had they beheld the mutiny in the wilderneſſe; when after ten great miracles in Egypt, and ſome in the ſame place, they melted down their ſtolen ear-rings into a calf, and monſtrouſly cried out, Theſe are thy gods O Iſrael, that brought thee out of the land of Egypt. It much accuſeth the impatiencie of Peter, who could not endure the ſtaves of the multitude, and is the greateſt example of lenity in our Saviour, when he deſired of God forgiveneſſe unto thoſe, who having one day brought him into the City in triumph, did preſently after, act all diſhonour upon him, and nothing could be heard but *Crucifige* in their courts. Certainly he that conſidereth theſe things in Gods peculiar people, will eaſily diſcern how little of truth, there is in the waies of the multitude; and though ſometimes they are flattered with that Aphoriſme, will hardly beleeve the voice of the people to be the voice of God.

Laſtly, Being thus divided from truth in themſelves, they are yet farther removed by advenient deception. For true it is (and I hope ſhall not offend their vulgarities,) if I ſay they are daily mocked into error by ſubtler deviſors, and have been expreſly deluded, by all profeſſions and ages. Thus the Prieſts of Elder time, have put upon them many incredible conceits, not only deluding their apprehenſions, with Ariolation, South-ſaying, and ſuch oblique Idolatries; but winning their credulities unto the literall and down-right adorement of Cats, Lizards and Beetles. And thus alſo in ſome Chriſtian Churches, wherein is preſumed an irreprovable truth, if all be true that is ſuſpected, or half what is related, there have not wanted, many ſtrange deceptions, and ſome thereof are ſtill confeſſed by the name of Pious fraudes. Thus Theudas an Impoſtor was able to lead away four thouſand into the wilderneſſe, and the deluſions of Mahomet almoſt the fourth part of mankinde. Thus all hereſies how groſſe ſoever, have found a welcome with the people. For thus, many of the Jews were wrought into belief, that Herod was the Meſſias; and David George of Leyden and Arden, were not without a party amongſt the people, who maintained the ſame opinion of themſelves almoſt in our daies.

The Authors cenſure upon judgements by Vrine.

Phyſitians (many at leaſt that make profeſſion thereof) beſide divers leſſe diſcoverable waies of fraud, have made them beleeve, there is the book of fate, or the power of Aarons breſt-plate in Urines. And therefore hereunto they have recourſe as unto the Oracle of life, the great determinator of virginity, conception, fertility, and the inſcrutable infirmities of the whole body. For as though there were a ſeminality in Urine, or that like the ſeed it carried with it the Idea of every part, they fooliſhly conceive we viſibly behold therein the Anatomy of every particle, and can thereby indigitate their affections; and running into any demands expect from us a ſudden reſolution in things wherein the devil of Delphos would demurre, and we know hath taken reſpite of ſome daies to anſwer eaſier queſtions.

Places in Venice and Paris, where Mountebanks play their pranks.

Saltimbancoes, Quackſalvers and Charlatans, deceive them in lower degrees. Were Æſop alive, the Piazza and Pont Neuf could not but ſpeak their fallacies; mean while there are too many, whoſe cries cannot conceale their miſchiefs. For their Impoſtures are full of cruelty, and worſe then any other; deluding not only unto pecuniary defraudations, but the irreparable deceit of death.

Aſtrologers, which pretend to be of Cabala with the ſtarres (ſuch I mean as abuſe

abuſe that worthy enquiry;) have not been wanting in their deceptions. Who having wonne their belief unto principles whereof they make great doubt themſelves, have made them beleeve that arbitrary events below, have neceſſary cauſes above; whereupon their credulities aſſent unto any prognoſticks, and daily ſwallow the predictions of men, which conſidering the independencie of their cauſes, and contingencie in their events, are only in the preſcience of God.

Fortune tellers, Juglers, Geomancers, and the like incantatory impoſtors, though commonly men of inferiour rank, and from whom without illumination they can expect no more then from themſelves, do daily and profeſſedly delude them. Unto whom (what is deplorable in men and Chriſtians) too many applying themſelves; betwixt jeſt and earneſt, betray the cauſe of truth, and inſenſibly make up the legionary body of error.

Statiſtes and Politicians, unto whom *Ragione di Stato*, is the firſt conſiderable, as though it were their buſineſſe to deceive the people, as a Maxime, do hold, that truth is to be concealed from them; unto whom although they reveale the viſible deſign, yet do they commonly conceale the capitall intention. And therefore have they alway been the inſtruments of great deſignes, yet ſeldome underſtood the true intention of any; accompliſhing the drifts of wiſer heads, as inanimate and ignorant Agents the generall deſigne of the world; who though in ſome latitude of ſenſe, and in a naturall cognition perform their proper actions, yet do they unknowingly concurre unto higher ends, and blindely advance the great intention of nature. Now how farre they may be kept in ignorance, a great example there is in the people of Rome, who never knew the true and proper name of their own City. For beſide that common appellation received by the Citizens, it had a proper and ſecret name concealed from them: *Cujus alterum nomen dicere ſecretis Ceremoniarum nefas habetur*, ſaith Plinie; leſt the name thereof being diſcovered unto their enemies, their Penates and Patronall gods, might be called forth by charms and incantations. For according unto the tradition of Magitians, the tutelary ſpirits will not remove at common appellations, but at the proper names of things whereunto they are protectors.

The people of Rome, why never ſuffer'd to know the right name of their city.

Thus having been deceived by themſelves, and continually deluded by others, they muſt needs be ſtuffed with errors, and even over-runne with theſe inferiour falſities; whereunto whoſoever ſhall reſigne their reaſons, either from the root of deceit in themſelves, or inability to reſiſt ſuch triviall ingarnations from others; although their condition and fortunes may place them many Spheres above the multitude, yet are they ſtill within the line of vulgarity, and Democraticall enemies of truth.

Deceptions.

CHAP. IIII.

Of the nearer and more Immediate Cauſes of popular errours, both in the wiſer and common ſort, Miſapprehenſion, Fallacy, or falſe diduction, Credulity, Supinity, adherence unto Antiquitie, Tradition and Authoritie.

THe firſt is a miſtake, or a conception of things, either in their firſt apprehenſions, or ſecondary relations. So Eve miſtook the Commandment, either from the immediate injunction of God, or from the ſecondary narration of her husband. So might the Diſciples miſtake our Saviour, in his anſwer unto Peter, concerning the death of John, as is delivered, John 21. Peter ſeeing John, ſaith unto Jeſus, Lord, and what ſhall this man doe? Jeſus ſaith, If I will, that he tarry till I come, what is that unto thee? Then went this ſaying abroad among

The belief of Centaures whence occasioned.

the brethren, that that Disciple should not die. Thus began the conceit and opinion of the Centaures, that is, in the mistake of the first beholders, as is declared by Servius; when some young Thessalians on horseback were beheld afarre off, while their horses watered, that is, while their heads were depressed, they were conceived by the first spectators, to be but one animall; and answerable hereunto have their pictures been drawn ever since.

And as simple mistakes commonly beget fallacies, so men rest not in false apprehensions, without absurd and inconsequent diductions; from fallacious foundations, and misapprehended mediums, erecting conclusions no way inferrible from their premises. Now the fallacies whereby men deceive others, and are deceived themselves, the Ancients, have divided into Verball and Reall. Of the Verball, and such as conclude from mistakes of the word, although there be no lesse then six, yet are there but two thereof worthy our notation; and unto which the rest may be referred: that is the fallacie of Æquivocation and Amphibologie; which conclude from the ambiguity of some one word, or the ambiguous syntaxis of many put together. From this fallacy arose that calamitous error of the Jews, misapprehending the Propheſies of their Messias, and expounding them alwaies unto literall and temporall expectations. By this way many errors crept in and perverted the doctrine of Pythagoras, whilest men received his precepts in a different sense from his intention; converting Metaphors into proprieties, and receiving as litterall expressions, obscure and involved truths. Thus when he enjoined his Disciples, an abstinence from beans, many conceived they were with severity debarred the use of that pulse; which notwithstanding could not be his meaning; for as Aristoxenus who wrote his life, averreth, he delighted much in that kinde of food himself. But herein as Plutarch observeth, he had no other intention, then to disswade men from Magistracy, or undertaking the publike offices of state; for by beans were the Magistrates elected in some parts of Greece; and after his daies, we reade in Thucydides, of the Councell of the bean in Athens. The same word also in Greek doth signifie a testicle, and hath been thought by some an injunction only of continencie, as Aul. Gellius hath expounded, and as Empedocles may also be interpreted, κὺν δύλοι κυαμῶν ἀπὸ χεῖρας ἔχεσθε, that is, *Testiculis miseri dextras subducite*. Again his injunction is, not to harbour Swallows in our houses: Whose advice notwithstanding we doe not contemn, who daily admit and cherish them. For herein a caution is only implied not to entertain ungratefull and thankleſſe persons, which like the swallow are no way commodious unto us; but having made use of our habitations, and served their own turns, forsake us. So he commands to deface the print of a cauldron in the ashes, after it hath boyled. Which strictly to observe were condemnable superstition: For hereby he covertly adviseth us not to persevere in anger, but after our choler hath boyled, to retain no impression thereof. In the like sense are to be received, or they will else be misapprehended, when he adviseth his Disciples to give the right hand but to few, to put no viands in a chamberpot, not to passe over a balance, not to rake up fire with a sword, or pisse against the Sunne. Which enigmaticall deliveries comprehend usefull verities, but being mistaken by literall Expositors at the first, they have been misunderstood by most since, and may be occasion of error to verball capacities for ever.

Æquivocation and Amphibologie how they differ.

Pythagoras his Allegoricall precepts moralized

This fallacy in the first deluſion Satan put upon Eve, and his whole tentation might be the same Elench continued; so when he said, Ye shall not die, that was in his equivocation, ye shall not incurre a present death, or a destruction immediatly ensuing your transgression. Your eyes shall be opened; that is, not to the enlargement of your knowledge, but discovery of your shame and proper confusion. You shall know good and evil; that is, you shall have knowledge of good by its privation, but cognisance of evil by sense and visible experience. And the same fallacy or way of deceit so well succeeding in Paradise, he continued in his

Oracles

Oracles through all the world. Which had not men more warily understood, they might have performed many acts inconsistent with his intention. Brutus might have made haste with Tarquine to have kissed his own mother. The Athenians might have built them wooden walls, or doubled the Altar at Delphos.

The circle of this fallacy is very large, and herein may be comprised all Ironicall mistakes; for intended expressions receiving inverted significations; all deductions from metaphors, parables, allegories, unto reall and rigid interpretations. Whereby have risen not only popular errors in Philosophy, but vulgar and senseless heresies in Divinity; as will be evident unto any that shall examine their foundations, as they stand related by Epiphanius, Austin, or Prateolus.

Other waies there are of deceit, which consist not in false apprehension of words, that is, verball expressions or sententiall significations, but fraudulent deductions, or inconsequent illations, from a false conception of things. Of these extradictionary and reall fallacies, Aristotle and Logicians make in number six, but we observe that men are most commonly deceived by four thereof: those are, *Petitio principij*. A *dicto secundum quid ad dictum simpliciter*. A *non causâ pro causâ*. And *fallacia consequentis*.

The first is *petitio principij*. Which fallacie is committed, when a question is made a medium, or we assume a medium as granted, whereof we remain as unsatisfied as of the question. Briefly, where that is assumed as a principle, to prove another thing, which is not conceded as true it self. By this fallacie was Eve deceived, when she took for granted, the false assertion of the devil; Ye shall not surely die; for God doth know that in the day she shall eat thereof, your eyes shall be opened, and you shall be as gods. Which was but a bare affirmation of Satan without any proof or probable inducement; contrary unto the command of God and former belief of her self. And this was the Logick of the Jews, when they accused our Saviour unto Pilate; who demanding a reasonable impeachment, or the allegation of some crime worthy of condemnation; they only replied, if he had not been worthy of death, we would not have brought him before thee. Wherein there was neither accusation of the person, nor satisfaction of the Judge, who well understood a bare accusation was no presumption of guilt, and the clamors of the people no accusation at all. The same fallacie is sometime used in the dispute, between Job, and his friends; they often taking that for granted which afterward he disproveth.

The second is *à dicto secundum quid ad dictum simpliciter*, when from that which is but true in a qualified sense, an inconditionall and absolute verity is inferred; transferring the speciall consideration of things unto their generall acceptions, or concluding from their strict acception, unto that without all limitation. This fallacie men commit when they argue from a particular to a generall; as when we conclude the vices or qualities of a few upon a whole Nation. Or from a part unto the whole. Thus the devil argued with our Saviour, and by this he would perswade him he might be secure if he cast himself from the pinacle: for said he, it is written, he shall give his Angels charge concerning thee, and in their hands they shall bear thee up, lest at any time thou dash thy foot against a stone. But this illation was fallacious, leaving out part of the text, Psalm 91. He shall keep thee in all thy waies; that is, in the waies of righteousnesse, and not of rash attempts: so he urged a part for the whole, and inferred more in the conclusion, then was contained in the premises. By the same fallacie we proceed, when we conclude from the signe unto the thing signified. By this incroachment Idolatry first crept in, men converting the symbolicall use of Idols into their proper worship, and receiving the representation of things as the substance and thing it self. So the statue of Belus at first erected in his memory, was in after times adored as a Divinity. And so also in the

The Originall of Idolatry.

Sacrament of the Eucharist, the bread and wine which were but the signalls or visible signes, were made the things signified, and worshipped as the body of Christ. And hereby generally men are deceived that take things spoken in some latitude without any at all. Hereby the Jews were deceived concerning the commandment of the Sabbath, accusing our Saviour for healing the sick, and his disciples for plucking the ears of corn, upon that day. And by this deplorable mistake they were deceived unto destruction, upon the assault of Pompey the great made upon that day, by whose superstitious observation they could not defend themselves, or perform any labour whatsoever.

The Alcoran endures neither wine nor Universities.

The third is a *non causa pro causâ*, when that is pretended for a cause which is not, or not in that sense which is inferred. Upon this consequence the law of Mahomet forbid the use of wine, and his successors abolished Universities: by this also many Christians have condemned literature, misunderstanding the counsel of Saint Paul, who adviseth no further then to beware of Philosophy. On this foundation were built the conclusions of Southsayers in their Auguriall, and Tripudiary divinations; collecting presages from voice or food of birds, and conjoyning events unto causes of no connexion. Hereupon also are grounded the grosse mistakes, in the cure of many diseases; not only from the last medicine, and sympatheticall receits, but amulets, charms, and all incantatory applications; deriving effects not only from inconcurring causes, but things devoid of all efficiencie whatever.

The fourth is the fallacie of the consequent; which if strictly taken, may be a fallacious illation in reference unto antecedencie, or consequencie; as to conclude from the position of the antecedent, unto the position of the consequent, or from the remotion of the consequent to the remotion of the antecedent. This is usually committed, when in connexed propositions the termes adhere contingently. This is frequent in Oratorie illations; and thus the Pharisees, because he conversed with Publicans and sinners, accused the holinesse of Christ. But if this fallacie be largely taken, it is committed in any vicious illation, offending the rules of good consequence; and so it may be very large, and comprehend all false illations against the setled laws of Logick. But the most usuall inconsequencies are from particulars, from negatives, and from affirmative conclusions in the second figure, wherein indeed offences are most frequent, and their discoveries not difficult.

Chap. V.

Of Credulity and Supinity.

A Third cause of common Errors is the Credulity of men, that is, an easie assent, to what is obtruded, or a beleeving at first ear what is delivered by others. This is a weaknesse in the understanding, without examination assenting unto things, which from their natures and causes doe carry no perswasion; whereby men often swallow falsities for truths, dubiosities for certainties, fesibilities for possibilities, and things impossible as possibilities themselves. Which, though a weaknesse of the Intellect, and most discoverable in vulgar heads, yet hath it sometime fallen upon wiser brains, and great advancers of truth. Thus many wise Athenians so far forgot their Philosophy, and the nature of humane production, that they descended unto beliefs, the originall of their Nation was from the Earth, and had no other beginning then from the seminality and womb of their great Mother. Thus is it not without wonder, how those learned Arabicks so tamely delivered up their belief unto the absurdities of the Alcoran. How the noble Geber, Avicenna aud Almanzor, should rest satisfied in

in the nature and cauſes of earthquakes, delivered from the doctrine of their Prophet; that is, from the motion of a great Bull, upon whoſe hornes all the earth is poiſed. How their faiths could decline ſo low, as to concede their generations in heaven, to be made by the ſmell of a citron, or that the felicity of their Paradiſe ſhould conſiſt in a Jubile of copulation, that is a coition of one act prolonged unto fifty years. Thus is it almoſt beyond wonder, how the belief of reaſonable creatures, ſhould ever ſubmit unto Idolatry: and the credulity of thoſe men ſcarce credible (without preſumption of a ſecond fall) who could beleeve a Deity in the work of their own hands. For although in that ancient and diffuſed adoration of Idols, unto the Prieſts and ſubtiler heads, the worſhip perhaps might be ſymbolicall, and as thoſe Images ſome way related unto their deities; yet was the Idolatry direct and down-right in the people; whoſe credulity is illimitable; who may be made beleeve that any thing is God; and may be made beleeve there is no God at all.

And as Credulity is the cauſe of Error, ſo incredulity oftentimes of not enjoying truth; and that not only an obſtinate incredulity, whereby we will not acknowledge aſſent unto what is reaſonably inferred, but any Academicall reſervation in matters of eaſie truth, or rather ſcepticall infidelity againſt the evidence of reaſon and ſenſe. For theſe are conceptions befalling wiſe men, as abſurd as the apprehenſions of fools, and the credulity of the people which promiſcuouſly ſwallow any thing. For this is not only derogatory unto the wiſdom of God, who hath propoſed the world unto our knowledge, and thereby the notion of himſelf, but alſo detractory unto the intellect, and ſenſe of man expreſſedly diſpoſed for that inquiſition. And therefore *hoc tantum ſcio quod nihil ſcio*, is not to be received in an abſolute ſenſe, but is comparatively expreſſed unto the number of things whereof our knowledge is ignorant; nor will it acquit the inſatisfaction of thoſe which quarrell with all things, or diſpute of matters concerning whoſe verities we have conviction from reaſon, or deciſion from the inerrable and requiſite conditions of ſenſe. And therefore if any affirm the earth doth move, and will not beleeve with us, it ſtandeth ſtill; becauſe he hath probable reaſons for it, and I no infallible ſenſe nor reaſon againſt it, I will not quarrell with his aſſertion. But if like Zeno he ſhall walk about, and yet deny there is any motion in nature, ſurely that man was conſtituted for Anticera, and were a fit companion for thoſe, who having a conceit they are dead, cannot be convicted into the ſociety of the living.

Obſtinate and irrationall Scepticiſme juſtly cenſured.

The fourth is a ſupinity or neglect of enquiry, even in matters whereof we doubt; rather beleeving, then going to ſee, or doubting with eaſe and gratis, then beleeving with difficulty or purchaſe; whereby, either from a temperamentall inactivity we are unready to put in execution the ſuggeſtions or dictates of reaſon; or by a content and acquieſcence in every ſpecies of truth, we embrace the ſhadow thereof, or ſo much as may palliate its juſt and ſubſtantiall acquirements. Had our forefathers ſat down in theſe reſolutions, or had their curioſities been ſedentary, who purſued the knowledge of things through all the corners of nature, the face of truth had been obſcure unto us, whoſe luſtre in ſome part their induſtries have revealed.

Certainly the ſweat of their labours was not ſalt unto them, and they took delight in the duſt of their endeavours. For queſtionleſſe in knowledge there is no ſlender difficulty, and truth which wiſe men ſay doth lye in a well, is not recoverable but by exantlation. It were ſome extenuation of the curſe, if *in ſudore vultus tui*, were confinable unto corporall exercitations, and there ſtill remained a Paradiſe or unthorny place of knowledge. But now our underſtandings being eclipſed, as well as our tempers infirmed, we muſt betake our ſelves to waies of reparation, and depend upon the illumination of our endeavours. For thus we may in ſome meaſure repair our primary ruines, and build our ſelves men again. And

though the attempts of ſome have been precipitous, and their enquiries ſo audacious as to come within command of the flaming ſwords, and loſt themſelves in attempts above humanity; yet have the enquiries of moſt defected by the way, and tyred within the ſober circumference of knowledge.

And this is the reaſon why ſome have tranſcribed any thing; and although they cannot but doubt thereof, yet neither make experiment by ſenſe or enquiry by reaſon, but live in doubts of things whoſe ſatisfaction is in their own power; which is indeed the inexcuſable part of our ignorance, and may perhaps fill up the charge of the laſt day. For not obeying the dictates of reaſon, and neglecting the cries of truth, we fail not only in the truſt of our undertakings, but in the intention of man it ſelf. Which although more veniall unto ordinary conſtitutions, and ſuch as are not framed beyond the capacity of beaten notions, yet will it inexcuſably condemn ſome men, who having received excellent endowments, have yet ſat down by the way, and fruſtrated the intention of their habilities. For certainly as ſome men have ſinned, in the principles of humanity, and muſt anſwer, for not being men, ſo others offend if they be not more; *Magis extra vitia quam cum virtutibus*, would commend thoſe, Theſe are not excuſable without an Excellency. For great conſtitutions, and ſuch as are conſtellated unto knowledge, do nothing till they outdoe all; they come ſhort of themſelves if they go not beyond others, and muſt not ſit down under the degree of worthies. God expects no luſtre from the minor ſtars, but if the Sun ſhould not illuminate all, it were a ſin in Nature. *Ultimus bonorum*, will not excuſe every man, nor is it ſufficient for all to hold the common levell; Mens names ſhould not only diſtinguiſh them: A man ſhould be ſomething that men are not, and individuall in ſomewhat beſide his proper nature. Thus while it exceeds not the bounds of reaſon and modeſty, we cannot condemn ſingularity. *Nos numerus ſumus*, is the motto of the multitude, and for that reaſon are they fools. For things as they recede from unity, the more they approach to imperfection, and deformity; for they hold their perfection in their ſimplicities, and as they neareſt approach unto God.

Now as there are many great wits to be condemned, who have neglected the increment of Arts, and the ſedulous purſuit of knowledge; ſo are there not a few very much to be pittied, whoſe induſtry being not attended with naturall parts, they have ſweat to little purpoſe, and rolled the ſtone in vain. Which chiefly proceedeth from naturall incapacity, and geniall indiſpoſition, at leaſt to thoſe particulars whereunto they apply their endeavours. And this is one reaſon why though Univerſities be full of men, they are oftentimes empty of learning. Why as there are ſome which do much without learning, ſo others but little with it, and few that attain to any meaſure of it. For many heads that undertake it, were never ſquared nor timbred for it. There are not only particular men, but whole nations indiſpoſed for learning; whereunto is required not only education, but a pregnant Minerva and teeming conſtitution. For the wiſdome of God hath divided the Genius of men according to the different affairs of the world, and varied their inclinations according to the variety of Actions to be performed therein. Which they who conſider not, rudely ruſhing upon profeſſions and waies of life unequall to their natures; diſhonour not only themſelves and their functions, but pervert the harmony of the whole world. For if the world went on as God hath ordained it, and were every one implied in points concordant to their Natures; Profeſſions, Arts and Common-wealths would riſe up of themſelves; nor needed we a Lanthorn to finde a man in Athens.

Univerſities, why many times full of Scholars and empty of Learning.

The naturall genius or inclination how much to be regarded in the choiſe of a profeſſion.

Chap.

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have expreſly treated *de re Ruſtica*, and have alſo delivered divers remedies for it. Why Juments, as Horſes, Oxen and Aſſes, have no eructation or belching, whereas indeed the contrary is often obſerved, and alſo delivered by Columella. And thirdly, why man alone hath gray haires? whereas it cannot eſcape the eies, and ordinary obſervation of all men, that horſes, dogs, and foxes, wax gray with age in our Countries, and in the colder regions many other animals without it. And though favourable conſtructions may ſomewhat extenuate the rigour of theſe conceſſions, yet will ſcarce any palliate that in the fourth of his meteors, That ſalt is eaſieſt diſſolvible in cold water: Nor that of Dioſcorides, That Quickſilver is beſt preſerved in Tinne and Lead.

Other Authors write often dubiouſly, even in matters wherein is expected a ſtrict and definitive truth; extenuating their affirmations, with *aiunt*, *ferunt*, *fortaſſe*, As Dioſcorides, Galen, Ariſtotle, and many more. Others by hear ſay; taking upon truſt moſt they have delivered; whoſe volumes are meer collections, drawn from the mouthes or leaves of other Authors; as may be obſerved in Plinie, Ælian, Athenæus, and many more. Not a few tranſcriptively; ſubſcribing their names unto other mens endeavours, and meerly tranſcribing almoſt all they have written. The Latines tranſcribing the Greeks, the Greeks and Latines each other. Thus hath Juſtine borrowed all from Trogus Pompeius, and Julius Solinus in a manner tranſcribed Plinie. Thus have Lucian and Apuleius ſerved Lucius Pratenſis; men both living in the ſame time, and both tranſcribing the ſame Authour, in thoſe famous Books, Entituled Lucius by the one, and Aureus Aſinus by the other. In the ſame meaſure hath Simocrates in his Tract *de Nilo*, dealt with Diodorus Siculus, as may be obſerved, in that work annexed unto Herodotus, and tranſlated by Jungermannus. Thus Eratoſthenes wholly tranſlated Timotheus *de Inſulis*, not reſerving the very Preface. The very ſame doth Strabo report of Eudorus and Ariſton in a Treatiſe Entituled *de Nilo*. Clemens Alexandrinus hath obſerved many examples hereof among the Greeks; and Plinie ſpeaketh very plainly in his Preface, that conferring his Authors, and comparing their works together, he generally found thoſe that went before *verbatim* tranſcribed, by thoſe that followed after, and their originals never ſo much as mentioned. To omit how much the wittieſt peece of Ovid is beholding unto Parthenius Chius; even the magnified Virgil hath borrowed almoſt all his works: his Eclogues from Theocritus, his Georgicks from Heſiod and Aratus, his Æneads from Homer; the ſecond Book whereof containing the exploit of Sinon and the Trojan horſes (as Macrobius obſerveth) he hath *verbatim* derived from Piſander. Our own profeſſion is not excuſable herein. Thus Oribaſius, Ætius and Ægineta have in a manner tranſcribed Galen. But Marcellus Empericus who hath left a famous work *de medicamentis*, hath word for word, tranſcribed all Scribonius Largus, *de compoſitione medicamentorum*, and not left out his very peroration. Thus may we perceive the Ancients were but men, even like our ſelves. The practice of tranſcription in our daies was no monſter in theirs: Plagiarie had not its nativity with printing; but began in times when thefts were difficult, and the paucity of books ſcarce wanted that invention.

The Antiquity, and ſome notable inſtances of Plagiariſme, that is, of tranſcribing or filching Authours.

Fourthly. While we ſo eagerly adhear unto Antiquity, and the accounts of elder times, we are to conſider the fabulous condition thereof; and that we ſhall not deny if we call to minde the mendacity of Greece, from whom we have received moſt relations, and that a conſiderable part of Ancient times, was by the Greeks themſelves termed μύθικον, that is, made up or ſtuffed out with fables. And ſurely the fabulous inclination of thoſe daies, was greater then any ſince; which ſwarmed ſo with fables, and from ſuch ſlender grounds, took hintes for fictions, poyſoning the world ever after; wherein, how far they exceeded, may be exemplified from Palæphatus, in his book of fabulous narrations.

An ancient Author who writ περὶ ἀπίστων *ſive de incredibilibus*, whereof ſome part is yet extant.

That

That fable of Orpheus, who by the melody of his muſick, made woods and trees to follow him, was raiſed upon a ſlender foundation; for there were a crew of mad women, retired unto a mountain, from whence being pacified by his Muſick, they deſcended with boughs in their hands, which unto the fabuloſity of thoſe times, proved a ſufficient ground to celebrate unto all poſterity the Magick of Orpheus harp, and its power to attract the ſenſeleſſe trees about it. That Medea the famous Sorcereſſe could renue youth, and make old men young again, was nothing elſe, but that from the knowledge of ſimples ſhe had a receit to make white hair black, and reduce old heads into the tincture of youth again. The fable of Gerion and Cerberus with three heads was this: Gerion was of the City Tricarinia, that is, of three heads, and Cerberus of the ſame place was one of his dogs, which running into a cave upon purſuit of his maſters oxen, Hercules perforce drew him out of that place; from whence the conceits of thoſe daies affirmed no leſſe, then that Hercules deſcended into hell, and brought up Cerberus into the habitation of the living. Upon the like grounds was raiſed the figment of Briareus, who dwelling in a City called Hecatonchiria, the fancies of thoſe times aſſigned him an hundred hands. Twas ground enough to fancy wings unto Dædalus, in that he ſtole out of a window from Minos, and ſailed away with his ſon Icarus; who ſteering his courſe wiſely, eſcaped; but his ſon carrying too high a ſaile was drowned. That Niobe weeping over her children was turned into a ſtone, was nothing elſe but that during her life, ſhe erected over their ſepultures, a marble tombe of her own. When Acteon had undone himſelf with dogs, and the prodigall attendance of hunting, they made a ſolemn ſtory how he was devoured by his hounds. And upon the like grounds was raiſed the Anthropophagie of Diomedes his horſes. Upon as ſlender foundation was built, the fable of the Minotaure; for one Taurus a ſervant of Minos gat his miſtreſſe Paſiphae with childe; from whence the infant was named Minotaurus. Now this unto the fabuloſitie of thoſe times was thought ſufficient to accuſe Paſiphae of Beaſtiality, or admitting conjunction with a Bull; and in ſucceeding ages gave a hint of depravity unto Domitian to act the fable into reality. In like manner, as Diodorus plainly delivereth, the famous fable of Charon had its nativity, who being no other but the common Ferryman of Ægypt, that wafted over the dead bodies from Memphis; was made by the Greeks to be the Ferryman of hell, and ſolemn ſtories raiſed after of him. Laſtly, We ſhall not need to enlarge, if that be true which grounded the generation of Caſtor and Helena out of an egge, becauſe they were born and brought up in an upper room, according unto the word ὠὸν, which with the Lacedæmonians had alſo that ſignification.

The fable of Orpheus his harp, &c. whence occaſioned.

Eating of Mans fleſh.

Fiftly, We applaud many things delivered by the Ancients, which are in themſelves but ordinary, and come ſhort of our own conceptions. Thus we uſually extoll, and our Orations cannot eſcape the ſayings of the wiſe men of Greece. *Noſce teipſum* of Thales: *Noſce tempus* of Pittacus: *Nihil nimis* of Cleobulus; which notwithſtanding to ſpeak indifferently, are but vulgar precepts in Morality, carrying with them nothing above the line, or beyond the extemporary ſententioſity of common conceits with us. Thus we magnifie the Apothegmes, or reputed replies of wiſdom, whereof many are to be ſeen in Laertius, more in Lycoſthenes, not a few in the ſecond book of Macrobius, in the ſalts of Cicero, Auguſtus, and the Comicall wits of thoſe times: in moſt whereof there is not much to admire, and are me thinks exceeded, not only in the replies of wiſe men, but the paſſages of ſociety and urbanities of our times. And thus we extoll their adages or proverbs; and Eraſmus hath taken great pains to make collections of them; whereof notwithſtanding the greater part will, I beleeve, unto indifferent judges be eſteemed no extraordinaries; and may be paralleled, if not exceeded, by thoſe of more unlearned nations, and many of our own.

A pedanticall vanity, to quote Authors in matters of common sense or of familiar acknowledgement.

Sixtly, We urge authorities, in points that need not, and introduce the testimony of ancient writers, to confirm things evidently beleeved, and whereto no reasonable hearer but would assent without them; such as are; *Nemo mortalium omnibus horis sapit. Virtute nil praestantius, nil pulchrius. Omnia vincit amor. Praclarum quiddam veritas.* All which, although things known and vulgar, are frequently urged by many men, and though triviall verities in our mouthes, yet noted from Plato, Ovid, or Cicero, they become reputed elegancies. For many hundred, to instance but in one we meet with while we are writing. Antonius Guevara that elegant Spaniard, in his book intituled, *The Diall of Princes*, beginneth his Epistle thus. Apolonius Thyaneus disputing with the Scholars of Hiarchas, said, that among all the affections of nature, nothing was more naturall, then the desire all have to preserve life; which being a confessed truth, and a verity acknowledged by all, it was a superfluous affectation, to derive its authority from Apolonius, or seek a confirmation thereof as farre as India, and the learned Scholers of Hiarchus. Which, whether it be not all one to strengthen common dignities and principles known by themselves, with the authority of Mathematicians; or think a man should beleeve the whole is greater then its parts, rather upon the authority of Euclide, then if it were propounded alone; I leave unto the second and wiser cogitations of all men. Tis sure a practice that savours much of Pedantery; a reserve of Puerility we have not shaken off from School; where being seasoned with Minor sentences; by a neglect of higher enquiries, they prescribe upon our riper ears, and are never worn out but with our memories.

Some remarkable mistakes among the Ancients.

Lastly, While we so devoutly adhere unto Antiquity in some things, we doe not consider we have deserted them in severall others. For they indeed have not only been imperfect, in the conceit of some things, but either ignorant or erroneous in many more. They understood not the motion of the eight sphear from West to East, and so conceived the longitude of the starres invariable. They conceived the torrid Zone unhabitable, and so made frustrate the goodliest part of the earth. But we now know 'tis very well empeopled, and the habitation thereof esteemed so happy, that some have made it the proper seat of Paradise; and been so farre from judging it unhabitable, that they have made it the first habitation of all. Many of the Ancients denied the Antipodes, and some unto the penality of contrary affirmations; but the experience of our enlarged navigations, can now assert them beyond all dubitation. Having thus totally relinquisht them in some things, it may not be presumptuous, to examine them in others; but surely most unreasonable to adhere to them in all, as though they were infallible or could not erre in any.

Chap. VII.

Of Authority.

Authority (simply) but a mean argument especially

NOr is only a resolved prostration unto Antiquity a powerfull enemy unto knowledge, but any confident adherence unto Authority, or resignation of our judgements upon the testimony of Age or Author whatsoever.

For first, To speak generally an argument from Authority to wiser examinations, is but a weaker kinde of proof, it being but a topicall probation, and as we term it, an inartificiall argument, depending upon a naked asseveration: wherein neither declaring the causes, affections or adjuncts of what we beleeve, it carrieth not with it the reasonable inducements of knowledge; and therefore *Contra negantem principia, Ipse dixit*, or *Oportet discentem credere*, although postulates very accommodable unto Junior indoctrinations; yet are their authorities

thorities but temporary, and not to be imbraced beyond the minority of our intellectuals. For our advanced beliefs are not to be built upon dictates, but having received the probable inducements of truth, we become emancipated from teſtimoniall ingagements, and are to erect upon the ſurer baſe of reaſon.

Secondly, Unto reaſonable perpenſions it hath no place in ſome Sciences, ſmall in others, and ſuffereth many reſtrictions, even where it is moſt admitted. It is of no validity in the Mathematicks, eſpecially the mother part thereof Arithmetick and Geometry. For theſe Sciences concluding from dignities and principles known by themſelves, receive not ſatisfaction from probable reaſons, much leſſe from bare and peremptory aſſeverations. And therefore if all Athens ſhould decree, that in every triangle, two ſides, which ſoever be taken, are greater then the ſide remaining; or that in rectangle triangles the ſquare which is made of the ſide that ſubtendeth the right angle, is equall to the ſquares which are made of the ſides containing the right angle: Although there be a certain truth therein, Geometritians notwithſtanding would not receive ſatisfaction without demonſtration thereof. 'Tis true, by the vulgarity of Philoſophers there are many points beleeved without probation; nor if a man affirme from Ptolomy, that the Sun is bigger then the Earth, ſhall he probably meet with any contradiction; whereunto notwithſtanding Aſtronomers will not aſſent without ſome convincing argument or demonſtrative proof thereof. And therefore certainly of all men a Philoſopher, ſhould be no ſwearer: for an oath which is the end of controverſies in Law, cannot determine any here; nor are the deepeſt ſacraments or deſperate imprecations of any force to perſwade, where reaſon only, and neceſſary mediums muſt induce. *in the Mathematicks*

In naturall Philoſophy more generally purſued amongſt us, it carrieth but ſlender conſideration; for that alſo proceeding from ſetled principles, therein is expected a ſatisfaction from ſcientificall progreſſions, and ſuch as beget a ſure or rationall belief. For if Authority might have made out the aſſertions of Philoſophy, we might have held, that ſnow was black, that the ſea was but the ſweat of the earth, and many of the like abſurdities. Then was Ariſtotle injurious to fall upon Meliſſus, to reject the aſſertions of Anaxagoras, Anaximander, and Empedocles; then were we alſo ungratefull unto himſelf; from whom our Junior endeavours embracing many things on his authority, our mature and ſecondary enquiries, are forced to quit thoſe receptions, and to adhere unto the nearer accounts of reaſon. And although it be not unuſuall, even in Philoſophicall tractates to make enumeration of Authors, yet are there reaſons uſually introduced, and to ingenuous readers do carry the ſtroak in the perſwaſion. And ſurely if we account it reaſonable among our ſelves, and not injurious unto rationall Authors, no farther to abet their opinions then as they are ſupported by ſolid reaſons: certainly with more excuſable reſervation may we ſhrink at their bare teſtimonies; whoſe argument is but precarious, and ſubſiſts upon the charity of our aſſentments. *and Phyſicks,*

In Morality, Rhetorick, Law and Hiſtory, there is I confeſſe a frequent and allowable uſe of teſtimony; and yet herein I perceive, it is not unlimitable, but admitteth many reſtrictions. Thus in law both Civill and Divine, that is only eſteemed a legall teſtimony, which receives comprobation from the mouths of at leaſt two witneſſes; and that not only for prevention of calumny, but aſſurance againſt miſtake; whereas notwithſtanding the ſolid reaſon of one man, is as ſufficient as the clamor of a whole Nation; and with imprejudicate apprehenſions begets as firm a belief as the authority or aggregated teſtimony of many hundreds. For reaſon being the very root of our natures, and the principles thereof common unto all; what is againſt the laws of true reaſon, or the unerring

understanding of any one, if rightly apprehended, must be disclaimed by all Nations, and rejected even by mankinde.

Again, A testimony is of small validity if deduced from men out of their own profession; so if Lactantius affirm the figure of the earth is plain, or Austin himself deny there are Antipodes; though venerable Fathers of the Church, and ever to be honoured, will their Authorities prove sufficient to ground a belief thereon? whereas notwithstanding the solid reason or confirmed experience of any man, is very approvable in what profession soever. So Raymund Sebund, a Physitian of Tholouze, besides his learned Dialogues, *de natura humana*, hath written a naturall Theologie; demonstrating therein the Attributes of God, and attempting the like in most points of Religion. So Hugo Grocius a Civilian, did write an excellent Tract of the verity of Christian Religion. Wherein most rationally delivering themselves, their works will be embraced by most that understand them, and their reasons enforce belief even from prejudicate Readers. Neither indeed have the authorities of men been ever so awfull; but that by some they have been rejected, even in their own professions. Thus Aristotle affirming the birth of the Infant or time of its gestation, extendeth sometimes unto the eleventh moneth, but Hippocrates averring that it exceedeth not the truth: Adrian the Emperour in a solemn processe, determined for Aristotle; but Justinian many years after, took in with Hippocrates and reversed the Decree of the other. Thus have Councels not only condemned private men, but the Decrees and Acts of one another. So Galen after all his veneration of Hippocrates, in some things hath fallen from him. Avicen in many from Galen; and others succeeding from him. And although the singularity of Paracelsus be intolerable, who sparing only Hippocrates, hath reviled not only the Authors, but almost all the learning that went before him; yet is it not much lesse injurious unto knowledge obstinately and inconvincibly to side with any one. Which humour unhappily possessing many, they have by prejudice withdrawn themselves into parties, and contemning the soveraignty of truth, seditiously abetted the private divisions of error.

Moreover a Testimony in points historicall, and where it is of unavoidable use, is of no illation in the negative; nor is it of consequence that Herodotus writing nothing of Rome, there was therefore no such city in his time; or because Dioscorides hath made no mention of Unicorns horn, there is therefore no such thing in Nature. Indeed, intending an accurate enumeration of Medicall materials, the omission hereof affords some probability, it was not used by the Ancients; but will not conclude the nonexistence thereof. For so may we annihilate many simples unknown to his enquiries, as Senna, Rhabarbe, Bezoar, Ambregris, and divers others. Whereas indeed the reason of man hath no such restraint; concluding not only affirmatively but negatively; not only affirming there is no magnitude beyond the last heavens, but also denying there is any vacuity within them. Although it be confessed, the affirmative hath the prerogative illation, and Barbara engrosseth the powerfull demonstration.

Lastly, The strange relations made by Authors, may sufficiently discourage our adherence unto Authority, and which if we beleeve we must be apt to swallow any thing. Thus Basil will tell us, the Serpent went erect like man, and that that beast could speak before the fall. Tostatus would make us beleeve that Nilus encreaseth every new Moon. Leonardo Fioravanti an Italian Physitian, beside many other secrets assumeth unto himself the discovery of one concerning Pellitory of the wall; that is, that it never groweth in the sight of the North starre. *Done si possa vedere la stella Tramontana*, wherein how wide he is from truth is easily discoverable unto every one, who hath

but

but Aſtronomy enough to know that ſtarre. Franciſcus Sanctius in a laudable Comment upon Alciats Emblems, affirmeth and that from experience, a Nightingale hath no tongue. *Avem Philomelam lingua carere pro certo affirmare poſſum, niſi me oculi fallunt.* Which if any man for while ſhall beleeve upon his experience, he may at his leaſure refute it by his own. What fool almoſt would beleeve, at leaſt, what wiſe man would relye upon that Antidote delivered by Pierius in his Hieroglyphicks againſt the ſting of a Scorpion? that is, to ſit upon an Aſſe with ones face toward his taile; for ſo the pain leaveth the man, and paſſeth into the beaſt. It were me thinks but an uncomfortable receit for a Quartane Ague (and yet as good perhaps as many others uſed) to have recourſe unto the remedy of Sammonicus; that is, to lay the fourth book of Homers Iliads under ones head, according to the precept of that Phyſitian and Poet, *Mæonia Iliados quartum ſuppone trementi.* There are ſurely few that have belief to ſwallow, or hope enough to experiment the Collyrium of Albertus, which promiſeth a ſtrange effect, and ſuch as Theeves would count ineſtimable; that is, to make one ſee in the dark: yet thus much, according unto his receit, will the right eye of an Hedge-hog boyled in oyle and preſerved in a braſen veſſell effect. As ſtrange it is, and unto vicious inclinations were worth a nights lodging with Lais, what is delivered in Kiranides; that the left ſtone of a Weeſell, wrapt up in the skin of a ſhe Mule, is able to ſecure incontinency from conception.

An eye medecine.

Ten thouſand drachmes.

Theſe with ſwarms of others have men delivered in their writings, whoſe verities are only ſupported by their Authorities: but being neither conſonant unto reaſon, nor correſpondent unto experiment, their affirmations are unto us no Axiomes; we eſteem thereof as things unſaid, and account them but in the liſt of nothing. I wiſh herein the Chymiſtes had been more ſparing; who overmagnifying their preparations, inveigle the curioſity of many, and delude the ſecurity of moſt. For if experiments would anſwer their encomiums, the Stone and Quartane Agues, were not opprobrious unto Phyſitians; we might contemn that firſt, and moſt uncomfortable Aphoriſme of Hippocrates; For ſurely that Art were ſoon attained, that hath ſo generall remedies; and life could not be ſhort, were there ſuch to prolong it.

Ars longa, vita brevis.

CHAP. VIII.

A brief enumeration of Authors.

NOw for as much as we have diſcourſed of Authority, and there is ſcarce any tradition or popular error but ſtands alſo delivered by ſome good Author; we ſhall endeavour a ſhort diſcovery of ſuch as for the major part have given authority hereto: who though excellent and uſefull Authors, yet being either tranſcriptive, or following common relations, their accounts are not to be ſwallowed at large, or entertained without a prudent circumſpection. In whom the *ipſe dixit*, although it be no powerfull argument in any, is yet leſſe authentick then in many other, becauſe they deliver not their own experiences, but others affirmations, and write from others as we our ſelves from them.

The Authors judgement, or a character given of ſome eminent Authors.

1. The firſt in order as alſo in time, ſhall be Herodotus of Halicarnaſſus, an excellent and very elegant Hiſtorian, whoſe books of hiſtory were ſo well received in his own daies, that at their rehearſall in the Olympick games, they obtained the names of the nine Muſes, and continued in ſuch eſteem unto deſcending Ages, that Cicero termed him *Hiſtoriarum parens.* And Dionyſius his Countreyman, in an Epiſtle to Pompey, after an expreſſe compariſon, affords

him the better of Thucydides; all which notwithstanding, he hath received from some, the stile of *Mendaciorum pater*; his authority was much infringed by Plutarch, who being offended with him, as Polybius had been with Philarcus, for speaking too coldly of his Countreymen, hath left a particular Tract, *de Malignitate Herodoti*. But in this later Century, Camerarius and Stephanus have stepped in, and by their witty Apologies, effectually endeavoured to frustrate the Arguments of Plutarch or any other. Now in this Author, as may be observed in our ensuing Discourse, and is better discernable in the perusall of himself, there are many things fabulously delivered, and not to be accepted as truths: whereby nevertheless if any man be deceived, the Author is not so culpable as the believer. For he indeed imitating the father Poet, whose life he hath also written, and as Thucydides observeth, as well intending the delight as benefit of his Reader, hath besprinkled his work with many fabulosities, whereby if any man be led into error, he mistaketh the intention of the Author, who plainly confesseth he writeth many things by hearsay, and forgetteth a very considerable caution of his, that is, *Ego quæ fando cognovi, exponere narratione mea debeo omnia; credere autem esse vera omnia, non debeo.*

2. In the second place is Ctesias the Cnidian, Physician unto Artaxerxes King of Persia; his books are often cited by ancient Writers; and by the industry of Stephanus and Rodomanus, there are extant some fragments thereof in our daies; he wrote the History of Persia, and many narrations of India. In the first as having a fair opportunity to know the truth, and as Diodorus affirmeth the perusall of Persian Records, his testimony is acceptable. In his Indian relations, wherein are contained strange and incredible accounts, he is surely to be read with suspension; these were they which weakned his authority with former ages; for as we may observe, he is seldome mentioned, without a derogatory parenthesis in any Author. Aristotle besides the frequent undervaluing of his authority, in his books of Animals gives him the lie no lesse then twice, concerning the seed of Elephants. Strabo in his eleventh Book hath left a harder censure of him. *Equidem facilius Hesiodo & Homero, aliquis fidem adhibuerit, itemque Tragicis Poetis, quam Ctesiæ, Herodoto, Hellanico & eorum similibus.* But Lucian hath spoken more plainly then any. *Scripsit Ctesias de Indorum regione, deque iis quæ apud illos sunt, ea quæ nec ipse vidit, neque ex ullius sermone audivit.* Yet were his relations taken up by some succeeding Writers, and many thereof revived by our Countryman, Sir John Mandevell, Knight and Doctor in Physick; who after thirty years peregrination died at Leige, and was there honourably interred. He left a book of his travells, which hath been honoured with the translation of many languages, and now continued above three hundred years; herein he often attesteth the fabulous relations of Ctesias, and seems to confirm the refuted accounts of Antiquity. All which may still be received in some acceptions of morality, and to a pregnant invention, may afford commendable mythologie; but in a naturall and proper exposition, it containeth impossibilities and things inconsistent with truth.

There is a Book *de mirandis auditionibus*, ascribed unto Aristotle; another *de mirabilibus narrationibus*, written long after by Antigonus; another also of the same title by Plegon Trallianus, translated by Xilander, and with the Annotations of Meursius; all whereof make good the promise of their titles and may be read with caution. Which if any man shall likewise observe in the Lecture of Philostratus, concerning the life of Apollonius; or not only in ancient Writers, but shall carry a wary eye, on Paulus Venetus, Jovius, Olaus Magnus, Nierembergius, and many other, I think his circumspection is laudable, and he may thereby decline occasion of Error.

4. Dioscorides Anazarbeus; he wrote many books in Physick, but six there-

of

of *de Materia Medica*, have found the greateſt eſteem; he is an Author of good Antiquity and uſe; preferred by Galen before Cratevas, Pamphilus, and all that attempted the like deſcription before him; yet all he deliver-eth therein is not to be conceived Oraculous. For beſide, that following the warres under Anthony, the courſe of his life would not permit a punctuall examen in all; There are many things concerning the nature of ſimples, traditionally delivered, and to which I beleeve he gave no aſſent himſelf. It had been an excellent receit, and in his time when Sadles were ſcarce in faſhion of very great uſe, if that were true, which he delivers, that Vitex, or Agnus Caſtus held only in the hand, preſerveth the rider from galling. It were a ſtrange effect, and whores would forſake the experiment of Savine, if that were a truth which he delivereth of Brake or femall fearn, that only treading over it it cauſeth a ſudden abortion. It were to be wiſhed true, and women would Idolize him, could that be made out which he recordeth of Phyllon, Mercury, and other vegetables, that the juice of the maſle plant drunk, or the leaves but applied unto the genitals, determines their conceptions unto males. In theſe relations although he be more ſparing, his predeceſſours were very numerous; and Galen hereof moſt ſharply accuſeth Pamphilus. Many of the like nature we meet ſometimes in Oribaſius, Ætius, Trallianus, Serapion, Evax and Marcellus; whereof ſome containing no colour of verity, we may at firſt ſight reject them; others which ſeem to carry ſome face of truth, we may reduce unto experiment. And herein we ſhall rather perform good offices unto truth, then any diſſervice unto their relators, who have well deſerved of ſucceeding ages, from whom having received the conceptions of former times, we have the readier hint of their conformity with ours, and may accordingly explore and ſift their verities.

5. *Plinius Secundus* of Verona; a man of great eloquence, and induſtry indefatigable, as may appear by his writings, eſpecially thoſe now extant, and which are never like to periſh, but even with learning it ſelf; that is, his naturall Hiſtory. He was the greateſt Collector or Rhapſodiſt of all the Latines, and as Suetonius *de viris Illuſtribus* obſerveth, he collected this piece out of two thouſand Latine and Greek Authors. Now, what is very ſtrange, there is ſcarce a popular error paſſant in our daies, which is not either directly expreſſed, or diductively contained in this work; which being in the hands of moſt men, hath proved a powerfull occaſion of their propogation. Wherein notwithſtanding the credulity of the Reader, is more condemnable then the curioſity of the Author. For commonly he nameth the Authors, from whom he received thoſe accounts; and writes but as he reades, as in his Preface to Veſpaſian he acknowledgeth.

Plinies naturall Hiſtory collected out of 2000. ſeverall Authors.

6. Claudius Ælianus; who flouriſhed not long after in the reign of Trajan, unto whom he dedicated his Tacticks; an elegant and miſcellaneous Author; he hath left two books which are in the hands of every one, his Hiſtory of Animals, and his *Varia hiſtoria*. Wherein are contained many things ſuſpicious, not a few falſe, ſome impoſſible; he is much beholding unto Cteſias, and in many ſubjects writes more confidently then Plinie.

7. Julius Solinus, who lived alſo about his time: He left a work entituled Polyhiſtor, containing great variety of matter, and is with moſt in good requeſt at this day. But to ſpeak freely what cannot be concealed, it is but Plinie varied, or a tranſcription of his naturall hiſtory; nor is it without all wonder it hath continued ſo long, but is now likely, and deſerves indeed to live for ever; not ſo much for the elegancy of the text, as the excellency of the comment, lately performed by Salmaſius, under the name of Plinian exercitations.

8. Athenæus a delectable Author and very various, and as Cauſabone in his

his Epiſtle ſtiles him *Græcorum Plinius*. There is extant of his, a famous piece under the name of Deipnoſophiſta, or *cœna ſapientum*, containing the diſcourſe of many learned men, at a feaſt provided by Laurentius. It is a laborious collection out of many Authors, and ſome whereof are mentioned no where elſe. It containeth ſtrange and ſingular relations, not without ſome ſpice or ſprinkling of all learning. The Author was probably a better Grammarian then Philoſopher, dealing but hardly with Ariſtotle and Plato, and betraieth himſelf much in his Chapter *de curioſitate Ariſtotelis*. In brief, he is an Author of excellent uſe, and may with diſcretion be read unto great advantage: and hath therefore well deſerved the Comments of Cauſabon and Dalecampius. But being miſcellaneous in many things, he is to be received with ſuſpition; for ſuch as amaſſe all relations, muſt erre in ſome, and may without offence be unbeleeved in many.

9. We will not omit the works of Nicander, a Poet of good Antiquity, that is, his Theriaca, and Alexipharmaca, tranſlated and commented by Gorræus: for therein are contained ſeverall traditions, and popular conceits, of venemous beaſts; which only deducted, the work is to be embraced, as containing the firſt deſcription of poyſons and their Antidotes, whereof Dioſcorides, Pliny and Galen, have made eſpeciall uſe in elder times; and Ardoynus, Grevinus and others, in times more near our own. We might perhaps let paſſe Oppianus, that famous Cilician Poet. There are extant of his in Greek, four books of Cynegeticks or venation, five of Halieuticks or piſcation, commented and publiſhed by Ritterhuſius; wherein deſcribing beaſts of venery and fiſhes, he hath indeed but ſparingly inſerted the vulgar conceptions thereof. So that abating the annuall mutation of Sexes in the Hyæna, the ſingle Sex of the Rhinoceros, the antipathy between two drummes, of a Lamb and a Wolfes skinne, the informity of Cubbes, the venation of Centaures, the copulation of the Murena and the Viper, with ſome few others, he may be read with great delight and profit. It is not without ſome wonder his elegant lines are ſo neglected. Surely hereby we reject one of the beſt Epick Poets, and much condemn the judgement of Antoninus, whoſe apprehenhenſions ſo honoured his Poems, that as ſome report, for every verſe, he aſſigned him a Stater of gold.

That write Hex meters or long Verſes.

10. More warily are we to receive the relations of Philes, who in Greek Iambicks delivered the proprieties of Animals, for herein he hath amaſſed the vulgar accounts recorded by the Ancients, and hath therein eſpecially followed Ælian. And likewiſe Johannes Tzetzes, a Grammarian, who beſides a Comment upon Heſiod and Homer, hath left us Chiliads *de Varia Hiſtoria*; wherein delivering the accounts of Cteſias, Herodotus, and moſt of the Ancients, he is to be embraced with caution, and as a tranſcriptive relator.

11. We cannot without partiality omit all caution even of holy Writers, and ſuch whoſe names are venerable unto all poſterity; not to meddle at all with miraculous Authors, or any Legendary relators. We are not without circumſpection to receive ſome books even of Authentick and renowned Fathers. So are we to read the leaves of Baſil and Ambroſe, in their books, entituled *Hexameron*, or *The deſcription of the Creation*; Wherein delivering particular accounts of all the Creatures, they have left us relations ſutable to thoſe of Ælian, Plinie and other naturall Writers; whoſe authorities herein they followed, and from whom moſt probably they deſumed their Narrations. And the like hath been committed by Epiphanius, in his Phyſiologie, that is, a book he hath left concerning the nature of Animals. With no leſſe caution muſt we look on Iſidor, Biſhop of Sevil, who having left in twenty books, an accurate work *de Originibus*, hath to the Etymologie of words, ſuperadded their received natures; wherein moſt generally he conſents with common opinions and Authors which have delivered them.

12. Alber-

12. Albertus Bishop of Ratisbone; for his great learning and latitude of knowledge sirnamed Magnus; besides divinity, he hath written many Tracts in Philosophy; what we are chiefly to receive with caution, are his naturall tractates, more especially those of Mineralls, Vegetables and Animals, which are indeed chiefly Collections out of Aristotle, Ælian and Plinie, and respectively contain many of our popular errors. A man who hath much advanced these opinions by the authority of his name, and delivered most conceits, with strict enquiry into few. In the same classis, may well be placed Vincentius Belluacensis; or rather he from whom he collected his *Speculum naturale*, that is, *Gulielmus de Conchis*; as also *Hortus Sanitatis*; and *Bartholomeus Glanvill*, sirnamed *Anglicus*, who writ *de Proprietatibus rerum*. Hither also may be referred Kiranides; which is a collection out of Harpocration the Greek, and sundry Arabick writers; delivering not only the Naturall but Magicall propriety of things; a work as full of vanity as variety; containing many relations, whose invention is as difficult as their beliefs, and their experiments sometime as hard as either.

13. We had almost forgot *Jeronimus Cardanus* that famous Physician of Milan, a great enquirer of truth, but too greedy a receiver of it; he hath left many excellent discourses, Medicall, Naturall and Astrologicall; the most suspicious are those two he wrote by admonition in a dream, that is, *de subtilitate & varietate rerum*. Assuredly this learned man hath taken many things upon trust, and although examined some, hath let slip many others. He is of singular use unto a prudent Reader; but unto him that only desireth Hoties, or to repleniſh his head with varities; like many others before related, either in the Originall or confirmation, he may become no small occasion of error.

14. Lastly, Authors are also suspicious, nor greedily to be swallowed, who pretend to write of secrets, to deliver Antipathies, Sympathies, and the occult abstrusities of things; in the list whereof may be accounted, Alexis, Pedimontanus: Antonius Mizaldus, Trinum Magicum, and many others; not omitting that famous Philosopher of Naples, Baptista Porta; in whose works, although there be contained many excellent things, and verified upon his own experience; yet are there many also receptary, and such as will not endure the test. Who although he hath delivered many strange relations in his Phytognomia, and his Villa; yet hath he more remarkably expressed himself in his Naturall Magick, and the miraculous effects of Nature. Which containing various and delectable subjects, withall promising wondrous and easie effects, they are entertained by Readers at all hands; whereof the major part sit down in his authority, and thereby omit not only the certainty of truth, but the pleasure of its experiment.

Thus have we made a brief enumeration of these learned men; not willing any to decline their Works (without which it is not easie to attain any measure of generall knowledge,) but to apply themselves with caution thereunto. And seeing the lapses of these worthy pens, to cast a wary eye on those diminutive, and pamphlet Treaties daily published amongst us; pieces maintaining rather Typography then verity; Authors presumably writing by common places, wherein for many years promiscuously amassing all that makes for their subject, they break forth at last in trite and fruitlesse Rapsodies; doing thereby not only open injury unto learning, but committing a secret treachery upon truth. For their relations falling upon credulous Readers, they meet with prepared beliefs; whose supinities had rather assent unto all, then adventure the triall of any.

Thus, I say, must these Authors be read, and thus must we be read our selves; for discoursing of matters dubious, and many controvertible truths;

we cannot without arrogancy entreat a credulity, or implore any farther assent, then the probability of our reasons, and verity of experiments induce.

Chap. IX.
Of the same.

There are beside these Authors and such as have positively promoted errors, divers other which are in some way accessory; whose verities although they doe not directly assert, yet doe they obliquely concurre unto their beliefs. In which account are many holy Writers, Preachers, Moralists, Rhetoricians, Orators and Poets; for they depending upon invention, deduce their mediums from all things whatsoever; and playing much upon the simile, or illustrative argumentation, to induce their Enthymemes unto the people, they take up popular conceits, and from traditions unjustifiable or really false, illustrate matters of undeniable truth. Wherein although their intention be sincere, and that course not much condemnable; yet doth it notoriously strengthen common errors, and authorise opinions injurious unto truth.

Thus have some Divines drawn into agreement the fable of the Phœnix, made use of that of the Salamander, Pelican, Basilisk, and divers relations of Pliny; deducing from thence most worthy morals, and even upon our Saviour. Now although this be not prejudiciall unto wiser judgements, who are but weakly moved with such argument, yet is it oftentimes occasion of error unto vulgar heads, who expect in the fable as equall a truth as in the morall, and conceive that infallible Philosophy, which is in any sense delivered by Divinity. But wiser discerners do well understand, that every Art hath its own circle; that the effects of things are best examined, by sciences wherein are delivered their causes; that strict and definitive expressions, are alway required in Philosophy, but a loose and popular delivery will serve oftentimes in Divinity. As may be observed even in holy Scripture; which often omitteth the exact account of things; describing them rather to our apprehensions, then leaving doubts in vulgar mindes, upon their unknown and Philosophicall descriptions. Thus it termeth the Sun and the Moon, the two great lights of heaven. Now if any shall from hence conclude, the Moon is second in magnitude unto the Sunne, he must excuse my belief; and I think it cannot be taken for heresie, if herein I rather adhere unto the demonstration of Ptolomy, then the popular description of Moses. Thus is it said, Chron. 2. 4. That Solomon made a molten sea of ten cubits, from brim to brim round in compasse, and five cubits the height thereof, and a line of thirty cubits did compasse it round about. Now in this description, the circumference is made just treble unto the diameter, that is, as 10. to 30. or 7. to 21. But Archimedes demonstrates in his Cyclometria, that the proportion of the diameter, unto the circumference, is as 7. unto almost 22. which will occasion a sensible difference, that is almost a cubit. Now if herein I adhere unto Archimedes who speaketh exactly, rather then the sacred Text which speaketh largely; I hope I shall not offend Divinity: I am sure I shall have reason and experience of every circle to support me.

Expressions of holy Scripture fitted many times rather to popular and common apprehension, then to the exact nature of things.

Thus Morall Writers, Rhetoricians and Orators make use of severall relations which will not consist with verity. Aristotle in his Ethicks takes up the conceit of the Bever, and the divulsion of his Testicles. The tradition of the Bear, the Viper, and divers others are frequent amongst Orators. All which although unto the illiterate and undiscerning hearers may seem a confirmation of their realities;

yet

yet is this no reaſonable eſtabliſhment unto others, who will not depend hereon otherwiſe then common Apologues; which being of impoſſible falſities, do notwithſtanding include wholeſome moralities, and ſuch as expiate the treſpaſſe of their abſurdities.

The Hieroglyphicall doctrine of the Egyptians (which in their four hundred years cohabition ſome conjecture they learned from the Hebrews) hath much advanced many popular conceits; for uſing an Alphabet of things, and not of words, through the Image and pictures thereof, they endeavoured to ſpeak their hidden conceits, in the letters and language of nature. In purſuit whereof, although in many things, they exceeded not their true and reall apprehenſions; yet in ſome other they either framing the ſtory, or taking up the tradition, conduceable unto their intentions, obliquely confirmed many falſities; which as authentick and conceded truths did after paſſe unto the Greeks; from them unto other nations, are ſtill retained by ſymbolical writers, Emblematiſtes, Heraldes and others. Whereof ſome are ſtrictly maintained for truths, as naturally making good their artificiall repreſentations; others ſymbollically intended are literally received, and ſwallowed in the firſt ſenſe, without all guſt of the ſecond. Famous in this doctrine in former ages were Heraiſcus, Cheremon and Epius, eſpecially Orus Apollo Niliacus; who lived in the reign of Theodoſius and in Ægyptian language left two books of Hieroglyphicks, tranſlated into Greek by Philippus, in Latine publiſhed by Hoſchelius, and a full collection of all made lately by Pierius.

Painters who are the viſible repreſenters of things, and ſuch as by the learned ſenſe of the eye endeavour to inform the underſtanding, are not inculpable herein; who either deſcribing naturals as they are, or actions as they have been, have oftentimes erred in their delineations; which being the books that all can reade, are fruitfull advancers of theſe conceptions; eſpecially in common and popular apprehenſions; who being unable for farther enquiry, muſt reſt in the text, and letter of their deſcriptions.

Laſtly, Poets and Poeticall Writers have in this point exceeded others, leaving unto us the notions of Harpes, Centaurs, Gryphins, and many more. Now how ever to make uſe of fictions, Apologues and fables be not unwarrantable, and the intent of theſe inventions might point at laudable ends: Yet doe they afford our junior capacities a frequent occaſion of error; ſetling impreſſions in our tender memories, which our advanced judgements doe generally neglect to expunge. This way the vain and idle fictions of the Gentiles did firſt inſinuate into the heads of Chriſtians; and thus are they continued even unto our daies: Our firſt and literary apprehenſions being commonly inſtructed in Authors which handle nothing elſe; wherewith our memories being ſtuffed, our inventions become Pedantick, and cannot avoid their alluſions; driving at theſe as at the higheſt elegancies, which are but the frigidities of wit, and become not the genius of manly ingenuities. It were therefore no loſſe like that of Galens ſtudy; if theſe had found the ſame fate; and would in ſome way requite the neglect of ſolid Authors, if they were leſſe purſued. For were a pregnant wit educated in ignorance hereof, receiving only impreſſions from realities; upon ſuch ſolid foundations, it muſt ſurely raiſe more ſubſtantiall ſuperſtructions, and fall upon very many excellent ſtrains, which have been juſled off by their intruſions.

Chap. X.

Of the laſt and common promoter of falſe Opinions, the endeavours of Satan.

But beſide the infirmities of humane nature, the ſeed of error within our ſelves, and the ſeverall waies of deluſion from each other, there is an inviſible Agent, and ſecret promoter without us, whoſe activity is undiſcerned, and plaies in the dark upon us; and that is the firſt contriver of Error, and profeſſed oppoſer of Truth, the devil. For though permitted unto his proper principles, Adam perhaps would have ſinned without the ſuggeſtion of Satan, and from the tranſgreſſive infirmities of himſelf might have erred alone, as well as the Angels before him. And although alſo there were no devil at all, yet is there now in our natures a confeſſed ſufficiency unto corruption; and the frailty of our own Oeconomie, were able to betray us out of truth; yet wants there not another Agent, who taking advantage hereof, proceedeth to obſcure the diviner part, and efface all tract of its traduction: To attempt a particular of all his wiles, is too bold an Arithmetick for man: what moſt conſiderably concerneth his popular and practiſed waies of deluſion, he firſt deceiveth mankinde in five main points concerning God and himſelf.

The devils method of propagating errour in the world.

And firſt his endeavours have ever been, and they ceaſe not yet to inſtill a belief in the minde of man, There is no God at all. And this he ſpecially labours to eſtabliſh in a direct and literall apprehenſion; that is, that there is no ſuch reality exiſtent, that the neceſſity of his entity dependeth upon ours, and is but a Politicall Chymera; That the naturall truth of God is an artificiall erection of man, and the Creator himſelf but a ſubtile invention of the creature. Where he ſucceeds not thus high, he labours to introduce a ſecondary and deductive Atheiſme; that although, men concede there is a God, yet ſhould they deny his providence; and therefore aſſertions have flown about, that he intendeth only the care of the ſpecies or common natures, but letteth looſe the guard of individuals, and ſingle exiſtencies therein: That he looks not below the Moon, but hath deſigned the regiment of ſublunary affairs unto inferiour deputations. To promote which apprehenſions or empuzzell their due conceptions, he caſteth in the notions of fate, deſtiny, fortune, chance and neceſſity; tearms commonly miſconceived by vulgar heads, and their propriety ſometime perverted by the wiſeſt. Whereby extinguiſhing in mindes the compenſation of vertue and vice, the hope and fear of heaven or hell; they comply in their actions unto the drift of his deluſions, and live like creatures below the capacity of either.

Now hereby he not only undermineth the Baſe of religion, and deſtroieth the principle preambulous unto all belief, but puts upon us the remoteſt error from truth. For Atheiſme is the greateſt falſity, and to affirm there is no God, the higheſt lie in Nature. And therefore ſtrictly taken, ſome men will ſay his labour is in vain; For many there are, who cannot conceive there was ever any abſolute Atheiſt, or ſuch as could determine there was no God, without all check from himſelf, or contradiction from his other opinions; and therefore thoſe few ſo called by elder times, might be the beſt of Pagans; ſuffering that name rather, in relation to the gods of the Gentiles, then the true Creatour of all. A conceit that cannot befall his greateſt enemy, or him that would induce the ſame in us; who hath a ſenſible apprehenſion hereof, for he beleeveth with trembling. To ſpeak yet more ſtrictly and conformably unto ſome opinions, no creature can wiſh thus much; nor can the will which hath a power to runne into velleities, and wiſhes of impoſſibilities, have any *utinam* of this.

For

For to desire there were no God, were plainly to unwish their own being; which must needs be annihilated in the substraction of that essence, which substantially supporteth them, and restrains them from regression into nothing. And if as some contend, no creature can desire his own annihilation, that Nothing is not appetible, and not to be at all, is worse then to be in the miserablest condition of something; the devil himself could not embrace that motion, nor would the enemy of God be freed by such a Redemption.

But coldly thriving in this designe, as being repulsed by the principles of humanity, and the Dictates of that production, which cannot deny its originall, he fetcheth a wider circle; and when he cannot make men conceive there is no God at all, he endeavours to make them beleeve, there is not one but many; wherein he hath been so successefull with common heads, that he hath led their belief thorow all the works of Nature.

Now in this latter attempt, the subtilty of his circumvension, hath indirectly obtained the former. For although to opinion there be many gods, may seem an accesse in Religion, and such as cannot at all consist with Atheisme, yet doth it diductively and upon inference include the same: for unity is the inseparable and essentiall attribute of Deity; And if there be more then one God, it is no Atheisme to say there is no God at all. And herein though Socrates only suffered, yet were Plato and Aristotle guilty of the same truth; who demonstratively understanding the simplicity of perfection, and the indivisible condition of the first causator, it was not in the power of earth, or Areopagy of hell to work them from it. For holding an * Apodicticall knowledge, and assured science of its verity, to perswade their apprehensions unto a plurality of gods in the world, were to make Euclide beleeve there were more then one Center in a Circle, or one right Angle in a Triangle; which were indeed a fruitlesse attempt, and inferreth absurdities beyond the evasion of hell. For though Mechanick and vulgar heads ascend not unto such comprehensions, who live not commonly unto half the advantage of their principles; yet did they not escape the eye of wiser Minervas, and such as made good the genealogie of Jupiters brains; who although they had divers styles for God, yet under many appellations acknowledged one divinity: ratherconceiving thereby the evidence or acts of his power in severall waies and places, then a multiplication of Essence, or reall distraction of unity in any one.

Areopagus the severe Court of Athens.
* Demonstrative.

Again, To render our errours more monstrous (and what unto miracle sets forth the patience of God,) he hath endeavoured to make the world beleeve, that he was God himself; and failing of his first attempt to be but like the highest in heaven, he hath obtained with men to be the same on earth; and hath accordingly assumed the annexes of divinity, and the prerogatives of the Creator, drawing into practice the operation of miracles, and the prescience of things to come. Thus hath he in a specious way wrought cures upon the sick: plaied over the wondrous acts of Prophets, and counterfeited many miracles of Christ and his Apostles. Thus hath he openly contended with God; And to this effect his insolency was not ashamed to play a solemne prize with Moses; wherein although his performance were very specious, and beyond the common apprehension of any power below a Deity, yet was it not such as could make good his Omnipotency. For he was wholly confounded in the conversion of dust into lice. An act Philosophy can scarce deny to be above the power of Nature, nor upon a requisite prediſposition beyond the efficacy of the Sun. Wherein notwithstanding the head of the old Serpent was confessedly too weak for Moses hand, and the arm of his Magicians too short for the finger of God.

Thus hath he also made men beleeve that he can raise the dead; that he hath the key of life and death, and a prerogative above that principle which makes

no regreſſion from privations. The Stoicks that opinioned the ſouls of wiſe men, dwelt about the Moon, and thoſe of fools wandred about the earth, advantaged the conceit of this effect; wherein the Epicureans, who held that death was nothing, nor nothing after death, muſt contradict their principles to be deceived. Nor could the Pythagorian or ſuch as maintained the tranſmigration of ſouls give eaſie admittance hereto: for holding that ſeparated ſouls, ſucceſſively ſupplied other bodies; they could hardly allow the raiſing of ſouls from other worlds, which at the ſame time, they conceived conjoined unto bodies in this. More inconſiſtent with theſe opinions, is the error of Chriſtians, who holding the dead doe reſt in the Lord, doe yet beleeve they are at the lure of the devil; that he who is in bonds himſelf commandeth the fetters of the dead, and dwelling in the bottomleſſe lake, the bleſſed from Abrahams boſome, that can beleeve the reall reſurrection of Samuel; or that there is any thing but deluſion, in the practice of * Necromancy and popular conception of Ghoſts.

The Authors opinion, touching Necromancy and appatitions of the ſpirits of men departed.

* Divination by the dead.

He hath moreover endeavoured the opinion of Deity, by the deluſion of Dreams, and the diſcovery of things to come in ſleep, above the preſcience of our waked ſenſes. In this expectation he perſwaded the credulity of elder times to take up their lodging before his temple, in skinnes of their own ſacrifices: till his reſervedneſſe had contrived anſwers, whoſe accompliſhments were in his power, or not beyond his preſagement. Which way, although it hath pleaſed Almighty God, ſometimes to reveale himſelf, yet was the proceeding very different. For the revelations of heaven are conveied by new impreſſions, and the immediate illumination of the ſoul; whereas the deceiving ſpirit, by concitation of humors, produceth his conceited phantaſmes; or by compounding the ſpecies already reſiding, doth make up words which mentally ſpeak his intentions.

How the devil works his pretended revelations or predictions.

But above all other he moſt advanced his Deity in the ſolemn practice of Oracles, wherein in ſeverall parts of the world, he publikely profeſſed his divinity; but how ſhort they flew of that ſpirit, whoſe omniſcience they would reſemble, their weakneſſe ſufficiently declared. What jugling there was therein, the Oratour plainly confeſſed, who being good at the ſame game himſelf, could ſay that Pythia Philippiſed. Who can but laugh at the carriage of Ammon unto Alexander, who addreſſing unto him as God, was made to beleeve, he was a god himſelf? How openly did he betray his Indivinity unto Cræſus, who being ruined by his Amphibology, and expoſtulating with him for ſo ungratefull a deceit, received no higher anſwer, then the excuſe of his impotency upon the contradiction of fate, and the ſetled law of powers beyond his power to controle! What more then ſublunary directions, or ſuch as might proceed from the oracle of humane reaſon, was in his advice unto the Spartans in the time of a great plague; when for the ceſſation thereof, he wiſht them to have recourſe unto a Fawn, that is in open tearms unto one Nebrus, a good Phyſitian of thoſe daies? From no diviner a ſpirit came his reply unto Caracalla, who requiring a remedy for his gout, received no other counſell then to refrain cold drink; which was but a dieteticall caution, and ſuch as without a journey unto Æſculapius, culinary preſcription and kitchin Aphoriſmes might have afforded at home. Nor ſurely if any truth there were therein of more then naturall activity was his counſell unto Democritus, when for the falling ſickneſſe he commended the Maggot in a Goats head. For many things ſecret are true; ſympathies and antipathies are ſafely authentick unto us, who ignorant of their cauſes may yet acknowledge their effects. Beſide being a naturall Magician he may perform many acts in waies above our knowledge, though not tranſcending our naturall power, when our knowledge ſhall direct it; part hereof hath been diſcovered by himſelf, and ſome by humane indagation: which

Demoſthenes.

Nebros in Greek, a Fawn.

which though magnified as fresh inventions unto us, are stale unto his cognition. I hardly beleeve he hath from elder times unknown the verticity of the loadstone; surely his perspicacity discerned it to respect the North, when ours beheld it indeterminately. Many secrets there are in nature of difficult discovery unto man, of easie knowledge unto Satan; whereof some his vain glory cannot conceale, others his envy will never discover.

Again, Such is the mystery of his delusion, that although he labour to make us beleeve that he is God, and supremest nature whatsoever, yet would he also perswade our beliefs, that he is lesse then Angels or men; and his condition not only subjected unto rationall powers, but the action of things which have no efficacy on our selves. Thus hath he inveigled no small part of the world into a credulity of artificiall Magick: That there is an Art, which without compact commandeth the powers of hell; whence some have delivered the polity of spirits, and left an account even to their Provinciall dominions; that they stand in awe of charmes, spells and conjurations, that he is afraid of letters and characters, of notes and dashes, which set together doe signifie nothing; and not only in the dictionary of man, but the subtiler vocabulary of Satan. That there is any power in Bitumen, pitch or brimstone, to purifie the air from his uncleanneſſe; that any vertue there is in Hipericon to make good the name of *fuga Dæmonis*; any such magick as is ascribed unto the root Baaras by Josephus, or Cynospastus by Ælianus, it is not easie to beleeve; nor is it naturally made out what is delivered of Tobias, that by the fume of a fishes liver, he put to flight Asmodeus. That they are afraid of the pentagle of Solomon, though so set forth with the body of man, as to touch and point out the five places wherein our Saviour was wounded, I know not how to assent. If perhaps he hath fled from holy water, if he cares not to hear the sound of * Tetragammaton, if his eye delight not in the sign of the Crosse; and that sometimes he will seem to be charmed with words of holy Scripture, and to flye from the letter and dead verbality, who must only start at the life and animated interiors thereof: It may be feared they are but Parthian flights, Ambuscado retreats, and elusory tergiversations: Whereby to confirm our credulities, he will comply with the opinion of such powers, which in themselves have no activities. Whereof having once begot in our mindes an assured dependence, he makes us rely on powers which he but precariously obeies; and to desert those true and only charmes which hell cannot withstand.

S. Johns wort.

So called by Magicians 3 triangles interserted and made of five lines.

* Implying Jehovah which in Hebrew consisteth of four letters.

Lastly, To lead us farther into darkneſſe, and quite to lose us in this maze of error, he would make men beleeve there is no such creature as himself, and that he is not only subject unto inferiour creatures but in the rank of nothing. Insinuating into mens mindes there is no devill at all, and contriveth accordingly, many waies to conceale or indubitate his existency. Wherein beside that he anihilates the blessed Angels and spirits in the rank of his creation; he begets a security of himself and a careleſſe eye unto the last remunerations. And therefore hereto he inveigleth, not only Sadduces and such as retain unto the Church of God, but is also content that Epicurus, Democritus or any heathen should hold the same. And to this effect he maketh men beleeve that apparitions, and such as confirm his existence are either deceptions of sight, or melancholy depravements of phancy: Thus when he had not only appeared but spake unto Brutus; Cassius the Epicurian was ready at hand to perswade him, it was but a mistake in his weary imagination, and that indeed there were no such realities in nature. Thus he endeavours to propagate the unbelief of witches, whose concession infers his coexistency; by this means also he advanceth the opinion of totall death, and staggereth the immortality of the soul: for, such as deny there are spirits subsistent without bodies, will with more difficulty affirm the separated existence of their own.

Now

Now to induce and bring about these falsities, he hath laboured to destroy the evidence of truth, that is the revealed verity and written word of God. To which intent he hath obtained with some to repudiate the books of Moses, others those of the Prophets, and some both to deny the Gospell and authentick histories of Christ; to reject that of John, and receive that of Judas; to disallow all, and erect another of Thomas. And when neither their corruption by Valentinus and Arrius, their mutilation by Marcion, Manes and Ebion could satisfie his design, he attempted the ruine and totall destruction thereof; as he sedulously endeavoured, by the power and subtilty of Julian, Maximinus and Diocletian.

But the longevity of that piece, which hath so long escaped the common fate, and the providence of that Spirit which ever waketh over it, may at last discourage such attempts; and if not make doubtfull its mortality, at least indubitably declare; this is a stone too bigge for Satans mouth, and a bit indeed Oblivion cannot swallow.

And thus how strangely he possesseth us with errors may clearly be observed; deluding us into contradictory and inconsistent falsities; whilest he would make us beleeve, That there is no God. That there are many. That he himself is God. That he is lesse then Angels or Men. That he is nothing at all.

Nor hath he only by these wiles depraved the conception of the Creator, but with such riddles hath also entangled the Nature of our Redeemer. Some denying his humanity, and that he was one of the Angels, as Ebion; that the Father and Sonne were but one person, as Sabellius. That his body was phantasticall, as Manes, Basilides, Priscillian, Jovinianuus; that he only passed through Mary, as Eutyches and Valentinus. Some denying his Divinity; that he was begotten of humane principles, and the seminall sonne of Joseph; as Carpocras, Symmachus, Photinus. That he was Seth the son of Adam, as the Sethians. That he was lesse then Angels as Cherinthus. That he was inferiour unto Melchisedech, as Theodotus. That he was not God, but God dwelt in him, as Nicolaus. And some embroiling them both. So did they which converted the Trinity into a quaternity, and affirmed two persons in Christ, as Paulus Samosatenus; that held he was man without a soul, and that the word performed that office in him, as Apollinaris. That he was both Son and Father, as Montanus. That Jesus suffered, but Christ remained impatible, as Cherinthus. Thus he endeavours to entangle truths: And when he cannot possibly destroy its substance he cunningly confounds its apprehensions; that from the inconsistent and contrary determinations thereof, consectary impieties, and hopefull conclusions may arise, there's no such thing at all.

Chap. XI.

A further Illustration.

NOw although these waies of delusions, most Christians have escaped, yet are there many other whereunto we are daily betrayed; and these we meet with in obvious occurrents of the world, wherein he induceth us, to ascribe effects unto causes of no cognation; and distorting the order and theory of causes perpendicular to their effects, he draws them aside unto things whereto they runne parallel, and in their proper motions would never meet together.

Thus doth he sometime delude us in the conceits of Starres and Meteors, beside their allowable actions ascribing effects thereunto of independent causations. Thus hath he also made the ignorant sort beleeve that naturall effects immedi-

immediatly and commonly proceed from ſupernaturall powers; and theſe he uſually derives from heaven, his own principality the air, and meteors therein; which being of themſelves, the effects of naturall and created cauſes, and ſuch as upon a due conjunction of actives and paſſives, without a miracle muſt ariſe unto what they appear; are alwaies looked on by ignorant ſpectators as ſupernaturall ſpectacles, and made the cauſes or ſignes of moſt ſucceeding contingencies. To behold a Rain-bow in the night, is no prodigy unto a Philoſopher. Then eclipſes of Sun or Moon, nothing is more naturall. Yet with what ſuperſtition they have been beheld ſince the Tragedy of Niceas and his Army, many examples declare.

True it is, and we will not deny it, that although theſe being naturall productions from ſecond and ſetled cauſes, we need not alway look upon them as the immediate hand of God, or of his miniſtring Spirits; yet doe they ſometimes admit a reſpect therein; and even in their naturals, the indifferency of their exiſtencies contemporiſed unto our actions, admits a farther conſideration.

That two or three Suns or Moons appear in any mans life or reign, it is not worth the wonder. But that the ſame ſhould fall out at a remarkable time, or point of ſome deciſive action; that the contingency of its appearance ſhould be confined unto that time; that thoſe two ſhould make but one line in the book of fate, and ſtand together in the great Ephemerides of God; beſide the Philoſophicall aſſignment of the cauſe, it may admit a Chriſtian apprehenſion in the ſignality.

But above all he deceiveth us when we aſcribe the effects of things unto evident and ſeeming cauſalities which ariſe from the ſecret and undiſcerned action of himſelf. Thus hath he deluded many Nations in his Auguriall and Extiſpicious inventions, from caſuall and uncontrived contingences divining events ſucceeding. Which Tuſcan ſuperſtition ſeaſing upon Rome hath ſince poſſeſſed all Europe. When Auguſtus found two gals in his ſacrifice, the credulity of the City concluded a hope of peace with Anthony; and the conjunction of perſons in choler with each other. Becauſe Brutus and Caſſius met a Blackmore, and Pompey had on a dark or ſad coloured garment at Pharſalia; theſe were preſages of their overthrow. Which notwithſtanding are ſcarce Rhetoricall ſequels; concluding metaphors from realities, and from conceptions metaphoricall inferring realities again.

Now theſe divinations concerning events, being in his power to force, contrive, prevent or further, they muſt generally fall out conformably unto his predictions. When Graccus was ſlain, the ſame day the Chickens refuſed to come out of the coop: and Claudius Pulcher underwent the like ſucceſſe, when he contemned the Tripudiary Augurations: They died not becauſe the Pullets would not feed; but becauſe the devil foreſaw their death, he contrived that abſtinence in them. So was there no naturall dependence of the event upon the ſigne, but an artificiall contrivance of the ſigne unto the event. An unexpected way of deluſion, and whereby he more eaſily led away the incircumſpection of their belief. Which fallacy he might excellently have acted before the death of Saul; which being in his power to foretell, was not beyond his ability to foreſhew; and might have contrived ſignes thereof through all the creatures, which viſibly confirmed by the event, had proved authentick unto thoſe times, and advanced the Art ever after.

He deludeth us alſo by Philters, Ligatures, Charmes, ungrounded Amulets, Characters, and many ſuperſtitious waies in the cure of common diſeaſes; ſeconding herein the expectation of men with events of his own contriving. Which while ſome unwilling to fall directly upon Magick, impute unto the power of imagination, or the efficacy of hidden cauſes, he obtains a bloudy advantage; for

The danger and deluſion that is in cures by Charmes Amulets, Ligatures, Characters, &c.

for thereby he begets not only a falſe opinion, but ſuch as leadeth the open way of deſtruction. In maladies admitting naturall reliefs, making men rely on remedies, neither of reall operation in themſelves, nor more then ſeeming efficacy in his concurrence. Which whenſoever he pleaſeth to withdraw, they ſtand naked unto the miſchief of their diſeaſes; and revenge the contempt of the medicines of the earth which God hath created for them. And therefore when neither miracle is expected, nor connexion of cauſe unto effect from naturall grounds concluded; however it be ſometime ſucceſſefull, it cannot be ſafe to rely on ſuch practiſes, and deſert the known and authentick proviſions of God. In which rank of remedies, if nothing in our knowledge or their proper power be able to relieve us, we muſt with patience ſubmit unto that reſtraint, and expect the will of the Reſtrainer.

Now in theſe effects although he ſeem oft times to imitate, yet doth he concurre unto their productions in a different way from that ſpirit which ſometime in naturall means produceth effects above Nature. For whether he worketh by cauſes which have relation or none unto the effect, he maketh it out by ſecret and undiſcerned waies of Nature. So when Caius the blinde, in the reign of Antoninus, was commanded to paſſe from the right ſide of the Altar unto the left, to lay five fingers of one hand thereon, and five of the other upon his eyes; although the cure ſucceeded and all the people wondered, there was not any thing in the action which did produce it, nor any thing in his power that could enable it thereunto. So for the ſame infirmity, when Aper was counſelled by him to make a collyrium or ocular medicine with the bloud of a white Cock, and hony, and apply it to his eyes for three daies: When Julian for his ſpitting of bloud, was cured by hony and pine Nuts taken from his Altar: When Lucius for the pain in his ſide, applyed thereto the aſhes from his Altar with wine; although the remedies were ſomewhat rationall, and not without a naturall vertue unto ſuch intentions, can we beleeve that by their proper faculties they produced theſe effects?

But the effects of powers Divine flow from another operation; who either proceeding by viſible means, or not, unto viſible effects, is able to conjoin them by his cooperation. And therefore thoſe ſenſible waies which ſeem of indifferent natures, are not idle ceremonies, but may be cauſes by his command, and ariſe unto productions beyond their regular activities. If Nahaman the Syrian had waſhed in Jordan without the command of the Prophet, I beleeve he had been cleanſed by them no more then by the waters of Damaſcus. I doubt if any beſide Eliſha had caſt in ſalt, the waters of Jericho had not been made wholeſome. I know that a decoction of wilde gourd or Colocynthis (though ſomewhat qualified) will not from every hand be dulcified unto aliment by an addition of flower or meale. There was ſome naturall vertue in the plaſter of figs applied unto Ezechias; we finde that gall is very mundificative, and was a proper medicine to clear the eies of Tobit; which carrying in themſelves ſome action of their own, they were additionally promoted by that power, which can extend their natures unto the production of effects beyond their created efficiencies. And thus may he operate alſo from cauſes of no power unto their viſible effects; for he that hath determined their actions unto certain effects, hath not ſo emptied his own, but that he can make them effectuall unto any other.

Again, Although his deluſions run higheſt in points of practice, whoſe errors draw on offenſive or penall enormities, yet doth he alſo deal in points of ſpeculation, and things whoſe knowledge terminates in themſelves; whoſe cognition although it ſeems indifferent, and therefore its aberration directly to condemn no man; yet doth he hereby preparatively diſpoſe us unto errors, and deductively deject us into deſtructive concluſions.

That the Sun, Moon and Stars are living creatures, endued with ſoul and life, ſeems

ſeems an innocent error, and a harmleſſe digreſſion from truth; yet hereby he confirmed their idolatry, and made it more plauſibly embraced. For wiſely miſtruſting that reaſonable ſpirits would never firmly be loſt in the adorement of things inanimate, and in the loweſt form of Nature; he begat an opinion that they were living creatures, and could not decay for ever.

That ſpirits are corporeall, ſeems at firſt view a conceit derogative unto himſelf, and ſuch as he ſhould rather labour to overthrow; yet hereby he eſtabliſheth the doctrine of Luſtrations, Amulets and Charmes, as we have declared before.

That there are two principles of all things, one good, and another evill; from the one proceeding vertue, love, light and unity; from the other diviſion, diſcord, darkneſſe and deformity, was the ſpeculation of Pythagoras, Empedocles, and many ancient Philoſophers, and was no more then Oromaſdes and Arimanius of Zoroaſter; yet hereby he obtained the advantage of Adoration, and as the terrible principle became more dreadfull then his Maker; and therefore not willing to let it fall, he furthered the conceit in ſucceeding Ages, and raiſed the faction of Manes to maintain it.

That the feminine ſex have no generative emiſſion, affording rather place then principles of conception, was Ariſtotles opinion of old, maintained ſtill by ſome, and will be countenanced by him for ever. For hereby he diſparageth the fruit of the Virgin, fruſtrateth the fundamentall Propheſie, nor can the ſeed of the woman then break the head of the Serpent.

Nor doth he only ſport in ſpeculative errors, which are of conſequent impieties; but the unquietneſſe of his malice hunts after ſimple lapſes, and ſuch whoſe falſities doe only condemn our underſtandings. Thus if Xenophanes will ſay there is another world in the Moon; If Heraclitus with his adherents will hold the Sunne is no bigger then it appeareth; If Anaxagoras affirm that Snow is black; If any other opinion there are no Antipodes, or that the Stars doe fall, he ſhall not want herein the applauſe or advocacy of Satan. For maligning the tranquillity of truth, he delighteth to trouble its ſtreams; and being a profeſſed enemy unto God (who is truth it ſelf) he promoteth any error as derogatory to his nature; and revengeth himſelf in every deformity from truth. If therefore at any time he ſpeak or practiſe truth, it is upon deſign, and a ſubtile inverſion of the precept of God, to doe good that evil may come of it. And therefore ſometimes we meet with wholeſome doctrines from hell; *Noſce teipſum*, the Motto of Delphos, was a good precept in morality; That a juſt man is beloved of the gods, an uncontroulable verity. 'Twas a good deed, though not well done, which he wrought by Veſpaſian, when by the touch of his foot he reſtored a lame man, and by the ſtroak of his hand another that was blinde; but the intention hereof drived at his own advantage; for hereby he not only confirmed the opinion of his power with the people, but his integrity with Princes; in whoſe power he knew it lay to overthrow his Oracles, and ſilence the practice of his deluſions.

But indeed of ſuch a diffuſed nature, and ſo large is the Empire of Truth, that it hath place within the walls of hell, and the devils themſelves are daily forced to practiſe it; not only as being true themſelves in a Metaphyſicall verity, that is, as having their eſſence conformable unto the Intellect of their maker, but making uſe of Morall and Logicall verities; that is, whether in the conformity of words unto things, or things unto their own conceptions, they practiſe truth in common among themſelves. For although without ſpeech they intuitively conceive each other, yet doe their apprehenſions proceed through realities; and they conceive each other by ſpecies, which carry the true and proper notions of things conceived. And ſo alſo in Morall verities, although

How ſpirits underſtand one another.

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THE SECOND BOOK:

Of ſundry popular Tenets concerning Minerall, and vegetable bodies, generally held for truth; which examined, prove either falſe, or dubious.

CHAP. I.
of Cryſtall.

HEreof the common opinion hath been, and ſtill remaineth amongſt us, that Cryſtall is nothing elſe, but Ice or Snow concreated, and by duration of time, congealed beyond liquation. Of which aſſertion, if preſcription of time, and numeroſity of Aſſertors, were a ſufficient demonſtration, we might ſit down herein, as an unqueſtionable truth; nor ſhould there need *ulterior* diſquiſition. For few opinions there are, which have found ſo many friends, or been ſo popularly received, through all profeſſions and ages. And firſt Pliny is poſitively in this opinion: *Cryſtallus fit gelu vehementius concreto:* the ſame is followed by Seneca, Elegantly deſcribed by Claudian, not denied by Scaliger, ſome way affirmed by Albertus, Braſavolus, and directly by many others. The venerable Fathers of the Church have alſo aſſented hereto; As Baſil in his Hexameron, Iſodore in his Etymologies, and not only Auſtin a Latine Father, but Gregory the great, and Jerom upon occaſion of that terme expreſſed in the firſt of Ezekiel.

That Cryſtall is not Ice or Snow congealed.

All which notwithſtanding, upon a ſtrict enquiry, we finde the matter controvertible, and with much more reaſon denied then is as yet affirmed. For firſt, though many have paſſed it over with eaſie affirmatives; yet are there alſo many Authors that deny it, and the exacteſt Mineralogiſts have rejected it. Diodorus in his eleventh book denieth it, (If Cryſtall be there taken in its proper acception, as Rhodiginus hath uſed it, and not for a Diamond, as Salmatius hath expounded it,) for in that place he affirmeth; *Cryſtallum eſſe lapidem ex aqua pura concretum, non tamen frigore ſed divini caloris vi.* Solinus who tranſcribed Pliny, and therefore in almoſt all ſubſcribed unto him, hath in this point diſſented from him. *Putant quidam glaciem coire, & in Cryſtallum corporari, ſed fruſtrà.* Mathiolus in his Comment upon Dioſcorides, hath with confidence rejected it. The ſame hath been performed by Agricola *de Natura foſſilium*; by Cardan, Bœtius *de Boot*, Cæſius Bernardus, Sennertus, and many more.

Now beſides authority againſt it, there may be many reaſons deduced from their ſeverall differences which ſeem to overthrow it. And firſt, a difference is probable in their concretion. For if Cryſtall be a ſtone (as in the number thereof it is confeſſedly received,) it is not immediatly concreted by the efficacy of cold, but rather by a Minerall ſpirit, and lapidificall principles of its own; and therefore while it lay *in ſolutis principijs*, and remained in a fluid body, it was a ſubject very unapt for proper conglaciation; for Minerall ſpirits, doe generally reſiſt and ſcarce ſubmit thereto. So we obſerve that many waters and ſprings will never freeze, and many parts in rivers and lakes, where there are Minerall eruptions, will ſtill perſiſt without congelation; as we alſo obſerve in *Aqua fortis*, or any Minerall ſolution, either of Vitrioll, Alum, Saltpeter, Ammoniac or Tartar; which although to ſome degree exhaled, and placed in cold conſervatories, will Cryſtallize and ſhoot into white and glacious bodies; yet is not this a congelation primarily effected by cold, but an intrinſecall induration from themſelves; and a retreat into their proper ſolidities, which were abſorbed by the liquour, and loſt in a full imbibition thereof before. And ſo alſo when wood and many other bodies doe petrifie, either by the ſea, other waters, or earths abounding in ſuch ſpirits; we doe not uſually aſcribe their induration to cold, but rather unto ſalinous ſpirits, concretive juices, and cauſes circumjacent, which doe aſſimilate all bodies not indiſpoſed for their impreſſions.

But Ice is water congealed by the frigidity of the aire; whereby it acquireth no new form, but rather a conſiſtence or determination of its diffluency, and amitteth not its eſſence, but condition of fluidity. Neither doth there any thing properly conglaciate but water, or watery humidity; for the determination of quick-ſilver is properly fixation, that of milk coagulation, and that of oyl and unctious bodies only, incraſſation; And therefore Ariſtotle makes a triall of the fertility of humane ſeed, from the experiment of congelation; for That, ſaith he, which is not watery and improlificall will not conglaciate; which perhaps muſt not be taken ſtrictly, but in the germe and ſpirited particles: for Eggs I obſerve will freeze, in the albuginous part thereof. And upon this ground Paracelſus in his Archidoxis, extracteth the magiſtery of wine; after four moneths digeſtion in horſedung, expoſing it unto the extremity of cold; whereby the aqueous parts will freeze, but the Spirit retire and be found uncongealed in the center.

How to make Ice at any time of the year.

But whether this congelation be ſimply made by cold, or alſo by cooperation of any nitrous coagulum, or ſpirit of ſalt the principle of concretion; whereby we obſerve that Ice may be made with Salt and Snowe by the fire ſide; as is alſo obſervable from Ice made by Saltpeter and water, duly mixed and ſtrongly agitated at any time of the year; were a very conſiderable enquiry. For thereby we might cleer the generation of Snow, haile and hoary froſts, the piercing qualities of ſome windes, the coldneſſe of cavernes and ſome cells. We might more ſenſibly conceive how Saltpeter fixeth the flying ſpirits of Mineralls in chymicall preparations; and how by this congealing quality it becomes an uſefull medicine in Fevers.

Again, The difference of their concretion is collectible from their diſſolution; which being many waies performable in Ice, is few waies effected in Cryſtall. Now the cauſes of liquation are contrary to thoſe of concretion; and as the atoms and indiviſible parcels are united, ſo are they in an oppoſite way disjoined. That which is concreted by exſiccation or expreſſion of humidity, will be reſolved by humectation, as earth, dirt and clay; that which is coagulated by a fiery ſiccity, will ſuffer colliquation from an aqueous humidity, as ſalt and ſugar, which are eaſily diſſoluble in water, but not without

out difficulty in oyle, and well rectified ſpirits of wine. That which is concreted by cold, will diſſolve by a moiſt heat, if it conſiſt of watery parts, as Gums, Arabick, Tragacanth, Ammoniac and others; in an ayrie heat or oyle, as all reſinous bodies, Turpentine, Pitch and Frankincenſe; in both as gummy reſinous bodies, Maſtick, Camphire and Storax; in neither, as neutralls and bodies anomalous hereto, as Bdellium, Myrrhe and others. Some by a violent dry heat, as mettalls; which although corrodible by waters, yet will they not ſuffer a liquation from the powerfulleſt heat, communicable unto that element. Some will diſſolve by this heat although their ingredients be earthy, as Glaſſe, whoſe materials are fine Sand, and the aſhes of Chali or Fearn; and ſo will Salt runne with fire, although it be concreted by heat. And this way may be effected a liquation in Cryſtall, but not without ſome difficulty; that is, calcination or reducing it by Art into a ſubtle powder; by which way and a vitreous commixture, Glaſſes are ſometime made hereof, and it becomes the chiefeſt ground for artificiall and fictitious gemmes; but the ſame way of ſolution is common alſo unto many Stones; and not only Berylls and Cornelians, but Flints and Pebbles, are ſubject unto fuſion, and will runne like Glaſſe in fire.

The originall ingredients of glaſſe.

But Ice will diſſolve in any way of heat; for it will diſſolve with fire; it will colliquate in water, or warm oyle; nor doth it only ſubmit unto an actuall heat, but not endure the potentiall calidity of many waters; for it will preſently diſſolve in cold *Aqua fortis*, ſp. of Vitrioll, Salt or Tartar; nor will it long continue its fixation in ſpirits of wine, as may be obſerved in Ice injected therein.

Again, The concretion of Ice will not endure a dry attrition without liquation; for if it be rubbed long with a cloth, it melteth. But Cryſtall will calefie unto electricity; that is, a power to attract ſtrawes or light bodies, and convert the needle freely placed. Which is a declarement of very different parts: wherein we ſhall not inlarge, as having diſcourſed concerning ſuch bodies in the Chap. of Electricks.

They are differenced by ſupernatation or floating upon water; for Cryſtall will ſink in water, as carrying in its own bulk a greater ponderoſity, then the ſpace in any water it doth occupy; and will therefore only ſwim in molten mettall and Quickſilver. But Ice will ſwim in water of what thinneſſe ſoever; and though it ſink in oyle, will float in ſpirits of wine or *Aqua vitæ*. And therefore it may ſwim in water, not only as being water it ſelf, and in its proper place, but perhaps as weighing no more then the water it poſſeſſeth. And therefore as it will not ſink unto the bottom, ſo will it neither float above like lighter bodies, but being near in weight, lie ſuperficially or almoſt horizontally unto it. And therefore alſo an Ice or congelation of Salt or Sugar, although it deſcend not unto the bottom, yet will it abate, and decline below the ſurface in thin water, but very ſenſibly in ſpirits of wine. For Ice although it ſeemeth as tranſparent and compact as Cryſtall, yet is it ſhort in either; for its attomes are not concreted into continuity, which doth diminiſh its tranſlucency; it is alſo full of ſpumes and bubbles, which may abate its gravity. And therefore waters frozen in pans, and open glaſſes, after their diſſolution doe commonly leave a froth and ſpume upon them; which are cauſed by the airy parts diffuſed in the congeleable mixture: which uniting themſelves and finding no paſſage at the ſurface, doe elevate the maſſe, and make the liquor take up a greater place then before: as may be obſerved in glaſſes filled with water, which being frozen will ſeem to ſwell above the brim. So that if in this condenſation any one affirmeth there is alſo ſome rarefaction, experience may aſſert it.

They

They are diſtinguiſhed in ſubſtance of parts and the accidents thereof, that is, in colour and figure; for Ice is a ſimilary body, and homogeneous concretion, whoſe materiall is properly water, and but accidentally exceeding the ſimplicity of that element. But the body of Cryſtall is mixed; its ingredients many, and ſenſibly containeth thoſe principles into which mixt bodies are reduced. For beſide the ſpirit and mercuriall principle, it containeth a ſulphur or inflamable part, and that in no ſmall quantity; for upon colliſion with ſteel, it will actively ſend forth its ſparks not much inferiour unto a flint. Now ſuch bodies only ſtrike fire as have a ſulphur or ignitible parts within them. For theſe ſcintillations are not the accenſion of the ayre, upon the colliſion of two hard bodies, but rather the inflamable effluencies diſcharged from the bodies collided. For Diamonds, Marbles, Heliotropes and Agaths, though hard bodies, will not readily ſtrike fire with a ſteel, much leſſe with one another; nor a flint eaſily with a ſteel, if they both be wet; for then the ſparks are quenched in their eruption.

What bodies only will ſtrike actively fire, and why.

It containeth alſo a ſalt, and that in ſome plenty, which may occaſion its fragility, as is alſo obſervable in Corall. This by the art of Chymiſtry is ſeparable, unto the operations whereof it is liable, with other concretions; as calcination, reverberation, ſublimation, diſtillation: And in the preparation of Cryſtall, Paracelſus hath made a rule for that of Gemms, as he declareth in his firſt *de præparationibus*. Briefly, it conſiſteth of ſuch parts ſo far from an Icie diſſolution, that powerfull menſtruums are made for its emollition; whereby it may receive the tincture of minerals, and ſo reſemble Gemms, as Boetius hath declared in the diſtillation of Urine, ſpirits of wine and turpentine; and is not only triturable, and reduceable into powder, by contrition, but will ſubſiſt in a violent fire, and endure a vitrification. Whereby are teſtified its earthy and fixed parts. For vitrification is the laſt work of fire, and a fuſion of the ſalt and earth; which are the fixed elements of the compoſition; wherein the fuſible ſalt draws the earth and infuſible part into one continuum; and therefore aſhes will not runne from whence the ſalt is drawn, as bone aſhes prepared for the Teſt of Mettals. Common fuſion in Metals is alſo made by a violent heat, acting upon the volatile and fixed, the dry and humid parts of thoſe bodies; which notwithſtanding are ſo united, that upon attenuation from heat, the humid parts will not fly away, but draw the fixed ones into fluor with them. Ordinary liquation in wax and oily bodies is made by a gentler heat, where the oyl and ſalt, the fixed and fluid principles will not eaſily ſeparate: All which, whether by virtification, fuſion or liquation, being forced into fluent conſiſtencies, doe naturally regreſſe into their former ſolidities. Whereas the melting of Ice is a ſimple reſolution, or return from ſolid to fluid parts, wherein it naturally reſteth.

The Phyſicall cauſes of liquation or melting of Metals, &c.

As for colour, although Cryſtall in his pellucid body ſeems to have none at all, yet in its reduction into powder, it hath a vaile and ſhadow of blew; and in its courſer peeces, is of a ſadder hue then the powder of Venice glaſſe; and this complexion it will maintain although it long endure the fire. Which notwithſtanding needs not move us unto wonder; for vitrified and pellucid bodies, are of a clearer complexion in their continuities, then in their powders and Atomicall diviſions. So *Stibium* or glaſſe of Antimony, appears ſowewhat red in glaſſe, but in its powder yellow; ſo painted glaſſe of a ſanguine red will not aſcend in powder above a murrey.

As for the figure of Cryſtall (which is very ſtrange, and forced Pliny to deſpair of reſolution) it is for the moſt part hexagonall or ſix-cornerd; being built upon a confuſed matter, from whence as it were from a root angular figures ariſe, even as in the Amethyſt and Baſaltes; which regular figuration hath

hath made ſome opinion, it hath not its determination from circumſpection, or as conforming unto contiguities, but rather from a ſeminall root, and formative principle of its own; even as we obſerve in ſeverall other concretions. So the ſtones which are ſometime found in the gall of a man, are moſt triangular, and pyramidall, although the figure of that part ſeems not to cooperate thereto. So the *Aſteria* or *Lapis Stellaris*, hath on it the figure of a Starre; ſo *Lapis Judaicus*, hath circular lines in length all down its body, and equidiſtant, as though they had been turned by Art. So that we call a Fayrie ſtone, and is often found in gravell pits amongſt us, being of an hemiſphericall figure, hath five double lines ariſing from the center of its baſis, which if no accretion diſtract them, doe commonly concur and meet in the pole thereof. The figures are regular in many other ſtones, as in the Belemnites, *Lapis anguinus*, *Cornu Ammonis*, and many more; as by thoſe which have not the experience hereof may be obſerved in their figures expreſſed by Mineralogiſts. But Ice receiveth its figure according unto the ſurface wherein it concreteth, or the circumambiency which conformeth it. So it is plain upon the ſurface of water, but round in Hayl (which is alſo a glaciation,) and figured in its guttulous deſcent from the ayre, and ſo growing greater or leſſer according unto the accretion or pluvious aggelation about the mother and fundamentall Atomes thereof; which ſeems to be ſome feathery particle of Snowe; although Snowe it ſelf be ſexangular, or at leaſt of a ſtarry and many-pointed figure.

Which ſeemeth to be Echinites decima Aldrovandi. Muſæi Metallici. lib. 4.

They are alſo differenced in the places of their generation; for though Cryſtall be found in cold countries, and where Ice remaineth long, and the ayre exceedeth in cold, yet is it alſo found in regions, where Ice is ſeldom ſeen or ſoon diſſolved; as Pliny and Agricola relate of Cyprus, Caramania and an Iſland in the Red-ſea; it is alſo found in the veins of Mineralls, in rocks, and ſometime in common earth. But as for Ice, it will not concrete but in the approachment of the ayre, as we have made triall in glaſſes of water, covered an inch with oyle, which will not eaſily freeze in the hardeſt froſts of our climate; for water concreteth firſt in its ſurface, and ſo conglaciates downward; and ſo will it doe although it be expoſed in the coldeſt mettall of lead; which well accordeth with that expreſſion, *Job* 38. The waters are hid as with a ſtone, and the face of the deep is frozen. But whether water which hath been boiled or heated doth ſooner receive this congelation, as commonly is delivered, we reſt in the experiment of Cabeus; who hath rejected the ſame in his excellent diſcourſe of Meteors.

They have contrary qualities elementall, and uſes medicinall; for Ice is cold and moiſt, of the quality of water: but Cryſtall is cold and dry, according to the condition of earth; the uſe of Ice is condemned by moſt Phyſicians; that of Cryſtall commended by many. For although Dioſcorides and Galen, have left no mention thereof; yet hath Mathiolus, Agricola and many commended it in dyſenteries and fluxes; all for the increaſe of milk; moſt Chymiſts for the ſtone, and ſome as Braſſavolus and Bœtius, as an antidote againſt poiſon. Which occult and ſpecificall operations, are not expectible from Ice; for being but water congealed, it can never make good ſuch qualities; nor will it reaſonably admit of ſecret proprieties, which are the affections of forms, and compoſitions at diſtance from their elements.

Having thus declared what Cryſtall is not, it may afford ſome ſatisfaction to manifeſt what it is. To deliver therefore what with the judgement of approved Authors, and beſt reaſon conſiſteth; It is a minerall body in the difference of ſtones, and reduced by ſome unto that ſubdiviſion, which comprehendeth gemmes; tranſparent and reſembling glaſſe or Ice, made of a lentous

What Chryſtall is.

percolation of earth, drawn from the moſt pure and limpid juice thereof; owing unto the coldneſſe of the earth ſome concurrence or coadjuvancy, but not immediate determination and efficiency; which are wrought by the hand of its concretive ſpirit, the ſeeds of petrification and Gorgon within it ſelf. As we may conceive in ſtones and gemmes, in Diamonds, Berils, Saphires and the like; whoſe generation we cannot with ſatisfaction confine unto the remote activity of the Sun, or the common operation of coldneſſe in the earth; but may more ſafely refer it unto a lapidifical ſuccity, and principle which determins prepared materials unto ſpecificall concretions. And therefore I fear we commonly conſider ſubterranities, not in contemplations ſufficiently reſpective unto the creation. For though Moſes have left no mention of minerals, nor made any other deſcription then ſutes unto the apparent and viſible creation; yet is there unqueſtionably, a very large Claſſis of creatures in the earth, farre above the condition of elementarity. And although not in a diſtinct and indiſputable way of vivency, or anſwering in all points the properties or affections of plants, yet in inferiour and deſcending conſtitutions, they doe like theſe contain ſpecificall diſtinctions, and are determined by ſeminalities; that is, created and defined ſeeds committed unto the earth from the beginning. Wherein although they attain not the indubitable requiſites of Animation, yet have they a neer affinity thereto. And though we want a proper name and expreſſive appellation, yet are they not to be cloſed up in the generall name of concretions; or lightly paſſed over as only Elementary and Subterraneous mixtions.

Exact continuity of parts a cauſe of tranſparency in things; and why.

The principle and moſt gemmary affection is its Tralucency: as for irradiancy or ſparkling which is found in many gemmes, it is not diſcoverable in this; for it cometh ſhort of their compactneſſe and durity: and therefore requireth not the Emery, as the Saphire, Granate and Topaz, but will receive impreſſion from ſteel, more eaſily then the Turchois. As for its diaphanity or perſpicuity, it enjoyeth that moſt eminently; and the reaſon thereof is its continuity; as having its earthly and ſalinous parts ſo exactly reſolved, that its body is left imporous and not diſcreted by atomicall terminations. For, that continuity of parts is the cauſe of perſpicuity, it is made perſpicuous by two waies of experiment; that is, either in effecting tranſparency in thoſe bodies which were not ſo before, or at leaſt far ſhort of the additionall degree: So Snow becomes tranſparent upon liquation; ſo horns and bodies reſolveable into continued parts or gelly: The like is obſervable in oyled paper, wherein the interſtitiall diviſions being continuated by the acceſſion of oyle, it becometh more tranſparent, and admits the viſible raies with leſſe umbroſity. Or elſe the ſame is effected by rendring thoſe bodies opacous, which were before pellucid and perſpicuous. So glaſſe which was before diaphanous, being by powder reduced into multiplicity of ſuperficies, becomes an opacous body, and will not tranſmit the light: ſo it is in Cryſtall powdered, and ſo it is alſo before; for if it be made hot in a cruſible, and preſently projected upon water, it will grow dim, and abate its diaphanity; for the water entring the body, begets a diviſion of parts, and a termination of Atoms united before unto continuity.

The ground of this opinion might be, firſt the concluſions of ſome men from experience; for as much as Cryſtall is found ſometimes in rocks, and in ſome places not much unlike the ſtirious or ſtillicidious dependencies of Ice. Which notwithſtanding may happen either in places which have been forſaken or left bare by the earth; or may be petrifications, or Minerall indurations, like other gemmes, proceeding from percolations of the earth diſpoſed unto ſuch concretions.

The

The ſecond and moſt common ground is from the name *Cryſtallus*, whereby in Greek, both Ice and Cryſtall are expreſſed; which many not duly conſidering, have from their community of name, conceived a community of nature, and what was aſcribed unto the one, not unfitly appliable unto the other. But this is a fallacy of Æquivocation, from a ſociety in name inferring an Identity in nature. By this fallacy was he deceived that drank *Aqua fortis* for ſtrong water: By this are they deluded, who conceive *ſperma Cœti* (which is a bituminous ſuperfluitance on the ſea) to be the ſpawn of the Whale; Or take *ſanguis draconis* (which is the gumme of a tree,) to be the blood of a Dragon. By the ſame Logick we may inferre, the Cryſtalline humour of the eye, or rather the Cryſtalline heaven above, to be of the ſubſtance of Cryſtall here below; Or that God ſendeth down Cryſtall, becauſe it is delivered in the vulgar tranſlation, Pſal. 47. *Mittit Cryſtallum ſuum ſicut Buccellas:* which tranſlation although it literally expreſſe the Septuagint; yet is there no more meant thereby, then what our tranſlation in plain Engliſh expreſſeth; that is, he caſteth forth his Ice like morſels, or what Tremellius and Junius as clearly deliver, *Dejicit gelu ſuum ſicut fruſta, coram frigore ejus quis conſiſtet?* which proper and Latine expreſſions, had they been obſerved in ancient tranſlations, elder Expoſitors had not been miſguided by the Synonomy; nor had they afforded occaſion unto Auſtin, the Gloſſe, Lyranus and many others, to have taken up the common conceit, and ſpoke of this text conformably unto the opinion rejected.

Agreement in name.

Chap. II.

Concerning the Loadſtone.

Of things particularly ſpoken thereof evidently or probably true. Of things generally beleeved, or particularly delivered, manifeſtly or probably falſe. In the firſt of the Magneticall vertue of the earth, of the four motions of the ſtone, that is, its Verticity or Direction, its Attraction or Coition, its Declination, its Variation, and alſo of its Antiquity. In the ſecond a rejection of ſundry opinions and relations thereof, Naturall, Medicall, Hiſtoricall, Magicall.

And firſt we conceive the earth to be a Magneticall body. A Magneticall body, we term not only that which hath a power attractive; but that which ſeated in a convenient medium naturally diſpoſeth it ſelf to one invariable and fixed ſituation. And ſuch a Magneticall vertue we conceive to be in the Globe of the earth; whereby as unto its naturall points and proper terms it diſpoſeth it ſelf unto the poles; being ſo framed, conſtituted and ordered unto theſe points, that thoſe parts which are now at the poles, would not naturally abide under the Æquator; nor Green-land remain in the place of Magellanica. And if the whole earth were violently removed, yet would it not forgoe its primitive points; nor pitch in the Eaſt or Weſt, but return unto its polary poſition again. For though by compactneſſe or gravity it may acquire the loweſt place, and become the center of the univerſe, yet that it makes good that point, not varying at all by the acceſſion of bodies upon, or ſeceſſion thereof, from its ſurface, perturbing the equilibration of either Hemiſphear (whereby the altitude of the ſtarres might vary) or that it ſtrictly maintains the north and ſouthern points; that neither upon the mo-

How the earth is a Magneticall body.

tions of the heavens, ayre and windes without, large eruptions and diviſion of parts within, its polary parts ſhould never incline or veere unto the Æquator (whereby the latitude of places ſhould alſo vary) it cannot ſo well be ſalved from gravity as a Magneticall verticity. This is probably that foundation the wiſdome of the Creator hath laid unto the earth; in this ſenſe we may more nearly apprehend, and ſenſibly make out the expreſſions of holy Scripture, as that of Pſal. 93. 1. *Firmavit orbem terræ qui non commovebitur*, he hath made the round world ſo ſure that it cannot be moved: as when it is ſaid by Job, *Extendit Aquilonem ſuper vacuo*, &c. He ſtretcheth forth the North upon the empty place, and hangeth the earth upon nothing. And this is the moſt probable anſwer unto that great queſtion, Job 38. Whereupon are the foundations of the earth faſtened, or who laid the corner ſtone thereof? Had they been acquainted with this principle, Anaxagoras, Socrates and Democritus had better made out the ground of this ſtability: Xenophanes had not been fain to ſay the earth had no bottome; and Thales Mileſius to make it ſwim in water.

The foundation of the earths ſtability.

Nor is the vigour of this great body included only in its ſelf, or circumferenced by its ſurface, but diffuſed at indeterminate diſtances through the ayre, water and all bodies circumjacent. Exciting and impregnating Magneticall bodies within its ſurface or without it; and performing in a ſecret and inviſible way what we evidently behold effected by the Loadſtoue. For theſe effluxions penetrate all bodies, and like the ſpecies of viſible objects are ever ready in the medium, and lay hold on all bodies proportionate or capable of their action; thoſe bodies likewiſe being of a congenerous nature doe readily receive the impreſſions of their motor; and if not fettered by their gravity, conform themſelves to ſituations, wherein they beſt unite unto their Animator. And this will ſufficiently appear from the obſervations that are to follow, which can no better way be made out then this we ſpeak of, the Magneticall vigour of the earth. Now whether theſe effluviums do flye by ſtriated Atomes and winding particles as *Renatus des Cartes* conceiveth, or glide by ſtreams attracted from either pole and Hemiſphere of the earth unto the Æquator, as Sir Kenelme Digby excellently declareth, it takes not away this vertue of the earth; but more diſtinctly ſets down the geſts and progreſſe thereof; and are conceits of eminent uſe to ſalve Magneticall phenomena's. And as in Aſtronomy thoſe hypotheſes though never ſo ſtrange are beſt eſteemed which beſt doe ſalve apparencies; ſo ſurely in Philoſophy thoſe principles (though ſeeming monſtrous) may with advantage be embraced, which beſt confirm experiment, and afford the readieſt reaſon of obſervation. And truly the doctrine of effluxions, their penetrating natures, their inviſible paths, and inſuſpected effects, are very conſiderable; for beſides this Magneticall one of the earth, ſeverall effuſions there may be from divers other bodies, which inviſibly act their parts at any time, and perhaps through any medium; a part of Philoſophy but yet in diſcovery, and will I fear prove the laſt leaf to be turned over in the book of Nature.

The magneticall vertue of the earth diffuſed *extra ſe* and communicated to bodies adjacent.

Apparencies, obſervations.

The doctrine of effluxions acknowledged by the Author.

Firſt, Therefore true it is, and confirmable by every experiment, that Steel and good Iron never excited by the Loadſtone, diſcover in themſelves a verticity; that is, a directive or polary faculty; whereby, conveniently placed, they doe ſeptentrionate at one extream, and Auſtralize at another; this is manifeſtible in long and thin plates of Steel perforated in the middle and equilibrated; or by an eaſier way in long wires equiponderate with untwiſted Silk and ſoft wax; for in this manner pendulous, they will conform themſelves Meridionally; directing one extream unto the North, another to the South. The ſame is alſo manifeſt in Steel wires thruſt through little ſphears

Point to the North.
Point to the South.

or

or globes of Cork and floated on the water; or in naked needles gently let fall thereon; for ſo diſpoſed they will not reſt untill they have found out the Meridian, and as near as they can lye parallel unto the axis of the earth: Sometimes the eye, ſometimes the point Northward in divers needles, but the ſame point alwaies in moſt; Conforming themſelves unto the whole earth, in the ſame manner as they doe unto every Loadſtone; For if a needle untoucht be hanged above a Loadſtone, it will convert into a parallel poſition thereto; for in this ſituation it can beſt receive its verticity and be excited proportionably at both extreams. Now this direction proceeds not primitively from themſelves, but is derivative and contracted from the Magneticall effluxions of the earth; which they have winded in their hammering and formation, or elſe by long continuance in one poſition, as we ſhall declare hereafter.

It is likewiſe true what is delivered of Irons heated in the fire, that they contract a verticity in their refrigeration; for heated red hot and cooled in the meridian from North to South, they preſently contract a polary power, and being poyſed in ayre or water convert that part unto the North which reſpected that point in its refrigeration; ſo that if they had no ſenſible verticity before, it may be acquired by this way; or if they had any, it might be exchanged by contrary poſition in the cooling. For by the fire they omit not only many droſſie and ſcorious parts, but whatſoever they had received either from the earth or Loadſtone; and ſo being naked and deſpoiled of all verticity, the Magneticall Atomes invade their bodies with more effect and agility.

Neither is it only true what Gilbertus firſt obſerved, that Irons refrigerated North and South acquire a Directive faculty; but if they be cooled upright and perpendicularly they will alſo obtain the ſame. That part which is cooled toward the North on this ſide the Æquator, converting it ſelf unto the North, and attracting the South point of the needle: the other and higheſt extream reſpecting the South, and attracting the Northern, according unto the laws Magneticall: For (what muſt be obſerved) contrary poles or faces attract each other, as the North the South; and the like decline each other, as the North the North. Now on this ſide of the Æquator, that extream which is next the earth is animated unto the North, and the contrary unto the South; ſo that in Coition it applies it ſelf quite oppoſitely, the Coition or attraction being contrary to the Verticity or Direction. Contrary, if we ſpeak according unto common uſe, yet alike, if we conceive the vertue of the North pole to diffuſe it ſelf and open at the South, and the South at the North again.

This polarity from refrigeration upon extremity and in defect of a Loadſtone might ſerve to invigorate and touch a needle any where; and this, allowing variation, is alſo the readieſt way at any ſeaſon to diſcover the North or South; and ſurely farre more certain then what is affirmed of the grains and cireles in trees, or the figure in the root of Fern. For if we erect a red hot wire untill it coole, then hang it up with wax and untwiſted Silk, where the lower end and that which cooled next the earth doth reſt, that is the Northern point; and this we affirm will ſtill be true, whether it be cooled in the ayre or extinguiſhed in water, oyle of vitriol, *Aqua fortis*, or Quick-ſilver. And this is alſo evidenced in culinary utenſils and Irons that often feel the force of fire, as tongs, fireſhovels, prongs and Andirons; all which acquire a Magneticall and polary condition, and being ſuſpended, convert their lower extreams unto the North; with the ſame attracting the Southern point of the needle. For eaſier experiment if we place a needle touched at the foot

Some conceive that the figure of the tree or ſpread-eagle in the root of Brake or Fern ſtands North and South; but not truly.

of tongs or andirons, it will obvert or turn aſide its lillie or North point, and conform its cuſpis or South extream unto the andiron. The like verticity though more obſcurely is alſo contracted by bricks and tiles, as we have made triall in ſome taken out of the backs of chimneys. Now to contract this Direction, there needs not a totall ignition, nor is it neceſſary the Irons ſhould be red hot all over. For if a wire be heated only at one end, according as that end is cooled upward or downward, it reſpectively acquires a verticity; as we have declared in wires totally candent. Nor is it abſolutely requiſite they ſhould be cooled perpendicularly, or ſtrictly lye in the meridian; for whether they be refrigerated inclinatorily or ſomewhat Æquinoxially, that is toward the Eaſtern or Weſtern points; though in a leſſer degree, they diſcover ſome verticity.

Looſeth. Nor is this only true in Irons but in the Loadſtone it ſelf. For if a Loadſtone be made red hot, it amits the magneticall vigour it had before in it ſelf, and acquires another from the earth in its refrigeration, for that part which cooleth toward the earth will acquire the reſpect of the North, and attract the Southern point or cuſpis of the Needle. The experiment hereof we made in a Loadſtone of a parallelogram or long ſquare figure; wherein only inverting the extremes as it came out of the fire, we altered the poles or faces thereof at pleaſure.

It is alſo true what is delivered of the Direction and coition of Irons, that they contract a verticity by long and continued poſition, that is, not only being placed from North to South, and lying in the meridian, but reſpecting the Zenith and perpendicular unto the center of the earth; as is moſt manifeſt in barres of windowes, caſements, hinges and the like. For if we preſent the Needle unto their lower extremes, it wheels about and turns its Southern point unto them. The ſame condition in long time doe bricks contract which are placed in walls; and therefore it may be a fallible way to finde out the meridian by placing the Needle on a wall; for ſome bricks therein by a long and continued poſition, are often magnetically enabled to diſtract the polarity of the Needle. And therefore thoſe Irons, which are ſaid to have been converted into Loadſtones; whether they were reall converſions, or only attractive augmentations, might be much promoted by this poſition: as the Iron croſſe of an hundred weight upon the Church of S^t^ John in Ariminum, or that Loadſton'd Iron of Cæſar Moderatus, ſet down by Aldrovandus. Deminer. lib 1.

Laſtly, Irons doe manifeſt a verticity not only upon refrigeration and conſtant ſituation, but (what is wonderfull and advanceth the magneticall hypotheſis) they evidence the ſame by meer poſition according as they are inverted, and their extreams diſpoſed reſpectively unto the earth. For if an Iron or Steele not firmly excited, be held perpendicularly or inclinatorily unto the Needle; the lower end thereof will attract the *cuſpis* or Southern point; but if the ſame extream be inverted and held under the Needle, it will then attract the lilly or northern point; for by inverſion it changeth its direction acquired before, and receiveth a new and ſouthern polarity from the earth, as being the upper extream. Now if an iron be touched before, it varieth not in this manner; for then it admits not this magneticall impreſſion, as being already informed by the Loadſtone, and polarily determined by it's preaction.

And from theſe grounds may we beſt determine why the Northern pole of the Loadſtone attracteth a greater weight then the Southern on this ſide the Æquator; why the ſtone is beſt preſerved in a naturall and polary ſituation; and why as Gilbertus obſerveth, it reſpecteth that pole out of the earth, which it

it regarded in its minerall bed and ſubterraneous poſition.

It is likewiſe true and wonderfull what is delivered of the Inclination or Declination of the Loadſtone; that is, the deſcent of the needle below the plain of the Horizon. For long needles which ſtood before upon their *axis parallell* unto the Horizon, being vigorouſly excited, incline and bend downward; depreſſing the North extream below the Horizon. That is the North on this, the South on the other ſide of the Æquator; and at the very Line or middle circle ſtand without deflection. And this is evidenced not only from obſervations of the needle in ſeverall parts of the earth, but ſundry experiments in any part thereof; as in a long Steel wire, equilibrated or evenly ballanced in the ayre; for excited by a vigorous Loadſtone it will ſomewhat depreſſe its animated extream, and interſect the horizontall circumference. It is alſo manifeſt in a needle pierced through a globe of Cork ſo cut away and pared by degrees that it will ſwim under water, yet ſink not unto the bottome; which may be well effected; for if the Cork be a thought too light to ſink under the ſurface, the body of the water may be attenuated with ſpirits of wine; if too heavy, it may be incraſſated with ſalt; and if by chance too much be added, it may again be thinned by a proportionable addition of freſh water. If then the needle be taken out, actively touched and put in again, it will depreſſe and bow down its northern head toward the bottome, and advance its ſouthern extremity toward the brim. This way invented by Gilbertus may ſeem of difficulty; the ſame with leſſe labour may be obſerved in a needled ſphere of Cork equally contiguous unto the ſurface of the water; for if the needle be not exactly equiponderant, that end which is a thought too light, if touched becometh even; that needle alſo which will but juſt ſwim under water, if forcibly touched will ſink deeper, and ſometime unto the bottome. If likewiſe that inclinatory vertue be deſtroyed by a touch from the contrary pole, that end which before was elevated will then decline; and this perhaps might be obſerved in ſome ſcales exactly ballanced, and in ſuch needles which for their bulk can hardly be ſupported by the water. For if they be powerfully excited and equally let fall, they commonly ſink down and break the water at that extream whereat they were ſeptentrionally excited; and by this way it is conceived there may be ſome fraud in the weighing of precious commodities, and ſuch as carry a value in quarter grains, by placing a powerfull Loadſtone above or below, according as we intend to depreſſe or elevate one extream.

Now if theſe Magneticall emiſſions be only qualities, and the gravity of bodies incline them only unto the earth; ſurely that which moveth other bodies to deſcent carrieth not the ſtroak in this, but rather the Magneticall alliciency of the earth; unto which with alacrity it applieth it ſelf, and in the very ſame way unto the whole earth, as it doth unto a ſingle Loadſtone: for if an untouched needle be at a diſtance ſuſpended over a Loadſtone, it will not hang parallel, but decline at the north extream, and at that part will firſt ſalute its Director. Again, what is alſo wonderfull, this inclination is not invariable; for juſt under the line the needle lieth parallel with the Horizon, but ſailing North or South it beginneth to incline, and increaſeth according as it approacheth unto either pole; and would at laſt endeavour to erect it ſelf; and this is no more then what it doth upon the Loadſtone, and that more plainly upon the Terrella or ſpherical magnet Coſmographically ſet out with circles of the Globe. For at the Æquator thereof the needle will ſtand rectangularly; but approaching northward toward the tropick it will regard the ſtone obliquely; and when it attaineth the pole, directly; and if its bulk be no impediment, erect it ſelf and ſtand perpendicularly thereon. And therefore

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perhaps not so. For Columbus knew not the variation of the compasse, whereof Sebastian Cabot first took notice, who after made discovery in the Northern parts of that continent. And it happened indeed that part of America was first discovered, which was on this side farthest distant, that is, Jamaica, Cuba, and the Isles in the Bay of Mexico. And from this variation doe some new discoverers deduce a probability in the attempts of the Northern passage toward the Indies.

Now because where the greater continents are joined, the action and effluence is also greater, therefore those needles doe suffer the greatest variation which are in countries which most doe feel that action, And therefore hath Rome far lesse variation then London; for on the West side of Rome, are seated the great continents of France, Spain, Germany, which take off the exuperance and in some way balance the vigour of the Eastern parts. But unto England there is almost no earth West, but the whole extent of Europe and Asia, lieth Eastward; and therefore at London it varieth eleven degrees, that is, almost one *Rhomb*. Thus also by reason of the great continent of Brasilia, Peru and Chili, the needle deflecteth toward the land twelve degrees; but at the straits of Magellan where the land is narrowed, and the sea on the other side, it varieth but five or six. And so likewise, because the Cape *delas Agullas* hath sea on both sides near it, and other land remote and as it were æquidistant from it; therefore at that point the needle conforms unto the true Meridian, and is not distracted by the vicinity of Adjacencies. This is the generall and great cause of variation. But if in certain creeks and valleys the needle prove irregular, and vary beyond expectance, it may be imputed unto some vigorous part of the earth, or Magneticall eminence not far distant. And this was the invention of D. Gilbert not many years past, a Physitian in London. And therefore although some assume the invention of its direction, and others have had the glory of the Card; yet in the experiments, grounds, and causes thereof, England produced the Father Philosopher, and discovered more in it, then Columbus or Americus did ever by it.

Unto this in great part true the reason of Kircherus may be added: That this variation proceedeth not only from terrestrious eminencies, and magneticall veins of earth, laterally respecting the needle, but the different coagmentation of the earth disposed unto the poles, lying under the sea and waters; which affect the needle with great or lesser variation, according to the vigour or imbecillity of these subterraneous lines: or the entire or broken compagination of the magneticall fabrick under it: as is observeable from severall Loadstones placed at the bottome of any water: for a Loadstone or needle upon the surface, will variously conform it self, according to the vigour or faintnesse of the Loadstones under it.

Thus also a reason may be alledged for the variation of the variation, and why, according to observation, the variation of the needle hath after some years been found to vary in some places, for this may proceed from mutations of the earth, by subterraneous fires, fumes, minerall spirits, or otherwise; which altering the constitution of the magneticall parts, in processe of time, doth vary the variation over the place.

It is also probable what is conceived of its Antiquity, that the knowledge of its polary power and direction unto the North was unknown unto the Ancients; and though Levinus Lemnius, and Cælius Calcagninus, are of another belief, is justly placed with new inventions by Pancirollus. For their Achilles and strongest argument is an expression in Plautus, a very ancient Authour, and contemporary unto Ennius. *Hic ventus jam secundus est, cape modò verforiam.* Now this *verforiam* they construe to be the compasse, which

notwithſtanding according unto Pineda, who hath diſcuſſed the point, Turnebus, Cabeus and divers others, is better interpreted the rope that helps to turn the ſhip; or as we ſay, doth make it tack about; the Compaſſe declaring rather the ſhip is turned, then conferring unto its converſion. As for the long expeditions and ſundry voiages of elder times, which might confirm the Antiquity of this invention, it is not improbable they were performed by the help of ſtars; and ſo might the Phœnicean navigators, and alſo Vlyſſes ſail about the Mediterranean by the flight of birds, or keeping near the ſhore, and ſo might Hanno coaſt about Africk, or by the help of oars, as is expreſſed in the voyage of Jonah. And whereas it is contended that this verticity was not unknown unto Salomon, in whom is preſumed a univerſality of knowledge; it will as forceably follow he knew the Art of Typography, powder and guns, or had the Philoſophers ſtone, yet ſent unto Ophir for gold. It is not to be denied, that beſide his politicall wiſdom; his knowledge in Philoſophy was very large; and perhaps from his works therein, the ancient Philoſophers eſpecially Ariſtotle, who had the aſſiſtance of Alexanders acquirements, collected great obſervables; yet if he knew the uſe of the Compaſſe, his ſhips were ſurely very ſlow, that made a three years voyage from Eziongeber in the red Sea unto Ophir, which is ſuppoſed to be Taprobana or Malaca in the Indies; not many moneths ſayl, and ſince in the ſame or leſſer time, Drake and Candiſh performed their voyage about the earth.

And as the knowledge of its verticity is not ſo old as ſome conceive, ſo is it more ancient then moſt beleeve; nor had its diſcovery with guns, printing, or as many think, ſome years before the diſcovery of America. For it was not unknown unto Petrus Peregrinus a French-man, who two hundred years ſince left a Tract of the Magnet, and a perpetuall motion to be made thereby preſerved by Gaſſerus. Paulus Venetus, and about five hundred years paſt Albertus Magnus make mention hereof, and quote for it a book of Ariſtotle *de lapide*, which book although we finde in the Catalogue of Laertius, yet with Cabeus I rather judge it to be the work of ſome Arabick writer, not many years before the daies of Albertus.

Laſtly, It is likewiſe true what ſome have delivered of *Crocus Martis*, that is, ſteel corroded with vineger, ſulphur or otherwiſe, and after reverberated by fire. For the Loadſtone will not at all attract it, nor will it adhere, but lie therein like ſand. This is to be underſtood of *Crocus martis* well reverberated, and into a violet colour: for common chalybs *præparatus*, or corroded and powdered ſteel, the Loadſtone attracts like ordinary filings of iron; and many times moſt of that which paſſeth for *Crocus martis*. So that this way may ſerve as a teſt of its preparation; after which it becometh a very good medecine in fluxes. The like may be affirmed of Flakes of iron that are ruſty and begin to tend unto earth; for their cognation then expireth, and the Loadſtone will nor regard them.

And therefore this may ſerve as a tryall of good Steel? the Loadſtone taking up a greater maſſe of that which is moſt pure, it may alſo decide the converſion of wood into Iron, as is pretended from ſome waters: and the common converſion of Iron into Copper by the mediation of blew Coperoſe: for the Loadſtone will not attract it, although it may be queſtioned, whether in this oporation the Iron or Coperoſe be tranſmuted; as may be doubted from the cognation of Coperoſe with Copper; and the quantity of Iron, remaining after the converſion. And the ſame may be uſefull to ſome diſcovery concerning Vitrioll or Coperoſe of Mars, by ſome called Salt of Steel, made by the ſpirits of Vitrioll or Sulphur. For the corroded powder of Steel, will after

after ablution be actively attracted by the Loadſtone; and alſo remaineth in little diminiſhed quantity. And therefore whether thoſe ſhooting Salts partake but little of ſteel, and be not rather the vitriolous ſpirits fixed into Salt by the effluvium or odor of Steel, is not without good queſtion.

Chap. III.

Concerning the Loadſtone, therein of ſundry common opinions, and received relations, Naturall, Hiſtoricall, Medicall, Magicall.

And firſt not only a ſimple Heterodox, but a very hard Parodox, it will ſeem, and of great abſurdity unto obſtinate ears, if we ſay attraction is unjuſtly appropriated unto the Loadſtone, and that perhaps we ſpeak not properly, when we ſay vulgarly the Loadſtone draweth Iron; and yet herein we ſhould not want experiment and great authority. The words of Renatus *des Cartes* in his principles of Philoſophy are very plain. *Præterea magnes trahet ferrum, ſive potius magnes & ferrum ad invicem accedunt, neque enim ulla ibi tractio eſt.* The ſame is ſolemnly determined by Cabeus. *Nec magnes trahit propriè ferrum, nec ferrum ad ſe magnetem provocat, ſed ambo pari conatu ad invicem conſtituunt.* Concordant hereto is the aſſertion of Doctor Ridley, Phyſitian unto the Emperour of Ruſſia in his Tract of Magneticall bodies; defining Magneticall attraction to be a naturall incitation and diſpoſition conforming unto contiguity; an union of one Magneticall body with another, and no violent haling of the weak unto the ſtronger. And this is alſo the doctrine of Gilbertus; by whom this motion is termed coition, and that not made by any faculty attractive of one, but a Syndrome and concourſe of each; a coition alway of their vigours, and alſo of their bodies, if bulk or impediment prevent not; and therefore thoſe contrary actions which flow from oppoſite poles or faces, are not ſo properly expulſion and attraction, as Sequela and Fuga a mutuall flight and following. Conſonant whereto are alſo the determinations of Helmontius and Kircherus.

Attraction reciprocall betwixt the Loadſtone and Iron.

The ſame is alſo confirmed by experiment; for if a piece of Iron be faſtened in the ſide of a bowl or baſon of water, a Loadſtone ſwimming freely in a boat of cork, will preſently make unto it. And ſo if a Steel or knife untouched be offered toward the needle that is touched, the needle nimbly moveth toward it; and conformeth unto union with the Steel that moveth not. Again, If a Loadſtone be finely filed, the atomes or duſt thereof will adhere unto Iron that was never touched, even as the powder of Iron doth alſo unto the Loadſtone. And laſtly, If in two skiffs of cork, a Loadſtone and Steel be placed within the orb of their activities, the one doth not move the other ſtanding ſtill, but both hoiſe ſayle and ſteer unto each other; ſo that if the Loadſtone attract, the Steel hath alſo its attraction; for in this action the Alliciency is reciprocall; which jointly felt, they mutually approach and run into each others armes.

And therefore ſurely more moderate expreſſions become this action, then what the Ancients have uſed; which ſome have delivered in the moſt violent termes of their language; ſo Auſtine cals it, *Mirabilem ferri raptorem: Hippocrates,* λίθος ὅτι τὸ σίδηρον ἁρπάζει, *Lapis qui ferrum rapit.* Galen diſputing againſt Epicurus uſeth the term ἕλκειν, but this is alſo too violent: among the Ancients Ariſtotle ſpake moſt warily, λίθος ὅτις τὸ σίδηρον κινεῖ, *Lapis qui ferrum movet:* and in ſome tollerable acception doe run the expreſſions of Aquinas, Scaliger and Cuſanus.

Many relations are made, and great expectations are raiſed from the Magnes Carneus, or a Loadſtone, that hath a faculty to attract not only Iron but fleſh; but this upon enquiry, and as Cabeus hath alſo obſerved, is nothing elſe but a weak, an inanimate kinde of Loadſtone, veined here and there with a few magneticall and ferreous lines; but chiefly conſiſting of a bolary and clammy ſubſtance, whereby it adheres like Hæmatites, or Terra Lemnia, unto the Lipps; and this is that ſtone which is to be underſtood, when Phyſitians join it with Ætites or the Eagle ſtone, and promiſe therein a vertue againſt abortion.

There is ſometime a miſtake concerning the variation of the compaſſe, and therein one point is taken for another. For beyond the Æquator ſome men account its variation by the diverſion of the Northern point, whereas beyond that circle the Southern point is ſovereign, and the North ſubmits his preheminency. For in the Southern coaſt either of America or Africa, the Southern point deflects and varieth toward the land, as being diſpoſed and ſpirited that way by the meridionall and proper Hemiſphere. And therefore on that ſide of the earth the varying point is beſt accounted by the South. And therefore alſo the writings of ſome, and Maps of others, are to be enquired, that make the needle decline unto the Eaſt twelve degrees at Capo Frio, and ſix at the ſtraits of Magellan; accounting hereby one point for anorher, and preferring the North in the liberties and province of the South.

That Garlick hinders not the attraction of the Loadſtone.

But certainly falſe it is what is commonly affirmed and beleeved, that Garlick doth hinder the attraction of the Loadſtone; which is notwithſtanding delivered by grave and worthy Writers; by Pliny, Solinus, Ptolomy, Plutarch, Albertus, Mathiolus, Rueus, Langius, and many more. An effect as ſtrange as that of Homers Moly, and the Garlick the gods beſtowed upon Ulyſſes. But that it is evidently falſe, many experiments declare. For an Iron wire heated red hot and quenched in the juyce of Garlick, doth notwithſtanding contract a verticity from the earth, and attracteth the Southern point of the Needle. If alſo the tooth of a Loadſtone be covered or ſtuck in Garlick, it will notwithſtanding attract; and Needles excited and fixed in Garlick untill they begin to ruſt, doe yet retain their attractive and polary reſpects.

Nor yet the Adamant or Diamond

Of the ſame ſtamp is that which is obtruded upon us by Authors ancient and modern, that an Adamant or Diamond prevents or ſuſpends the attraction of the Loadſtone; as is in open termes delivered by Pliny. *Adamas diſſidet cum Magnete Lapide, ut juxta poſitus ferrum non patiatur abſtrahi, aut ſi admotus magnes apprehenderit, rapiat atque auferat.* For if a Diamond be placed between a needle and a Loadſtone, there will nevertheleſſe enſue a Coition even over the body of the Diamond: and an eaſie matter it is to touch or excite a needle through a Diamond, by placing it at the tooth of a Loadſtone; and therefore the relation is falſe or our eſtimation of theſe gems untrue; nor are they Diamonds which carry that name amongſt us.

It is not ſuddenly to be received what Paracelſus in his book *De generatione rerum*, affirmeth, that if a Loadſtone be anointed with Mercuriall oyle, or only put into Quickſilver, it omitteth its attraction for ever. For we have found that Loadſtones and touched needles which have laid long time in Quickſilver have not amitted their attraction; and we alſo finde that red hot needles or wires extinguiſhed in Quickſilver, doe yet acquire a verticity according to the Laws of poſition in extinction. Of greater repugnancy unto reaſon is that which he delivers concerning its graduation, that heated in fire and often extinguiſhed

tinguished in oyle of Mars or Iron, it acquires an ability to extract or draw forth a naile fastened in a wall; for, as we have declared before, the vigor of the Loadstone is destroyed by fire, nor will it be reimpregnated by any other Magnete then the earth.

Nor is it to be made out what seemeth very plausible, and formerly hath deceived us, that a Loadstone will not attract an Iron or Steel red hot. The falsity hereof discovered first by Kircherus, we can confirm by iterated experiment; very sensibly in armed Loadstones, and obscurely in any other.

True it is, that besides fire some other waies there are of its destruction, as Age, Rust; and what is least dreamt on, an unnaturall or contrary situation. For being impolarily adjoined unto a more vigorous Loadstone, it will in a short time exchange its poles; or being kept in undue position, that is, not lying on the meridian or with its poles inverted, it receives in longer time impair in activity, exchange of faces, and is more powerfully preserved by site then by the dust of Steel. But the sudden and surest way is fire; that is, fire not only actuall but potentiall; the one surely and suddenly, the other slowly and imperfectly; the one changing, the other destroying the figure. For if distilled Vinegar or Aqua fortis be powred upon the powder of Loadstone, the subsiding powder dried, retains some magneticall vertue, and will be attracted by the Loadstone: but if the menstruum or dissolvent be evaporated to a consistence, and afterward doth shoot into Icycles or Crystals, the Loadstone hath no power upon them; and if in a full dissolution of Steel a separation of parts be made by precipitation or exhalation, the exsiccated powder hath lost its wings and ascends not unto the Loadstone. And though a Loadstone fired doe presently omit its proper vertue, and according to the position in cooling contracts a new verticity from the earth, yet if the same be laid a while in Aqua fortis or other corrosive water, and taken out before a considerable corrosion; it still reserves its attraction, and will convert the Needle according to former polarity. And that duly preserved from violent corrosion, or the naturall disease of rust, it may long conserve its vertue, beside the Magneticall vertue of the earth, which hath lasted since the creation, a great example we have from the observation of our learned friend Mr *Graves*, in an Ægyptian Idoll cut out of Loadstone, and found among the Mummies; which still retains its attraction, though probably taken out of the mine about two thousand years agoe.

It is improbable what Pliny affirmeth concerning the object of its attraction, that it attracts not only ferreous bodies, but also *liquorem vitri*; for in the body of glasse there is no ferreous or Magneticall nature which might occasion attraction. For of the glasse we use, the purest is made of the finest sand and the ashes of Chali or Glassewort, and the courser or green sort of the ashes of brake or other plants. True it is that in the making of glasse, it hath been an ancient practice to cast in pieces of Loadstone: conceiving it carried away all ferreous and earthy parts, from the pure and running portion of glasse, which the Loadstone would not respect, and therefore if that attraction were not rather electricall then Magneticall, it was a wondrous effect what Helmont delivereth concerning a glasse wherein the magistery of Loadstone was prepared; which after retained an attractive quality.

But that the Magnete attracteth more then common Iron, we can affirm. It attracteth the Smyris or Emery in powder; It draweth the shining or glassie powder brought from the Indies, and usually implied in writing dust. There is also in Smiths cinders by some adhesion of Iron whereby they appear as

it were glazed, ſometime to be found a Magneticall operation; for ſome thereof applied have power to move the Needle. But whether the aſhes of vegetables which grow over Iron mines contract a Magneticall quality, as containing ſome minerall particles, which by ſublimation aſcend unto their roots, and are attracted together with their nouriſhment; according as ſome affirm from the like obſervations upon the mines of Silver, Quickſilver and Gold; we muſt refer unto further experiment.

Nierembergius the Ieſuites conceit of mans body.

It is alſo improbable and ſomething ſingular what ſome conceive, and Euſebius Nierembergius a late writer and Jeſuit of Spain delivers, that the body of man is Magneticall, and being placed in a boat, the veſſell will never reſt untill the head reſpecteth the North. If this be true, the bodies of Chriſtians doe lye unnaturally in their graves. King Cheops in his tomb, and the Jews in their beds have fallen upon the naturall poſition: who reverentially declining the ſituation of their temple, nor willing to lye as that ſtood; doe place their beds from North to South, and delight to ſleep meridionally. This opinion confirmed would much advance the microcoſmicall conceit, and commend the Geography of Paracelſus; who according to the cardinall points of the world divideth the body of man; and therefore working upon humane ordure and by long preparation rendring it odiferous, he terms it *Zibeta Occidentalis*, Weſtern Civet; making the face the Eaſt, but the poſteriors the America or Weſtern part of his microcoſme. The verity hereof, might eaſily be tried in Wales, where there are portable boats, and made of leather, which would convert upon the impulſion of any verticity; and ſeem to be the ſame whereof in his deſcription of Brittain Cæſar hath left ſome mention.

Anagrammatically.

Another kinde of verticity, is that which Angelus *doce mihi jus, alias*, Michael Sundevogis, in a Tract *de ſulphure*, diſcovereth in Vegetables, from ſticks let fall or depreſſed under water; which equally framed and permitted unto themſelves, will aſcend at the upper end, or that which was verticall in its vegetation; wherein notwithſtanding, as yet, we have not found ſatisfaction. Although perhaps too greedy of magnalities, we are apt to make but favourable experiments concerning welcome truths, and ſuch deſired verities.

Horæ ſubſecivæ.

It is alſo wondrous ſtrange what Lælius Biſciola reporteth, that if unto ten ounces of Loadſtone one of Iron be added, it encreaſeth not unto eleven, but weighs ten ounces ſtill. A relation inexcuſable in his work, of leaſurable howres: the examination being as ready as the relation, and the falſity tried as eaſily as delivered. Nor is it to be omitted what is taken up by Cæſius Bernardus a late Mineralogiſt, and originally confirmed by Porta, that needles touched with a Diamond contract a verticity, even as they doe with a Loadſtone; which will not conſiſt with experiment. And therefore, as Gilbertus obſerveth, he might be deceived, in touching ſuch needles with Diamonds, which had a verticity before, as we have declared moſt needles to have; and ſo had he touched them with gold or ſilver, he might have concluded a magneticall vertve therein.

In the ſame form may we place Fracaſtorius his attraction of ſilver, Philoſtratus his Pantarbes; Apollodorus and Beda his relation of the Loadſtone that attracted only in the night. But moſt inexcuſable is Franciſcus Rueus, a man of our own profeſſion; who in his Diſcourſe of gemmes mentioned in the Apocalyps, undertakes a Chapter of the Loadſtone; wherein ſubſtantially and upon experiment he ſcarce delivereth any thing; making enumeration of its traditionall qualities; whereof he ſeemeth to beleeve many, and ſome above convicted by experience, he is fain to ſalve as impoſtures of the devil.

devil. But Bœtius de Boot Phyſician unto Rodulphus the ſecond, hath recompenced this defect; and in his Tract, *de Lapidibus & Gemmis*, ſpeaks very materially hereof; and his diſcourſe is conſonant unto experience and reaſon.

As for relations Hiſtoricall, though many there be of leſſe account, yet two alone deſerve conſideration; The firſt concerneth magneticall rocks, and attractive mountains in ſeverall parts of the earth. The other the tombe of Mahomet and bodies ſuſpended in the aire. Of rocks magneticall there are likewiſe two relations; for ſome are delivered to be in the Indies, and ſome in the extremity of the North, and about the very pole. The Northern account is commonly aſcribed unto Olaus Magnus Archbiſhop of Upſale, who out of his predeceſſour Joannes, Saxo and others, compiled a hiſtory of ſome Northern Nations; but this aſſertion we have not diſcovered in that work of his which paſſeth among us, and ſhould beleeve his Geography herein no more then that in the firſt line of his book; when he affirmeth that Biarmia (which is not ſeventy degrees in latitude) hath the pole for its Zenith, and Equinoctiall for the Horizon.

Now upon this foundation how uncertain ſoever men have erected mighty illations; aſcribing thereto the cauſe of the Needles direction, and conceiving the effluxions from theſe mountains and rocks invite the lilly toward the North; which conceit though countenanced by learned men, is not made out either by experience or reaſon; for no man hath yet attained or given a ſenſible account of the pole by ſome degrees. It is alſo obſerved the Needle doth very much vary as it approacheth the pole; whereas were there ſuch direction from the rocks, upon a nearer approachment it would more directly reſpect them. Beſide, were there ſuch magneticall rocks under the pole, yet being ſo far removed they would produce no ſuch effect; for they that ſaile by the Iſle of Ilua now called Elba in the Thuſcan ſea which abounds in veins of Loadſtone, obſerve no variation or inclination of the Needle; much leſſe may they expect a direction from rocks at the end of the earth. And laſtly, men that aſcribe thus much unto rocks of the North, muſt preſume or diſcover the like magneticals at the South: For in the Southern ſeas and far beyond the Æquator, variations are large, and declinations as conſtant as in the Northern Ocean.

The other relation of Loadſtone mines and rocks, in the ſhore of India is delivered of old by Pliny; wherein ſaith he, they are ſo placed both in abundance and vigor, that it proves an adventure of hazard to paſſe thoſe coaſts in a ſhip with Iron nailes. Serapion the Moor, an Author of good eſteem and reaſonable antiquity, confirmeth the ſame, whoſe expreſſion in the word *magnes* is this. The mine of this ſtone is in the ſea coaſt of India; whereto when Ships approach, there is no Iron in them which flies not like a bird unto theſe mountains; and therefore their Ships are faſtened not with Iron but wood, for otherwiſe they would be torn to peeces. But this aſſertion, how poſitive ſoever, is contradicted by all Navigators that paſſe that way; which are now many and of our own Nation; and might ſurely have been controuled by Nearchus the Admirall of Alexander; who not knowing the compaſſe, was fain to coaſt that ſhore.

(Probably) there be no magneticall Rocks.

For the relation concerning Mahomet, it is generally beleeved his tomb at Medina Talnabi, in Arabia, without any viſible ſupporters hangeth in the ayre between two Loadſtones artificially contrived both above and below. Which conceit is very fabulous, and evidently falſe from the teſtimony of ocular Teſtators; who affirm his tomb is made of ſtone and lyeth upon the ground; as beſides others the learned Voſſius obſerveth from Gabriel

Mahomets tomb of ſtone, and built upon the ground.

Gabriel Sionita, and Joannes Heſronita, two Maronites in their relations hereof. Of ſuch intentions and attempt by Mahometans we read in ſome relators; and that might be the occaſion of the fable, which by tradition of time and diſtance of place enlarged into the ſtory of being accompliſhed. And this hath been promoted by attempts of the like nature; for we reade in Pliny that one Dinocrates began to Arch the Temple of Arſinoe in Alexandria with Loadſtone, that ſo her ſtatue might be ſuſpended in the ayre to the amazement of the beholders. And to lead on our credulity herein, confirmation may be drawn from Hiſtory and Writers of good authority: ſo is it reported by Ruffinus, that in the Temple of Serapis there was an Iron Chariot ſuſpended by Loadſtones in the ayre, which ſtones removed, the Chariot fell and daſhed into pieces. The like doth Beda report of Bellerophons horſe, which framed of Iron, and placed between two Loadſtones with wings expanſed, hung pendulous in the ayre.

The verity of theſe ſtories we ſhall not further diſpute, their poſſibility we may in ſome way determine; if we conceive, what no man will deny, that bodies ſuſpended in the ayre have this ſuſpenſion from one or many Loadſtones placed both above and below it; or elſe by one or many placed only above it. Likewiſe the body to be ſuſpended in reſpect of the Loadſtone above, is either placed firſt at a pendulous diſtance in the medium, or elſe attracted unto that ſite by the vigor of the Loadſtone; and ſo we firſt affirm that poſſible it is a body may be ſuſpended between two Loadſtones; that is, it being ſo equally attracted unto both that it determineth it ſelf unto neither. But ſurely this poſition will be of no duration; for if the ayre be agitated or the body waved either way, it omits the equilibration and diſpoſeth it ſelf unto the neareſt attractor. Again, it is not impoſſible (though hardly feiſible) by a ſingle Loadſtone to ſuſpend an Iron in the ayre, the Iron being artificially placed, and at a diſtance guided toward the ſtone, untill it finde the neutrall point, wherein its gravity juſt equals the magneticall quality; the one exactly extolling as much as the other depreſſeth. And laſtly, impoſſible it is that if an Iron reſt upon the ground, and a Loadſtone be placed over it, it ſhould ever ſo ariſe as to hang in the way or medium; for that vigor which at a diſtance is able to overcome the reſiſtance of its gravity and to lift it up from the earth, will as it approacheth nearer be ſtill more able to attract it; and it will never remain in the middle that could not abide in the extreams: Now the way of *Baptiſta Porta* that by a thred faſteneth a Needle to a table, and then ſo guides and orders the ſame, that by the attraction of the Loadſtone it abideth in the ayre, infringeth not this reaſon; for this is a violent retention; and if the thred be looſened, the Needle aſcends and adheres unto the Attractor.

The third conſideration concerneth Medicall relations; wherein what ever effects are delivered, they are either derived from its minerall and ferreous condition, or elſe magneticall operation. Unto the ferreous and minerall quality pertaineth what Dioſcorides an ancient Writer and Souldier under Anthony and Cleopatra, affirmeth, that half a dram of Loadſtone given with honey and water, proves a purgative medicine, and evacuateth groſſe humors. But this is a quality of great incertainty; for omitting the vehicle of water and honey, which is of a laxative power it ſelf, the powder of ſome Loadſtones in this doſe doth rather conſtipate and binde, then purge and looſen the belly. And if ſometimes it cauſe any laxity, it is probably in the ſame way with Iron and Steel unprepared; which will diſturb ſome bodies, and work by purge and vomit. And therefore, whereas it is delivered in a book aſcribed unto Galen that it is a good medicine in dropſies, and evacuates the

Powder of Loadſtones of what operation.

the waters of persons so affected: It may I confesse by siccity and astriction afford a confirmation unto parts relaxed, and such as be hydropically disposed; and by these qualities it may be usefull in Hernias or Ruptures, and for these it is commended by Ætius, Ægineta and Oribasius; who only affirm that it contains the vertue of Hæmatites, and being burnt was sometimes vended for it. Wherein notwithstanding there is an higher vertue: and in the same prepared, or in rich veins thereof, though crude, we have observed the effects of Chalybeat medicines; and the benefits of Iron and Steel in strong obstructions. And therefore that was probably a different vein of Loadstone, or infected with other minerall mixture, which the ancients commended for a purgative medicine, and ranked the same with the violentest kindes thereof: with Hippophae, Cneoron and Thymelæa, as we finde it in Hippocrates; and might be somewhat doubtfull, whether by the Magnesian stone, he understood the Loadstone; did not Achilles Statius define the same, the stone that loveth Iron. *De morbis internis.*

To this minerall condition belongeth what is delivered by some, that wounds which are made with weapons excited by the Loadstone, contract a malignity, and become of more difficult cure; which nevertheless is not to be found in the incision of Chyrurgions with knives and lancets touched; which leave no such effect behinde them. Hither must we also referre that affirmative which saies the Loadstone is poison; and therefore in the lists of poisons we finde it in many Authors. But this our experience cannot confirm, and the practice of the King of Zeilan clearly contradicteth; who as *Garcias ab Horto*, Physician unto the Spanish Viceroy delivereth, hath all his meat served up in dishes of Loadstone, and conceives thereby he preserveth the vigour of youth.

But surely from a magneticall activity must be made out what is let fall by Ætius, that a Loadstone held in the hand of one that is podagricall, doth either cure or give great ease in the Gout. Or what Marcellus Empericus affirmeth, that as an amulet it also cureth the head-ach; which are but additions unto its proper nature, and hopefull enlargements of its allowed attraction; for perceiving its secret power to draw magneticall bodies, men have invented a new attraction to draw out the dolour and pain of any part. And from such grounds it surely became a philter, and was conceived a medicine of some venereall attraction; and therefore upon this stone they graved the Image of Venus, according unto that of Claudian, *Venerem magnetica gemma figurat.* Hither must we also referre what is delivered concerning its power to draw out of the body bullets and heads of arrows, and for the like intention is mixed up in plaisters: which course although as vain and ineffectuall it be rejected by many good Authors, yet is it not me thinks so readily to be denied, nor the practice of many Physicians which have thus compounded plaisters, thus suddenly to be condemned, as may be observed in the *Emplastrum divinum Nicolai*, the *Emplastrum nigrum* of Augspurge, the Opodeldoch and *Attractivum* of Paracelsus, with severall more in the Dispensatory of Wecker, and practice of Sennertus; the cure also of Hernias, or Ruptures in Pareus, and the method also of curation lately delivered by Daniel Beckherus, and approved by the Professors of Leyden in the Tract *de Cultivoro Prussiaco*, 1636. that is, of a young man of Spruceland that casually swallowed down a knife about ten inches long, which was cut out of his stomach and the wound healed up. In which cure to attract the knife to a convenient situation, there was applied a plaister made up with the powder of Loadstone. Now this kinde of practice Libavius, Gilbertus, and lately Swickardus in his *Ars Magnetica*, condemn, as vain, and altogether unusefull; because a Loadstone in powder hath *The cure of the Prussian knife.*

no attractive power; for in that form it omits his polary respects, and loseth those parts which are the rule of attraction.

Wherein to speak compendiously, if experiment hath not deceived us, we first affirm, that a Loadstone in powder omits not all attraction. For if the powder of a rich vein be in a reasonable quantity presented toward the Needle freely placed, it will not appear to be void of all activity, but will be able to stir it. Nor hath it only a power to move the Needle in powder and by it self, but this will it also doe, if incorporated and mixed with plaisters; as we have made triall in the *Emplastrum de Minio*; with half an ounce of the masse, mixing a dram of Loadstone. For applying the magdaleon or roale unto the Needle it would both stir and attract it; not equally in all parts, but more vigorously in some, according unto the mine of the stone more plentifully dispersed in the masse. And lastly, in the Loadstone powdered, the polary respects are not wholly destroyed. For those diminutive particles are not atomicall or meerly indivisible, but consist of dimensions sufficient for their operations though in obscurer effects. Thus if unto the powder of Loadstone or Iron we admove the North pole of the Loadstone, the powders or small divisions will erect and conform themselves thereto: but if the South pole approach, they will subside, and inverting their bodies respect the Loadstone with the other extream. And this will happen not only in a body of powder together, but in any particle or dust divided from it.

Now though we disavow not these plaisters, yet shall we not omit two cautions in their use; that therein the stone be not too subtilly powdered; for it will better manifest its attraction in a more sensible dimension. That where is desired a speedy effect, it may be considered whether it were not better to relinquish the powdered plaisters, and to apply an entire Loadstone unto the part: And though the other be not wholly ineffectuall, whether this way be not more powerfull, and so might have been in the cure of the young man delivered by Beckerus.

The last consideration, concerneth Magicall relations; in which account we comprehend effects derived and fathered upon hidden qualities, specificall forms, Antipathies and Sympathies, whereof from received grounds of Art, no reasons are derived. Herein relations are strange and numerous; men being apt in all ages to multiply wonders, and Philosophers dealing with admirable bodies as Historians have done with excellent men; upon the strength of their great atchievements, ascribing acts unto them not only false, but impossible; and exceeding truth as much in their relations, as they have others in their actions. Hereof we shall briefly mention some delivered by Authors of good esteem; whereby we may discover the fabulous inventions of some, the credulous supinity of others, and the great disservice unto truth by both; multiplying obscurities in nature, and authorising hidden qualities that are false; whereas wise men are ashamed there are so many true.

And first, Dioscorides puts a shrewd quality upon it, and such as men are apt enough to experiment, and therewith discovers the incontinency of a wife, by placing the Loadstone under her pillow; whereupon she will not be able to remain in bed with her husband. The same he also makes a help unto theevery. For theeves saith he, having a designe upon a house, doe make a fire at the four corners thereof, and cast therein the fragments of Loadstone; whence ariseth a fume that so disturbeth the inhabitants, that they forsake the house and leave it to the spoil of the robbers. This relation how ridiculous soever, hath Albertus taken up above a thousand years after, and Marbodeus the Frenchman hath continued it the same in Latine verse; which with the notes of Pictorius is currant unto our daies. As strange must be the Lithomancy

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and are as boundleſſe as mens inventions; and though honeſt mindes doe glorifie God hereby; yet doe they moſt powerfully magnifie him, and are to be looked on with another eye, who demonſtratively ſet forth its Magnalities; who not from poſtulated or precarious inferences, entreat a courteous aſſent; but from experiments and undeniable effects, enforce the wonder of its Maker.

CHAP. IV.

Of bodies Electricall.

HAving thus ſpoken of the Loadſtone and bodies Magneticall, I ſhall in the next place deliver ſomewhat of Electricall, and ſuch as may ſeem to have attraction like the other; and hereof we ſhall alſo deliver what particularly ſpoken or not generally known is manifeſtly or probably true, what generally beleeved is alſo falſe or dubious. Now by Electricall bodies, I underſtand not ſuch as are Metallicall, mentioned by Pliny, and the Ancients; for their Electrum was a mixture made of gold, with the addition of a fifth part of ſilver; a ſubſtance now as unknown, as true Aurichalcum, or Corinthian braſſe, and ſet down among things loſt by Pancirollus. Nor by Electrick bodies doe I conceive ſuch only as take up ſhavings, ſtrawes, and light bodies, in which number the Ancients only placed Jet and Amber; but ſuch as conveniently placed unto their objects attract all bodies palpable whatſoever. I ſay, conveniently placed, that is, in regard of the object, that it be not too ponderous, or any way affixed; in regard of the Agent, that it be not foul or ſullied, but wiped, rubbed and excitated; in regard of both, that they be conveniently diſtant, and no impediment interpoſed. I ſay, all bodies palpable, thereby excluding fire, which indeed it will not attract, nor yet draw through it; for fire conſumes its effluxions by which it ſhould attract. Bodies Electricall, What.

Now although in this rank but two were commonly mentioned by the Ancients, Gilbertus diſcovereth many more; as Diamonds, Saphyres, Carbuncles, Iris, Opalls, Amethyſtes, Berill, Chryſtall, Briſtoll ſtones, Sulphur, Maſtick, hard Wax, hard Roſin, Arſenic, Sal gemme, roch Alume, common Glaſſe, Stibium, or glaſſe of Antimony. Unto theſe Cabeus addeth white Wax, Gum Elemi, Gum Guaici, Pix Hiſpanica, and Gypſum. And unto theſe we adde gum Anime, Benjamin, Talcum, Chyna diſhes, Sandaraca, Turpentine, Styrax Liquida, and Caranna dried into a hard conſiſtence. And the ſame attraction we finde, not only in ſimple bodies, but ſuch as are much compounded; as the Oxicroceum plaſter, and obſcurely that *ad Herniam*, and *Gratia Dei*, all which ſmooth and rightly prepared, will diſcover a ſufficient power to ſtirre the Needle, ſetled freely upon a well pointed pinne, and ſo as the Electrick may be applied unto it without all diſadvantage.

But the attraction of theſe Electricks we obſerve to be very different. Reſinous or unctuous bodies, and ſuch as will flame, attract moſt vigorouſly, and moſt thereof without frication; as Anime, Benjamin, and moſt powerfully good hard wax, which will convert the Needle almoſt as actively as the Loadſtone; and we beleeve that all or moſt of this ſubſtance if reduced to hardneſſe, tralucency or clearneſſe, would have ſome attractive quality. But juyces concrete, or gums eaſily diſſolving in water, draw not at all, as Aloe, Opium, Sanguis Draconis, Lacca, Galbanum, Sagapenum. Many ſtones alſo both precious and vulgar, although terſe and ſmooth, have not this power attractive;

tractive; as Emeralds, Pearl, Jaſpis, Corneleans, Agathe, Heliotropes, Marble, Alablaſter, Touchſtone, Flint and Bezoar. Glaſſe attracts but weakly, though clear; ſome ſlick-ſtones and thick glaſſes indifferently: Arſenic but weakly; ſo likewiſe glaſſe of Antimony; but Crocus Metallorum not at all. Saltes generally but weakly, as Sal Gemma, Alum and alſo Talke; nor very diſcoverably by any frication: but if gently warmed at the fire, and wiped with a dry cloth, they will better diſcover their Electricities.

No mettall attracts, nor animall concretion we know, although polite and ſmooth; as we have made triall in Elkes hooves, Hawkes talons, the ſword of a Sword fiſh, Tortoyſe ſhels, Sea-horſe and Elephants teeth, in bones, in Harts horn, and what is uſually conceived Unicorns horn; no wood though never ſo hard and poliſhed, although out of ſome Electrick bodies proceed; as Ebony, Box, Lignum vitæ, Cedar, &c. And although Jet and Amber be reckoned among Bitumens, yet neither doe we finde Aſphaltus, that is, Bitumen of Judea, nor Seacole, nor Camphire, nor Mummia to attract; although we have tried in large and poliſhed pieces. Now this attraction have we tried in ſtrawes and paleous bodies, in needles of Iron equilibrated; powders of wood and Iron, in Gold and Silver foliate; and not only in ſolid but fluent and liquid bodies, as oyles made both by expreſſion and diſtillation; in water, in ſpirits of wine, vitrioll and Aqua fortis.

But how this attraction is made is not ſo eaſily determined; that 'tis performed by effluviums is plain and granted by moſt; for Electricks will not commonly attract, except they grow hot or become perſpirable. For if they be foul and obnubilated, it hinders their effluxion; nor if they be covered though but with Linen or Sarſenet, or if a body be interpoſed, for that intercepts the effluvium. If alſo a powerfull and broad Electrick of wax or Anime be held over fine powder, the Atomes or ſmall particles will aſcend moſt numerouſly unto it; and if the Electrick be held unto the light, it may be obſerved that many thereof will fly, and be as it were diſcharged from the Electrick to the diſtance ſometime of two or three inches; which motion is performed by the breath of the effluvium iſſuing with agility; for as the Electrick cooleth, the projection of the Atomes ceaſeth.

Cabeus his way for attraction in bodies Electrick.

The manner hereof Cabeus wittily attempteth, affirming that this effluvium attenuateth and impelleth the neighbour ayre, which returning home in a gyration, carrieth with it the obvious bodies unto the Electrick. And this he labours to confirm by experiments; for if the ſtrawes be raiſed by a vigorous Electrick, they doe appear to wave and turn in their aſcents. If likewiſe the Electrick be broad and the ſtrawes light and chaffy, and held at a reaſonable diſtance, they will not ariſe unto the middle, but rather adhere toward the verge or borders thereof. And laſtly, if many ſtrawes be laid together, and a nimble Electrick approach, they will not all ariſe unto it, but ſome will commonly ſtart aſide and be whirled a reaſonable diſtance from it. Now that the ayre impelled returns unto its place in a giration or whirling, is evident from the Atomes or Moats in the Sun. For when the Sun ſo enters a hole or window, that by its illumination the Atomes or Moats become perceptible, if then by our breath the ayre be gently impelled, it may be perceived that they will circularly return and in a giration unto their places again.

The way of Sir Kenelme Digby.

Another way of their attraction is alſo delivered; that is, by a tenuous emanation or continued effluvium, which after ſome diſtance rerracteth into it ſelf; as is obſervable in drops of ſyrups, oyle and ſeminall viſcoſities, which ſpun at length retire into their former dimenſions. Now theſe effluviums

viums advancing from the body of the Electrick, in their return doe carry back the bodies whereon they have laid hold within the ſphear or circle of their continuities; and theſe they doe not only attract, but with their viſcous armes hold faſt a good while after. And if any ſhall wonder why theſe effluviums iſſuing forth impell and protrude not the ſtraw before they can bring it back, it is becauſe the effluvium paſſing out in a ſmaller thred and more enlengthened filament, it ſtirreth not the bodies interpoſed, but returning unto its originall it falls into a cloſer ſubſtance, and carrieth them back unto it ſelf. And this way of attraction is beſt received, embraced by Sir Kenelme Digby in his excellent Treaty of bodies, allowed by *Des Cartes* in his principles of Philoſophy, as farre as concerneth fat and reſinous bodies, and with exception of glaſſe, whoſe attraction he alſo deriveth from the receſſe of its effluxion. And this in ſome manner the words of Gilbertus will bear. *Effluvia illa tenuiora concipiunt & amplectuntur corpora, quibus uniuntur, & Electris tanquam extenſis brachiis, & ad fontem propinquitate invaleſcentibus effluviis, deducuntur.* And if the ground were true that the earth were an Electrick body, and the ayre but the effluvium thereof; we might perhaps beleeve that from this attraction and by this effluxion bodies tended to the earth, and could not remain above it.

Our other diſcourſe of Electricks concerneth a generall opinion touching Jet and Amber, that they attract all light bodies, except Ocymum or Baſil, and ſuch as be dipped in oyle or oyled; and this is urged as high as Theophraſtus: but Scaliger acquitteth him; And had this been his aſſertion, Pliny would probably have taken it up, who herein ſtands out, and delivereth no more but what is vulgarly known. But Plutarch ſpeaks poſitively in his Sympoſiacks, that Amber attracteth all bodies, excepting Baſil and oyled ſubſtances. With Plutarch conſent many Authors both ancient and modern; but the moſt inexcuſable are Lemnius and Rueus, whereof the one delivering the nature of minerals mentioned in Scripture the infallible fountain of truth, confirmeth their vertues with erroneous traditions; the other undertaking the occult and hidden miracles of Nature, accepteth this for one; and endeavoureth to alledge a reaſon of that which is more then occult, that is, not exiſtent.

Now herein, omitting the authority of others, as the doctrine of experiment hath informed us, we firſt affirm, That Amber attracts not Baſil, is wholly repugnant unto truth. For if the leaves thereof or dried ſtalks be ſtripped into ſmall ſtrawes, they ariſe unto Amber, Wax, and other Electries, no otherwiſe then thoſe of Wheat or Rye; nor is there any peculiar fatneſſe or ſingular viſcoſity in that plant that might cauſe adheſion and ſo prevent its aſcenſion. But that Jet and Amber attract not ſtrawes oyled, is in part true and falſe. For if the ſtrawes be much wet or drenched in oyle, true it is that Amber draweth them not; for then the oyle makes the ſtraw to adhere unto the part whereon they are placed, ſo that they cannot riſe unto the Attractor; and this is true not only if they be ſoaked in oyle, but ſpirits of wine or water. But if we ſpeak of ſtrawes or feſtuceous diviſions lightly drawn over with oyle, and ſo that it cauſeth no adheſion, or if we conceive an antipathy between oyle and Amber, the doctrine is not true. For Amber will attract ſtrawes thus oyled; it will convert the Needles of Dials made either of Braſſe or Iron, although they be much oyled; for in theſe Needles conſiſting free upon their center there can be no adheſion. It will likewiſe attract oyle it ſelf, and if it approacheth unto a drop thereof, it becometh conicall and ariſeth up unto it; for oyle taketh not away his attraction, although it be rubbed over it. For if you touch a piece of wax already excitated,

citated, with common oyle, it will notwithſtanding attract, though not ſo vigorouſly as before. But if you moiſten the ſame with any chymicall oyle, water or ſpirits of wine, or only breathe upon it, it quite omits its attraction; for either its effluencies cannot get through, or will not mingle with thoſe ſubſtances.

It is likewiſe probable the Ancients were miſtaken concerning its ſubſtance and generation; they conceiving it a vegetable concretion made of the gums of trees, eſpecially, Pine and Poplar falling into the water, and after indurated or hardened; whereunto accordeth the fable of Phaetons ſiſters: but ſurely the concretion is minerall, according as is delivered by Eœtius. For either it is found in mountains and mediterraneous parts; and ſo it is a fat and unctuous ſublimation in the earth, concreted and fixed by ſalt and nitrous ſpirits wherwith it meeteth. Or elſe, which is moſt uſuall, it is collected upon the ſea ſhore; and ſo it is a fat and bituminous juice coagulated by the ſaltneſſe of the ſea. Now that ſalt ſpirits have a power to congele and coagulate unctuous bodies, is evident in chymicall operations; in the diſtillations of Arſenick, ſublimate and Antinomy; in the mixture of oyl of Juniper, with the ſalt and acide ſpirit of Sulphur; for thereupon enſueth a concretion unto the conſiſtence of Birdlime; as alſo in ſpirits of ſalt, or *Aqua fortis* powred upon oyle of Olive, or more plainly in the manufacture of Sope. And many bodies will coagulate upon commixture whoſe ſeparated natures promiſe no concretion. Thus upon a ſolution of Tinne by *Aqua fortis*, there will enſue a coagulation, like that of whites of eggs. Thus the volatile ſalt of urine will coagulate *Aqua vitæ*, or ſpirits of wine; and thus perhaps (as Helmont excellently declareth) the ſtones or calculous concretions in Kidney or Bladder may be produced: the ſpirits or volatile ſalt of urine conjoining with the *Aqua vitæ* potentially lying therein; as he illuſtrateth from the diſtillation of fermented urine. From whence ariſeth an *Aqua vitæ* or ſpirit, which the volatile ſalt of the ſame urine will congele; and finding an earthly concurrence, ſtrike into a lapideous ſubſtance.

How the ſtone is bred in the kidney or bladder.

Laſtly, We will not omit what Bellabonus upon his own experiment writ from Dantzich unto Mellichius, as he hath left recorded in his Chapter *De ſuccino*, that the bodies of Flies, Piſmires and the like, which are ſaid oft times to be included in Amber, are not reall but repreſentative, as he diſcovered in ſeverall pieces broke for that purpoſe. If ſo, the two famous Epigrams hereof in Martiall are but poeticall, the Piſmire of Braſſavolus Imaginary, and Cardans Mouſoleum for a flie, a meer phancy. But hereunto we know not how to aſſent, as having met with ſome whoſe reals made good their repreſentments.

Of a Bee and a Viper involved in Amber. Mart. lib. 4.

Chap. V.

Compendiouſly of ſundry other common Tenents, concerning Minerall and Terreous bodies, which examined, prove either falſe or dubious.

1. And firſt we hear it in every mouth, and in many good Authors reade it, That a Diamond, which is the hardeſt of ſtones, not yeelding unto Steele, Emery, or any thing, but its own powder, is yet made ſoft, or broke by the bloud of a Goat. Thus much is affirmed by Pliny, Solinus, Albertus, Cyprian, Auſtin, Iſidore, and many Chriſtian Writers; alluding herein unto the heart of man, and the precious bloud of our Saviour; who was typified indeed by the Goat that was ſlain, and the ſcape Goat in the wilderneſſe; and

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at the effusion of whose bloud, not only the hard hearts of his enemies relented, but the stony rocks and vail of the Temple were shattered. But this I perceive is easier affirmed then proved. For Lapidaries, and such as professe the art of cutting this stone, doe generally deny it; and they that seem to countenance it, have in their deliveries so qualified it, that little from thence of moment can be inferred from it. For first, the holy Fathers, without a further enquiry did take it for granted, and rested upon the authority of the first deliverers. As for Albertus, he promiseth this effect, but conditionally, not except the Goat drink wine, and be fed with *Siler montanum, petroselinum,* and such herbs as are conceived of power to break the stone in the bladder. But the words of Pliny from whom most likely the rest at first derived it, if strictly considered, doe rather overthrow, then any way advantage this effect. His words are these: *Hercino rumpitur sanguine, nec aliter quam recenti, calidoque macerata, & sic quoque multis ictibus, tunc etiam praterquam eximias incudes malleosque ferreos frangens.* That is, it is broken with Goats bloud, but not except it be fresh and warm, and that not without many blowes; and then also it will break the best Anvills and hammers of Iron. And answerable hereto, is the assertion of Isidore and Solinus. By which account, a Diamond steeped in Goats bloud, rather increaseth in hardnesse, then acquireth any softnesse by the infusion; for the best we have are comminuible without it; and are so far from breaking hammers, that they submit unto pistillation, and resist not an ordinary pestle.

Upon this conceit arose perhaps the discovery of another; that the bloud of a Goat, was sovereigne for the Stone, as it stands commended by many good Writers, and brings up the composition in the powder of Nicolaus, and the Electuary of the Queen of Colein: or rather because it was found an excellent medicine for the Stone, and its ability commended by some to dissolve the hardest thereof; it might be conceived by amplifying apprehensions, to be able to break a Diamond; and so it came to be ordered that the Goat should be fed with saxifragous herbs, and such as are conceived of power to break the stone. However it were as the effect is false in the one, so is it surely very doubtfull in the other. For although inwardly received it may be very diuretick, and expulse the stone in the kidnyes; yet how it should dissolve or break that in the bladder, will require a further dispute; and perhaps would be more reasonably tried by a warm injection thereof, then as it is commonly used. Wherein notwithstanding, we should rather rely upon the urine in a Castlings bladder; a resolution of Crabs eyes; or the second distillation of urine, as Helmont hath commended; or rather (if any such might be found) a Chilifactory menstruum or digestive preparation drawn from species or individualls, whose stomacks peculiarly dissolve lapideous bodies.

Palois Lithontripticus.

2. *That Glasse is poison,* according unto common conceit, I know not how to grant. Not only from the innocency of its ingredients, that is, fine sand, and the ashes of glasse-wort of fearn, which in themselves are harmlesse and usefull: or because I finde it by many commended for the Stone; but also from experience, as having given unto doggs above a dram thereof, subtilly powdered in butter or paste, without any visible disturbance.

The conceit is surely grounded upon the visible mischief of Glasse grossely or coursly powdered; for that indeed is mortally noxious, and effectually used by some to destroy Mice and Rats; for by reason of its acuteneesse and angularity, it commonly excoriates the parts through which it passeth, and sollicits them unto a continuall expulsion. Whereupon there ensues fearfull symptomes, not much unlike those which attend the action of poison. From

Why Glasse is commonly held to be poysonous.

whence notwithſtanding, we cannot with propriety impoſe upon it that name, either by occult or elementary quality; which he that concedeth will much enlarge the catalogue or liſts of poiſons. For many things, neither deleterious by ſubſtance or quality, are yet deſtructive by figure, or ſome occaſionall activity. So are Leeches deſtructive, and by ſome accounted poiſon; not properly, that is by temperamentall contrariety, occult form, or ſo much as elementall repugnancy; but becauſe being inwardly taken they faſten upon the veins, and occaſion an effuſion of bloud, which cannot be eaſily ſtanched. So a ſponge is miſchievous; not in it ſelf, for in its powder it is harmleſſe; but becauſe being received into the ſtomack it ſwelleth, and occaſioning a continuall diſtenſion, induceth a ſtrangulation. So pins, needles, ears of Rye or Barley, may be poiſon, So Daniel deſtroyed the Dragon by a compoſition of three things, whereof neither was poiſon alone, nor properly all together, that is, pitch, fat and hair; according as is expreſſed in the hiſtory. Then Daniel took pitch, and fat, and hair, and did ſeeth them together and made lumps thereof; theſe he put in the Dragons mouth, and ſo he burſt aſunder. That is, the fat and pitch being cleaving bodies, and the hair continually extimulating the parts, by the action of the one, nature was provoked to expell, but by the tenacity of the other forced to retain: ſo that there being left no paſſage in or out, the Dragon brake in peeces. It muſt therefore be taken of groſſely-powdered glaſſe what is delivered by Grevinus; and from the ſame muſt that mortall dyſentery proceed which is related by Sanctorius. And in the ſame ſenſe ſhall we only allow a Diamond to be poiſon; and whereby as ſome relate Paracelſus himſelf was poiſoned. And ſo even the precious fragments and cordiall gems which are of frequent uſe in Phyſick, and in themſelves confeſſed of uſefull faculties; received in groſſe and angular powders, may ſo offend the bowels, as to procure deſperate languors, or cauſe moſt dangerous fluxes.

That Glaſſe may be rendred malleable, and pliable unto the hammer, many conceive, and ſome make little doubt; when they reade in Dio, Pliny and Petronius, that one unhappily effected it for Tiberius. Which notwithſtanding muſt needs ſeem ſtrange, unto ſuch as conſider, that bodies are ductile from a tenacious humidity, which holdeth the parts together; that though they dilate or extend, they part not from each other. That bodies runne into glaſſe, when the volatile parts are exhaled, and the continuating humour ſeparated: the ſalt and earth, that is, the fixed parts remaining. And therefore vitrification maketh bodies brittle; as deſtroying the viſcous humours which hinder the diſruption of parts. Which may be verified even in the bodies of Mettalls. For glaſſe of Lead or Tinne is fragile, when that glutinous ſulphur hath been fired out, which made their bodies ductile.

He that would moſt probably attempt it, muſt experiment upon gold. Whoſe fixed and flying parts are ſo conjoined, whoſe ſulphur and continuating principle is ſo united unto the ſalt, that ſome may be hoped to remain to hinder fragility after vitrification. But how to proceed, though after frequent corroſion, as that upon the agency of fire, it ſhould not revive into its proper body, before it comes to vitrifie, will prove no eaſie diſcovery.

3 That Gold inwardly taken, either in ſubſtance, infuſion, decoction or extinction, is a cordiall of great efficacy, in ſundry medicall uſes, although a practice much uſed, is alſo much queſtioned, and by no man determined beyond diſpute. There are hereof I perceive two extream opinions; ſome exceſſively magnifying it, and probably beyond its deſerts; others extreamly vilifying it, and perhaps below its demerits. Some affirming it a powerfull medicine in many diſeaſes, others averring that ſo uſed it is effectuall in none;

and

and in this number are very eminent Phyſicians; Eraſtus, Duretus, Rondeletius, Braſſavolus and many other; who beſide the ſtrigments and ſudorous adheſions from mens hands, acknowledge that nothing proceedeth from gold in the uſuall decoction thereof. Now the capitall reaſon that led men unto this opinion was their obſervation of the inſeparable nature of gold; it being excluded in the ſame quantity as it was received, without alteration of parts, or diminution of its gravity.

Now herein to deliver ſomewhat which in a middle way may be entertained; we firſt affirm, that the ſubſtance of gold is invincible by the powerfulleſt action of naturall heat; and that not only alimentally in a ſubſtantiall mutation, but alſo medicamentally in any corporeall converſion; as is very evident, not only in the ſwallowing of golden bullets, but in the leſſer and foliate diviſions thereof, paſſing the ſtomack and guts even as it doth the throat, that is, without abatement of weight or conſiſtence; ſo that it entereth not the veins with thoſe electuaries, wherein it is mixed; but taketh leave of the permeant parts, at the mouthes of the meſeraicks, and accompanieth the inconvertible portion unto the ſiege. Nor is it ſubſtantiall converſion expectible in any compoſition or aliment wherein it is taken. And therefore that was truly a ſtarving abſurdity, which befell the wiſhes of Midas. And little credit there is to be given to the golden Hen, related by Wendlerus. So in the extinction of gold, we muſt not conceive it parteth with any of its ſalt or diſſoluble principle thereby, as we may affirm of Iron; for the parts thereof are fixed beyond diviſion; nor will they ſeparate upon the ſtrongeſt teſt of fire. This we affirm of pure gold; for that which is currant and paſſeth in ſtamp amongſt us, by reaſon of its allay, which is a proportion of ſilver or copper mixed therewith; is actually dequantitated by fire, and poſſibly by frequent extinction.

Secondly, Although the ſubſtance of gold be not ſenſibly immuted or its gravity at all decreaſed, yet that from thence ſome vertue may proceed either in ſubſtantiall reception or infuſion, we cannot ſafely deny. For poſſible it is that bodies may emit vertue and operation without abatement of weight; as is moſt evident in the Loadſtone, whoſe effluencies are continuall, and communicable without a minoration of gravity. And the like is obſervable in bodies electricall, whoſe emiſſions are leſſe ſubtile. So will a Diamond or Saphire emit an effluvium ſufficient to move the needle or a ſtraw, without diminution of weight. Nor will poliſhed Amber although it ſend forth a groſſe and corporall exhalement, be found a long time defective upon the exacteſt ſcales. Which is more eaſily conceiveable in a continued and tenacious effluvium, whereof a great part retreats into its body.

Thirdly, If amulets doe work by emanations from their bodies, upon thoſe parts whereunto they are appended, and are not yet obſerved to abate their weight; if they produce viſible and reall effects by imponderous and inviſible emiſſions; it may be unjuſt to deny all efficacy of gold, in the non-omiſſion of weight, or deperdition of any ponderous particles.

Laſtly, Since Stibium or glaſſe of Antimony, ſince alſo its Regulus will manifeſtly communicate unto water or wine, a purging and vomatory operation; and yet the body it ſelf, though after iterated infuſions, cannot be found to abate either vertue or weight; I dare not deny but gold may doe the like; that is, impart ſome effluences unto the infuſion, which carry with them the ſeparable ſubtilties thereof.

That therefore this mettall thus received, hath any undeniable effect, we ſhall not imperiouſly determine; although beſide the former experiments, many more may induce us to beleeve it. But ſince the point is dubious, and

not yet authentically decided, it will be no diſcretion to depend on diſputable remedies; but rather in caſes of known danger, to have recourſe unto medicines of known and approved activity. For, beſide the benefit accruing unto the ſick, hereby may be avoided a groſſe and frequent error, commonly committed in the uſe of doubtfull remedies, conjointly with thoſe which are of approved vertues; That is, to impute the cure unto the conceited remedy, or place it on that whereon they place their opinion. Whoſe operation although it be nothing, or its concurrence not conſiderable; yet doth it obtain the name of the whole cure; and carrieth often the honour of the capitall energie, which had no finger in it.

Herein exact and criticall triall ſhould be made by publike enjoinment; whereby determination might be ſetled beyond debate: for ſince thereby, not only the bodies of men, but great Treaſures might be preſerved, it is not only an error of Phyſick, but folly of State, to doubt thereof any longer.

4. That a pot full of aſhes, will ſtill contain as much water as it would without them, although by Ariſtotle in his problems taken for granted, and ſo received by moſt, is not effectible upon the ſtricteſt experiment I could ever make. For when the aiery interſticies are filled, and as much of the ſalt of the aſhes as the water will imbibe is diſſolved; there remains a groſſe and terreous portion at the bottome; which will poſſeſſe a ſpace by it ſelf; according whereto there will remain a quantity of water not receivable; ſo will it come to paſſe in a pot of ſalt, although decrepitated; and ſo alſo in a pot of ſnow. For ſo much it will want in reception, as its ſolution taketh up; according unto the bulk whereof, there will remain a portion of water not to be admitted. So a glaſſe ſtuffed with pieces of ſponge, will want about a ſixt part of what it would receive without it. So Sugar will not diſſolve beyond the capacity of the water; nor a mettall in *Aqua fortis* be corroded beyond its reception. And ſo a pint of ſalt of tartar expoſed unto a moiſt aire untill it diſſolve, will make far more liquor, or as ſome term it oyle, then the former meaſure will contain.

Nor is it only the excluſion of ayre by water, or repletion of cavities poſſeſſed thereby, which cauſeth a pot of aſhes to admit ſo great a quantity of water, but alſo the ſolution of the ſalt of the aſhes into the body of the diſſolvent. So a pot of aſhes will receive ſomewhat more of hot water then of cold; for as much as the warm water imbibeth more of the ſalt; and a veſſell of aſhes more then one of pinduſt or filings of Iron; and a glaſſe full of water, will yet drink in a proportion of ſalt or ſugar without overflowing.

Nevertheleſſe to make the experiment with moſt advantage, and in which ſenſe it approacheth neareſt the truth, it muſt be made in aſhes throughly burnt, and well reverberated by fire, after the ſalt thereof hath been drawn out by iterated decoctions. For then the body being reduced nearer unto earth, and emptied of all other principles, which had former ingreſſion unto it, becometh more porous, and greedily drinketh in water. He that hath beheld what quantity of lead the teſt of ſaltleſſe aſhes will imbibe, upon the refining of Silver; hath encouragement to think it will doe very much more in water.

The ingredients of Gun powder.

5. Of white powder and ſuch as is diſcharged without report, there is no ſmall noiſe in the world: but how far agreeable unto truth, few I perceive are able to determine. Herein therefore to ſatisfie the doubts of ſome, and amuſe the credulity of others, We firſt declare; that Gunpowder conſiſteth of three ingredients, Salt-peter, Smal-coal, and Brimſtone. Salt-peter, although it be alſo naturall and found in ſeverall places, yet is that of common uſe an artificiall

artificiall Salt, drawn from the infusion of salt earth, as that of Stales, Stables, Dovehouses, Cellers, and other covered places, where the rain can neither dissolve, nor the Sunne approach to resolve it. Brimstone is a Minerall body of fat and inflamable parts, and this is either used crude, and called sulphur vive, and is of a sadder colour; or after depuration, such as we have in magdeleons or rols of a lighter yellow. Smal-coal is known unto all, and for this use is made of Sallow, Willow, Alder, Hasell, and the like; which three proportionably mixed, tempered, and formed into granulary bodies, doe make up that powder which is in use for Guns.

Now all these although they bear a share in the discharge, yet have they distinct intentions, and different offices in the composition. From brimstone proceedeth the piercing and powerfull firing; for Small-coal and peter together will only spit, nor vigorously continue the ignition. From Small-coal ensueth the black colour and quick accension; for neither brimstone nor peter, although in powder, will take fire like Small-coal; nor will they easily kindle upon the sparks of a flint; as neither will Camphire, a body very inflamable; but Small-coal is equivolent to tinder, and serveth to light the sulphur. It may also serve to diffuse the ignition through every part of the mixture; and being of more grosse and fixed parts, may seem to moderate the activity of Salt-peter, and prevent too hasty rarefaction. From Salt-peter proceedeth the force and the report; for sulphur and small-coal mixed will not take fire with noise, or exilition; and powder which is made of impure and greasie peter, hath but a weak emission, and giveth a faint report; and therefore in the three sorts of powder, the strongest containeth most Salt-peter, and the proportion thereof is about ten parts of peter, unto one of coal and sulphur.

But the immediate cause of the report, is the vehement commotion of the ayre upon the sudden and violent eruption of the powder; for that being suddenly fired, and almost altogether; upon this high rarefaction, requireth by many degrees a greater space then before its body occupied; but finding resistance, it actively forceth out his way, and by concussion of the aire, occasioneth the report. Now with what violence it forceth upon the aire, may easily be conceived, if we admit what Cardan affirmeth, that the powder fired doth occupy a hundred times a greater space then its own bulk; or rather what Snellius more exactly accounteth; that it exceedeth its former space no lesse then 12000. and 500. times. And this is the reason not only of this fulminating report of Guns, but may resolve the cause of those terrible cracks, and affrighting noises of heaven; that is, the nitrous and sulphureous exhalations, set on fire in the clouds; whereupon requiring a larger place, they force out their way, not only with the breaking of the cloud, but the laceration of the ayre about it. When if the matter be spirituous, and the cloud compact, the noise is great and terrible: If the cloud be thin, and the materials weak, the eruption is languid, ending in coruscations and flashes without noise, although but at the distance of two miles; which is esteemed the remotest distance of clouds. And therefore such lightnings doe seldome any harm. And therefore also it is prodigious to have thunder in a clear skye, as is observably recorded in some Histories.

The cause of Thunder.

The greatest distance of the Clouds.

From the like cause may also proceed subteraneous thunders and earthquakes; when sulphureous and nitrous veins being fired, upon rarefaction doe force their way through bodies that resist them. Where if the kindled matter be plentifull, and the mine close and firm about it, subversion of hils and Towns doth sometimes follow: If scanty, weak, and the earth hollow or porous; there only ensueth some faint concussion or tremulous

The cause of Earthquakes.

and quaking motion. Surely a main reaſon why the ancients were ſo imperfect in the doctrine of meteors was their ignorance of Gun-powder and fire works which beſt diſcover the cauſes of many thereof.

Now therefore, he that would deſtroy the report of powder, muſt work upon the peter; he that would exchange the colour, muſt think how to alter the Small-coal. For the one, that is, to make white powder; it is ſurely many waies feaſible: The beſt I know is by the powder of rotten Willowes; ſpunk, or touchwood prepared, might perhaps make it ruſſet: and ſome as Beringuccio affirmeth, have promiſed to make it red. All which notwithſtanding doth little concern the report; for that as we have ſhewed depends on another ingredient. And therefore alſo under the colour of black, this principle is very variable; for it is made not only by Willow, Aller, Hazell, *&c.* But ſome above all commend the coales of Flax and Ruſhes; and ſome alſo contend the ſame may be effected with Tinder.

In his Pyrotechnia.

As for the other, that is, to deſtroy the Report, it is reaſonably attempted but two waies; either by quite leaving out, or elſe by ſilencing the Salt-peter. How to abate the vigour thereof, or ſilence its bombulation, a way is promiſed by Porta, not only in generall termes by ſome fat bodies, but in particular by Borax and butter mixed in a due proportion; which ſaith he, will ſo go off as ſcarce to be heard by the diſcharger; and indeed plentifully mixed, it will almoſt take off the report, and alſo the force of the charge. That it may be thus made without Salt-peter, I have met with but one example, that is, of Alphonſus Duke of Ferrara; who in the relation of Braſſavolus and Cardan, invented ſuch a powder, as would diſcharged a bullet without report.

De examine Salium.

That therefore white powder there may be, there is therein no abſurdity; that alſo ſuch a one as may give no report, we will not deny a poſſibility. But this however, contrived either with or without Salt-peter, will ſurely be of little force, and the effects thereof no way to be feared: For as it omits of report, ſo will it of effectuall excluſion. For ſeeing the ſtrength and report, do neceſſarily depend upon the violent excluſion, where there is no report there will be no violent excluſion; and ſo the charge of no force which is excluded, For thus much is reported of that famous powder of Alphonſus, which was not of force enough to kill a chicken, according to the delivery of Braſſavolus. *Iamq; pulvis inventus eſt qui glandem ſine bombo projicit, nec tamen vehementer ut vel pullum interficere poſſit.*

It is not to be denied, there are waies to diſcharge a bullet, not only with powder that makes no noiſe, but without any powder at all; as is done by water and windegunnes; but theſe afford no fulminating report, and depend on ſingle principles; and even in ordinary powder there are pretended other waies, to alter the noiſe and ſtrength of the diſcharge; and the beſt, if not only way conſiſts in the quality of the Nitre: for as for other waies which make either additions or alterations in the powder, or charge, I finde therein no effect. That unto every pound of ſulphur, an adjection of one ounce of Quickſilver, or unto every pound of peter, one ounce of Sal Armoniac will much intend the force, and conſequently the report, as Beringuccio hath delivered, I finde no verity therein. That a piece of Opium will dead the force, and blow, as ſome have promiſed, I finde herein no ſuch peculiarity, no more then in any gumme or viſcoſe body: and as much effect there is to be found from Scammony. That a bullet dipped in oyle by preventing the tranſpiration of ayre, will carry farther, and pierce deeper, as Porta affirmeth, my experience cannot diſcern. That Quickſilver is more deſtructive then

then ſhot, is ſurely not to be made out; for it will ſcarce make any penetration, and diſcharged from a Piſtoll, will hardly pierce thorow a parchment. That vineger, ſpirits of wine, or the diſtilled water of Orange pilles, wherewith the powder is tempered, are more effectuall unto the report then common water, as ſome doe promiſe, I ſhall not affirm; but may aſſuredly more conduce unto the preſervation and durance of the powder, as Cataneo hath well obſerved. *Cat. avertimenti intorno a un Bombardiero.*

That the heads of arrows and bullets have been diſcharged with that force, as to melt or grow red hot in their flight, though commonly received, and taken up by Ariſtotle in his meteors, is not ſo eaſily allowable by any, who ſhall conſider; that an arrow or bullet diſcharged againſt linen or paper doe not ſet them on fire, and hardly apprehend how an Iron ſhould grow red hot, ſince the ſwifteſt motion at hand will not keep one red that hath been made red by fire; as may be obſerved in ſwinging a red hot Iron about, or faſtening it into a wheel; which under that motion will ſooner grow cold then without it. That a bullet alſo mounts upward upon the horizontall or point blank diſcharge, many Artiſts doe not allow: who contend that it deſcribeth a parabolicall and bowing line, by reaſon of its naturall gravity inclining it alwaies downward.

But, beſide the prevalence from Salt-peter, as Maſter-ingredient in the mixture; Sulphur may hold a greater uſe in the compoſition and further activity in the excluſion, then is by moſt conceived. For Sulphur vive makes better powder then common Sulphur, which nevertheleſſe is of a quick accenſion. For Small-coale, Salt-peter and Camphire made into powder will be of little force, wherein notwithſtanding there wants not the accending ingredient. And Camphire though it flame well, yet will not fluſh ſo lively, or defecate Salt-peter, if you inject it thereon, like Sulphur, as in the preparation of *Sal prunellæ*. And laſtly, though many waies may be found to light this powder, yet is there none I know to make a ſtrong and vigorous powder of Salt-peter; without the admixtion of Sulphur. Arſenick red and yellow, that is Orpement and Sandarach may perhaps doe ſomething, as being inflamable and containing Sulphur in them; but containing alſo a ſalt, and mercuriall mixtion, they will be of little effect; and white or Cryſtalline arſenick of leſſe; for that being artificiall, and ſublimed with ſalt, will not endure flamation.

This antipathy or contention between Salt-peter and Sulphur upon an actuall fire, in their compleat and diſtinct bodies, is alſo manifeſted in their preparations, and bodies which inviſibly contain them. Thus is the preparation of Crocus Metallorum; the matter kindleth and fluſheth like Gunpowder; wherein notwithſtanding, there is nothing but Antimony and Salt-peter. But this proceedeth from the Sulphur of Antimony, not enduring the ſociety of Salt-peter; for after three or four accenſions, through a freſh addition of peter, the powder will fluſh no more; for the Sulphur of the Antimony is quite exhaled. Thus Iron in *Aqua fortis* will fall into ebullition, with noiſe and emication, as alſo a craſſe and fumid exhalation; which are cauſed from this combat of the Sulphur of Iron, with the acide and nitrous ſpirits of *Aqua fortis*. So is it alſo in *Aurum fulminans*, or powder of gold diſſolved in *Aqua Regis*, and precipitated with oyle of Tartar, which will kindle without an actuall fire, and afford a report like Gun-powder; that is, not as Crollius affirmeth from any Antipathy between *Sal Armoniac* and Tartar, but rather between the nitrous ſpirits of *Aqua Regis*, commixed *per minima* with the Sulphur of Gold, as Sennertus hath well obſerved. *De conſenſu Chymicorum, &c.*

6. That

6. That Corall (which is a Lithophyton or ſtone plant, and groweth at the bottome of the Sea) is ſoft under water, but waxeth hard in the ayre, although the aſſertion of Dioſcorides, Pliny, and conſequently Solinus, Iſidore, Rueus, and many others, and ſtands beleeved by moſt, we have ſome reaſon to doubt; not only from ſo ſudden a petrifaction and ſtrange induration, not eaſily made out from the qualities of ayre; but becauſe we finde it rejected by experimentall enquiries. Johannes Beguinus in his Chapter of the tincture of Corall, undertakes to clear the world of this error, from the expreſſe experiment of *John Baptiſta de Nicole*, who was Overſeer of the gathering of Corall upon the Kingdome of Thunis. This Gentleman, ſaith he, deſirous to finde the nature of Corall, and to be reſolved how it groweth at the bottome of the Sea; cauſed a man to go down no leſſe then a hundred fathom into the Sea, with expreſſe to take notice whether it were hard or ſoft in the place where it groweth; who returning brought in each hand a branch of Corall, affirming it was as hard at the bottome, as in the ayre where he delivered it. The ſame was alſo confirmed by a triall of his own, handling it a fathome under water before it felt the ayre. *Boetius* in his accurate Tract *De Gemmis*, is of the ſame opinion; not aſcribing its concretion unto the ayre, but the coagulating ſpirits of ſalt, and lapidificall juyce of the Sea, which entring the parts of that plant, overcomes its vegetability, and converts it into a lapideous ſubſtance. And this, ſaith he, doth happen when the plant is ready to decay; for all Corall is not hard, and in many concreted plants ſome parts remain unpetrified, that is, the quick and livelier parts remain as wood, and were never yet converted. Now that plants and ligneous bodies may indurate under water without approachment of ayre, we have experiment in Coralline, with many Coralloidall concretions; and that little ſtony plant which Mr Johnſon nameth, *Hippuris coralloides*, and *Geſner foliis manſu Arenoſis*, we have found in freſh water; which is the leſſe concretive portion of that element. We have alſo with us the viſible petrification of wood in many waters; whereof ſo much as is covered with water converteth into ſtone; as much as is above it and in the ayre, retaineth the form of wood, and continueth as before.

In the French Copy.

How Corall of a plant becomes a ſtone.

7. We are not throughly reſolved concerning Porcellane or China diſhes, that according to common belief they are made of earth, which lieth in preparation abount an hundred years under ground; for the relations thereof are not only divers, but contrary; and Authors agree not herein. Guido Pancirollus will have them made of Egge ſhels, Lobſter ſhells, and Gypſum laid up in the earth the ſpace of 80. years: of the ſame affirmation is Scaliger, and the common opinion of moſt. Ramuzius in his Navigations is of a contrary aſſertion; that they are made out of earth, not laid under ground, but hardened in the Sun and winde, the ſpace of fourty years. But Gonzales *de Mendoza*, a man employed into Chyna, and with an honourable preſent, ſent from Philip the ſecond King of Spain, hath upon ocular experience, delivered a way different from all theſe. For enquiring into the artifice thereof, he found they were made of a Chalky earth; which beaten and ſteeped in water, affordeth a cream or fatneſſe on the top, and a groſſe ſubſidence at the bottome; out of the cream or ſuperfluitance, the fineſt diſhes, ſaith he, are made; out of the reſidence thereof the courſer; which being formed, they gild or paint, and not after an hundred years, but preſently commit unto the furnace. This, ſaith he, is known by experience, and more probable then what Odoardus Barboſa hath delivered; that they are made of ſhels, and buried under earth a hundred years. And anſwerable in all points hereto, is the relation of Linſchotten, a diligent enquirer, in his Orientall Navigations. Later confirmation

Of what matter the China diſhes be made.

firmation may be had from Alvarez the Jeſuit, who lived long in thoſe parts, in his relations of China. That Porcellane veſſels were made but in one Town of the Province of Chiamſi: That the earth was brought out of other Provinces, but for the advantage of water, which makes them more polite and perſpicuous, they were only made in this. That they were wrought and faſhioned like thoſe of other countries, whereof ſome were tincted blew, ſome red, others yellow, of which colour only they preſented unto the King.

Now if any enquire, why being ſo commonly made, and in ſo ſhort a time, they are become ſo ſcarce, or not at all to be had? The anſwer is given by theſe laſt Relators, that under great penalties it is forbidden to carry the firſt ſort out of the Countrey. And of thoſe ſurely the properties muſt be verified, which by Scaliger and others are aſcribed to China diſhes, That they admit no poyſon, That they ſtrike fire, That they will grow hot no higher then the liquor in them ariſeth. For ſuch as paſſe amongſt us, and under the name of the fineſt, will only ſtrike fire, but not diſcover Aconite, Mercury, or Arſenick; but may be uſefull in dyſenteries and fluxes beyond the other.

8. Whether a Carbuncle (which is eſteemed the beſt and biggeſt of Rubies) doth flame in the dark, or ſhine like a coale in the night, though generally agreed on by common beleevers, is very much queſtioned by many. By Milius; who accounts it a vulgar error: By the learned Boetius; who could not finde it verified in that famous one of Rodulphus, which was as big as an Egge, and eſteemed the beſt in Europe. Wherefore although we diſpute not the poſſibility, whether herein there be not too high an apprehenſion, and above its naturall radiancy, is not without juſt doubt: however it be granted a very ſplendid gem, and whoſe ſparkes may ſomewhat reſemble the glances of fire; and metaphorically deſerve that name. And therefore when it is conceived by ſome that this ſtone in the Breſt-plate of Aaron reſpected the tribe of Dan, who burnt the City of Laiſh; and Sampſon of the ſame tribe, who fired the corn of the Philiſtims; in ſome ſenſe it may be admitted, and is no intollerable conception.

As for that Indian Stone, that ſhined ſo brightly in the night, and pretended to have been ſhewn to many in the Court of France, as Andreas Chioccus hath declared out of Thuanus; it proved but an impoſture, as that eminent Philoſopher Licetus hath diſcovered; and therefore in the reviſed editions of Thuanus, it is not to be found. And for the Phoſphorus or Bononian Stone, which expoſed unto the Sunne, and then cloſely ſhut up, will afterward afford a light in the dark; it is of unlike conſideration, for that requireth calcination, or reduction into a dry powder by fire; whereby it imbibeth the light in the vaporous humidity of the ayre about it; and therefore maintaineth its light not long, but goes out when the vaporous vehicle is conſumed.

Licet. de quæſt. per Epiſtolas.

Licet. de lapide Bononienſi.

9. Laſtly, He muſt have more heads then Rome had hils, that makes out half of thoſe vertues aſcribed unto ſtones, and their not only Medicall, but Magicall proprieties, which are to be found in Authors of great name. In Pſellus, Serapion, Evax, Albertus, Aleazar, Marbodeus; in Maiolus, Rueus, Mylius, and many more.

That Lapis Laſuli hath in it a purgative faculty we know; that Bezoar is Antidotall, Lapis Judaicus diureticall, Corall Antepilepticall, we will not deny. That Cornelians, Jaſpis, Heliotropes, and Bloudſtones, may be of vertue to thoſe intentions they are implied, experience and viſible effects will make us grant. But that an Amethyſt prevents inebriation; that an

Againſt poiſon. Provoking urine. Againſt the falling ſickneſs.

Emerald will break if worn in copulation. That a Diamond laid under the pillow, will betray the incontinency of a wife. That a Saphire is preſervative againſt inchantments; that the fume of an Agath will avert a tempeſt, or the wearing of a Cryſopraſe make one out of love with gold; as ſome have delivered, we are yet, I confeſſe, to beleeve, and in that infidelity are likely to end our daies. And therefore, they which in the explication of the two Beryls upon the Ephod, or the twelve ſtones in the Rationall or breaſt-plate of Aaron, or thoſe twelve which garniſhed the wall of the holy City in the Apocalyps, have drawn their ſignifications from ſuch as theſe; or declared their ſymbolicall verities from ſuch traditionall falſities; have ſurely corrupted the ſincerity of their Analogies, or miſunderſtood the myſtery of their intentions.

Chap. VI.

Of ſundry Tenents concerning vegetables or Plants, which examined, prove either falſe or dubious.

1. MAny Mola's and falſe conceptions there are of Mandrakes, the firſt from great Antiquity, conceiveth the root thereof reſembleth the ſhape of man, which is a conceit not to be made out by ordinary inſpection, or any other eyes, then ſuch as regarding the clouds, behold them in ſhapes conformable to preapprehenſions.

Now what ever encouraged the firſt invention, there have not been wanting many waies of its promotion. The firſt a Catachreſticall and farre derived ſimilitude, it holds with man; that is, in a bifurcation or diviſion of the root into two parts, which ſome are content to call thighs; whereas notwithſtanding they are oft times three, and when but two, commonly ſo complicated and croſſed, that men for this deceit, are fain to effect their deſign in other plants; And as fair a reſemblance is often found in Carrots, Parſenips, Bryony, and many others. There are, I confeſſs, divers plants which carry about them, not only the ſhape of parts, but alſo of whole animals, but ſurely not all thereof, unto whom this conformity is imputed. Whoever ſhall peruſe the ſignatures of Crollius, or rather the Phytognomy of Porta, and ſtrictly obſerve how vegetable realities, are commonly forced into Animall repreſentations, may eaſily perceive in very many, the ſemblance is but poſtulatory; and muſt have a more aſſimilating phancy then mine to make good many thereof.

Illiterate heads have been led on by the name; which in the firſt ſyllable expreſſeth its repreſentation; but others have better obſerved the laws of Etymology, and deduced it from a word of the ſame language, that is, μάνδρα, *ſpelunca*, becauſe it delighteth to grow in obſcure and ſhady places; which derivation, although we ſhall not ſtand to maintain, yet is the other openly abſurd, anſwerable unto the Etymologies of many Authors, who often confound ſuch nominall notations. Not to enquire beyond our own profeſſion, the Latine Phyſicians which moſt adhered unto the Arabick way, have often failed herein; particularly Valeſcus *de Tarranta* a received Phyſician, in whoſe Philonium or medicall practice theſe may be obſerved; *Diarhea*, ſaith he, *quia pluries venit in die. Heriſepela, quaſi hærens pilis, Emorrhois, ab emach ſanguis & morrhois quod eſt cadere. Lithargia à Litos quod eſt oblivio & Targus morbus, Scotomia à Scotus quod eſt videre, & mias muſca. Opthalmia*

ab

ab opus Grece quod eſt ſuccus, & Talmon quod eſt occulus, Paraliſis, quaſi laſio partis, Fiſtula à fos ſonus & ſtolon quod eſt emiſſio, quaſi emiſſio ſoni vel vocis. Which are derivations as ſtrange indeed as the other, and hardly to be paralleld elſewhere; confirming not only the words of one language with another, but creating ſuch as were never yet in any.

The received diſtinction and common notation by ſexes, hath alſo promoted the conceit; for true it is, that Herbaliſts from ancient times, have thus diſtinguiſhed them; naming that the male, whoſe leaves are lighter, and fruit and apples rounder; but this is properly no generative diviſion, but rather ſome note of diſtinction in colour, figure or operation. For though Empedocles affirm, there is a mixt, and undivided ſex in vegetables; and Scaliger upon Ariſtotle *de plantis*, doth favourably explain that opinion; yet will it not conſiſt with the common and ordinary acception, nor yet with Ariſtotles definition. For if that be male which generates in another, that female which procreates in it ſelf; if it be underſtood of ſexes conjoined, all plants are female; and if of disjoined and congreſſive generation, there is no male or female in them at all.

But the Atlas or main axis, which ſupported this opinion, was daily experience, and the viſible teſtimony of ſenſe. For many there are in ſeverall parts of Europe, who carry about roots and ſell them unto ignorant people, which handſomely make out the ſhape of man or woman. But theſe are not productions of Nature, but contrivances of Art, as divers have noted, and Mathiolus plainly detected, who learned this way of trumpery from a vagabond cheater lying under his cure for the French diſeaſe. His words are theſe, and may determine the point, *Sed profectò vanum & fabuloſum, &c.* But this is vain and fabulous which ignorant people, and ſimple women beleeve; for the roots which are carried about by impoſtors to deceive unfruitfull women, are made of the roots of Canes, Bryony and other plants; for in theſe yet freſh and virent, they carve out the figures of men and women, firſt ſticking therein the grains of barley or millet, where they intend the hair ſhould grow; then bury them in ſand, untill the grains ſhoot forth their roots, which at the longeſt will happen in twenty daies; afterward clip and trim thoſe tender ſtrings in the faſhion of beard and other hairy teguments. All which like other impoſtures once diſcovered is eaſily effected, and in the root of white Bryony may be practiſed every ſpring.

The impoſtures touching the root of Mandrake.

What is therefore delivered in favour thereof, by Authors ancient or modern, muſt have its root in tradition, impoſture, farre derived ſimilitude, or caſuall and rare contingency. So may we admit of the epithete of Pythagoras, who calls it Anthropomorphus; and that of Columella, who termes it Semihomo, more appliable unto the Man-Orchis, whoſe flower repreſents a man. Thus is Albertus to be received when he affirmeth, that Mandrakes repreſent man-kinde with the diſtinction of either ſex. Under theſe reſtrictions may thoſe Authors be admitted, which for this opinion are introduced by Druſius; nor ſhall we need to queſtion the monſtrous root of Bryony deſcribed in Aldrovandus.

Orchis Anthropomorphus cujus Icon in Kircheri Magia paraſtatica.

De mandragora De monſtru.

The ſecond aſſertion concerneth its production, That it naturally groweth under gallowſes and places of execution, ariſing from fat or urine that drops from the body of the dead; a ſtory ſomewhat agreeable unto the fable of the Serpents teeth ſowed in the earth by Cadmus; or rather the birth of Orion from the urine of Jupiter, Mercury and Neptune. Now this opinion ſeems grounded on the former, that is, a conceived ſimilitude it hath with man; and therefore from him in ſome way they would make out its production. Which conceit is not only erroneous in the foundation, but injurious unto

Philoſophy in the ſuperſtruction; making putrifactive generations, correſpondent unto ſeminall productions, and conceiving in equivocall effects and univocall conformity unto the efficient. Which is ſo far from being verified of animals in their corruptive mutations into plants, that they maintain not this ſimilitude in their nearer tranſlation into animals. So when the Oxe corrupteth into Bees, or the Horſe into Hornets, they come not forth in the image of their originals. So the corrupt and excrementous humours in man are animated into Lice; and we may obſerve, that Hoggs, Sheep, Goats, Hawkes, Hens and others, have one peculiar and proper kinde of vermine; not reſembling themſelves according to ſeminall conditions, yet carrying a ſetled and confined habitude unto their corruptive originals. And therefore come not forth in generations erraticall, or different from each other; but ſeem ſpecifically and in regular ſhapes to attend the corruption of their bodies, as doe more perfect conceptions, the rule of ſeminall productions.

Generations equivocall, are yet commonly regular and of a determinate form or ſpecies.

The third affirmeth the roots of Mandrakes doe make a noiſe, or give a ſhreek upon eradication; which is indeed ridiculous, and falſe below confute; ariſing perhaps from a ſmall and ſtridulous noiſe, which being firmly rooted, it maketh upon divulſion of parts. A ſlender foundation for ſuch a vaſt conception: for ſuch a noiſe we ſometime obſerve in other plants, in Parſenips, Liquoriſh, Eringium, Flags and others.

The laſt concerneth the danger enſuing, That there followes an hazard of life to them that pull it up, that ſome evil fate purſues them, and they live not very long after; therefore the attempt hereof among the Ancients, was not in ordinary way; but as Pliny informeth, when they intended to take up the root of this plant, they took the winde thereof, and with a ſword deſcribing three circles about it, they digged it up, looking toward the Weſt; a conceit not only injurious unto truth, and confutable by daily experience, but ſomewhat derogatory unto the providence of God; that is, not only to impoſe ſo deſtructive a quality on any plant, but conceive a vegetable whoſe parts are uſefull unto many, ſhould in the only taking up prove mortall unto any. To think he ſuffereth the poiſon of Nubia to be gathered, Napellus, Aconite and Thora to be eradicated, yet this not to be moved. That he permitteth Arſenick and minerall poiſons to be forced from the bowells of the earth, yet not this from the ſurface thereof. This were to introduce a ſecond forbidden fruit, and inhance the firſt malediction; making it not only mortall for Adam to taſte the one, but capitall unto his poſterity to eradicate or dig up the other.

Now what begot, at leaſt promoted ſo ſtrange conceptions, might be the magicall opinion hereof; this being conceived the plant ſo much in uſe with Circe, and therefore named Circea, as Dioſcorides and Theophraſtus have delivered; which being the eminent ſorceres of elder ſtory, and by the magick of ſimples beleeved to have wrought many wonders; ſome men were apt to invent, others to beleeve any tradition or magicall promiſe thereof.

Analogus relations concerning other plants, and ſuch as are of near affinity unto this, have made its currant ſmooth, and paſſe more eaſily among us. For the ſame effect is alſo delivered by Joſephus, concerning the root Baaras; by Ælian of Cynoſpaſtus; and we read in Homer the very ſame opinion concerning Moly.

Μῶλυ δὲ μὶν καλέουσι θεοὶ, χαλεπὸν δὲ ὀρύσσειν
Ανδράσι γε θνητοῖσι, θεοὶ δὲ τὰ πάντα δύνανται.

The Gods it Moly call, whoſe root to dig away,
Is dangerous unto man; but Gods, they all things may.

Now

Now parallels or like relations alternately releeve each other; when neither will paſſe aſunder, yet are they plauſible together, their mutuall concurrences ſupporting their ſolitary inſtabilites.

Signaturiſts have ſomewhat advanced it; who ſeldome omitting what Ancients delivered; drawing into inference received diſtinctions of ſex, not willing to examine its humane reſemblance, and placing it in the form of ſtrange and magicall ſimples, have made men ſuſpect there was more therein, then ordinary practice allowed; and ſo became apt to embrace whatever they heard or read conformable unto ſuch conceptions.

Laſtly, The conceit promoteth it ſelf: for concerning an effect whoſe triall muſt coſt ſo dear, it fortifies it ſelf in that invention; and few there are whoſe experiment it need to fear. For (what is moſt contemptible) although not only the reaſon of any head, but experience of every hand may well convict it, yet will it not by divers be rejected; for prepoſſeſſed heads will ever doubt it, and timorous beliefs will never dare to try it. So theſe traditions how low and ridiculous ſoever, will finde ſuſpition in ſome, doubt in others, and ſerve as teſts or trialls of melancholy, and ſuperſtitious tempers for ever.

That Cinamon, Ginger, Clove, &c are not of the ſame tree.

2. That Cinamon, Ginger, Clove, Mace and Nutmeg, are but the ſeverall parts and fruits of the ſame tree, is the common belief of thoſe which daily uſe them; whereof to ſpeak diſtinctly; Ginger is the root of neither tree nor ſhrub, but of an herbaceous plant, reſembling the water flower De luce, as Garcias firſt deſcribed; or rather the common reed, as Lobelius ſince affirmed; very common in many parts of India, growing either from root or ſeed, which in December and January they take up, and gently dryed, role it up in earth; whereby occluding the pores, they conſerve the naturall humidity, and ſo prevent corruption.

Cinnamon is the inward bark of a Cinnamon tree, whereof the beſt is brought from Zeilan; this freed from the outward bark, and expoſed unto the Sun, contracts into thoſe folds wherein we commonly receive it. If it have not a ſufficient inſolation it looketh pale, and attains not its laudable colour; if it be ſunned too long it ſuffereth a torrefaction, and deſcendeth ſomewhat below it.

Clove ſeems to be the rudiment or beginning of a fruit growing upon the Clove tree; to be found but in few Countries. The moſt commendable is that of Iſles of Molucca; it is firſt white, afterward green, which beaten down, and dried in the Sun, becometh black, and in the complexion we receive it.

Nutmeg is the fruit of a tree differing from all theſe, and as Garcias deſcribeth it, ſomewhat like a Peach; growing in divers places, but fructifying in the Iſle of Banda. The fruit hereof, conſiſteth of four parts; the firſt or outward part is a thick and carnous covering like that of a Walnut. The ſecond a dry and floſculous coat commonly called Mace. The third a harder tegument or ſhell, which lyeth under the Mace. The fourth a kernell included in the ſhell, which is the ſame we call Nutmeg. All which both in their parts and order of diſpoſure, are eaſily diſcerned in thoſe fruits, which are brought in preſerves unto us.

Now if becauſe Mace and Nutmegs proceed from one tree, the reſt muſt bear them company; or becauſe they are all from the Eaſt-Indies, they are all from one plant; the Inference is precipitous; nor will there ſuch a plant be found in the Herball of Nature.

3. That Viſcus Arboreus or Miſſeltoe is bred upon trees, from ſeeds which birds, eſpecially Thruſhes and Ringdoves let fall thereon, was the creed of

the Ancients, and is ſtill beleeved among us; is the account of its production, ſet down by Pliny, delivered by Virgil, and ſubſcribed by many more. If ſo, ſome reaſon muſt be aſſigned, why it groweth only upon certain trees, and not upon many whereon theſe birds doe light. For as Exotick obſervers deliver, it groweth upon Almond trees, Cheſnut, Apples, Oakes and Pine trees. As we obſerve in England, very commonly upon Apple, Crabs and White thorn; ſometimes upon Sallow, Haſell and Oake: rarely upon Aſh and Maple; never, that I could obſerve, upon Holly, Elme, and many more. Why it groweth not in all countries and places where theſe birds are found; for ſo Braſſavolus affirmeth, it is not to be found in the territory of Ferrara; and was fain to ſupply himſelf from other parts of Italy. Why if it ariſeth from a ſeed, if ſown it will not grow again, as Pliny affirmeth, and as by ſetting the berries thereof, we have in vain attempted its production; why if it cometh from ſeed that falleth upon the tree, it groweth often downwards, and puts forth under the bough, where ſeed can neither fall nor yet remain. Hereof beſide ſome others, the Lord Verulam hath taken notice. And they ſurely ſpeak probably who make it an arboreous excreſcence, or rather ſuperplant, bred of a viſcous and ſuperfluous ſappe which the tree it ſelf cannot aſſimilate; and therefore ſprouteth not forth in boughs and ſurcles of the ſame ſhape, and ſimilary unto the tree that beareth it; but in a different form, and ſecondary unto its ſpecificall intention; wherein once failing, another form ſucceedeth, and in the firſt place that of Miſſeltoe, in plants and trees diſpoſed to its production. And therefore alſo where ever it groweth, it is of conſtant ſhape, and maintains a regular figure; like other ſupercreſcenſes, and ſuch as living upon the ſtock of others, are termed Paraſiticall plants, as Polypody, Moſſe, the ſmaller Capillaries, and many more: So that ſeverall regions produce ſeverall Miſſeltoes; India one, America another, according to the law and rule of their degenerations.

What the Miſſeltoe in ſome trees is.

Now what begot this conceit, might be the enlargement of ſome part of truth contained in its ſtory. For certain it is, that ſome birdes doe feed upon the berries of this vegetable, and we meet in Ariſtotle with one kinde of Thruſh called the miſſell Thruſh or feeder upon miſſeltoe. But that which hath moſt promoted it, is a received proverb, *Turdus ſibi malum cacat*; Appliable unto ſuch men as are authors of their own misfortune: For according unto ancient tradition and Plinies relation, the bird not able to digeſt the fruit whereon ſhe feedeth, from her inconverted muting, ariſeth this plant; of the berries whereof birdlime is made, wherewith ſhe is after entangled. But although proverbs be popular principles, yet is not all true that is proverbiall; and in many thereof there being one thing delivered, and another intended; though the verball expreſſion be falſe, the proverb is true enough in the verity of its intention.

ἐξοδίῳ.

As for the Magicall vertues in this plant, and conceived efficacy unto veneficiall intentions, it ſeemeth a Pagan relique derived from the ancient Druides, the great admirers of the Oake, eſpecially the Miſſeltoe that grew thereon; which according unto the particular of Pliny, they gathered with great ſolemnity. For after ſacrifice the prieſt in a white garment aſcended the tree, cut down the Miſſeltoe with a golden hook, and received it in a white coat; the vertue whereof was to reſiſt all poyſons, and make fruitfull any that uſed it. Vertues not expected from Claſſicall practice; And did they anſwer their promiſe which are ſo commended, in Epilepticall intentions; we would abate theſe qualities. Countrey practice hath added another, to provoke the afterbirth, and in that caſe the decoction is given unto Cowes. That the berries are

Paganiſh ſuperſtition about the Miſſeltoe of the Oake.

are poyſon as ſome conceive, we are ſo far from averring, that we have ſafely given them inwardly; and can confirm the experiment of Braſſavolus, that they have ſome purgative quality.

4. The Roſe of Jericho, that flouriſhes every year juſt upon Chriſtmas Eve is famous in Chriſtian reports; which notwithſtanding we have ſome reaſon to doubt; and are plainly informed by Bellonius, it is but a Monaſticall impoſture, as he hath delivered in his obſervations, concerning the plants in Jericho. That which promoted the conceit, or perhaps begot its continuance, was a propriety in this plant. For though it be dry, yet will it upon imbibition of moiſture dilate its leaves, and explicate its flowers contracted, and ſeemingly dried up. And this is to be effected not only in the plant yet growing, but in ſome manner alſo in that which is brought exuccous and dry unto us. Which quality being obſerved, the ſubtilty of contrivers did commonly play this ſhew upon the Eve of our Saviours Nativity; when by drying the plant again, it cloſed the next day, and ſo pretended a double myſtery: referring unto the opening and cloſing of the womb of Mary.

There wanted not a ſpecious confirmation from a text in Eccleſiaſticus, chap. 24. *Quaſi palma exaltata ſum in Cades, & quaſi plantatio Roſæ in Jericho:* I was exalted like a Palme tree in Engaddi, and as a Roſe in Jericho. The ſound whereof in common eares, begat an extraordinary opinion of the Roſe of that denomination. But herein there ſeemeth a great miſtake; for by the Roſe in the text, is implied the true and proper Roſe; οὐ περ τῆς ῥόδου ſaith the Greek, and ours acordingly rendreth it. But that which paſſeth under this name, and by us is commonly called the Roſe of Jericho, is properly no Roſe, but a ſmall thorny ſhrub or kinde of heath, bearing little white flowers, farre differing from the Roſe; whereof Bellonius a very inquiſitive Herbaliſt could not finde any in his travells thorow Jericho. A plant ſo unlike a Roſe, it hath been miſtaken by ſome good Simpliſt for Amomum; which truely underſtood is ſo unlike a Roſe, that as Dioſcorides delivers, the flowers thereof, are like the white violet, and its leaves reſemble Bryonie.

Surable unto this relation almoſt in all points is that of the thorn at Glaſſenbury, and perhaps the daughter thereof; herein our endeavours as yet have not attained ſatisfaction, and cannot therefore enlarge. Thus much in generall we may obſerve, that ſtrange effects, are naturally taken for miracles by weaker heads; and artificially improved to that apprehenſion by wiſer. Certainly many precocious trees, and ſuch as have their ſpring in the winter, may be found in moſt parts of Europe, and divers alſo in England. For moſt trees doe begin to ſprout in the fall of the leaf or Autumne, and if not kept back by cold and outward cauſes, would leaf about the Solſtice. Now if it happen, that any be ſo ſtrongly conſtituted, as to make this good againſt the power of winter, they may produce their leaves or bloſſomes in that ſeaſon, and perform that in ſome ſingles, which is obſervable in whole kindes, as is obſervable in Ivy, which bloſſomes and beares at leaſt twice a year, and once in the winter; as alſo in Furze which flowreth in that ſeaſon.

Such a thorn there is in Parham Park in Suffolk.

5. That *ferrum Equinum*, or *Sferra Cavallo* hath a vertue attractive of Iron, a power to break locks, and draw off the ſhooes of a horſe that paſſeth over it; whether you take it for one kinde of Securidaca, or will alſo take in Lunaria, we know it to be falſe: And cannot but wonder at Mathiolus, who upon a parallell in Pliny was ſtaggered into ſuſpenſion; notwithſtanding in the imputed vertue to open things, cloſe and ſhut up, could laugh himſelf at

at that promiſe from the herb Æthiopis or Æthiopian mullen; and condemn the judgement of Scipio, who having ſuch a picklock, would ſpend ſo many years in battering the gates of Carthage. Which ſtrange and Magicall conceit, ſeems to have no deeper root in reaſon, then the figure of its ſeed; for therein indeed it ſomewhat reſembles an horſeſhooe; which notwithſtanding *Baptiſta Porta* hath thought too low a ſignation, and raiſed the ſame unto a Lunary repreſentation.

6. That Bayes will protect from the miſchief of lightning and thunder, is a quality aſcribed thereto, common with the figtree, Ægle, and skin of a Seale. Againſt ſo famous a quality, Vicomercatus produceth experiment of a Bay tree blaſted in Italy; and therefore although Tiberius for this intent, did wear a Laurell about his temples; yet did Auguſtus take a more probable courſe; who fled under arches and hollow vaultes for protection. And though Porta conceive, becauſe in a ſtreperous eruption, it riſeth againſt fire, it doth therefore reſiſt lightning, yet is that no emboldning Illation: And if we conſider the threefold effect of Jupiters Triſulk, to burn, diſcuſſe and terebrate; and if that be true which is commonly delivered, that it will melt the blade, yet paſſe the ſcabbard, kill the childe, yet ſpare the mother, dry up the wine, yet leave the hogshead intire; though it favour the amulet it may not ſpare us; it will be unſure to rely on any preſervative; 'tis no ſecurity to be dipped in Styx, or clad in the armour of Ceneus. Now that beer, wine and other liquors, are ſpoiled with lightning and thunder, we conceive it proceeds not only from noiſe and concuſſion of the ayre, but alſo noxious ſpirits, which mingle therewith, and draw them to corruption; whereby they become not only dead themſelves, but ſometime deadly unto others, as that which Seneca mentioneth; whereof whoſoever drank, either loſt his life, or elſe his wits upon it.

How beer and wine come to be ſpoiled by lightning.

7. It hath much deceived the hopes of good fellows, what is commonly expected of bitter Almonds, and though in Plutarch confirmed from the practice of Claudius his Phyſitian, that Antidoee againſt ebriety hath commonly failed. Surely men much verſt in the practice doe erre in the theory of inebriation; conceiving in that diſturbance the brain doth only ſuffer from exhalations and vaporous aſcentions from the ſtomack, which fat and oylie ſubſtancies may ſuppreſſe; whereas the prevalent intoxication is from the ſpirits of drink diſperſed into the veynes and arteries; from whence by common conveyances they creep into the brain, inſinuate into its ventricles, and beget thoſe vertigoes, accompanying that perverſion. And therefore the ſame effect may be produced by a Gliſter; the head may be intoxicated by a medicine at the heele. And ſo the poyſonous bites of Serpents, although on parts at diſtance from the head, yet having entered the veynes, diſturb the animall faculties, and produce the effects of drink, or poyſon ſwallowed. And ſo as the head may be diſturbed by the skin, it may the ſame way be relieved; as is obſervable in balneations, waſhings, and fomentations, either of the whole body, or of that part alone.

How drinks intoxicate or overcome men.

CHAP.

CHAP. VII.

Of Insects, and the properties of severall plants.

1. THe presage of the year succeeding, which is commonly made from Insects or little animals in Oak-apples, according to the kindes thereof, either Maggot, Flye or Spider; that is, of Famine, Warre or Pestilence; whether we mean that wooddy excrescence, which shooteth from the branch about May, or that round and Apple-like accretion, which groweth under the leaf, about the later end of Summer, is I doubt too distinct, nor verifiable from event.

For Flies and Maggots are found every year; very seldome Spiders: And Helmont affirmeth he could never finde the Spider and the Flye upon the same tree; that is, the signes of Warre and Pestilence, which often go together. Beside, that the Flies found were at first Maggots, experience hath informed us: for keeping these excrescencies, we have observed their conversions; beholding in magnifying glasses the daily progression thereof. As may be also observed in other vegetable excretions; whose Maggots doe terminate in Flies of constant shapes; as in the Nutgalls of the outlandish Oake, and the mossie tuft of the wilde briar; which having gathered in November, we have found the little Maggots which lodged in woodden cels all Winter, to turn into Flies in June.

We confesse the opinion may hold some verity in the Analogy, or emblematicall phancy. For Pestilence is properly signified by the Spider, whereof some kindes are of a very venemous nature. Famine by Maggots, which destroy the fruits of the earth. And Warre not improperly by the Flye; if we rest in the phancy of Homer, who compares the valiant Grecian unto a Flye.

Some verity it may also have in it self, as truly declaring the corruptive constitution in the present sap and nutrimentall juice of the tree, and may consequently discover the disposition of that year, according to the plenty or kindes of these productions. For if the putrifying juices of bodies, bring forth plenty of Flies and Maggots, they give testimony of common corruption, and declare that the elements are full of the seeds of putrefaction; as the great number of Caterpillars, Gnats and ordinary Insects doe also declare. If they runne into Spiders, they give signes of higher putrefaction, as plenty of Vipers and Scorpions are confessed to doe; the putrefying materials producing animals of higher mischeifs, according to the advance and higher strain of corruption.

Abundance of Flies, Maggots, &c what they may naturally signifie.

2. Whether all plants have seed, were more easily determinable, if we could conclude concerning Harts-tongue, Ferne, the Capillaries and some others. But whether those little dusty particles, upon the lower side of the leaves, be seeds and seminall parts; or rather, as it is commonly conceived, excrementall separations; we have not been able to determine by any germination or univocall production from them. Thus much we observe, that they seem to renew yearly, and come not fully out till the plant be in its vigour, and by the help of magnifying glasses we finde these dusty atomes to be round at first, and fully representing seeds; out of which proceed little mites almost invisible; so that such as are old stand open, as being emptied of some bodies formerly included, which though discernable in Harts-tongue, is notoriously discoverable in some differencies of Brake or Ferne.

3. Whether the ſap of trees runnes down to the roots in Winter, whereby they become naked and grow not; or whether they doe not ceaſe to draw any more, and reſerve ſo much as ſufficeth for conſervation, is not a point indubitable: For we obſerve, that moſt trees, as though they would be perpetually green, doe bud at the fall of the leaf; although they ſprout not much forward untill the ſpring, and warmer weather approacheth; and many trees maintain their leaves all Winter, although they ſeem to receive very ſmall advantage in their growth. But that the ſap doth powerfully riſe in the Spring, to repair that moiſture whereby they barely ſubſiſted in the Winter, and alſo to put the plant in a capacity of fructification; he that hath beheld how many gallons of water may in a ſmall time be drawn from a birch tree in the ſpring, hath ſlender reaſon to doubt.

4. That Camphire or Eunuchates begets in men an impotency unto venery, obſervation will hardly confirm and we have found it to fail in Cocks and Hens, though given for many daies, which was a more favourable triall then that of Scaliger, when he gave it unto a Bitch that was proud. For the inſtant turgeſcence is not to be taken off, but by medicines of higher natures, and with any certainty but one way that we know, which notwithſtanding, by ſuppreſſing that naturall evacuation, may incline unto madneſſe, if taken in the Summer.

5. In the hiſtory of prodigies we meet with many ſhowers of wheat; how true or probable, we have not room to debate: only thus much we ſhall not omit to inform, That what was this year found in many places, and almoſt preached for wheat rained from the clouds; was but the ſeed of Ivy berries, which ſomewhat repreſent it, and though it were found in Steeples and high places, might be conveied thither, or muted out by birds: for many feed thereon, and in the crops of ſome we have found no leſſe then three ounces.

6. That every plant might receive a name according unto the diſeaſe it cureth, was the wiſh of Paracelſus. A way more likely to multiply Empericks then Herbaliſts; yet what is practiſed by many is advantagious unto neither; that is, relinquiſhing their proper appellations, to re-baptiſe them by the name of Saints, Apoſtles, Patriarchs and Martyres; to call this the herb of John, that of Peter, this of James or Joſeph, that of Mary or Barbara. For hereby apprehenſions are made additionall unto their proper natures; whereon ſuperſtitious practices enſue; and ſtories are framed accordingly to make good their foundations.

7. We cannot omit to declare the groſſe miſtake of many in the nominall apprehenſion of plants; to inſtance but in few. An herb there is commonly called Betonica Pauli, or Pauls Betony; hereof the people have ſome conceit in reference to S. Paul; whereas indeed that name is derived from Paulus Ægineta, an ancient Phyſitian of Ægina, and is no more then Speed-well, or Fluellen. The like expectations are raiſed from *Herba Trinitatis*; which notwithſtanding obtaineth that name from the figure of its leaves, and is one kinde of Liverwort or Hepatica. In *Milium Solis*, the epithete of the Sunne hath enlarged its opinion; which hath indeed no reference thereunto, it being no more then Lithoſpermon, or Grummell, or rather *Milium Soler*; which as Serapion from Aben Juliel hath taught us, becauſe it grew plentifully in the mountains of Soler, received that appellation. In Jews-eares ſomething is conceived extraordinary from the name, which is in propriety but *Fungus ſambucinus*, or an excreſcence about the roots of Elder, and concerneth not the Nation of the Jewes, but Judas Iſcariot, upon a conceit, he hanged on this tree; and is become a fa-

Why the Iews-ear is uſed for ſore throats.

a famous medicine in Quinſies, ſore throats, and ſtrangulations ever ſince. And ſo are they deceived in the name of Horſe-raddiſh, Horſe-mint, Bull-ruſh, and many more: conceiving therein ſome prenominall conſideration; whereas indeed that expreſſion is but a Greciſme; by the prefix of Hippos and Bous, that is, Horſe and Bull, intending no more then great. According whereto the great dock is called Hippolapathum; and he that calls the horſe of Alexander, Great head, expreſſeth the ſame which the Greeks doe in Bucephalus.

8. Laſtly, Many things are delivered and beleeved of other plants, wherein at leaſt we cannot but ſuſpend. That there is a property in Baſil to propagate Scorpions, and that by the ſmell thereof they are bred in the brains of men, is much advanced by Hollerius, who found this inſect in the brains of a man that delighted much in this ſmell. Wherein beſide that we finde no way to conjoin the effect unto the cauſe aſſigned; herein the Modernes ſpeak but timerouſly, and ſome of the Ancients quite contrarily. For, according unto Oribaſius, Phyſitian unto Julian, The Africans, men beſt experienced in poiſons, affirm, whoſoever hath eaten Baſil, although he be ſtung with a Scorpion, ſhall feel no pain thereby: which is a very different effect, and rather antidotally deſtroying then ſeminally promoting its production.

That the leaves of Cataputia or ſpurge being plucked upward or downward reſpectively perform their operations by purge or vomit, as ſome have written, and old wives ſtill doe preach, is a ſtrange conceit, aſcribing unto plants poſitionall operations, and after the manner of the Loadſtone; upon the pole whereof if a knife be drawn from the handle unto the point, it will take up a needle; but if drawn again from the point to the handle, it will attract it no more.

That Cucumbers are no commendable fruits, that being very wateriſh, they fill the veins with crude and windy ſeroſities; that containing little ſalt or ſpirit, they may alſo debilitate the vitall acidity, and fermentall faculty of the ſtomack, we readily concede. But that they ſhould be ſo cold, as be almoſt poiſon by that quality, it will be hard to allow, without the contradiction of Galen; who accounteth them cold but in the ſecond degree, and in that claſſis have moſt Phyſitians placed them.

That Elder berries are poiſon, as we are taught by tradition, experience will unteach us. And beſide the promiſes of Blochwitius, the healthfull effects thereof daily obſerved will convict us. In his *Anatomia Sambuci.*

That an Ivy cup will ſeparate wine from water, if filled with both, the wine ſoaking through, but the water ſtill remaining, as after Pliny many have averred, we know not how to affirm; who making triall thereof, found both the liquors to ſoak indiſtinctly through the bowle.

That Ros ſolis which rotteth ſheep, hath any ſuch cordiall vertue upon us, we have ſome reaſon to doubt.

That Flos Africanus is poiſon, and deſtroyeth dogs, in two experiments we have not found.

That Yew and the berries thereof are harmleſſe, we know.

That a Snake will not endure the ſhade of an Aſh, we can deny.

That Cats have ſuch delight in the herb Nepeta, called therefore Cattaria, our experience cannot diſcover. Nor is it inconſiderable what is affirmed by Bellonius; for if his aſſertion be true in the firſt of his obſervations, our apprehenſion is oftentimes wide in ordinary ſimples, and in common uſe we miſtake one for another. We know not the true Thyme; the Savory in our Gardens is not that commended of old; and that kinde of Hyſop the Ancients

used, is unknown unto us who make great use of another.

We omit to recite the many vertues, and endlesse faculties ascribed unto plants, which sometime occurre in grave and serious Authors, and we shall make a bad transaction for truth to concede a verity in half. To reckon up all, it were imployment for Archimedes, who undertook to write the number of the sands. Swarms of others there are, some whereof our future endeavours may discover; common reason I hope will save us a labour in many; whose absurdities stand naked unto every eye; errors not able to deceive the Emblem of Justice, and need no Argus to descry them. Herein there surely wants expurgatory animadversions, whereby we might strike out great numbers of hidden qualities; and having once a serious and conceded list, we might with more encouragement and safety, attempt their Reasons

THE

THE THIRD BOOK:

Of divers popular and received Tenets concerning Animals, which examined, prove either false or dubious.

Chap. I.

Of the Elephant.

THE first shall be of the Elephant; whereof there generally passeth an opinion it hath no joints; and this absurdity is seconded with another, that being unable to lie down, it sleepeth against a tree; which the Hunters observing doe saw almost asunder; whereon the beast relying, by the fall of the tree falls also down it self, and is able to rise no more. Which conceit is not the daughter of later times, but an old and gray-headed error, even in the daies of Aristotle, as he delivereth in his book, *de incessu animalium*; and stand successively related by severall other Authors; by Diodorus Siculus, Strabo, Ambrose, Cassiodore, Solinus and many more. Now herein me thinks men much forget themselves, not well considering the absurdity of such assertions.

For first, they affirm it hath no joints, and yet concede it walks and moves about; whereby they conceive there may be a progression or advancement made in motion without inflexion of parts. Now all progression or animall locomotion being (as Aristotle teacheth) performed *tractu & pulsu*; that is, by drawing on, or impelling forward some part which was before in station, or at quiet; where there are no joints or flexures, neither can there be these actions; and this is true, not only in Quadrupedes, Volatils and Fishes, which have distinct and prominent organs of motion, legs, wings and fins; but in such also as perform their progression by the trunck, as Serpents, Wormes and Leeches; whereof though some want bones, and all extended articulations, yet have they arthriticall analogies; and by the motion of fibrous and musculous parts, are able to make progression. Which to conceive in bodies inflexible, and without all protrusion of parts, were to expect a race from Hercules his pillars; or hope to behold the effects of Orpheus his harp; when Trees found joints, and danced after his musick.

How progression is made in animals.

Jointlike parts.

Again, While men conceive they never lie down, and enjoy not the position of rest, ordained unto all pedestrious animals, hereby they imagin (what rea-

ſon cannot conceive) that an animall of the vaſteſt dimenſion and longeſt duration, ſhould live in a continuall motion, without that alternity and viciſſitude of reſt whereby all others continue; and yet muſt thus much come to paſſe, if we opinion they lie not down and enjoy no decumbence at all. For ſtation is properly no reſt, but one kinde of motion, relating unto that which Phyſitians (from Galen) doe name extenſive or tonicall; that is, an extenſion of the muſcles and organs of motion maintaining the body at length or in its proper figure; wherein although it ſeem to be unmoved, it is nevertheleſſe not without all motion; for in this poſition the muſcles are ſenſibly extended, and labour to ſupport the body; which permitted unto its proper gravity, would ſuddenly ſubſide and fall unto the earth, as it happeneth in ſleep, diſeaſes and death. From which occult action and inviſible motion of the muſcles in ſtation (as Galen declareth) proceed more offenſive laſſitudes then from ambulation. And therefore the Tyranny of ſome have tormented men, with long and enforced ſtation; and though Ixion and Siſiphus which alwaies moved, doe ſeem to have the hardeſt meaſure; yet was not Titius favoured, that lay extended upon Caucaſus; and Tantalus ſuffered ſomewhat more then thirſt, that ſtood perpetually in hell. Thus Mercurialis in his Gymnaſticks juſtly makes ſtanding one kinde of exerciſe; and Galen when we lye down, commends unto us middle figures; that is, not to lye directly, or at length, but ſomewhat inflected, that the muſcles may be at reſt; for ſuch as he termeth Hypobolemaioi or figures of exceſſe, either ſhrinking up or ſtretching out, are weariſome poſitions, and ſuch as perturb the quiet of thoſe parts. Now various parts doe variouſly diſcover theſe indolent and quiet poſitions: ſome in right lines, as the wriſts; ſome at right angles, as the cubit; others at oblique angles, as the fingers and the knees: all reſting ſatisfied in poſtures of moderation, and none enduring the extremity of flexure or extenſion.

Extenſive or Tonicall motion, what.

Moreover men herein doe ſtrangely forget the obvious relations of hiſtory, affirming they have no joints, whereas they daily reade of ſeverall actions which are not performable without them. They forget what is delivered by Xiphilinus, and alſo by Suetonius in the lives of Nero and Galba, that Elephants have been inſtructed to walk on ropes, in publike ſhews before the people; which is not eaſily performed by man, and requireth not only a broad foot, but a pliable flexure of joints, and commandible diſpoſure of all parts of progreſſion. They paſſe by that memorable place in Curtius, concerning the Elephant of King Porus, *Indus qui Elephantem regebat, deſcendere eum ratus, more ſolito procumbere juſſit in genua, cæteri quoque (ita enim inſtituti erant) demiſere corpora in terram.* They remember not the expreſſion of *Oſorius de rebus geſtis Emanuelis*, when he ſpeaks of the Elephant preſented to Leo the tenth, *Pontificem ter genibus flexis, & demiſſo corporis habitu venerabundus ſalutavit.* But above all, they call not to minde that memorable ſhew of Germanicus, wherein twelve Elephants danced unto the ſound of muſick, and after laid them down in the Tricliniums, or places of feſtivall Recumbency.

They forget the Etymologie of the Knee, approved by ſome Grammarians. They diſturb the poſition of the young ones in the wombe: which upon extenſion of leggs is not eaſily conceiveable; and contrary unto the generall contrivance of nature. Nor doe they conſider the impoſſible excluſion thereof, upon extenſion and rigour of the leggs.

γόνυ from γονία.

Laſtly, They forget or conſult not experience; whereof not many years paſt, we have had the advantage in England, by an Elephant ſhewn in many parts thereof; not only in the poſture of ſtanding, but kneeling and lying down.

down. Whereby although the opinion at preſent be well ſuppreſſed, yet from ſome ſtrings of tradition, and fruitfull recurrence of error, it is not improbable, it may revive in the next generation again; this being not the firſt that hath been ſeen in England; for (beſides ſome other ſince) as Polydore Virgil relateth, Lewis the French King ſent one to Henry the third; and Emanuel of Portugall another to Leo the tenth into Italy; where notwithſtanding the error is ſtill alive and epidemicall; as with us.

The hint and ground of this opinion might be the groſſe and ſomewhat Cylindricall compoſure of the legs, the equality and leſſe perceptible diſpoſure of the joints, eſpecially in the four legs of this Animall; they appearing when he ſtandeth, like pillars of fleſh, without any evidence of articulation. The different flexure and order of the joints might alſo countenance the ſame; being not diſpoſed in the Elephant, as they are in other quadrupedes, but carry a nearer conformity into thoſe of man; that is, the bought of the fore-legs not directly backward, but laterally and ſomewhat inward; but the hough or ſuffraginous flexure behinde rather outward. Contrary unto many other quadrupedes, and ſuch as can ſcratch the ear with the hinder foot, as Horſes, Camels, Deer, Sheep and Dogges; for their fore legs bend like our legs, and their hinder legs like our arms, when we move them to our ſhoulders. But quadrupedes oviparous, as Frogs, Lizards, Crocadiles, have their joints and motive flexures more analogouſly framed unto ours; and ſome among viviparous; that is, ſuch thereof as can bring their fore-feet and meat therein into their mouthes, as moſt can doe that have the clavicles or coller-bones; whereby their breaſts are broader, and their ſhoulders more aſunder, as the Ape, the Monkey, the Squirrell and ſome others. If therefore any ſhall affirm the joints of Elephants are differently framed from moſt of other quadrupedes, and more obſcurely and groſſely almoſt then any; he doth herein no injury unto truth. But if *à dicto ſecundum quid ad dictum ſimpliciter*, he affirmeth alſo they have no articulations at all; he incurs the controllment of reaſon, and cannot avoid the contradiction alſo of ſenſe.

Round, pillar-like.

As for the manner of their venation, if we conſult hiſtoricall experience, we ſhall finde it to be otherwiſe then as is commonly preſumed, by ſawing away of trees. The accounts whereof are to be ſeen at large in *Johannes Hugo*, *Edwardus Lopez*, *Garcias ab Horto*, *Cadamuſtus* and many more.

Other concernments there are of the Elephant, which might admit of diſcourſe; and if we ſhould queſtion the teeth of Elephants, that is, whether they be properly ſo termed, or might not rather be called horns; it were no new enquiry of mine, but a paradox as old as Oppianus. Whether as Pliny and divers ſince affirm, that Elephants are terrefied, and make away upon the grunting of Swine, *Garcias ab Horto* may decide, who affirmeth upon experience they enter their ſtalls, and live promiſcuouſly in the woods of Malavar. That the ſituation of the genitalls is averſe, and their copulation like that of Camels, as Pliny hath alſo delivered, is not to be received; for we have beheld that part in a different poſition; and their coition is made by ſuperſaliency like that of Horſes, as we are informed by ſome who have beheld them in that act. That ſome Elephants have not only written whole ſentences, as Ælian ocularly teſtifieth, but have alſo ſpoken, as Oppianus deſivereth, and Chriſtophorus a Coſta particularly relateth; although it ſound like that of Achilles Horſe in Homer, we doe not conceive impoſſible: nor beſide the affinity of reaſon in this Animall any ſuch intollerable incapacity in the organs of divers quadrupedes, whereby they might not be taught to ſpeak, or become imitators of ſpeech like birds. Strange it is how the curioſity of men that have been active in the inſtruction of beaſts, have never fallen upon this artifice;

Cyneget. lib. 2.

Some Brutes tolerably well organiz'd for ſpeech and approaching to reaſon.

artifice; and among thoſe many paradoxicall and unheard of imitations, ſhould not attempt to make one ſpeak. The Serpent that ſpake unto Eve, the Dogs and Cats, that uſually ſpeak unto Witches, might afford ſome encouragement. And ſince broad and thick chops are required in birds that ſpeak, ſince lips and teeth are alſo organs of ſpeech; from theſe there is alſo an advantage in quadrupedes; and a proximity of reaſon in Elephants and Apes above them all. Since alſo an Echo will ſpeak without any mouth at all, articulately returning the voice of man, by only ordering the vocall ſpirit in concave and hollow places; whether the muſculous and motive parts about the hollow mouthes of beaſts, may not diſpoſe the paſſing ſpirit into ſome articulate notes, ſeems a querie of no great doubt.

Chap. II.

Of the Horſe.

Veterinarians or Farriers.

THE ſecond Aſſertion, that an Horſe hath no gall, is very generall, nor only ſwallowed by the people, and common Farriers, but alſo received by good Veterinarians, and ſome who have laudably diſcourſed upon Horſes. It ſeemeth alſo very ancient; for it is plainly ſet down by Ariſtotle, an Horſe and all Solidungulous or whole hoofd animals have no gall; and the ſame is alſo delivered by Pliny; which notwithſtanding we finde repugnant unto experience and reaſon. For firſt, it calls in queſtion the providence or wiſe proviſion of nature; who not abounding in ſuperfluities, is neither deficient in neceſſities. Wherein nevertheleſſe there would be a main defect, and her improviſion juſtly accuſable; if ſuch a feeding Animall, and ſo ſubject unto diſeaſes from bilious cauſes, ſhould want a proper conveyance for choler; or have no other receptacle for that humour, then the veins, and generall maſſe of bloud.

Medicina equaria.

It is again controulable by experience; for we have made ſome ſearch and enquiry herein; encouraged by Abſyrtus a Greek Author, in the time of Conſtantine; who in his Hippiatrics, obſcurely aſſigneth the gall a place in the liver; but more eſpecially by Ruino the Bononian, who in his *Anatomia del Cavallo*, hath more plainly deſcribed it, and in a manner as I found it. For in the diſſections of Horſes, and particular enquiry into that part, in the concave or ſimous part of the liver, whereabout the gall is uſually ſeated in quadrupedes, I diſcover an hollow, long and membranous ſubſtance, of a yellow colour without, and lined with choler and gall within; which part is by branches diffuſed into the lobes and ſeverall parcels of the liver; from whence receiving the fiery ſuperfluity, or cholerick remainder, upon the ſecond concoction; by a manifeſt and open paſſage, it conveyeth it into the duodenum or upper gut, thence into the lower bowels; which is the manner of its derivation in man and other animals. And therefore although there be no eminent and circular follicle, no round bagge or veſicle which long containeth this humour; yet is there a manifeſt receptacle and paſſage of choler, from the liver into the guts; which being not ſo ſhut up, or at leaſt not ſo long detained, as it is in other animals; procures that frequent excretion, and occaſions the Horſe to dung more often then many other. For choler is the naturall gliſter, or one excretion whereby nature excludeth another; which deſcending daily into the bowels, extimulates thoſe parts, and excites them unto expulſion. And therefore when this humour aboundeth or corrupteth,

Choler the naturall gliſter.

eth, there ſucceeds oft times a *cholerica paſſio*; that is, a ſudden and vehement purgation upward and downward; and when the paſſage of gall becomes obſtructed, the body growes coſtive, and the excrements of the belly white; as it happeneth oft times in the Jaundice.

If any therefore affirm an Horſe hath no gall, that is, no receptacle, or part ordained for the ſeparation of choler, or not that humour at all; he hath both ſenſe and reaſon to oppoſe him, But if he ſaith it hath no bladder of gall, and ſuch as is obſerved in many other animals, we ſhall oppoſe our ſenſe if we gainſay him. Thus muſt Ariſtotle be made out when he denieth this part; by this diſtinction we may releeve Pliny of a contradiction; who in one place affirming an Horſe hath no gall, delivereth yet in another, that the gall of an Horſe was accounted poiſon; and therefore at the ſacrifices of Horſes in Rome, it was unlawfull for the Flamen to touch it. But with more difficulty, or hardly at all is that reconcileable which is delivered by our Countreyman, and received Veterinarian; whoſe words in his maſter-piece, and Chapter of diſeaſes from the gall, are ſomewhat too ſtrict, and ſcarce admit a Reconciliation. The fallacy therefore of this conceit is not unlike the former; *A dicto ſecundum quid ad dictum ſimpliciter*. Becauſe they have not a bladder of gall, like thoſe we uſually obſerve in others, they have no gall at all. Which is a Paralogiſme not admittible; a fallacy that dwells not in a cloud, and needs not the Sun to ſcatter it. Frieſt.

Chap. III.

Of the Dove.

The third Aſſertion is ſomewhat like the ſecond, That a Dove or Pigeon hath no gall; which is affirmed from very great Antiquity; for as Pierius obſerveth, from this conſideration the Ægyptians did make it the Hieroglyphick of meekneſſe; it hath been averred by many holy Writers; commonly delivered by Poſtillers and Commentators; who from the frequent mention of the Dove in the Canticles, the precept of our Saviour, to be wiſe as Serpents, and innocent as Doves; and eſpecially the appearance of the holy Ghoſt in the ſimilitude of this animall; have taken occaſion to ſet down many affections of the Dove, and what doth moſt commend it, is, that it hath no gall. And hereof have made uſe not only minor Divines, but Cyprian, Auſtin, Iſidore, Beda, Rupertus, Janſenius and many more.

Whereto notwithſtanding we know not how to aſſent; it being repugnant unto the Authority and poſitive determination of ancient Philoſophy. The affirmative of Ariſtotle in his hiſtory of Animals is very plain, *Fel aliis ventri, aliis inteſtino jungitur*; Some have the gall adjoined to the guts, as the Crow, the Swallow, Sparrow and the Dove; the ſame is alſo atteſted by Pliny; and not without ſome paſſion by Galen, who in his book *de Atra bile*, accounts him ridiculous that denies it.

It is not agreeable to the conſtitution of this Animall, nor can we ſo reaſonably conceive there wants a gall; that is, the hot and fiery humour in a body ſo hot of temper; which phlegm or melancholy could not effect. Now of what complexion it is, Julius Alexandrinus declareth, when he affirmeth, that ſome upon the uſe thereof, have fallen into Feavers and Quinſies; the temper of their tongue and inteſtinall excretions doe alſo confirm the ſame; which Topically applied become a Phænigmus or Rubifying medicine; and Salubrium, 13°

are of ſuch fiery parts, that as we reade in Galen, they have of themſelves conceived fire, and burnt a houſe about them. And therefore when in the famine of Samaria (wherein the fourth part of a cab of Pigeons dung was ſold for five pieces of ſilver,) it is delivered by Joſephus, that men made uſe hereof in ſtead of common ſalt; although the expoſition ſeem ſtrange, it is more probable then many other; for that it containeth very much ſalt, beſide the effects before expreſſed, is diſcernable by taſte, and the earth of Columbaries or Dovehouſes, ſo much deſired in the artifice of Salt-peter. And to ſpeak generally, the excrement of birds which want both bladder and kidnies, hath more of ſalt and acrimony, then that of other animals, who beſide the guts have alſo thoſe conveyances; for whereas in theſe, the ſalt and lixiviated ſeroſity with ſome portion of choler, is divided between the guts and bladder, it remains undivided in birds; and hath but a ſingle deſcent, by the guts, with the excluſions of the belly. Now if becauſe the Dove is of a milde and gentle nature, we cannot conceive it ſhould be of an hot temper; our apprehenſions are not diſtinct in the meaſure of conſtitutions, and the ſeverall parts which evidence ſuch conditions: for the Iraſcible paſſions doe follow the temper of the heart, but the concupiſcible diſtractions the craſis of the liver; now many have hot livers, which have but cool and temperate hearts; and this was probably the temper of Paris; a contrary conſtitution to that of Ajax; and both but ſhort of Medea, who ſeemed to exceed in either.

Whence the iraſcible, whence the concupiſcible paſſions doe moſt arile.

Laſtly, It is repugnant to experience; for Anatomicall enquiry diſcovereth in them a gall; and that according to the determination of Ariſtotle, not annexed unto the Liver but adhering unto the guts; nor is the humour contained in ſmaller veines, or obſcurer capillations, but in a veſicle or little bladder, though ſome affirm it hath no bag at all. And therefore the Hieroglyphick of the Ægyptians, though allowable in the ſenſe, is weak in the foundation; who expreſſing meekneſſe and lenity by the portract of a Dove with the taile erected, affirmed it had no gall in the inward parts, but onely in the rump, and as it were out of the body. And therefore if they conceived their gods were pleaſed with the ſacrifice of this Animall, as being without gall, the ancient Heathen were ſurely miſtaken in the reaſon, and in the very oblation. Whereas in the holocauſt or burnt offerings of Moſes the gall was caſt away; for as Ben Maimon inſtructeth, the inwards whereto the gall adhereth were taken out with the crop, according unto the Law, Levit. 1. which the Prieſt did not burn, but caſt unto the Eaſt; that is, behinde his back, and readieſt place to be carried out of the Sanctuary. And if they alſo conceived that for this reaſon, they were the birds of Venus, and wanting the furious and diſcording part, were more acceptable unto the Deity of Love; they ſurely added unto the conceit; which was at firſt venereall; and in this animall may be ſufficiently made out from that conception.

Doves, the birds of Venus, why.

The ground of this conceit is partly like the former; the obſcure ſituation of the gall, and out of the Liver, wherein it is commonly enquired; but this is a very injuſt illation, not well conſidering with what variety this part is ſeated in birds; in ſome both at the ſtomack and the liver, as in the Capriceps; in ſome at the liver only, as in Cocks, Turkeys and Phaſiants; in others at the guts and Liver, as in Hawkes and Kites, in ſome at the guts alone, as Crowes, Doves, and many more. And theſe perhaps may take up all the waies of ſituation, not only in birds, but alſo other animals; for what is ſaid of the Anchovy, that anſwerable unto its name it carrieth the gall in the head, is further to be enquired. And though the diſcoloured particles in

in the skin of an Heron, be commonly termed Galls, yet is not this animall deficient in that part. And thus when it is conceived that the eyes of Tobias were cured by the gall of the fish Callyonimus or *Scorpius marinus*, commended to that effect by Dioscorides; although that part were not in the Liver, there were no reason to doubt that probability. And whatsoever animall it was, it may be received without exception when 'tis delivered, the married couple as a testimony of future concord, did cast the gall of the sacrifice behinde the Altar.

A strict and literall acception of a loose and tropicall expression was a second ground hereof. For while some affirmed it had no gall, intending onely thereby no evidence of anger or fury; others have construed it anatomically, and denied that part at all. By which illation we may inferre, and that from sacred Text, a Pigeon hath no heart; according to that expression, Hosea 7. *Factus est Ephraim sicut Columba seducta non habens cor*; and so from the letter of Scripture we may conclude it is no milde, but a fiery and furious animall, according to that of Jeremy, chap. 25. *Facta est terra in desolationem à facie iræ Columbæ*: and again, chap. 46. *Revertamur ad terram nativitatis nostræ à facie gladii Columbæ*. Where notwithstanding the Dove is not literally intended; but thereby are implied the Babylonians, whose Queen Semiramis was called by that name, and whose successors did bear the Dove in their standard. So is it proverbially said, *Formicæ sua bilis inest, habet & musca splenem*; whereas we know Philosophy denieth these parts, nor hath Anatomy discovered them in insects.

If therefore any affirm a Pigeon hath no gall, implying no more thereby then the lenity of this animall, we shall not controvert his affirmation. Thus may we make out the assertions of ancient Writers, and safely receive the expressions of Divines and worthy Fathers. But if by a transition from Rhetorick to Logick, he shall contend, it hath no such part or humour; he committeth an open fallacy, and such as was probably first committed concerning Spanish Mares; whose swiftnesse tropically expressed from their generation by the winde; might after be grosly taken, and a reall truth conceived in that conception.

Chap. IV.

Of the Bever.

That a Bever to escape the Hunter, bites off his testicles or stones, is a tenent very ancient; and hath had thereby advantage of propagation. For the same we finde in the Hieroglyphicks of the Ægyptians; in the Apologue of Æsope, an Author of great antiquity, who lived in the beginning of the Persian Monarchy, and in the time of Cyrus; the same is touched by Aristotle in his Ethicks, but seriously delivered by Ælian, Pliny and Solinus; with the same we meet with in Juvenall, who by an handsome and metricall expression more welcomely engrafts it in our junior memories

Æsops Apologues of what antiquity.

——*imitatus Castora, qui se*
Eunuchum ipse facit, cupiens evadere damno
Testiculorum, adeo medicatum intelligit inguen,

it hath been propagated by Emblems; and some have been so bad Grammarians, as to be deceived by the name, deriving *Castor à castrando*; whereas, the

proper Latine word is *Fiber*; and *Caſtor*, but borrowed from the Greek, ſo called *quaſi* γάστωρ, that is, *Animal ventricoſum*, from his ſwaggy and prominent belly.

Herein therefore to ſpeak compendiouſly, we firſt preſume to affirm, that from a ſtrict enquiry, we cannot maintain the evulſion or biting off any parts; and this is declarable from the beſt and moſt profeſſed Writers; for though ſome have made uſe hereof in a Morall or Tropicall way, yet have the profeſſed diſcourſers by ſilence deſerted, or by experience rejected this aſſertion. Thus was it in ancient times diſcovered, and experimentally refuted by one Seſtius a Phyſitian, as it ſtands related by Pliny; by Dioſcorides, who plainly affirms that this tradition is falſe; by the diſcoveries of modern Authors, who have expreſly diſcourſed hereon, as Aldrovandus, Mathiolus, Geſnerus, Bellonius; by Olaus *Magnus*, Peter Martyr and divers others; who have deſcribed the manner of their venations in America; they generally omitting this way of their eſcape, and have delivered ſeverall other, by which they are daily taken.

The originall of the conceit was probably Hieroglyphicall; which after became Mythologicall unto the Greeks, and ſo ſet down by Æſop; and by proceſſe of tradition, ſtole into a totall verity, which was but partially true, that is in its covert ſenſe and morality. Now why they placed this invention upon the Bever (beſide the Medicall and Merchantable commodity of *caſtoreum* or parts conceived to be bitten away) might be the ſagacity and wiſdome of that animall; which indeed from the works it performes, and eſpecially its artifice in building, is very ſtrange, and ſurely not to be matched by any other; omitted by Plutarch *de ſolertia animalium*, but might have much advantaged the drift of that diſcourſe.

If therefore any affirm a wiſe man ſhould demean himſelf like the Bever, who to eſcape with his life, contemneth the loſſe of his genitals; that is, in caſe of extremity, not ſtrictly to endeavour the preſervation of all, but to ſit down in the enjoiment of the greater good, though with the detriment and hazzard of the leſſer; we may hereby apprehend a reall and uſefull truth. In this latitude of belief, we are content to receive the fable of Hippomanes who redeemed his life with the loſſe of a golden ball; and whether true or falſe, we reject not the tragedy of Abſyrtus, and the diſperſion of his members by Medea to perplex the purſuit of her father. But if he ſhall poſitively affirm this act, and cannot beleeve the morall, unleſſe he alſo credit the fable; he is ſurely greedy of deluſion, and will hardly avoid deception in theories of this nature. The error therefore and Alogy in this opinion, is worſe then in the laſt; that is not to receive figures for realities, but expect a verity in Apologues; and beleeve, as ſerious affirmations, confeſſed and ſtudied fables.

Again, If this were true, and that the Bever in chaſe makes ſome divulſion of parts, as that which we call *Caſtoreum*; yet are not theſe parts avelled to be termed Teſticles or ſtones; for theſe cods or follicles are found in both ſexes, though ſomewhat more protuberant in the male. There is hereto no derivation of the ſeminall parts, nor any paſſage from hence, unto the veſſels of ejaculation: ſome perforations only in the part it ſelf, through which the humor included doth exudate; as may be obſerved in ſuch as are freſh, and not much dried with age; and laſtly, the Teſticles properly ſo called, are of a leſſer magnitude and ſeated inwardly upon the loines; and therefore it were not only a fruitleſſe attempt, but impoſſible act, to eunuchate or caſtrate themſelves; and might be an hazardous practice of Art, if at all attempted by others.

Now

Now all this is confirmed from the experimentall testimony of five very memorable Authors; Bellonius, Gesnerus, Amatus, Rondeletius and Mathiolus; who receiving the hint hereof from Rondeletius in the Anatomy of two Bevers, did finde all true that had been delivered by him, whose words are these in his learned book *de Piscibus: Fiori in inguinibus geminos tumores habent, utrinque unicum, ovi Anserini magnitudine, inter hos est mentula in maribus, in fœminis pudendum, hi tumores testes non sunt, sed folliculi membranâ contecti, in quorum medio singuli sunt meatus è quibus exudat liquor pinguis & cerosus, quem ipse Castor sæpe admoto ore lambit & exugit, postea veluti oleo, corporis partes oblinit; Hos tumores testes non esse hinc maxime colligitur, quod ab illis nulla est ad mentulam via neque ductus quo humor in mentula meatum derivetur, & foras emittatur; præterea quod testes intus reperiuntur, eosdem tumores Moscho animali inesse puto, è quibus odoratum illud pus emanat*; then which words there can be none plainer, nor more evidently discover the impropriety of this appellation. That which is included in the cod or visible bagge about the groin, being not the Testicle, or any spermaticall part, but rather a collection of some superfluous matter deflowing from the body, especially the parts of nutrition as unto their proper emunctories; and as it doth in Musk and Civet cats, though in a different and offensive odour; proceeding partly from its food, that being especially fish; whereof this humor may be a garous excretion and olidous separation.

Most therefore of the Modernes before Rondeletius, and all the Ancients excepting Sestius, have misunderstood this part, conceiving *Castoreum* the Testicles of the Bever, as Dioscorides, Galen, Ægineta, Ætius, and others have pleased to name it. The Egyptians also failed in the ground of their Hieroglyphick, when they expressed the punishment of adultery by the Bever depriving himself of his testicles; which was amongst them the penalty of such incontinency. Nor is Ætius perhaps, too strictly to be observed, when he prescribeth the stones of the Otter, or River-dog, as succedaneous unto *Castoreum*. But most inexcusable of all is Pliny; who having before him in one place the experiment of Sestius against it, sets down in another, that the Bevers of Pontus bite off their testicles, and in the same place affirmeth the like of the Hyena; which was indeed well joined with the Bever, as having also a bagge in those parts; if thereby we understand the Hyena odorata, or Civet cat, as is delivered and graphically described by Castellus.

Castellus de Hyenâ odoriferâ.

Now the ground of this mistake might be the resemblance and situation of these tumors about those parts, wherein we observe the testicles in other animals. Which notwithstanding is no well founded illation; for the testicles are defined by their office, and not determined by place or situation; they having one office in all, but different seats in many. For beside that no serpent or fishes oviparous, have any stones at all; that neither biped nor quadruped oviparous have any exteriorly, or prominent in the groine; some also that are viviparous contain these parts within, as, beside this animall, the Elephant, and the Hedge-hog.

If any therefore shall terme these, testicles, intending metaphorically, and in no strict acception; his language is tolerable and offends our eares no more then the Tropicall names of plants, when we reade in Herbals, of Dogs, Fox, and Goat-stones. But if he insist thereon, and maintain a propriety in this language; our discourse hath overthrown his assertion, nor will Logick permit his illation; That is, from things alike, to conclude a thing the same; and from an accidentall convenience, that is a similitude in

place or figure, to infer a ſpecificall congruity or ſubſtantiall concurrence in nature.

Chap. V.

Of the Badger.

That a Brock or Badger hath the legs of one ſide ſhorter then of the other, though an opinion perhaps not very ancient, is yet very generall; received not only by theoriſts and unexperienced beleevers, but aſſented unto by moſt who have the opportunity to behold and hunt them daily. Which notwithſtanding upon enquiry I finde repugnant unto the three determinators of truth, Authority, Senſe and Reaſon. For firſt, Albertus *magnus* ſpeaks dubiouſly, confeſſing he could not confirm the verity hereof; but Aldrovand affirmeth plainly, there can be no ſuch inequality obſerved. And for my own part, upon indifferent enquiry, I cannot diſcover this difference; although the regardible ſide be defined, and the brevity by moſt imputed unto the left.

Again, It ſeems no eaſie affront unto reaſon, and generally repugnant unto the courſe of nature; for if we ſurvey the totall ſet of animals, we may in their legs, or organs of progreſſion, obſerve an equality of length, and parity of numeration; that is, not any to have an odde leg, or the ſupporters and movers of one ſide not exactly anſwered by the other. Although the hinder may be unequall unto the fore and middle legs, as in Frogs, Locuſts and Graſhoppers; or both unto the middle, as in ſome beetles, and ſpiders, as is determined by Ariſtotle *de inceſſu animalium.* Perfect and viviparous quadrupeds, ſo ſtanding in their poſition of proneneſſe, that the oppoſite joints of neighbour legs conſiſt in the ſame plane; and a line deſcending from their navell interſects at right angles the axis of the earth. It happeneth often I confeſſe that a Lobſter hath the chely or great claw of one ſide longer then the other; but this is not properly their leg, but a part of apprehenſion, and whereby they hold or ſeize upon their prey; for the legs and proper parts of progreſſion are inverted backward, and ſtand in a poſition oppoſite unto theſe.

Laſtly, The monſtroſity is ill contrived, and with ſome diſadvantage; the ſhortneſſe being affixed unto the legs of one ſide, which might have been more tolerably placed upon the thwart or Diagoniall movers; for the progreſſion of quadrupeds being performed *per Diametrum*, that is the croſſe legs moving or reſting together, ſo that two are alwaies in motion, and two in ſtation at the ſame time; the brevity had been more tolerable in the croſſe legs. For then the motion and ſtation had been performed by equall legs; whereas herein they are both performed by unequall organs, and the imperfection becomes diſcoverable at every hand.

Diagonion, a line drawn from the croſſe angles.

Chap. VI.

Of the Beare.

That a Bear brings forth her young informous and unshapen, which she fashioneth after by licking them over, is an opinion not only vulgar, and common with us at present; but hath been of old delivered by ancient Writers. Upon this foundation it was a Hieroglyphick with the Ægyptians; Aristotle seems to countenance it; Solinus, Pliny and Ælian directly affirm it, and Ovid smoothly delivereth it

Nec catulus partu quem reddidit ursa recenti
Sed male viva caro est, lambendo mater in artus
Ducit, & in formam qualem cupit ipsa reducit.

Which opinion notwithstanding is not only repugnant unto the sense of every one that shall enquire into it, but the exact and deliberate experiment of three authentick Philosophers. The first of Mathiolus in his Comment on Dioscorides, whose words are to this effect. In the valley of Anania about Trent, in a Bear which the Hunters eventerated or opened, I beheld the young ones with all their parts distinct; and not without shape, as many conceive; giving more credit unto Aristotle and Pliny, then experience and their proper senses. Of the same assurance was Julius Scaliger in his Exercitations, *Ursam fatus informes potius ejicere, quam parere, si vera dicunt, quos postea lingua effingat; Quid hujusce fabulæ authoribus fidei habendum ex hac historia cognosces; In nostris Alpibus venatores fœtam ursam cepere, dissecta ea fœtus plane formatus intus inventus est:* And lastly, Aldrovandus who from the testimony of his own eies affirmeth, that in the cabinet of the Senate of Bononia, there was preserved in a glasse a Cub dissected out of a Bear perfectly formed, and compleat in every part.

It is moreover injurious unto reason, and much impugneth the course and providence of nature, to conceive a birth should be ordained before there is a formation. For the conformation of parts is necessarily required not only unto the prerequisites and previous conditions of birth, as motion and animation; but also unto the parturition or very birth it self: Wherein not only the Dam, but the younglings play their parts, and the cause and act of exclusion proceedeth from them both. For the exclusion of animals is not meerly passive like that of egges, nor the totall action of delivery to be imputed unto the mother; but the first attempt beginneth from the Infant; which at the accomplished period attempteth to change his mansion; and strugling to come forth, dilacerates and breaks those parts which restrained him before.

Beside (what few take notice of) men hereby doe in a high measure vilifie the works of God, imputing that unto the tongue of a beast, which is the strangest artifice in all the acts of nature; that is the formation of the Infant in the womb; not only in mankinde, but all viviparous animals. Wherein the plastick or formative faculty, from matter appearing homogeneous, and of a similary substance, erecteth bones, membranes, veins and arteries; and out of these contriveth every part in number, place and figure, according to the law of its species. Which is so far from being fashioned by any outward agent, that once omitted or perverted by a slip of the inward Phidias, it is not reducible by any other whatsoever. And therefore, *mixè me plasmaverunt manus tuæ*, though it originally respected the generation of man,

Formation in the Matrix the admirable work of nature.

man, yet is it appliable unto that of other animals; who entring the womb in indiſtinct and ſimple materials, return with diſtinction of parts, and the perfect breath of life. He that ſhall conſider theſe alterations without, muſt needs conceive there have been ſtrange operations within; which to behold, it were a ſpectacle almoſt worth ones being; a ſight beyond all; except that man had been created firſt, and might have ſeen the ſhew of five daies after.

Now as the opinion is repugnant both unto ſenſe and reaſon, ſo hath it probably been occaſioned from ſome ſlight ground in either. Thus in regard the Cub comes forth involved in the Chorion, a thick and tough membrane obſcuring the formation, and which the Dam doth after bite and tear aſunder; the beholder at firſt ſight conceives it a rude and informous lump of fleſh, and imputes the enſuing ſhape unto the mouthing of the Dam; which addeth nothing thereunto, but only drawes the curtain, and takes away that vaile which concealed the piece before. And thus have ſome endeavoured to enforce the ſame from reaſon; that is, the ſmall and ſlender time of the Beares geſtation, or going with her young; which laſting but few daies (a moneth ſome ſay) the excluſion becomes precipitous, and the young ones conſequently informous; according to that of Solinus, *Trigeſimus dies uterum liberat urſæ; unde evenit ut præcipitata fœcunditas informes creet partus.* But this will overthrow the generall method of nature, in the works of generation. For therein the conformation is not only antecedent, but proportionall unto the excluſion; and if the period of the birth be ſhort, the term of conformation will be as ſudden alſo. There may I confeſſe from this narrow time of geſtation enſue a minority or ſmalneſſe in the excluſion; but this however inferreth no informity, and it ſtill receiveth the name of a naturall and legitimate birth; whereas if we affirm a totall informity, it cannot admit ſo forward a term as an Abortment; for that ſuppoſeth conformation; and ſo we muſt call this conſtant and intended act of nature, a ſlip or effluxion, that is an excluſion before conformation; before the birth can bear the name of the parent, or be ſo much as properly called an Embryon.

ἔκχυσις.

Chap. VII.

Of the Baſilisk.

Many opinions are paſſant concerning the Baſilisk or little king of Serpents, commonly called the Cockatrice; ſome affirming, others denying, moſt doubting the relations made hereof. What therefore in theſe incertainties we may more ſurely determine; that ſuch an animall there is, if we evade not the teſtimony of Scripture, and humane Writers, we cannot ſafely deny. So is it ſaid, Pſal. 91. *Super aſpidem & Baſiliſcum ambulabis*, wherein the vulgar Tranſlation retaineth the word of the Septuagint, uſing in other places the Latine expreſſion *Regulus*, as Proverb. 23. *Mordebit ut coluber, & ſicut Regulus venena diffundet*, and Jeremy 8. *Ecce ego mittam vobis ſerpentes Regulos*, &c. That is, as ours tranſlate it, Behold I will ſend Serpents, Cockatrices among you which will not be charmed, and they ſhall bite you. And as for humane Authors, or ſuch as have diſcourſed of animals, or poiſons, it is to be found almoſt in all; in Dioſcorides, Galen, Pliny, Solinus, Ælian, Ætius, Avicen, Ardoynus, Grevinus, and many

many more. In Aristotle I confesse we finde no mention thereof, but Scaliger in his Comment and enumeration of Serpents, hath made supply; and in his Exercitations delivereth that a Basilisk was found in Rome, in the daies of Leo the fourth; the like is reported by Sigonius; and some are so farre from denying one, that they have made severall kindes thereof; for such is the Catoblepas of Pliny, conceived by some; and the Dryinus of Ætius by others.

But although we deny not the existence of the Basilisk, yet whether we doe not commonly mistake in the conception hereof, and call that a Basilisk which is none at all, is surely to be questioned. For certainly that which from the conceit of its generation we vulgarly call a Cockatrice, and wherein (but under a different name) we intend a formall Identity and adequate conception with the Basilisk; is not the Basilisk of the Ancients, whereof such wonders are delivered. For this of ours is generally described with legs, wings, a serpentine and winding taile, and a crist or comb somewhat like a Cock; but the Basilisk of elder times was a proper kinde of Serpent, not above three palmes long, as some account; and differenced from other Serpents by advancing his head, and some white marks or coronary spots upon the crown; as all authentick Writers have delivered.

Nor is this Cockatrice only unlike the Basilisk, but of no reall shape in nature; and rather an Hieroglyphicall fancy, to expresse different intentions, set forth in different fashions; sometimes with the head of a man, sometimes with the head of an Hawk, as Pierius hath delivered; and as with addition of legs the Heralds and Painters still describe it. Nor was it onely of old a symbollicall and allowable invention, but is now become a manuall contrivance of Art, and artificiall imposture; whereof besides others, Scaliger hath taken notice: *Basiliſci formam mentiti ſunt vulgo Gallinaceo ſimilem, & pedibus binis; neque enim abſimiles ſunt cæteris ſerpentibus, niſi maculâ quaſi in vertice candidâ, unde illi nomen Regium*; that is, men commonly counterfeit the form of a Basilisk, with another like a Cock, and with two feet; whereas they differ not from other Serpents, but in a white speck upon their crown. Now although in some manner it might be counterfeited in Indian Cocks, and flying Serpents; yet is it commonly contrived out of the skins of Thornbacks, Scaites or Maids, as Aldrovand hath observed; and also graphically described in his excellent book of Fishes.

By way of figure,

Nor is only the existency of this animall considerable, but many things delivered thereof, particularly its poison, and its generation. Concerning the first, according to the doctrine of the Ancients, men still affirm, that it killeth at a distance, that it poisoneth by the eye, and by priority of vision. Now that deleterious it may be at some distance and destructive without corporall contaction, what uncertainty soever there be in the effect, there is no high improbability in the relation. For if plagues or pestilentiall Atomes have been conveyed in the air from different Regions; if men at a distance have infected each other; if the shaddowes of some trees be noxious; if Torpedoes deliver their opium at a distance, and stupifie beyond themselves; we cannot reasonably deny, that (beside our grosse and restrained poisons requiring contiguity unto their actions) there may proceed from subtiller seeds, more agile emanations; which contemn those Laws, and invade at distance unexpected.

That this venenation shooteth from the eye, and that this way a Basilisk may empoison, although thus much be not agreed upon by Authors, some imputing it unto the breath, others unto the bite, it is not a thing impossible;

Effluxion of corporeall ſpecies.

for eies receive offenſive impreſſions, from their objects, and may have influences deſtructive to each other. For the viſible ſpecies of things ſtrike not our ſenſes immaterially; but ſtreaming in corporall raies, doe carry with them the qualities of the object from whence they flow, and the medium through which they paſſe. Thus through a green or red glaſſe all things we behold appear of the ſame colours; thus ſore eies affect thoſe which are ſound; and themſelves alſo by reflection; as will happen to an inflamed eye that beholds it ſelf long in a glaſſe; thus is faſcination made out; and thus alſo it is not impoſſible, what is affirmed of this animall; the viſible raies of their eies carrying forth the ſubtileſt portion of their poiſon; which received by the eie of man, or beaſt, infecteth firſt the brain, and is from thence communicated unto the heart.

How the Baſiliſk kils at diſtance.

But laſtly, That this deſtruction ſhould be the effect of the firſt beholder, or depend upon priority of aſpection, is a point not eaſily to be granted, and very hardly to be made out upon the principles of Ariſtotle, Alhazen, Vitello, and others; who hold that ſight is made by Reception, and not by Extramiſſion; by receiving the raies of the object into the eye, and not by ſending any out. For hereby although he behold a man firſt, the Baſiliſk ſhould rather be deſtroied, in regard he firſt receiveth the raies of his Antipathy, and venemous emiſſions which objectively move his ſenſe; but how powerfull ſoever his own poiſon be, it invadeth not the ſenſe of man, in regard he beholdeth him not. And therefore this conceit was probably begot by ſuch as held the opinion of ſight by extramiſſion; as did Pythagoras, Plato, Empedocles, Hipparchus, Galen, Macrobius, Proclus, Simplicius, with moſt of the Ancients, and is the poſtulate of Euclide in his Opticks, but now ſufficiently convicted from obſervations of the dark chamber.

The generation of the Cocks-egge.

As for the generation of the Baſiliſk, that it proceedeth from a Cocks egge hatched under a Toad or Serpent, it is a conceit as monſtrous as the brood it ſelf. For if we ſhould grant that Cocks growing old, and unable for emiſſion, amaſſe within themſelves ſome ſeminall matter, which may after conglobate into the forme of an egge, yet will this ſubſtance be unfruitfull; as wanting one principle of generation, and a commixture of the ſeed of both ſexes, which is required unto production; as may be obſerved in the egges of Hens not trodden; and as we have made triall in ſome which are termed Cocks egges. It is not indeed impoſſible that from the ſperm of a Cock, Hen, or other animall being once in putreſcence, either from incubation, or otherwiſe, ſome generation may enſue; not univocall and of the ſame ſpecies, but ſome imperfect or monſtrous production; even as in the body of man from putrid humours, and peculiar waies of corruption, there have ſucceeded ſtrange and unſeconded ſhapes of wormes, whereof we have beheld ſome our ſelves, and read of others in medicall obſervations. And ſo may ſtrange and venemous Serpents be ſeverall waies engendered; but that this generation ſhould be regular, and alway produce a Baſiliſk, is beyond our affirmation, and we have good reaſon to doubt.

Ovum Centeninum, or the laſt egge, which is a very little one.

Again, It is unreaſonable to aſcribe the equivocacy of this form unto the hatching of a Toade, or imagine that diverſifies the production. For Incubation alters not the ſpecies; nor if we obſerve it ſo much as concurres either to the ſex or colour; as appears in the eggs of Ducks or Partridges hatched under a Hen; there being required unto their excluſion, only a gentle and continued heate; and that not particular or confined unto the ſpecies or parent. So have I known the ſeed of Silk-wormes hatched on the bodies of women: Pliny reports that Livia the wife of Auguſtus hatched an egge in her boſome. Nor is only an animall heate required hereto, but an elementall and artificiall warmth

warmth will ſuffice; for as Diodorus delivereth, the Ægyptians were wont to hatch their eggs in ovens, and many eyewitneſſes confirm that practice unto this day. And therefore this generation of the Baſilisk, ſeems like that of Caſtor and Helena; he that can credit the one, may eaſily beleeve the other; that is, that theſe two were hatched out of the egge, which Jupiter in the form of a Swan, begat on his Miſtres Leda.

The occaſion of this conceit might be an Ægyptian tradition concerning the bird Ibis; which after became transferred unto Cocks. For an old opinion it was of that Nation, that the Ibis feeding upon Serpents, that venemous food ſo inquinated their ovall conceptions, or egges within their bodies, that they ſometimes came forth in Serpentine ſhapes; and therefore they alwaies brake their egges, nor would they endure the bird to ſit upon them. But how cauſeleſſe their fear was herein, the daily Incubation of Ducks, Peahens, and many other teſtifie; and the Stork might have informed them; which bird they honoured and cheriſhed, to deſtroy their Serpents.

That which much promoted it, was a miſapprehenſion in holy Scripture upon the Latine Tranſlation in Eſay 51. *Ova aſpidum ruperunt, & telas Aranearum texuerunt, qui comedent de ovis eorum morietur, & quod confotum eſt, erumpet in Regulum.* From whence notwithſtanding, beſide the generation of Serpents from egges, there can be nothing concluded; but what kinde of Serpents are meant, not eaſie to be determined; for tranſlations are very different: Tremellius rendring the Aſpe Hæmorrhous, and the Regulus or Baſilisk a Viper, and our tranſlation for the Aſpe ſets down a Cockatrice in the text, and an Adder in the margine.

Another place of Eſay doth alſo ſeem to countenance it, Chap. 14. *Ne Lætetis Philiſtæa quoniam diminuta eſt virga percuſſoris tui, de radice enim colubri egredietur Regulus, & ſemen ejus abſorbens volucrem*; which ours ſomewhat favourably rendreth; Out of the Serpents Root ſhall come forth a Cockatrice, and his fruit ſhall be a fiery flying Serpent. But Tremellius, *è radice Serpentis prodit Hæmorrhous, & fructus illius Præſter volans*; wherein the words are different, but the ſenſe is ſtill the ſame; for therein are figuratively intended Uzziah and Ezechias; for though the Philiſtines had eſcaped the minor Serpent Uzziah, yet from his ſtock, a fiercer Snake ſhould ariſe, that would more terribly ſting them, and that was Ezechias.

Chap. VIII.

of the Wolfe.

Such a Story as the Baſilisk is that of the Wolfe concerning priority of viſion, that a man becomes hoarſe or dumbe, if a Wolfe have the advantage firſt to eye him. And this is in plain language affirmed by Pliny: *In Italia ut creditur, Luporum viſus eſt noxius, vocemque homini, quem prius contemplatur adimere*; ſo is it made out what is delivered by Theocritus, and after him by Virgil ——— *Vox quoq; Mœrim*
Jam fugit ipſa, Lupi Mœrim videre priores.
Thus is the Proverb to be underſtood, when during the diſcourſe if the party or ſubject interveneth, and there enſueth a ſudden ſilence, it is uſually ſaid, *Lupus eſt in fabulâ.* Which conceit being already convicted, not only by Scaliger, Riolanus and others, but daily confutable almoſt every where out of England; we ſhall not further refute.

The ground or occaſionall originall hereof, was probably the amazement and ſudden ſilence, the unexpected appearance of Wolves doe often put upon travellers; not by a ſuppoſed vapour, or venemous emanation, but a vehement fear which naturally produceth obmuteſcence; and ſometimes irrecoverable ſilence. Thus birds are ſilent in preſence of an Hawk, and Pliny ſaith that dogges are mute in the ſhadow of an Hyæna; but thus could not the mouthes of worthy Martyrs be ſilenced, who being expoſed not only unto the eyes, but the mercileſſe teeth of Wolves, gave lowd expreſſions of their faith; and their holy clamours were heard as high as heaven.

That which much promoted it beſide the common Proverb, was an expreſſion in Theocritus, a very ancient Poet, ὁ φθίσῃ λύκον εἶδες, *Edere non poteris vocem, Lycus eſt tibi viſus*; which Lycus was Rivall unto another; and ſuddenly appearing ſtopped the mouth of his Corrivall: now Lycus ſignifying alſo a Wolfe, occaſioned this apprehenſion; men taking that appellatively, which was to be underſtood properly, and tranſlating the genuine acception. Which is a fallacy of Æquivocation, and in ſome opinions begat the like conceit concerning Romulus and Remus, that they were foſtered by a Wolfe, the name of the Nurſe being *Lupa*; and founded the fable of Europa, and her carriage over Sea by a Bull, becauſe the Ship or Pilots name was *Taurus*. And thus have ſome been ſtartled at the Proverb, *Bos in linguâ*; confuſedly apprehending how a man ſhould be ſaid to have an Oxe in his tongue, that would not ſpeak his minde; which was no more then that a piece of money had ſilenced him: for by the Oxe was only implied a piece of coin ſtamped with that figure, firſt currant with the Athenians, and after among the Romanes.

Chap. IX.

Of Deere.

The common opinion concerning the long life of Animals, is very ancient, eſpecially of Crowes, Choughs and Deere; in moderate accounts exceeding the age of man; in ſome the daies of Neſtor, and in others ſurmounting the years of Artephius or Methuſelah; from whence Antiquity hath raiſed proverbiall expreſſions, and the reall conception of their duration, hath been the hyperbolicall expreſſion of many others. From all the reſt we ſhall ſingle out the Deer; upon conceſſion a long-liv'd Animall, and in longævity by many conceived to attain unto hundreds; wherein permitting every man his own belief, we ſhall our ſelves crave liberty to doubt; and our reaſons are theſe enſuing.

The firſt is that of Ariſtotle, drawn from the increment and geſtation of this Animall, that is, its ſudden arrivance unto growth and maturity, and the ſmall time of its remainder in the wombe. His words in the tranſlation of Scaliger are theſe; *De ejus vitæ longitudine fabulantur; neque enim aut geſtatio aut incrementum hinnulorum ejuſmodi ſunt, ut præſtent argumentum longævi animalis*; that is, fables are raiſed concerning the vivacity of Deere; for neither are their geſtation or increment, ſuch as may afford an argument of long life. And theſe ſaith Scaliger, are good mediums conjunctively taken, that is, not one without the other. For of animals viviparous ſuch as live long, goe long with young, and attain but ſlowly to their maturity and ſtature. So the Horſe that liveth about thirty, arriveth unto his ſtature about

ſix

six years, and remaineth above nine moneths in the wombe; so the Camell that liveth unto fifty, goeth with young no lesse then ten moneths, and ceaseth not to grow before seven; and so the Elephant that liveth an hundred, beareth its young above a year, and arriveth unto perfection at twenty. On the contrary, the Sheep and Goat, which live but eight or ten years, goe but five moneths, and attain to their perfection at two years: and the like is observable in Cats, Hares and Conies. And so the Deere that endureth the wombe but eight moneths, and is compleat at six years, from the course of nature, we cannot expect to live an hundred; nor in any proportionall allowance much more then thirty; as having already passed two generall motions observable in all animations, that is, its beginning and encrease; and having but two more to runne thorow, that is, its state and declination; which are proportionally set out by nature in every kinde; and naturally proceeding admit of inference from each other.

The other ground that brings its long life into question, is the immoderate salacity, and almost unparalleld excesse of venery, which every September may be observed in this Animall; and is supposed to shorten the lives of Cocks, Partridges and Sparrows. Certainly a confessed and undeniable enemy unto longævity; and that not only as a signe in the complexionall desire and impetuosity; but also as a cause in the frequent act, or iterated performance thereof. For though we consent not with that Philosopher, who thinks a spermaticall emission unto the weight of one dragme, is æquivalent unto the effusion of sixty ounces of bloud; yet considering the exolution and langour ensuing that act in some, the extenuation and marcour in others, and the visible acceleration it maketh of age in most; we cannot but think it much abridgeth our daies. Although we also concede that this exclusion is naturall, that nature it self will finde a way hereto without either act or object: And although it be placed among the six non-naturals, that is, such as neither naturally constitutive, nor meerly destructive, doe preserve or destroy according unto circumstance; yet doe we sensibly observe an impotency or totall privation thereof, prolongeth life; and they live longest in every kinde that exercise it not at all. And this is true not only in Eunuches by nature, but Spadoes by Art; for castrated animals in every species are longer lived then they which retain their virilities: For the generation of bodies is not effected as some conceive, of souls, that is, by Irradiation, or answerably unto the propagation of light, without its proper diminution; but therein a transmission is made materially from some parts, and Ideally from every one; and the propagation of one, is in a strict acception, some minoration of another. And therefore also that axiome in Philosophy, that the generation of one thing, is the corruption of another; although it be substantially true concerning the form and matter, is also dispositively verified in the efficient or producer.

Eunuches and gelded creatures generally longer lived.

As for more sensible arguments, and such as relate unto experiment, from these we have also reason to doubt its age, and presumed vivacity; for where long life is naturall, the marks of age are late, and when they appear, the journey unto death cannot be long. Now the age of Deer (as Aristotle long agoe observed) is best conjectured, by view of the horns and teeth; from the horns there is a particular and annuall account unto six years; they arising first plain, and so successively branching; after which the judgement of their years by particular marks becomes uncertain; but when they grow old, they grow lesse branched, and first doe lose their ἀμυντῆρες, or *propugnacula*; that is, their brow Antlers, or loweſt furcations next the head, which Aristotle saith the young ones use in fight, and the old as needlesse have them not

at all. The ſame may be alſo collected from the loſſe of their Teeth, whereof in old age they have few or none before in either jaw. Now theſe are infallible marks of age, and when they appear, we muſt confeſſe a declination; which notwithſtanding (as men inform us in England, where obſervations may well be made,) will happen between twenty and thirty. As for the bone or rather induration of the roots of the arteriall vein, and great artery, which is thought to be found only in the heart of an old Deere, and therefore becomes more precious in its rarity; it is often found in Deere, much under thirty; and we have known ſome affirm they have found it in one of half that age. And therefore in that account of Pliny, of a Deere with a collar about his neck, put on by Alexander the Great, and taken alive a hundred years after, with other relations of this nature, we much ſuſpect impoſture or miſtake; and if we grant their verity, they are but ſingle relations, and very rare contingencies in individuals, not affording a regular diduction upon the ſpecies. For though Ulyſſes his Dogge lived unto twenty, and the Athenian Mule unto fourſcore; yet doe we not meaſure their daies by thoſe years, or uſually ſay, they live thus long; nor can the three hundred years of John of times, or Neſtor, overthrow the aſſertion of Moſes, or afford a reaſonable encouragement beyond his ſeptuagenary determination. Pſalm. 90.

The ground and authority of this conceit was firſt Hieroglyphicall, the Ægyptians expreſſing longævity by this animall; but upon what uncertainties, and alſo convincible falſities they often erected ſuch emblems, we have elſewhere delivered. And if that were true which Ariſtotle delivers of his time, and Pliny was not afraid to take up long after, the Ægyptians could make but weak obſervations herein; for though it be ſaid that Æneas feaſted his followers with Veniſon, yet Ariſtotle affirms that neither Deere nor Boar were to be found in Africa. And how far they miſcounted the lives and duration of Animals, is evident from their conceit of the Crow, which they preſume to live five hundred years; and from the lives of Hawkes which (as Ælian deliverеth) the Ægyptians doe reckon no leſſe then at ſeven hundred. Hiſtor. animal. lib. 8.

The ſecond which led the conceit unto the Grecians, and probably deſcended from the Ægyptians, was Poeticall; and that was a paſſage of Heſiod, thus rendred by Auſonius.

Ter binos decieſq́, novem ſuper exit in annos,
Juſta ſeneſcentum quos implet vita virorum.
Hos novies ſuperat vivendo garrula cornix,
Et quater egreditur cornicis ſæcula cervus,
Alipedem cervum ter vincit corvus.——

To ninety ſix the life of man aſcendeth,
Nine times as long that of the Chough extendeth,
Four times beyond, the life of Deere doth goe,
And thrice is that ſurpaſſed by the Crow.

So that according to this account, allowing ninety ſix for the age of man, the life of a Deere amounts unto three thouſand, four hundred, fifty ſix. A conceit ſo hard to be made out, that many have deſerted the common and litterall conſtruction. So Theon in Aratus would have the number of nine not taken ſtrictly, but for many years. In other opinions the compute ſo farre exceedeth truth, that they have thought it more probable to take the word Genea, that is, a generation conſiſting of many years, but for one year, or a ſingle revolution of the Sunne; which is the remarkable meaſure of time, and within the compaſſe whereof we receive our perfection in the wombe. So that by this

this conſtruction, the years of a Deere ſhould be but thirty ſix, as is diſcourſed at large in that Tract of Plutarch, concerning the ceſſation of Oracles; and whereto in his Diſcourſe of the Crow, Aldrovandus alſo inclineth. Others not able to make it out, have rejected the whole account, as may be obſerved from the words of Pliny, *Heſiodus qui primus aliquid de longævitate vitæ prodidit, fabuloſe (reor) multa de hominum ævo referens, cornici novem noſtras attribuit ætates, quadruplum ejus cervis, id triplicatum corvis, & reliqua fabuloſius de Phœnice & nymphis*; and this how ſlender ſoever, was probably the ſtrongeſt ground Antiquity had for this longævity of Animals; that made Theophraſtus expoſtulate with Nature concerning the long life of Crowes; that begat that Epethete of Deere in Oppianus, and that expreſſion of Juvenal τετραετῶν.

—— *Longa & cervina ſenectus.*

The third ground was Philoſophicall and founded upon a probable reaſon in nature, that is, the defect of a Gall, which part (in the opinion of Ariſtotle and Pliny) this Animall wanted, and was conceived a cauſe and reaſon of their long life; according (ſay they) as it happeneth unto ſome few men, who have not this part at all. But this aſſertion is firſt defective in the verity concerning the Animall alledged: for though it be true, a Deere hath no gall in the liver like many other Animals, yet hath it that part in the guts as is diſcoverable by taſte and colour: and therefore Pliny doth well correct himſelf, when having affirmed before it had no gall, he after ſaith, ſome hold it to be in the guts, and that for their bitterneſſe, dogges will refuſe to eat them. It is alſo deficient in the verity of the Induction or connumeration of other Animals conjoined herewith, as having alſo no gall; that is, as Pliny accounteth, *Equi, Muli*, &c. Horſes, Mules, Aſſes, Deer, Goats, Boars, Camels, Dolphins, have no gall. Concerning Horſes, what truth there is herein we have declared before; as for Goats we finde not them without it; what gall the Camell hath, Ariſtotle declareth; that Hogs alſo have it, we can affirm; and that not in any obſcure place, but in the liver, even as it is ſeated in man.

That therefore the Deer is no ſhort-liv'd Animall, we will acknowledge; that comparatively, and in ſome ſenſe long-liv'd we will concede; and thus much we ſhall grant if we commonly account its daies by thirty ſix or fourty; for thereby it will exceed all other cornigerous Animals. But that it attaineth unto hundreds, or the years delivered by Authors; ſince we have no authentick experience for it, ſince we have reaſon and common experience againſt it, ſince the grounds are falſe and fabulous which doe eſtabliſh it, we know no ground to aſſent.

Concerning Deer there alſo paſſeth another opinion, that the males thereof doe yearly loſe their pizzell. For men obſerving the decidence of their hornes, doe fall upon the like conceit of this part, that it annually rotteth away, and ſucceſſively reneweth again. Now the ground hereof, was ſurely the obſervation of this part in Deer after immoderate venery, and about the end of their Rutt, which ſometimes becomes ſo relaxed and pendulous, it cannot be quite retracted; and being often beſet with flies, it is conceived to rot, and at laſt to fall from the body. But herein experience will contradict us: for Deer which either die or are killed at that time, or any other, are alwaies found to have that part entire. And reaſon alſo will correct us; for ſpermaticall parts, or ſuch as are framed from the ſeminall principles of parents, although homogeneous or ſimilary, will not admit a Regeneration; much leſſe will they receive an integrall reſtauration, which being organicall and inſtrumentall members, conſiſt of many of thoſe. Now this part, or Animall of Plato, containeth not only ſanguineous and reparable particles; but

but is made up of veines, nerves, arteries, and in ſome Animals, of bones; whoſe reparation is beyond its own fertility, and a fruit not to be expected from the fructifying part it ſelf. Which faculty were it communicated unto animals, whoſe originals are double, as well as unto plants, whoſe ſeed is within themſelves; we might abate the Art of Taliacotius, and the new inarching of noſes. And therefore the phanſies of Poets have been ſo modeſt, as not to ſet down ſuch renovations, even from the powers of their deities; for the mutilated ſhoulder of Pelops was pieced out with Ivory; and that the limbs of Hyppolitus were ſet together, not regenerated by Æſculapius, is the utmoſt aſſertion of Poetry.

Chap. X.

Of the Kingfiſher.

That a Kingfiſher hanged by the bill, ſheweth in what quarter the winde is, by an occult and ſecret propriety, converting the breaſt to that point of the Horizon from whence the winde doth blow, is a received opinion, and very ſtrange; introducing naturall Weathercocks, and extending magneticall poſitions as far as animall natures: A conceit ſupported chiefly by preſent practice, yet not made out by reaſon or experience.

Whence it is, that ſome creatures preſage the weather.

Unto reaſon it ſeemeth very repugnant, that a carcaſſe or body diſanimated, ſhould be ſo affected with every winde, as to carry a conformable reſpect and conſtant habitude thereto. For although in ſundry animals, we deny not a kinde of naturall Meteorology or innate præſention both of winde and weather; yet that proceeding from ſenſe receiving impreſſions from the firſt mutation of the air, they cannot in reaſon retain that apprehenſion after death; as being affections which depend on life, and depart upon diſanimation. And therefore with more favourable reaſon may we draw the ſame effect or ſympathie upon the Hedgehog; whoſe preſention of windes is ſo exact, that it ſtoppeth the North or Southern hole of its neſt, according to prenotion of theſe windes enſuing; which ſome men obſerving, have been able to make predictions which way the winde would turn, and been eſteemed hereby wiſe men in point of weather. Now this proceeding from ſenſe in the creature alive, it were not reaſonable to hang up an Hedgehog dead, and to expect a conformable motion unto its living converſion. And though in ſundry plants their vertues doe live after death, and we know that Scammonie, Rhubarbe and Senna will purge without any vitall aſſiſtance; yet in animals or ſenſible creatures, many actions are mixt, and depend upon their living form, as well as that of miſtion; and though they wholly ſeem to retain unto the body, depart upon diſunion. Thus Glowewormes alive, project a luſtre in the dark, which fulgour notwithſtanding ceaſeth after death; and thus the Tropedo which being alive ſtupifies at a diſtance, applied after death, produceth no ſuch effect; which had they retained, in places where they abound, they might have ſupplied Opium, and ſerved as frontals in Phrenſies.

As for experiment, we cannot make it out by any we have attempted; for if a ſingle Kingfiſher be hanged up with untwiſted ſilk in an open room, and where the air is free, it obſerves not a conſtant reſpect unto the mouth of the winde, but varioufly converting doth ſeldome breaſt it right. If two be ſuſpended in the ſame room, they will not regularly conform their breaſts, but oft-times

oft-times respect the opposite points of heaven. And if we conceive that for exact exploration, they should be suspended where the air is quiet and unwoved, that clear of impediments, they may more freely convert upon their naturall verticity; we have also made this way of inquisition, suspending them in large and capacious glasses closely stopped; wherein nevertheless we observed a casuall station, and that they rested irregularly upon conversion; whersoever they rested, remaining inconverted, and possessing one point of the Compasse, whilst the winde perhaps had passed the two and thirty.

The ground of this popular practice might be the common opinion concerning the vertue prognostick of these birds; the naturall regard they have unto the windes, and they unto them again, more especially remarkable in the time of their nidulation, and bringing forth their young; for at that time, which happeneth about the brumall Solstice, it hath been observed even unto a proverb, that the Sea is calm, and the windes do cease, till the young ones are excluded, and forsake their nest, which floateth upon the Sea, and by the roughnesse of windes might otherwise be overwhelmed. But how farre hereby to magnifie their prediction we have no certain rule; for whether out of any particular prenotion they chuse to sit at this time, or whether it be thus contrived by concurrence of causes, and providence of Nature, securing every species in their production, is not yet determined. Surely many things fall out by the design of the generall motor and undreamt of contrivance of Nature, which are not imputable unto the intention or knowledge of the particular Actor. So though the seminality of Ivy be almost in every earth, yet that it ariseth and groweth not, but where it may be supported; we cannot ascribe the same unto the distinction of the seed; or conceive any science therein which suspends and conditionates its eruption. So if, as Pliny and Plutarch report, the Crocodiles of Ægypt, so aptly lay their egges, that the natives thereby are able to know how high the floud will attain; it will be hard to make out, how they should divine the extent of the inundation, depending on causes so many miles remote; that is, the measure of showers in Æthiopia; and whereof, as Athanasius in the life of Anthony delivers, the devil himself upon demand could make no clear prediction. So are there likewise many things in Nature, which are the forerunners or signes of future effects, whereto they neither concurre in causality or prenotion; but are secretly ordered by the providence of causes, and concurrence of actions collaterall to their signations.

It was also a custome of old to keep these birds in chests, upon opinion that they prevented moths; whether it were not first hang'd up in roomes to such effects, is not beyond all doubt; or whether we mistake not the posture of suspension, hanging it by the bill, whereas we should doe it by the back; that by the bill it might point out the quarters of the winde; for so hath Kircherus described the Orbis and the Sea Swallow. But the eldest custome of hanging up these birds was founded upon a tradition that they would renew their feathers every year as though they were alive: In expectation whereof four hundred years ago Albertus Magnus was deceived.

Commonly mistaken for the true Halcion, ours being rather the Ispida.

Chap. XI.

Of Griffins.

That there are Griffins in Nature, that is, a mixt and dubious Animall, in the fore-part resembling an Eagle, and behinde, the shape of a Lion, with erected eares, four feet, and a long taile, many affirm, and most, I perceive, deny not. The same is averred by Ælian, Solinus, Mela and Herodotus, countenanced by the name sometimes found in Scripture, and was an Hieroglyphick of the Egyptians.

Notwithstanding we finde most diligent enquiries to be of a contrary assertion; for beside that Albertus and Pliny have disallowed it, the learned Aldrovandus hath in a large discourse rejected it; Mathias Michovius who writ of those Northern parts wherein men place these Griffins, hath positively concluded against it; and if examined by the doctrine of Animals, the invention is monstrous, nor much inferiour unto the figment of Sphynx, Chimæra and Harpies. For though some species there be of middle and participating natures, that is, of bird and beast, as Bats and some few others, yet are their parts so conformed and set together, that we cannot define the beginning or end of either; there being a commixtion of both in the whole, rather then an adaptation or cement of the one unto the other.

Now for the word גְּרִיפ or Gryps, sometimes mentioned in Scripture, and frequently in humane Authors, properly understood, it signifies some kinde of Eagle or Vulture; from whence the Epithete Grypus for an hooked or Aquiline nose. Thus when the Septuagint makes use of this word, Tremellius and our Translation hath rendred it the Ossifrage; which is one kinde of Eagle. And although the Vulgar translation, and that annexed unto the Septuagint retain the word *Gryps*, which in ordinary and school-construction is commonly rendred a Griffin; yet cannot the Latine assume any other sense then the Greek, from whence it is borrowed. And though the Latine *Gryphes* be altered somewhat by the addition of an h, or aspiration of the letter π, yet is not this unusuall; so what the Greeks call τρόπαιον, the Latines will call *Trophæum*, and that person which in the Gospel is named Κλεοπᾶς, the Latines will render *Cleophas*. And therefore the quarrell of Origen was injust and his conception erroneous, when he conceived the food of Griffins forbidden by the Law of Moses; that is, poeticall Animals, and things of no existence. And therefore when in the Hecatombs and mighty oblations of the Gentiles, it is delivered they sacrificed Gryphes or Griffins; hereby we may understand some stronger sort of Eagles. And therefore also when its said in Virgil of an improper match, or Mopsus marrying Nysa, *Jungentur jam gryphes equis*; we need not hunt after other sense, then that strange unions shall be made, and differing natures be conjoined together.

Levit. 11.

As for the testimonies of ancient Writers, they are but derivative, and terminate all in one Aristeus a Poet of Proconesus; who affirmed that neer the Arimaspi, or one eyed Nation, Griffins defended the mines of gold. But this as Herodotus delivereth, he wrote by hearsay; and Michovius who hath expressely written of those parts plainly affirmeth, there is neither gold nor Griffins in that countrey, nor any such Animall extant; for so doth he conclude, *Ego vero contra veteres authores, Gryphes nec in illa septentrionis, nec in aliis orbis partibus inveniri affirmarim.*

Lastly,

Lastly, Concerning the Hieroglyphicall authority, although it neereſt approacheth the truth, it doth not inferre its exiſtency; the conceit of the Griffin properly taken being but a ſymbolicall phancy, in ſo intolerable a ſhape including allowable morality. So doth it well make out the properties of a Guardian, or any perſon entruſted; the ears implying attention, the wings celerity of execution, the Lion-like ſhape, courage and audacity, the hooked bill, reſervance and tenacity. It is alſo an Embleme of valour and magnanimity, as being compounded of the Eagle and Lion, the nobleſt Animals in their kindes; and ſo is it appliable unto Princes, Preſidents, Generals, and all heroick Commanders; and ſo is it alſo born in the Coat-armes of many noble Families of Europe.

Chap. XII.

Of the Phœnix.

THat there is but one Phœnix in the world, which after many hundred years burneth it ſelf, and from the aſhes thereof ariſeth up another, is a conceit not new or altogether popular, but of great Antiquity; not only delivered by humane Authors, but frequently expreſſed by holy Writers; by Cyril, Epiphanius and others, by Ambroſe in his Hexameron, and Tertul. in his Poem *de Judicio Domini*, but more agreeably unto the preſent ſenſe, in his excellent Tract, *de Reſur. carnis. Illum dico alitem orientis peculiarem, de ſingularitate famoſum, de poſteritate monſtruoſum; qui ſemetipſum libenter funerans renovat, natali fine decedens, atque ſuccedens iterum Phœnix. Ubi jam nemo, iterum ipſe; quia non jam, alius idem.* The Scripture alſo ſeems to favour it, particularly that of Job 21. in the Interpretation of Beda, *Dicebam in nidulo meo moriar, & ſicut Phœnix multiplicabo dies:* and Pſalme 31. Δίκαιος ὡσεὶ φοῖνιξ ἀνθήσει, *vir juſtus ut Phœnix florebit*, as Tertullian renders it, and ſo alſo expounds it in his book before alledged.

All which notwithſtanding, we cannot preſume the exiſtence of this Animall; nor dare we affirm there is any Phœnix in Nature. For, firſt there wants herein the definitive confirmator and teſt of things uncertain, that is, the ſenſe of man. For though many Writers have much enlarged hereon, there is not any ocular deſcriber, or ſuch as preſumeth to confirm it upon aſpection; And therefore Herodotus that led the ſtory unto the Greeks, plainly ſaith, he never attained the ſight of any, but only in the picture. Againſt the ſtory of the Phœnix.

Again, Primitive Authors, and from whom the ſtream of relations is derivative, deliver themſelves very dubiouſly; and either by a doubtfull parentheſis, or a timerous concluſion overthrow the whole relation. Thus Herodotus in his Euterpe, delivering the ſtory hereof, preſently interpoſeth, λόγος μὲν οὐ πρὸς ἐμοῦ λεγόμενος; that is, which account ſeems to me improbable. Tacitus in his Annals affordeth a larger ſtory; how the Phœnix was firſt ſeen at Heliopolis in the reign of Seſoſtris, then in the reign of Amaſis, after in the daies of Ptolomy, the third of the Macedonian race; but at laſt thus determineth, *Sed Antiquitas obſcura; & nonnulli falſum eſſe hunc Phœnicem, neque Arabum è terris credidere.* Pliny makes yet a fairer ſtory; that the Phœnix flew into Ægypt in the Conſulſhip of Quintus Plancius, that it was brought to Rome in the Cenſorſhip of Claudius, in the eight hundred year of the City, and teſtified alſo in their records; but after all concludeth, *Sed quæ*

falſa eſſe nemo dubitabit, but that this is falſe no man will make doubt.

Moreover, Such as have naturally diſcourſed hereon, have ſo diverſly, contrarily, or contradictorily delivered themſelves, that no affirmative from thence can reaſonably be deduced. For moſt have poſitively denied it, and they which affirm and beleeve it, aſſign this name unto many, and miſtake two or three in one. So hath that bird been taken for the Phœnix which liveth in Arabia, and buildeth its neſt with Cinnamon; by Herodotus called *Cinnamulgus*, and by Ariſtotle *Cinnamomus*, and as a fabulous conceit is cenſured by Scaliger. Some have conceived that bird to be the Phœnix, which by a Perſian name with the Greeks is called Rhyntace; but how they made this good we finde occaſion of doubt; whilſt we reade in the life of Artaxerxes, that this is a little bird brought often to their tables, and wherewith Paryſatis cunningly poiſoned the Queen. The Manucodiata or bird of Paradiſe, hath had the honour of this name, and their feathers brought from the Molucca's, doe paſſe for thoſe of the Phœnix; which though promoted by rarity with us, the Eaſtern travellers will hardly admit; who know they are common in thoſe parts, and the ordinary plume of Janizaries among the Turks. And laſtly, the bird Semenda hath found the ſame appellation, for ſo hath Scaliger obſerved and refuted; nor will the ſolitude of the Phœnix allow this denomination; for many there are of that ſpecies, and whoſe triſtiſtulary bill and crany we have beheld our ſelves. Nor are men only at variance in regard of the Phœnix it ſelf, but very diſagreeing in the accidents aſcribed thereto: for ſome affirm it liveth three hundred, ſome five, others ſix, ſome a thouſand, others no leſſe then fifteen hundred years; ſome ſay it liveth in Æthiopia, others in Arabia, ſome in Ægypt, others in India, and ſome in Utopia; for ſuch muſt that be which is deſcribed by Lactantius; that is, which neither was ſinged in the combuſtion of Phaeton, or overwhelmed by the inundation of Deucaleon.

Laſtly, Many Authors who have diſcourſed hereof, have ſo delivered themſelves, and with ſuch intentions, we cannot from thence deduce a confirmation. For ſome have written Poetically as Ovid, Mantuan, Lactantius, Claudian and others: Some have written myſtically, as Paracelſus in his book *de Azoth*, or *de ligno & linea vitæ*; and as ſeverall Hermeticall Philoſophers, involving therein the ſecret of their Elixir, and enigmatically expreſſing the nature of their great work. Some have written Rhetorically, and conceſſively, not controverting but aſſuming the queſtion, which taken as granted advantaged the illation. So have holy men made uſe hereof as farre as thereby to confirm the Reſurrection; for diſcourſing with heathens who granted the ſtory of the Phœnix, they induced the Reſurrection from principles of their own, and poſitions received among themſelves. Others have ſpoken Emblematically and Hieroglyphically; and ſo did the Ægyptians, unto whom the Phœnix was the Hieroglyphick of the Sunne. And this was probably the ground of the whole relation; ſucceeding ages adding fabulous accounts, which laid together built up this ſingularity, which every pen proclaimeth.

As for the Texts of Scripture, which ſeem to confirm the conceit, duly perpended they adde not thereunto. For whereas in that of Job, according to the Septuagint or Greek Tranſlation we finde the word Phœnix, yet can it have no animall ſignification; for therein it is not expreſſed φοῖνιξ but στέλεχος φοίνικος, the trunk of the Palme tree, which is alſo called Phœnix; and therefore the conſtruction will be very hard, if not applied unto ſome vegetable nature; nor can we ſafely inſiſt upon the Greek expreſſion at all: for though the Vulgar tranſlates it *Palma*, and ſome retain the word Phœnix,

Phœnix, others doe render it by a word of a different ſenſe; for ſo hath Tremellius delivered it: *Dicebam quod apud nidum meum expirabo, & ſicut arena multiplicabo dies*; ſo hath the Geneva and ours tranſlated it, I ſaid I ſhall die in my neſt, and ſhall multiply my daies, as the ſand. As for that in the book of Pſalmes, *Vir juſtus ut Phœnix florebit*, as Epiphanius and Tertullian render it, it was only a miſtake upon the homonymy of the Greek word Phœnix, which ſignifies alſo a Palm tree; which is a fallacy of equivocation, from a community in name inferring a common nature, and whereby we may as firmly conclude, that Diaphœnicon a purging electuary hath ſome part of the Phœnix for its ingredient; which receiveth that name from Dates, or the fruit of the Palme tree, from whence as Pliny delivers, the Phœnix had its name. Conſent of names.

Nor doe we only arraigne the exiſtence of this Animall, but many things are queſtionable which are aſcribed thereto, eſpecially its unity, long life, and generation. As for its unity or conceit there ſhould be but one in nature, it ſeemeth not only repugnant unto Philoſophy, but alſo holy Scripture; which plainly affirmes, there went of every ſort two at leaſt into the Ark of Noah, according to the text, Gen.7. Every fowle after his kinde, every bird of every ſort, they went into the Ark, two and two of all fleſh, wherein there is the breath of life, and they that went in, went in both male and female of all fleſh. It infringeth the Benediction of God concerning multiplication, Gen.1. God bleſſed them ſaying, Be fruitfull and multiply, and fill the waters in the ſeas, and let fowl multiply in the earth; and again, Chap.8. Bring forth with thee, every living thing that they may breed abundantly in the earth, and be fruitfull and multiply upon the earth; which terms are not appliable unto the Phœnix, whereof there is but one in the world, and no more now living then at the firſt benediction. For the production of one, being the deſtruction of another, although they produce and generate, they encreaſe not; and muſt not be ſaid to multiply, who doe not tranſcend an unity.

As for longævity, that it liveth a thouſand years or more; beſide that from imperfect obſervations and rarity of appearance, no confirmation can be made; there may be probably a miſtake in the compute. For the tradition being very ancient and probably Ægyptian, the Greeks who diſperſed the fable, might ſumme up the account by their own numeration of years, whereas the conceit might have its originall in times of ſhorter compute. For if we ſuppoſe our preſent calculation, the Phœnix now in nature will be the ſixt from the Creation; but in the middle of its years; and if the Rabbines prophecy ſucceed, ſhall conclude its daies, not in its own, but the laſt and generall flames, without all hope of Reviviction. That the world ſhould laſt but ſix thouſand years.

Concerning its generation, that without all conjunction it begets and reſeminates it ſelf; hereby we introduce a vegetable production in Animals, and unto ſenſible natures, transferre the propriety of plants; that is to multiply within themſelves, according to the law of the Creation, Gen.1. Let the earth bring forth graſſe, the herb yeelding ſeed, and the tree yeelding fruit, whoſe ſeed is in it ſelf. Which is indeed the naturall way of plants, who having no diſtinction of ſex, and the power of the ſpecies contained in every *individuum*, beget and propagate themſelves without commixtion; and therefore their fruits proceeding from ſimpler roots, are not ſo unlike, or diſtinguiſhable from each other, as are the off-ſprings of ſenſible creatures and prolifications deſcending from double originals. But Animall generation is accompliſhed by more; and the concurrence of two ſexes is required to the conſtitution of one. And therefore ſuch as have no diſtinction of ſex,

engender not at all, as Aristotle conceives of Eeles, and testaceous Animals. And though plant-animals doe multiply, they doe it not by copulation, but in a way analogous unto plants. So Hermaphrodites although they include the parts of both sexes, and may be sufficiently potent in either; yet unto a conception require a separated sex, and cannot impregnate themselves; and so also though Adam included all humane nature, or was (as some opinion) an Hermaphrodite, yet had he no power to propagate himself; and therefore God said, It is not good that man should be alone, let us make him an help meet for him; that is, an help unto generation; for as for any other help, it had been fitter to have made another man.

Irregularities.

Now whereas some affirm that from one Phœnix there doth not immediatly proceed another, but the first corrupteth into a worm, which after becometh a Phœnix, it will not make probable this production. For hereby they confound the generation of perfect animals with imperfect, sanguineous with exanguious, vermiparous with oviparous, and erect Anomalies, disturbing the laws of Nature. Nor will this corruptive production be easily made out in most imperfect generations; for although we deny not that many animals are vermiparous, begetting themselves at a distance, and as it were at the second hand (as generally insects, and more remarkably Butterflies and silkworms) yet proceeds not this generation from a corruption of themselves, but rather a specificall and seminall diffusion, retaining still the Idea of themselves, though it act that part a while in other shapes. And this will also hold in generations equivocall, and such are not begotten from Parents like themselves; so from Frogs corrupting, proceed not Frogs again; so if there be anatiferous trees, whose corruption breaks forth into Bernacles, yet if they corrupt, they degenerate into Maggots, which produce not them again; for this were a confusion of corruptive and seminall production, and a frustration of that seminall power committed to animals at the creation. The probleme might have been spared, Why we love not our Lice as well as our Children? Noahs Ark had been needlesse; the graves of animals would be the fruitfullest wombs; for death would not destroy, but empeople the would again.

Since therefore we have so slender grounds to confirm the existence of the Phœnix; since there is no ocular witnesse of it; since as we have declared, by Authors from whom the Story is derived, it rather stands rejected; since they who have seriously discoursed hereof, have delivered themselves negatively, diversly or contrarily; since many others cannot be drawn into Argument, as writing Poetically, Rhetorically, Enigmatically, Hieroglyphically; since holy Scripture alledged for it duely perpended, doth not advantage it; and lastly since so strange a generation, unity and long life, hath neither experience nor reason to confirm it; how far to rely on this tradition, we refer unto consideration.

ἀνιέναι.

But surely they were not wel-wishers unto parable Physick, or remedies easily acquired, who derived medicines from the Phœnix; as some have done, and are justly condemned by Pliny; *Irridere est vitæ, remedia post millesimum annum reditura monstrare*; It is a folly to finde out remedies that are not recoverable under a thousand years; or propose the prolonging of life by that which the twentieth generation may never behold. More veniable is a dependance upon the Philosophers stone, potable gold, or any of those Arcana's, whereby Paracelsus that died himself at fourty seven, gloried that he could make other men immortall; which, although extreamly difficult, and *tantum non* infesible, yet are they not impossible; nor doe they (rightly understood) impose any violence on Nature. And therefore if strictly taken for

for the Phœnix, very ſtrange is that which is delivered by Plutarch, That the brain thereof is a pleaſant bit, but that it cauſeth the head-ach; which notwithſtanding the luxurious Emperour could never taſte; though he had at his table many a Phœnicopterus, yet had he not one Phœnix; for though he expected and attempted it, we reade not in Lampridius that he performed it; and conſidering the unity thereof, it was a vain deſigne, that is, to deſtroy any ſpecies, or mutilate the great accompliſhment of ſix daies. And although ſome conceive, and it may ſeem true, that there is in man a naturall poſſibility to deſtroy the world in one generation, that is, by a generall conſpire to know no woman themſelves, and diſable all others alſo; yet will this never be effected; and therefore Cain after he had killed Abel, were there no other woman living, could not have alſo deſtroyed Eve; which although he had a naturall power to effect, yet the execution thereof, the providence of God would have reſiſted; for that would have impoſed another creation upon him, and to have animated a ſecond rib of Adam.

De ſanitate tuenda ineliogabalus.

CHAP. XIII.

Froggs, Toades and Toad-ſtone.

CONcerning the venemous urine of Toads, of the ſtone in the Toads head, and of the generation of Frogs, conceptions are entertained which require conſideration. And firſt, that a Toad piſſeth, and this way diffuſeth its venome, is generally received, not only with us, but alſo in other parts; for ſo hath Scaliger obſerved in his Comment, *Averſum urinam reddere ob oculos perſecutoris perniciosam ruricolis perſuaſum eſt*; and Mathiolus hath alſo a paſſage, that a Toad communicates its venom, not only by urine, but by the humidity and ſlaver of its mouth; which notwithſtanding ſtrictly underſtood, will not conſiſt with truth. For to ſpeak properly, a Toad piſſeth not; nor doe they contain thoſe urinary parts which are found in other animals, to avoid that ſerous excretion; as may appear unto any that exenterates or diſſects them; for therein will be found neither bladder, kidnies or ureters, any more then they are in birds; who for the moiſt and dry excretion, have but one vent and common place of excluſion; and with the ſame propriety of language, we may aſcribe that action unto Crowes and Kites. And this is verified not only in Frogs and Toades, but that may be true which Anſtotle affirmeth, that no oviparous animall, that is, which either ſpawn or lay egges doth urine, except the Tortois.

The ground or occaſion of this expreſſion might from hence ariſe, that Toades are ſometimes obſerved to exclude or ſpirt out a dark and liquid matter behinde; which we have obſerved to be true, and a venemous condition there may be perhaps therein, but it cannot be called their urine; not only becauſe they want thoſe parts of ſecretion; but becauſe it is emitted averſly or backward, by both ſexes.

As for the ſtone commonly called a Toad-ſtone, which is preſumed to be found in the head of that animall, we firſt conceive it not a thing impoſſible; nor is there any ſubſtantiall reaſon, why in a Toad, there may not be found ſuch hard and lapideous concretions; for the like we daily obſerve in the heads of Fiſhes, as Codds, Carps and Pearches; the like alſo in Snailes, a ſoft and exoſſeous animall, whereof in the naked and greater ſort, as though ſhe would requite the defect of a ſhell on their back, nature neere the head hath placed

placed a flat white ſtone, or rather teſtaceous concretion; which though Aldrovandus affirms, that after diſſection of many, he found but in ſome few; yet of the great gray Snailes, I have not met with any that wanted it; and the ſame indeed ſo palpable, that without diſſection it is diſcoverable by the hand.

Again, though it be not impoſſible, yet it is ſurely very rare; as we are induced to beleeve from ſome enquiry of our own; from the triall of many who have been deceived; and the fruſtated ſearch of Porta, who upon the explorement of many, could ſcarce finde one. Nor is it only of rarity, but may be doubted whether it be of exiſtency, or really any ſuch ſtone in the head of a Toad at all. For although Lapidaries, and queſtuary enquirers affirm it, yet the writers of Mineralls and naturall ſpeculators, are of another belief; conceiving the ſtones which bear this name, to be a Minerall concretion, not to be found in animals, but in fields; and therefore *Bœtius* refers it to Aſteria, or ſome kinde of *Lapis ſtellaris*, and plainly concludeth, *Reperiuntur in agris, quos tamen alij in annoſis, ac qui diu in Arundinetis, inter rubos-ſenteſque delituerunt, bufonis capitibus generari pertinaciter affirmant.*

Laſtly, If any ſuch thing there be, yet muſt it not for ought I ſee, be taken as we receive it, for a looſe and moveable ſtone, but rather a concretion or induration of the crany it ſelf; for being of an earthy temper, living in the earth, and as ſome ſay feeding thereon, ſuch indurations may ſometimes happen; thus when Braſſavolus after a long ſearch had diſcovered one, he affirmes it was rather the forehead bone petrified, then a ſtone within the crany; and of this belief was Geſner. Which is alſo much confirmed from what is delivered in Aldrovandus, upon experiment of very many Toades; whoſe cranies or skuls in time grew hard, and almoſt of a ſtony ſubſtance. All which conſidered, we muſt with circumſpection receive thoſe ſtones, which commonly bear this name; muchleſſe beleeve the traditions, that in envy to mankinde they are caſt out, or ſwallowed down by the Toad; which cannot conſiſt with Anatomy, and with the reſt, enforced this cenſure from Bœtius, *Ab eo tempore pro nugis habui quod de Bufonio lapide, ejusq; origine traditur.*

What therefore beſt reconcileth theſe divided determinations, may be a middle opinion; that of theſe ſtones ſome are minerall, and to be found in the earth; ſome animall, to be met with in Toads, at leaſt by the induration of their cranies. The firſt are many and manifold, to be found in Germany and other parts; the laſt are fewer in number, and in ſubſtance not unlike the ſtones in Carps heads. This is agreeable unto the determination of Aldrovandus, and is alſo the judgement of learned Spigelius in his Epiſtle unto Pignorius.

De Mineral. lib. 4. Muſei Calceolariani. Sect. 3.

Concerning the generation of Froggs, we ſhall briefly deliver that account which obſervation hath taught us. By Froggs I underſtand not ſuch as ariſing from putrefaction, are bred without copulation, and becauſe they ſubſiſt not long, are called *Temporariæ*; nor doe I mean the little Frogge of an excellent Parrat-green, that uſually ſits on trees and buſhes, and is therefore called *Ranunculus viridis*, or *Arboreus*; but hereby I underſtand the aquatile or water Frogge, whereof in ditches and ſtanding plaſhes we may behold many millions every Spring in England. Now theſe doe not as Pliny conceiveth, exclude black pieces of fleſh, which after become Frogges; but they let fall their ſpawn in the water, which is of excellent uſe in Phyſick, and ſcarce unknown unto any; in this ſpawn of a lentous and tranſparant body, are to be diſcerned many ſpecks, or little conglobations, which in a

ſmall

ſmall time become of deep black; a ſubſtance more compacted and terreſtrious then the other, for it riſeth not in diſtillation, and affords a powder, when the white and aqueous part is exhaled. Now of this black or duskie ſubſtance is the Frogge at laſt formed; as we have beheld, including the ſpawn with water in a glaſſe, and expoſing it unto the Sunne. For that black and round ſubſtance, in a few daies began to dilate and grow ovall, after a while the head, the eyes, the taile to be diſcernable, and at laſt to become that which the Ancients called Gyrinus, we a Porwigle or Tadpole. This in ſome weeks after, becomes a perfect Frogge, the legs growing out before, and the taile wearing away, to ſupply the other behinde; as may be obſerved in ſome, which have newly forſaken the water: for in ſuch, ſome part of the taile will be ſeen, but curtal'd and ſhort, not long and finny as before; a part provided them a while to ſwim and move in the water, that is, untill ſuch time as nature excluded legs, whereby they might be provided not only to ſwim in the water, but move upon the land, according to the amphibious and mixt intention of nature, that is, to live in both. So that whoever obſerveth the firſt progreſſion of the ſeed before motion, or ſhall take notice of the ſtrange indiſtinction of parts in the Tadpole, even when it moveth about, and how ſucceſſively the inward parts doe ſeem to diſcover themſelves, untill their laſt perfection; may eaſily diſcern the high curioſity of nature in theſe inferiour animals, and what a long line is runne to make a Frogge.

Amphibious Animals, ſuch as live in both elements of land and water.

And becauſe many affirm, and ſome deliver, that in regard it hath lungs and breatheth, a Frogge may be eaſily drowned; though the reaſon be probable, I finde not the experiment anſwerable; for faſtning one about a ſpan under water, it lived almoſt ſix daies. Nor is it only hard to deſtroy one in water, but difficult alſo at land: for it will live long after the lunges and heart be out, how long it will live in the ſeed, or whether the ſpawn of this year being preſerved, will not ariſe into Frogges in the next, might alſo be enquired: and we are prepared to trie.

Chap. XIV.

Of the Salamander.

That a Salamander is able to live in flames, to endure and put out fire, is an aſſertion, not only of great Antiquity, but confirmed by frequent, and not contemptible teſtimony. The Ægyptians have drawn it into their Hieroglyphicks; Ariſtotle ſeemeth to embrace it; more plainly Nicander, Serenus Sammonicus, Ælian and Pliny, who aſſignes the cauſe of this effect: An animall (ſaith he) ſo cold that it extinguiſheth the fire like Ice. All which notwithſtanding, there is on the negative Authority and experience; Sextius a Phyſitian, as Pliny delivereth, denied this effect; Dioſcorides affirmed it a point of folly to beleeve it; Galen that it endureth the fire a while, but in continuance is conſumed therein. For experimentall conviction, Mathiolus affirmeth, he ſaw a Salamander burnt in a very ſhort time; and of the like aſſertion is Amatus Luſitanus; and moſt plainly Pierius, whoſe words in his Hieroglyphicks are theſe; Whereas it is commonly ſaid, that a Salamander extinguiſheth fire, we have found by experience, that 'tis ſo farre from quenching hot coales; that it dieth immediatly therein. As for the contrary aſſertion of Ariſtotle, it is but by hearſay, as common opini-

A corruptive Medicine destroying the parts like Arsenike.

on beleeveth, *Hæc enim (ut aiunt) ignem ingredient, eum extinguit*; and therefore there was no absurdity in Galen when as a Septicall medicine he commended the ashes of a Salamander; and Magicians in vain from the power of this tradition, at the burning of towns or houses expect a relief from Salamanders.

The ground of this opinion, might be some sensible resistance of fire observed in the Salamander; which being as Galen determineth, cold in the fourth, and moist in the third degree, and having also a mucous humidity above and under the skin, by vertue thereof it may a while endure the flame; which being consumed it can resist no more. Such an humidity there is observed in Newtes, or water-Lizards, especially if their skins be perforated or pricked. Thus will Frogges and Snailes endure the flame, thus will whites of egges, vitreous or glassie flegme extinguish a coal; thus are unguents made which protect a while from the fire; and thus beside the Hirpini there are later stories of men that have pass'd untoucht through fire. And therefore some truth we allow in the tradition; truth according unto Galen, that it may for a time resist a flame, or as Scaliger avers, extinguish or put out a coale; for thus much will many humid bodies perform; but that it perseveres and lives in that destructive element, is a fallacious enlargement; nor doe we reasonably conclude, because for a time it endureth fire, it subdueth and extinguisheth the same; because by a cold and aluminous moisture, it is able a while to resist it: from a peculiarity of nature it subsisteth and liveth in it.

It hath been much promoted by Stories of incombustible napkins and textures which endure the fire, whose materials are call'd by the name of Salamanders wooll. Which many too literally apprehending, conceive some investing part, or tegument of the Salamander; wherein beside that they mistake the condition of this Animall (which is a kinde of Lizard, a quadruped corticated and depilous, that is, without wooll, furre or hair) they observe not the method and generall rule of nature; whereby all Quadrupeds oviparous, as Lizards, Froggs, Tortois, Chameleons, Crocodiles, are without haire, and have no covering part or hairy investment at all. And if they conceive that from the skin of the Salamander, these incremable pieces are composed; beside the experiments made upon the living, that of Brassavolus will step in, who in the search of this truth, did burn the skin of one dead.

Nor is this Salamanders wooll desumed from any Animall, but a Minerall substance Metaphorically so called from this received opinion. For beside Germanicus his heart, and Pyrrhus his great Toe, which would not burn with the rest of their bodies, There are in the the number of Minerals, some bodies incombustible; more remarkably that which the Ancients named Asbeston, and Pancirollus treats of in the chapter of *Linum vivum*: whereof by Art were weaved napkins, shirts and coats inconsumable by fire; and wherein in ancient times, to preserve their ashes pure, and without commixture, they burnt the bodies of Kings. A napkin hereof Pliny reports that Nero had, and the like saith Paulus Venetus, the Emperour of Tartarie, sent unto Pope Alexander; and affirmes that in some part of Tartarie, there were Mines of Iron whose filaments were weaved into incombustible cloth. Which rare manufacture, although delivered for lost by Pancirollus, yet Salmuth affirmeth in his comment that one Podocaterus a Cyprian, had shewed the same at Venice; and his materials were from Cyprus, where indeed Dioscorides placeth them; the same is also ocularly confirmed by Vives upon Austin, and Maiolus in his colloquies; and thus in our daies doe men practise to make long-lasting Snasts for lampes, out of

Plutarch. Suetonius.

Alumen

Alumen plumoſum; and by the ſame we reade in Pauſanias, that there alwaies burnt a Lamp before the Image of Minerva.

Chap. XV.

Of the Amphisbæna.

That the Amphisbæna, that is, a ſmaller kinde of Serpent, which moveth forward and backward, hath two heads, or one at either extream, was affirmed firſt by Nicander, and after by many others; by the Author of the book *de Theriaca ad Piſonem*, aſcribed unto Galen; more plainly Pliny, *Geminum habet caput, tanquam parum eſſet uno ore effundi venenum:* but Ælian moſt confidently, who referring the conceit of Chimera and Hydra unto fables, hath ſet down this as an undeniable truth.

Whereunto while men aſſent, and can beleeve a bicipitous conformation in any continued ſpecies, they admit a gemination of principall parts, not naturally diſcovered in any Animall. True it is that other parts in Animals are not equall, for ſome make their progreſſion with many legs, even to the number of an hundred, as Juli; Scolopendiæ, or ſuch as are termed Centipides; ſome fly with two wings, as birds and many inſects, ſome with four, as all farinaceous or mealy-winged animals, as Butter-flies, and Moths; all vaginipennous or ſheathwinged inſects, as Beetles and Dorrs. Some have three Teſticles, as Ariſtotle ſpeaks of the Buzzard; and ſome have four ſtomacks, as horned and ruminating animals; but for the principall parts, the Liver, heart, and eſpecially the brain, regularly they are but one in any kinde or ſpecies whatſoever.

And were there any ſuch ſpecies or naturall kinde of animall, it would be hard to make good thoſe ſix poſitions of body, which according to the three dimenſions are aſcribed unto every animall; that is, *infra ſupra, ante, retro, dextrorſum, ſiniſtrorſum*; for if (as it is determined) that be the anterior and upper part wherein the ſenſes are placed, and that the poſterior and lower part which is oppoſite thereunto; there is no inferiour or former part in this animall; for the ſenſes being placed at both extreams, doe make both ends anterior, which is impoſſible, the termes being Relative, which mutually ſubſiſt, and are not without each other, and therefore this duplicity was ill contrived to place one head at both extreams, and had been more tolerable to have ſetled three or four at one; and therefore alſo Poets have been more reaſonable then Philoſophers, and Geryon or Cerberus leſſe monſtrous then Amphisbæna.

Again, If any ſuch thing there were, it were not to be obtruded by the name of Amphisbæna, or as an animall of one denomination; for properly that animall is not one, but multiplicious or many, which hath a duplicity or gemination of principall parts. And this doth Ariſtotle define, when he affirmeth a monſter is to be eſteemed one or many, according to it's principle, which he conceived the heart, whence he derived the originall of Nerves, and thereto aſcribed many acts which Phyſitians aſſign unto the brain: and therefore if it cannot be called one, which hath a duplicity of hearts in his ſenſe, it cannot receive that appellation with a plurality of heads in ours. And this the practice of Chriſtians hath acknowledged, who have baptized theſe geminous births, and double connaſcencies with ſeverall names; as conceiving in them a diſtinction of ſouls, upon the divided execution of their fun-

ctions; that is, while one wept, the other laughing, while one was silent, the other speaking, while one awaked, the other sleeping; as is declared by three remarkable examples in Petrarch, Vincentius, and the Scottish history of Buchanan.

It is not denied there have been bicipitous Serpents with the head at each extream, for an example hereof we finde in Aristotle, and of the like form in Aldrovandus we meet with the Icon of a Lizzard; which double formations do often happen unto multiparous generations, more especially that of Serpents; whose conceptions being numerous, and their Eggs in chains or links together (which sometime conjoin and inoculate into each other) they may unite into various shapes, and come out in mixed formations. But these are monstrous productions, and beside the intention of nature, and the statutes of generation, neither begotten of like parents, nor begetting the like again, but irregularly produced to stand as Anomalies in the generall book of Nature. Which being the shifts and forced pieces, rather then the genuine and proper effects, they afford us no illation; nor is it reasonable to conclude, from a monstrosity unto a species, or from accidentall effects, unto the regular works of Nature.

Lastly, the ground of the conceit was the figure of this animall, and motion oft times both waies; for described it is to be like a worme, and so equally framed at both extremes, that at an ordinary distance it is no easie matter, to determine which is the head; and therefore some observing them to move both waies, have given the appellation of heads unto both exteames; which is no proper and warrantable denomination; for many animals with one head, doe ordinarily perform both different and contrary motions; Crabs move sideling, Lobsters will swim swiftly backward, Wormes and Leeches will move both waies; and so will most of those animals, whose bodies consist of round and annulary fibers, and move by undulation, that is, like the waves of the Sea, the one protruding the other, by inversion whereof they make a backward motion.

Upon the same ground hath arisen the same mistake concerning the Scolopendra or hundred-footed insect, as is delivered by Rhodiginus from the scholiast of Nicander: *Dicitur à Nicandro,* ἀμφικεφάλις, *id est dicephalus aut biceps fictum vero, quoniam retrorsum (ut scribit Aristoteles) arrepit*, observed by Aldrovandus, but most plainly by Muffetus, who thus concludeth upon the text of Nicander: *Tamen pace tanti authoris dixerim, unicum illi duntaxat caput licet pari facilitate, prorsum capite, retrorsum ducente cauda, incedat, quod Nicandro aliisque imposuisse dubito*: that is, under favour of so great an Author, the Scolopendra hath but one head, although with equall facility it moveth forward and backward, which I suspect deceived Nicander and others.

Chap. XVI.

Of the Viper.

That the young Vipers force their way through the bowels of their Dam, or that the female Viper in the act of generation bites off the head of the male, in revenge whereof the young ones eate through the wombe and belly of the female, is a very ancient tradition; in this sense entertained in the Hieroglyphicks of the Ægyptians; affirmed by Herodotus, Nicander, Pliny, Plutarch,

Plutarch, Ælian, Jerome, Basil, Isidore, seems countenanced by Aristotle, and his scholar Theophrastus; from hence is commonly assigned the reason why the Romanes punished parricides by drowning them in a sack with a Viper; and so perhaps upon the same opinion the men of Melita when they saw a Viper upon the hand of Paul, said presently without conceit of any other sinne, No doubt this man is a murtherer; whom though he have escaped the Sea, yet vengeance suffereth him not to live. That is, he is now paid in his own way, the parricidous animall and punishment of murtherers is upon him; and though the Tradition were currant among the Greeks, to confirm the same the Latine name is introduced, *Vipera quasi vi pariat*; That passage also in the Gospel, O ye generation of Vipers, hath found expositions which countenance this conceit. Notwithstanding which authorities, transcribed relations and conjectures, upon enquiry we finde the same repugnant unto experience and reason.

And first it seems not only injurious unto the providence of Nature, to ordain a way of production which should destroy the producer, or contrive the continuation of the species by the destruction of the continuator; but it overthrowes and frustrates the great Benediction of God, which is expressed, Gen. 1. God blessed them saying, Be fruitfull and multiply. Now if it be so ordained that some must regularly perish by multiplication, and these be the fruits of fructifying in the Viper; it cannot be said that God did blesse, but curse this Animall; upon thy belly shalt thou go, and dust shalt thou eat all thy life, was not so great a punishment unto the Serpent after the fall, as encrease, be fruitfull and multiply, was before. This were to confound the maledictions of God, and translate the curse of the Woman upon the Serpent; that is, *in dolore paries*, in sorrow shalt thou bring forth; which being proper unto the woman, is verified best in the Viper, whose delivery is not only accompanied with pain, but also with death it self. And lastly, it overthrows the carefull course, and parentall provision of nature, whereby the young ones newly excluded are sustained by the Dam; and protected untill they grow up to a sufficiency for themselves. All which is perverted in this eruptive generation; for the Dam being destroied, the younglings are left to their own protection; which is not conceivable they can at all perform, and whereof they afford us a remarkable confirmance many daies after birth; for the young ones supposed to break through the belly of the Dam, will upon any fright for protection run into it; for then the old one receives them in at her mouth, which way the fright being past they will return again; which is a peculiar way of refuge; and though it seem strange is avowed by frequent experience and undeniable testimony.

As for the experiment although we have thrice attempted it, it hath not well succeeded; for though we feed them with milk, branne, cheese, *&c.* the females alwaies died before the young ones were mature for this eruption, but rest sufficiently confirmed in the experiments of worthy enquirers: Wherein to omit the ancient conviction of Apollonius, we shall set down some few of modern Writers. The first, of Amatus Lusitanus in his comment upon Dioscorides, *Vidimus nos viperas prægnantes inclusas pixidibus parere, quæ inde ex partu nec mortuæ, nec visceribus perforatæ manserunt.* The second is that of Scaliger, *Viperas ab impatientibus moræ fatibus numerosissimis rumpi atque interire falsum esse scimus, qui in Vincentii Camerini circulatoris lignea theca vidimus enatas viperellas, parente salva.* The last and most plain of Franciscus Bustamantinus, a Spanish Physitian of Alcala *de* Henares, whose words in his third *de Animantibus Scripturæ*, are these: *Cum vero per me & per alios hæc ipsa disquisissem servata Viperina progenie, &c.*

That Vipers exclude their young ones by an ordinary passage, as other vivipatous creatures.

that is, when by my ſelf and others I had enquired the truth hereof, including Vipers in a glaſſe, and feeding them with cheeſe and branne, I undoubtedly found that the Viper was not delivered by the tearing of her bowels, but I beheld them excluded by the paſſage of generation, near the orifice of the ſeidge.

Now although the Tradition be untrue, there wanted not many grounds which made it plauſibly received. The firſt was a favourable indulgence and ſpeciall contrivance of nature; which was the conceit of Herodotus, who thus delivereth himſelf. Fearfull Animals, and ſuch as ſerve for food, nature hath made more fruitfull; but upon the offenſive and noxious kinde, ſhe hath not conferred fertility. So the Hare that becometh a prey unto man, unto beaſts, and fowles of the air, is fruitfull even to ſuperfatation; but the Lyon a fierce and ferocious Animall hath young ones but ſeldome, and alſo but one at a time; Vipers indeed, although deſtructive, are fruitfull; but leſt their number ſhould encreaſe, providence hath contrived another way to abate it; for in copulation the female bites off the head of the male, and the young ones deſtroy the mother. But this will not conſiſt with reaſon as we have declared before. And if we more nearly conſider the condition of Vipers and noxious Animals, we ſhall diſcover an higher proviſion of nature; how although in their paucity ſhe hath not abridged their malignity, yet hath ſhe notoriouſly effected it by their receſſion or latitancy. For not only offenſive inſects as Hornets, Waſpes, and the like; but ſanguineous corticated Animals, as Serpents, Toads and Lizards, doe lie hid and betake themſelves to coverts in the Winter; whereby moſt countries enjoying the immunity of Ireland and Candie, there ariſeth a temporall ſecurity from their venome; and an intermiſſion of their miſchiefs, mercifully requiting the time of their activities.

A ſecond ground of this effect, was conceived the juſtice of Nature, whereby ſhe compenſates the death of the father by the matricide or murder of the mother; and this was the expreſſion of Nicander; but the cauſe hereof is as improbable as the effect; and were indeed an improvident revenge in the young ones, whereby in conſequence, and upon defect of proviſion they muſt deſtroy themſelves. And whereas he expreſſeth this decollation of the male by ſo full a term as ἀποτίμησιν, that is, to cut or lop off, the act is hardly conceivable; for the female Viper hath but four conſiderable teeth, and thoſe ſo diſpoſed, ſo ſlender and needle-pointed, that they are apter for puncture then any act of inciſion. And if any like action there be, it may be only ſome faſt retention or ſudden compreſſion in the Orgaſmus or fury of their luſt; according as that expreſſion of Horace is conſtrued concerning Lydia and Telephus

——*Sive puer furens,*
Impreſſit memorem dente labris notam.

Others aſcribe this effect unto the numerous conception of the Viper; and this was the opinion of Theophraſtus; who though he denieth the exeſion or forcing through the belly, conceiveth nevertheleſſe that upon a full and plentifull impletion there may perhaps ſucceed a diſruption of the matrix, as it happeneth ſometimes in the long and ſlender fiſh Acus. Now although in hot Countries, and very numerous conceptions, in the Viper or other Animals, there may ſometimes enſue a dilaceration of the genitall parts; yet is this a rare and contingent effect, and not a naturall and conſtant way of excluſion. For the wiſe Creator hath formed the organs of Animals unto their operations; and in whom he ordaineth a numerous conception, in them he hath prepared convenient receptacles, and a ſutable way of excluſion.

Found ſometimes upon the ſea ſhore, conſiſting of four lines unto the vent, and ſix from thence unto the head.

Others

Others doe ground this diſruption upon their continued or protracted time of delivery; preſumed to laſt twenty daies; whereat, excluding but one a day, the latter brood impatient, by a forcible proruption anticipate their period of excluſion; and this was the aſſertion of Pliny; *Cæteri tarditatis impatientes prorumpunt latera, occisâ parente*; which was occaſioned upon a miſtake of the Greek text in Ariſtole, τίκτει δὲ ἐν μιᾷ ἡμέρᾳ καθ' ἕν, τίκτει δὲ πολλῷ ἢ εἴκοσι, which are literally thus tranſlated, *Parit autem una die ſecundum unum, parit autem plures quam viginti*, and may be thus Engliſhed, She bringeth forth in one day, one by one, and ſometimes more then twenty; and ſo hath Scaliger rendred it, *Sigillatim parit, abſolvit una die interdum plures quam viginti*: But Pliny whom Gaza followeth hath differently tranſlated it, *Singulos diebus ſingulis parit, numero fere viginti*; whereby he extends the excluſion unto twenty daies, which in the textuary ſenſe is fully accompliſhed in one.

But what hath moſt advanced it, is a miſtake in another text of Ariſtotle, which ſeemeth directly to determine this diſruption, τίκτει μικρὰ ἐχίδνια ἐν ὑμέναι, ἃ διαῤῥήγνυται τετάρτῃ, ἐνίοις δὲ καὶ ἐν τῇ μήτρᾳ διαῤῥηγέντα ἐνίοτε ἐξέρχεται; which Gaza hath thus tranſlated, *Parit catulos obvolutos membranis, quæ tertio die rumpuntur, evenit interdum ut qui in utero adhuc ſunt abroſis membranis prorumpant.* Now herein very probably Pliny, and many ſince have been miſtaken; for the diſruption of the membranes or skins, which include the young ones, conceiving a dilaceration of the matrix and belly of the Viper; and concluding from a caſuall dilaceration, a regular and conſtant diſruption.

As for the Latine word *Vipera*, which in the Etymologie of Iſidore promoteth this conceit; more properly it may imply *vivipera*. For whereas other Serpents lay egges; the Viper excludeth living animals; and though the Ceraſtes be alſo viviparous, and we have found formed Snakes in the belly of the Ciciſia or ſlow-worm; yet may the Viper emphatically bear the name. For the notation or Etymologie is not of neceſſity adequate unto the name; and therefore though animall be deduced from *anima*, yet are there many animations beſide, and plants will challenge a right therein as well as ſenſible creatures.

As touching the Text of Scripture, and compellation of the Phariſees, by Generation of Vipers; although conſtructions be made hereof conformable to this Tradition, and it may be plauſibly expounded, that out of a viperous condition, they conſpired againſt their Prophets, and deſtroied their ſpirituall parents; yet (as Janſenius obſerveth) Gregory and Jerome, doe make another conſtruction; apprehending thereby what is uſually implied by that Proverb, *Mali corvi malum ovum*; that is, of evil parents, an evil generation; a poſterity not unlike their majority; of miſchievous progenitors, a venemous and deſtructive progeny.

And laſtly, concerning the Hieroglyphicall account, according to the Vulgar conception ſet down by Orus Apollo, the authority thereof is only Emblematicall; for were the conception true or falſe, to their apprehenſions, it expreſſed filiall impiety. Which ſtrictly taken, and totally received for truth; might perhaps begin, but ſurely promote this conception.

Chap. XVII.

of Hares.

That Hares are both male and female, beside the vulgar opinion, was the affirmative of Archelaus, of Plutarch, Philostratus and many more. Of the same belief have been the Jewish Rabbins: The same is likewise confirmed from the Hebrew word; which as though there were no single males of that kinde, hath only obtained a name of the feminine gender; as also from the symbolicall foundation of its prohibition in the law, and what vices therein it figured; that is, not only pusillanimity and timidity from its temper, feneration or usury from its fecundity and superfetation, but from this mixture of sexes, unnaturall venery and degenerous effemination. Nor are there hardly any who either treat of mutation or mixtion of sexes, who have not left some mention of this point; some speaking positively, others dubiously, and most resigning it unto the enquiry of the Reader. Now hereof to speak distinctly, they must be male and female by mutation and succession of sexes; or else by composition, mixture or union thereof.

Arnabeth.

Levit. 11.

As for the mutation of sexes, or transition into one another, we cannot deny it in Hares, it being observable in Man. For hereof beside Empedocles or Tiresias, there are not a few examples; and though very few, or rather none which have emasculated or turned Women, yet very many who from an an esteem or reality of being Women have infallibly proved Men: some at the first point of their menstruous eruptions, some in the day of their marriage, others many years after; which occasioned disputes at Law, and contestations concerning a restore of the dowry. And that not only Mankinde, but many other Animals, may suffer this transexion, we will not deny, or hold it at all impossible; although I confesse by reason of the postick and backward position of the feminine parts in quadrupedes, they can hardly admit the substitution of a protrusion effectuall unto masculine generation; except it be in Retroingents, and such as couple backward.

Transmutation of Sexes, viz. of Women into Men granted.

Nor shall we only concede the succession of sexes in some, but shall not dispute the transition of reputed species in others; that is, a transmutation, or (as Paracelsians terme it) Transplantation of one into another. Hereof in perfect Animals of a congenerous seed, or near affinity of natures, examples are not unfrequent, as Horses, Asses, Dogs, Foxes, Phaisants, Cocks, &c. but in imperfect kindes, and such where the discrimination of sexes is obscure, these transformations are more common: and in some within themselves without commixtion, as particularly in Caterpillers or Silk-wormes, wherein there is a visible and triple transfiguration. But in Plants wherein there is no distinction of sex, these transplantations are yet more obvious then any; as that of Barley into Oates, of Wheat into Darnell, and those grains which generally arise among corn, as Cockle, Aracus, Ægilops, and other degenerations; which come up in unexpected shapes, when they want the support and maintenance of the primary and master-formes: And the same doe some affirm concerning other Plants in lesse analogy of figures; as the mutation of Mint into Cresses, Basill into Serpoile, and Turneps into Radishes; in all which, as Severinus conceiveth, there may be equivocall seeds and Hermaphroditicall principles, which contain the radicality and power of different forms; thus in the seed of Wheat there lieth obscurely the seminality of Darnell, although in

In Idea Medicinæ Philosophicæ.

in a ſecondary or inferiour way, and at ſome diſtance of production; which nevertheleſſe if it meet with convenient promotion, or a conflux and conſpiration of cauſes more powerfull then the other; it then beginneth to edifie in chief, and contemning the ſuperintendent form, produceth the ſignatures of its ſelf.

Now therefore although we deny not theſe ſeverall mutations, and doe allow that Hares may exchange their ſex, yet this we conceive doth come to paſſe but ſometimes, and not in that viciſſitude or annuall alternation as is preſumed; that is, from imperfection to perfection, from perfection to imperfection; from female unto male, from male to female again, and ſo in a circle to both without a permanſion in either. For beſide the inconceivable mutation of temper, which ſhould yearly alternate the ſex, this is injurious unto the order of nature, whoſe operations doe reſt in the perfection of their intents; which having once attained, they maintain their accompliſhed ends, and relapſe not again into their progreſſionall imperfections. So if in the minority of naturall vigor, the parts of feminality take place; when upon the encreaſe or growth thereof the maſculine appear, the firſt deſigne of nature is atchieved, and thoſe parts are after maintained.

But ſurely it much impeacheth this iterated tranſexion of Hares, if that be true which Cardan and other Phyſicians affirm, that Tranſmutation of ſex is only ſo in opinion; and that theſe tranſeminated perſons were really men at firſt, although ſucceeding years produced the manifeſto or evidence of their virilities. Which although intended and formed, was not at firſt excluded; and that the examples hereof have undergone no reall or new tranſexion, but were Androgynally born, and under ſome kinde of Hermaphrodites. For though Galen doe favour the opinion, that the diſtinctive parts of ſexes are only different in poſition, that is, inverſion or protruſion, yet will this hardly be made out from the Anatomy of thoſe parts; the teſticles being ſo ſeated in the female, that they admit not of protruſion; and the neck of the matrix wanting thoſe parts which are diſcoverable in the organ of virility.

The ſecond and moſt received acception, is, that Hares are male and female by conjunction of both ſexes; and ſuch are found in mankinde, Poetically called Hermaphrodites; ſuppoſed to be formed from the equality, or *non victorie* of either ſeed; carrying about them the parts of Man and Woman; although with great variety in perfection, ſite and ability; not only as Ariſtotle conceived, with a conſtant impotencie in one; but as later Obſervers affirm, ſometimes with ability of either venery. And therefore the providence of ſome Laws have thought good, that at the years of maturity they ſhould elect one ſex, and the errors in the other ſhould ſuffer a ſeverer puniſhment. Whereby endeavouring to prevent incontinencie, they unawares enjoined perpetuall chaſtity; for being executive in both parts, and confined unto one, they reſtrained a naturall power, and ordained a partiall virginity. Plato and ſome of the Rabbins proceeded higher; who conceived the firſt Man an Hermaphrodite; and Marcus Leo the learned Jew, in ſome ſenſe hath allowed it; affirming that Adam in one ſuppoſitum without diviſion, contained both male and female; and therefore whereas it is ſaid in the text, That God created man in his own Image, in the Image of God created he him, male and female created he them: applying the ſingular and plurall unto Adam, it might denote, that in one ſubſtance, and in himſelf he included both ſexes, which was after divided, and the female called Woman. The opinion of Ariſtotle extendeth farther, from whoſe aſſertion all men ſhould be Hermaphrodites; for affirming that Women doe not ſperma-

tize, and conferre a place or receptacle rather then essentiall principles of generation, he deductively includes both sexes in mankinde; for from the father proceed not only males and females, but from him also must Hermaphroditicall and masculo-feminine generations be derived, and a commixtion of both sexes arise from the seed of one. But the Schoolmen have dealt with that sex more hardly then any other, who though they have not much disputed their generation, yet have they controverted their Resurrection, and raised a query, whether any at the last day should arise in the sex of Women; as may be observed in the supplement of Aquinas.

Consisting of man and woman.

Now as we must acknowledge this Androgynall condition in Man, so can we not deny the like doth happen in beasts. Thus doe we reade in Pliny, that Neroes Chariot was drawn by four Hermaphroditicall Mares, and Cardan affirmes he also beheld one at Antwerp; and thus may we also concede, that Hares have been of both sexes, and some have ocularly confirmed it; but that the whole species or kinde should be bisexous or double-sexed, we cannot affirm, who have found the parts of male and female respectively distinct and single in any wherein we have enquired. And whereas it is conceived, that being an harmlesse animall and delectable food unto man, nature hath made them with double sexes, that actively and passively performing they might more numerously encrease; we forget an higher providence of nature whereby she especially promotes the multiplication of Hares, which is by superfetation; that is, a conception upon a conception, or an improvement of a second fruit before the first be excluded; preventing hereby the usuall intermission and vacant time of generation; which is very common and frequently observable in Hares, mentioned long ago by Aristotle, Herodotus and Pliny; and we have often observed, that after the first cast, there remain successive conceptions, and other younglings very immature, and far from their terme of exclusion.

Superfetation possible in women, and that unto a perfect birth.

Nor need any man to question this in Hares, for the same we observe doth sometime happen in Women; for although it be true, that upon conception the inward orifice of the matrix exactly closeth, so that it commonly admitteth nothing after; yet falleth it out sometime, that in the act of coition, the avidity of that part dilateth it self, and receiveth a second burden; which if it happen to be near in time unto the first, they commonly doe both proceed unto perfection, and have legitimate exclusions, periodically succeeding each other. But if the superfetation be made with considerable intermission, the latter most commonly proves abortive; for the first being confirmed, engrosseth the aliment from the other. However therefore the project of Julia seem very plausible, and that way infallible, when she received not her passengers, before she had taken in her lading; there was a fallibility therein; nor indeed any absolute security in the policy of adultery after conception. For the Matrix (which some have called another animall within us, and which is not subjected unto the law of our will) after reception of its proper Tenant, may yet receive a strange and spurious inmate; as in confirmable by many examples in Pliny; by Lariſſæa in Hippocrates; and that merry one in Plautus urged also by Aristotle; that is, of Iphicles and Hercules, the one begat by Jupiter, the other by Amphitryon upon Alcmæna; as also in those superconceptions where one childe was like the father, the other like the adulterer; the one favour'd the servant, the other resembled the master.

Now the grounds that begat, or much promoted the opinion of a double sex in Hares, might be some little bags or tumours, at first glance representing stones or Testicles, to be found in both sexes about the parts of generation; which

which men obſerving in either ſex, were induced to beleeve a maſculine ſex in both; but to ſpeak properly, theſe are no Teſticles or parts officiall unto generation, but glandulous ſubſtances that ſeem to hold the nature of Emunctories. For herein may be perceived ſlender perforations, at which may be expreſſed a black and fœculent matter; if therefore from theſe we ſhall conceive a mixtion of ſexes in Hares, with fairer reaſon we may conclude it in Bevers, whereof both ſexes contain a double bagge or Tumour in the groin, commonly called the Cod of Caſtor, as we have delivered before.

Another ground were certain holes or cavities obſervable about the ſiedge; which being perceived in males, made ſome conceive there might be alſo a fœminine nature in them. And upon this very ground, the ſame opinion hath paſſed upon the Hyæna, as is declared by Ariſtotle, and thus tranſlated by Scaliger; *Quod autem aiunt utriuſq; ſexus habere genitalia, falſum eſt, quod videtur eſſe fœmineum ſub cauda, eſt ſimile figura fœminino, verum pervium non eſt*; and thus is it alſo in Hares; in whom theſe holes, although they ſeem to make a deep cavity, yet doe they not perforate the skin; nor hold a community with any part of generation; but were (as Pliny delivereth) eſteemed the marks of their age, the number of thoſe deciding their number of years. In which opinion what truth there is we ſhall not contend; for if in other Animals there be authentick notations; if the characters of years be found in the horns of Cowes, or in the Antlers of Deere; if we conjecture the age of Horſes from joints in their docks, and undeniably preſume it from their teeth; we cannot affirm, there is in this conceit, any affront unto nature; although, who ever enquireth ſhall finde no aſſurance therein.

The laſt foundation was Retromingency or piſſing backward; for men obſerving both ſexes to urine backward, or averſly between their legges, they might conceive there was a fœminine part in both; wherein they are deceived by the ignorance of the juſt and proper ſite of the Pizell, or part deſigned unto the Excretion of urine; which in the Hare holds not the common poſition, but is averſly ſeated, and in its diſtention enclines unto the coccix or ſcut. Now from the nature of this poſition, there enſueth a neceſſity of Retrocopulation, which alſo promoteth the conceit; for ſome obſerving them to couple without aſcenſion, have not been able to judge of male or female, or to determine the proper ſex in either. And to ſpeak generally this way of copulation is not appropriate unto Hares, nor is there one, but many waies of Coition; according to divers ſhapes and different conformations. For ſome couple laterally or ſidewiſe, as wormes; ſome circularly or by complication as Serpents; ſome pronely, that is by contaction of prone parts in both, as Apes, Porcupines, Hedgehogges, and ſuch as are termed Mollia, as the Cuttleſiſh and the Purple; ſome mixtly, that is, the male aſcending the female, or by application of the prone parts of the one, unto the poſtick parts of the other, as moſt Quadrupeds; Some averſely, as all Cruſtaceous animals, Lobſters, Shrimps, and Creviſes, and alſo Retromingents, as Panthers, Tigers, and Hares. This is the conſtant Law of their Coition, this they obſerve and tranſgreſſe not: only the vitioſity of man hath acted the varieties hereof; nor content with a digreſſion from ſex or ſpecies, hath in his own kinde run thorow the Anomalies of venery; and been ſo bold, not only to act, but repreſent to view, the Irregular waies of luſt.

Chap. XVIII.

Of Molls.

That Molls are blinde and have no eyes, though a common opinion, is received with much variety; some affirming only they have no sight, as Oppianus, the Proverb *Talpa Cæcior*, and the word ἀσπαλαξία, or Talpitas, which in Hesychius is made the same with Cæcias: some that they have eies, but no sight, as the text of Aristotle seems to imply; some neither eies nor sight, as Albertus, Pliny, and the vulgar opinion; some both eies and sight, as Scaliger, Aldrovandus, and some others. Of which opinions the last with some restriction, is most consonant unto truth: for that they have eyes in their head is manifest unto any, that wants them not in his own; and are discoverable, not only in old ones, but as we have observed in young and naked conceptions, taken out of the belly of the Dam. And he that exactly enquires into the cavity of their cranies, may discover some propagation of nerves communicated unto these parts; but that the humors together with their coats are also distinct (though Galen seem to affirm it) transcendeth our discovery; for separating these little Orbes, and including them in magnifying glasses, we discerned no more then Aristotle mentions, τὸ ὑφαλινὸν μέλαινα, that is, *humorem nigrum*, nor any more if they be broken. That therefore they have eies we must of necessity affirm, but that they be comparatively incomplete we need not to denie: So Galen affirmes the parts of generation in women are imperfect, in respect of those of men, as the eies of Molls in regard of other animals; So Aristotle termes them ἀτελεῖνας, which Gaza translates *oblæsos*, and Scaliger by a word of Imperfection, *inchoatos*.

Now as that they have eies is manifest unto sense, so that they have sight not incongruous unto reason; if we call not in question the providence of this provision, that is, to assign the organs, and yet deny the office, to grant them eies and withold all manner of vision. For as the inference is fair, affirmatively deduced from the action to the organ, that they have eies because they see; so is it also from the organ to the action, that they have eies, therefore some sight designed; if we take the intention of Nature in every species, and except the casuall impediments, or morbosities in individuals. But as their eies are more imperfect then others, so doe we conceive of their sight, or act of vision; for they will runne against things, and hudling forwards fall from high places. So that they are not blinde, nor yet distinctly see; there is in them no cecity, yet more then a cecutiency; they have sight enough to discern the light, though not perhaps to distinguish of objects or colours; so are they not exactly blinde, for light is one object of vision. And this (as Scaliger observeth) might be as full a sight as Nature first intended; for living in darkness under the earth, they had no further need of eies then to avoid the light; and to be sensible when ever they lost that darkness of earth, which was their naturall confinement. And therefore however Translators doe render the word of Aristotle or Galen, that is, *imperfectos*, *oblæsos* or *inchoatos*, it is not much considerable; for their eies are sufficiently begun to finish this action, and competently perfect for this imperfect Vision.

And lastly, although they had neither eies nor sight, yet could they not be termed blinde. For blindness being a privative term unto sight, this appellation

pellation is not admittible in propriety of ſpeech, and will overthrow the doctrine of privations; which preſuppoſe poſitive formes or habits, and are not indefinite negations, denying in all ſubjects, but ſuch alone wherein the poſitive habits are in their proper nature, and placed without repugnancy. So doe we improperly ſay a Moll is blinde, if we deny it the organs or a capacity of viſion from its created nature; ſo when the text of John had ſaid, that perſon was blinde from his nativity, whoſe cecity our Saviour cured, it was not warrantable in Nonnus to ſay he had no eies at all, in the judgement of Heinſius, as he deſcribeth in his paraphraſe; and as ſome ancient Fathers affirm, that by this miracle they were created in him. And ſo though the ſenſe may be accepted, that proverb muſt be candidly interpreted, which maketh fiſhes mute; and calls them ſilent which have no voice in Nature.

Now this conceit is erected upon a miſapprehenſion or miſtake in the ſymptomes of viſion; men confounding aboliſhment, diminution and depravement, and naming that an abolition of ſight, which indeed is but an abatement. For if viſion be aboliſhed, it is called *cæcitas*, or blindneſſe; if depraved and receive its objects erroneouſly, Hallucination; if diminiſhed, *hebetudo viſus*, *caligatio*, or dimneſſe. Now inſtead of a diminution or imperfect viſion in the Moll, we affirm an abolition or totall privation; inſtead of caligation or dimneſſe, we conclude a cecity or blindneſſe. Which hath been frequently inferred concerning other animals; ſo ſome affirm the water Rat is blinde, ſo Sammonicus and Nicander doe call the Muſ-Araneus the ſhrew or Ranny, blinde; And becauſe darkneſſe was before light, the Ægyptians worſhipped the ſame: So are ſlow-Wormes accounted blinde, and the like we affirm proverbially of the Beetle; although their eies be evident, and they will flye againſt lights, like many other inſects; and though alſo Ariſtotle determines, that the eies are apparent in all flying inſects, though other ſenſes be obſcure, and not perceptible at all. And if from a diminution we may inferre a totall privation, or affirm that other Animals are blinde which doe not acutely ſee, or comparatively unto others, we ſhall condemn unto blindneſſe many not ſo eſteemed; for ſuch as have corneous or horney eies, as Lobſters and cruſtaceous animals, are generally dim-ſighted; all inſects that have *antennæ*, or long hornes to feel out their way, as Butter-flies and Locuſts; or their fore-legs ſo diſpoſed, that they much advance before their heads, as may be obſerved in Spiders; and if the Eagle were judge, we might be blinde our ſelves; the expreſſion therefore of Scripture in the ſtory of Jacob is ſurely with circumſpection; And it came to paſſe when Jacob was old, and his eies were dim, *quando caligarunt oculi*, ſaith Jerom and Tremellius, which are expreſſions of diminution, and not of abſolute privation.

CHAP. XIX.

Of Lampries.

WHether Lampries have nine eies, as is received, we durſt refer it unto Polyphemus, who had but one, to judge it. An error concerning eies, occaſioned by the error of eies; deduced from the appearance of divers cavities or holes on either ſide, which ſome call eies that careleſly behold them; and is not only refutable by experience, but alſo repugnant

unto reaſon. For beſide the monſtroſity they faſten unto Nature, in contriving many eies, who hath made but two unto any animall, that is, one of each ſide, according to the diviſion of the brain; it were a ſuperfluous and inartificiall act to place and ſettle ſo many in one plane; for the two extreams would ſufficiently perform the office of ſight without the help of the intermediate eies, and behold as much as all ſeven joined together. For the viſible baſe of the object would be defined by theſe two; and the middle eies although they behold the ſame thing, yet could they not behold ſo much thereof as theſe; ſo were it no advantage unto man to have a third eie between thoſe two he hath already; and the fiction of Argus ſeems more reaſonable then this; for though he had many eies, yet were they placed in circumference and poſitions of advantage.

All ſenſe is from the brain.

Again, Theſe cavities which men call eies are ſeated out of the head, and where the Gils of other fiſh are placed; containing no organs of ſight, nor having any communication with the brain. Now all ſenſe proceeding from the brain, and that being placed (as Galen obſerveth) in the upper part of the body, for the fitter ſituation of the eies, and conveniency required unto ſight; it is not reaſonable to imagine that they are any where elſe, or deſerve that name which are ſeated in other parts. And therefore we relinquiſh as fabulous what is delivered of Sternopthalmi, or men with eies in their breaſt; and when it is ſaid by Solomon, A wiſe mans eies are in his head, it is to be taken in a ſecond ſenſe, and affordeth no objection. True it is that the eies of animals are ſeated with ſome difference, but all whatſoever in the head, and that more forward then the ear or hole of hearing. In quadupedes, in regard of the figure of their heads, they are placed at ſome diſtance; in latiroſtrous and flat-bild birds they are more laterally ſeated; and therefore when they look intently they turn one eie upon the object, and can convert their heads to ſee before and behinde, and to behold two oppoſite points at once. But at a more eaſie diſtance are they ſituated in man, and in the ſame circumference with the ear; for if one foot of the compaſſe be placed upon the Crown, a circle deſcribed thereby will interſect, or paſſe over both the eares.

To what uſe the nine eies in a Lampreydo ſerve.

The error in this conceit conſiſts in the ignorance of theſe cavities, and their proper uſe in nature; for this is a particular diſpoſure of parts, and a peculiar conformation whereby theſe holes and ſluces ſupply the defect of Gils, and are aſſiſted by the conduit in the head; for like cetaceous animals and Whales, the Lamprey hath a fiſtula, ſpout or pipe at the back part of the head, whereat it ſpurts out water. Nor is it only ſingular in this formation, but alſo in many other; as in defect of bones, whereof it hath not one; and for the ſpine or back-bone, a cartilaginous ſubſtance without any ſpondyles, proceſſes or protuberance whatſoever. As alſo in the proviſion which Nature hath made for the heart; which in this animall is very ſtrangely ſecured, and lies immured in a cartilage or griſtly ſubſtance. And laſtly, in the colour of the liver; which is in the male of an excellent graſſe green; but of a deeper colour in the female, and will communicate a freſh and durable verdure.

Chap. XX.

Of Snayles.

That Snailes have two eyes, and at the end of their Horns, beſide the aſſertion of the people, is the opinion of ſome Learned men. Which notwithſtanding Scaliger tearms but imitation of eyes; which Pliny contradicts, and Ariſtotle upon conſequence denies, when he affirms that teſtaceous animals have no eyes at all. And for my own part after much inquiry, I am not ſatisfied that theſe are eyes, or that thoſe black and atramentous ſpots which ſeem to repreſent them are any ocular realities. For if any object be preſented unto them, they will ſometime ſeem to decline it, and ſometime run againſt it. If alſo theſe black extremities, or preſumed eyes be clipped off, they will notwithſtanding make uſe of their protruſions or horns, and poke out their way as before. Again, if they were eyes or inſtruments of viſion, they would have their originals in the head, and from thence derive their motive and optick organs; but their roots and firſt extremities are ſeated low upon the ſides of the back, as may be perceived in the whiter ſort of Snayles when they retract them. And laſtly, if we concede they have two eyes, we muſt alſo grant, they have no leſſe then four; for not only the two greater extenſions above have theſe imitations of eyes, but alſo the two leſſer below: and if they be dextrouſly diſſected, there will be found on either ſide two black filaments or membranous ſtrings, which extend into the long and ſhorter cornicle upon protruſion. And therefore if they have two eyes, they have alſo four, which will be monſtrous, and beyond the affirmation of any.

Now the reaſon why we name theſe black ſtrings eyes, is, becauſe we know not what to call them elſe, and underſtand not the proper uſe of that part; which indeed is very obſcure, and not delivered by any; but may probably be ſaid to aſſiſt the protruſion and retraction of their horns; which being a weak and hollow body, require ſome inward eſtabliſhment, to confirm the length of their advancement; which we obſerve they cannot extend without the concurrence hereof. For if with your finger you apprehend the top of the horn, and draw out this black and membranous emiſſion, the horn will be excluded no more; but if you clip off the extremity, or only ſinge the top thereof with *Aqua fortis*, or other corraſive water, leaving a conſiderable part behinde; they will nevertheleſſe exclude their horns, and therewith explorate their way as before. And indeed the exact ſenſe of theſe extremities is very remarkable; for if you dip a pen in *Aqua fortis*, oyl of vitriol or Turpentine, and preſent it towards theſe points, they will at a reaſonable diſtance, decline the acrimony thereof, retiring or diſtorting them to avoid it; and this they will nimbly perform if objected to the extremes, but ſlowly or not at all, if approached unto their roots.

What hath been therefore delivered concerning the plurality, paucity or anomalous ſituation of eyes, is either monſtrous, fabulous, or under things never ſeen includes good ſenſe or meaning. And ſo may we receive the figment of Argus, who was an Hieroglyphick of heaven, in thoſe centuries of eyes expreſſing the ſtars; and their alternate wakings, the viciſſitude of day and night; which ſtrictly taken cannot be admitted; for the ſubject of ſleep is not the eye, but the common ſenſe, which once aſleep, all eyes muſt be at reſt. And therefore what is delivered as an Embleme of vigilancy, that the Hare

Hare and Lion doe ſleep with one eye open, doth not evince they are any more awake then if they were both cloſed. For the open eye beholds in ſleep no more then that which is cloſed; and no more one eye in them then two in other animals that ſleep with both open; as ſome by diſeaſe, and others naturally which have no eye-lids at all.

How things happen to be ſeen as double.

As for Polyphemus, although the ſtory be fabulous, the monſtroſity is not impoſſible. For the act of Viſion may be performed with one eye; and in the deception and fallacy of ſight, hath this advantage of two, that it beholds not objects double, or ſees two things for one. For this doth happen when the axis of the viſive cones, diffuſed from the object, fall not upon the ſame plane; but that which is conveyed into one eye, is more depreſſed or elevated then that which enters the other. So if beholding a Candle, we protrude either upward or downward the pupill of one eye, the object will appear double; but if we ſhut the other eye, and behold it with one, it will then appear but ſingle; and if we abduce the eye unto either corner, the object will not duplicate; for in that poſition the axis of the cones remain in the ſame plane, as is demonſtrated in the opticks, and delivered by Galen, in his tenth *De uſu partium.*

Relations alſo there are of men that could make themſelves inviſible, which belongs not to this diſcourſe; but may ſerve as notable expreſſions of wiſe and prudent men, who ſo contrive their affairs, that although their actions be manifeſt, their deſignes are not diſcoverable. In this acception there is nothing left of doubt, and Giges ring remaineth ſtill amongſt us; for vulgar eyes behold no more of wiſe men then doth the Sun; they may diſcover their exteriour and outward waies, but their interiour and inward pieces he only ſees, that ſees into their beings.

Chap. XXI.

Of the Cameleon.

Concerning the Cameleon there generally paſſeth an opinion that it liveth only upon ayre, and is ſuſtained by no other aliment; Thus much is in plain termes affirmed by Solinus, Pliny and others, and by this periphraſis is the ſame deſcribed by Ovid. All which notwithſtanding, upon enquiry I finde the aſſertion mainly controvertible, and very much to fail in the three inducements of belief.

And firſt for its verity, although aſſerted by ſome, and traditionally delivered by others, yet is it very queſtionable. For beſide Ælian, who is ſeldome defective in theſe accounts; Ariſtotle diſtinctly treating hereof, hath made no mention of this remarkeable propriety; which either ſuſpecting its verity, or preſuming its falſity he ſurely omitted; for that he remained ignorant of this account it is not eaſily conceivable; it being the common opinion, and generally received by all men. Some have poſitively denied it, as Auguſtinus Niphus, Stobæus, Dalechampius, Fortunius, Licetus, with many more; others have experimentally refuted it, as namely *Johannes Landius*, who in the relation of Scaliger, obſerved a Cameleon to lick up a fly from his breaſt; But *Bellonius* hath been more ſatisfactorily experimentall, not only affirming they feed on Flyes, Caterpillars, Beetles and other inſects, but upon exenteration he found theſe animals in their bellies: and although we have not had the advantage of our own obſervation, yet have we received the

the like confirmation from many ocular ſpectators.

As touching the veriſimility or probable truth of this relation, ſeverall reaſons there are which ſeem to overthrow it. For firſt, there are found in this animall, the guts, the ſtomack, and other parts officiall unto nutrition; which were its aliment the empty reception of air, their proviſions had been ſuperfluous. Now the wiſdom of nature abhorring ſuperfluities, and effecting nothing in vain, unto the intention of theſe operations, reſpectively contriveth the Organs; and therefore where we finde ſuch Inſtruments, we may with ſtrictneſſe expect their actions, and where we diſcover them not, we may with ſafety conclude the non-intention of their operations. So when we obſerve that oviperous animals, as Lizards, Frogs, Birds, and moſt Fiſhes have neither bladder nor kidneys, we may with reaſon inferre they do not urine at all: But whereas in the ſame kinde we diſcover theſe parts in the Tortoys, we cannot deny he exerciſeth that excretion; Nor was there any abſurdity in Pliny, when for medicinall uſes he commended the urine of a Tortoiſe. So when we perceive that Bats have teats, it is not unreaſonable to inferre they ſuckle their younglings with milk; but whereas no other flying animall hath theſe parts, we cannot from them expect a viviparous excluſion; but either a generation of eggs, or ſome vermiparous ſeparation, whoſe navell is within it ſelf at firſt, and its nutrition after not inwardly dependant of its originall.

Again, Nature is ſo far from leaving any one part without its proper action, that ſhe oft times impoſeth two or three labours upon one, ſo the pizell in animals is both officiall unto urine and to generation, but the firſt and primary uſe is generation; for many creatures enjoy that part which urine not, as fiſhes, birds, and quadrupeds oviparous. But not on the contrary, for the ſecundary action ſubſiſteth not alone, but in concomitancy with the other; ſo the noſtrils are uſefull both for reſpiration and ſmelling, but the principall uſe is ſmelling; for many have noſtrils which have no lungs, as fiſhes, but none have lungs or reſpiration, which have not ſome ſhew, or ſome analogy of noſtrils. Thus we perceive the providence of nature, that is, the wiſdome of God, which diſpoſeth of no part in vain, and ſome parts unto two or three uſes, will not provide any without the execution of its proper office, nor where there is no digeſtion to be made, make any parts inſervient to that intention.

Nature provides no part, without its proper function or office.

Beſide the teeth, the tongue of this animall is a ſecond argument to overthrow this airie nutrication: and that not only in its proper nature, but alſo its peculiar figure. For of this part properly taken there are two ends; that is, the formation of the voice, and the execution of taſte: for the voice, it can have no office in Camelions, for they are mute animals; as beſide fiſhes, are moſt other ſorts of Lizards. As for their taſte, if their nutriment be air, neither can it be an inſtrument thereof; for the body of that element is inguſtible, void of all ſapidity, and without any action of the tongue, is by the rough artery or wezon conducted into the lungs. And therefore Pliny much forgets the ſtrictneſſe of his aſſertion, when he alloweth excrements unto that animall, that feedeth only upon air; which notwithſtanding with the urine of an Aſſe, he commends as a magicall medicine upon our enemies.

The figure of the tongue ſeems alſo to overthrow the preſumption of this aliment, which according to exact delineation, is in this animall peculiar, and ſeemeth contrived for prey. For in ſo little a creature it is at the leaſt half a palm long, and being it ſelf very ſlow in motion, hath in this part a very great agility; withall its food being flies and ſuch as ſuddenly eſcape, it hath

χαμαιλέων.

in the tongue a mucous and ſlymy extremity, whereby upon a ſudden emiſſion it inviſcates and tangleth thoſe inſects. And therefore ſome have thought its name not unſuitable unto its nature; the nomination in Greek is a little Lion; not ſo much for the reſemblance of ſhape, as affinity of condition; that is for vigilancy in its prey, and ſudden rapacity thereof, which it performeth not like the Lion with its teeth, but a ſudden and unexpected ejaculation of the tongue. This expoſition is favoured by ſome, eſpecially the old gloſſe upon Leviticus, whereby in the Tranſlation of Jerome and the Septuagint, this animall is forbidden; whatever it be, it ſeems more reaſonable then that of Iſidore, who derives this name *a Camelo & Leone*, as preſuming herein reſemblance with a Camell.

As for the poſſibility hereof, it is not alſo unqueſtionable; and wiſe men are of opinion, the bodies of animals cannot receive a proper aliment from air: for beſide that taſte being (as Ariſtotle terms it) a kinde of touch; it is required the aliment ſhould be tangible, and fall under the palpable affections of touch; beſide alſo that there is ſome ſapor in all aliments, as being to be diſtinguiſhed and judged by the guſt, which cannot be admitted in air: Beſide theſe, I ſay, if we conſider the nature of aliment, and the proper uſe of air in reſpiration, it will very hardly fall under the name hereof, or properly attain the act of nutrication.

Requiſites unto Nutrition.

And firſt concerning its nature, to make a perfect nutrition into the body nouriſhed, there is required a tranſmutation of the nutriment, now where this converſion or aggeneration is made, there is alſo required in the aliment a familiarity of matter, and ſuch a community or vicinity unto a living nature, as by one act of the ſoul may be converted into the body of the living, and enjoy one common ſoul. Which cannot be effected by air, it concurring only with our fleſh in common principles, which are at the largeſt diſtance from life, and common alſo unto inanimated conſtitutions. And therefore when it is ſaid by Fernelius, and aſſerted by divers others, that we are only nouriſhed by living bodies, and ſuch as are ſome way proceeding from them, that is, the fruits, effects, parts, or ſeeds thereof, they have laid out an object very agreeable unto aſſimulation; for theſe indeed are fit to receive a quick and immediate converſion, as holding ſome community with our ſelves, and containing approximate diſpoſitions unto animation.

Secondly (as is argued by Ariſtotle againſt the Pythagoreans) whatſoever properly nouriſheth before its aſſimulation, by the action of naturall heat it receiveth a corpulency or incraſſation progreſſionall unto its converſion; which notwithſtanding cannot be effected upon the air; for the action of heat doth not condenſe but rarifie that body, and by attenuation rather then for nutrition, diſpoſeth it for expulſion.

Thirdly (which is the argument of Hippocrates) all aliment received into the body, muſt be therein a conſiderable ſpace retained, and not immediatly expelled. Now air but momentally remaining in our bodies, it hath no proportionable ſpace for its converſion; only of length enough to refrigerate the heart; which having once performed, leſt being it ſelf heated again, it ſhould ſuffocate that part, it maketh no ſtay, but haſteth back the ſame way it paſſed in.

Fourthly, The proper uſe of ayre attracted by the lungs, and without which there is no durable continuation in life, is not the nutrition of parts, but the contemperation of that fervour in the heart, and the ventilation of that fire alwaies maintained in the forge of life; whereby although in ſome manner it concurreth unto nutrition, yet can it not receive the proper name of nutriment; and therefore by Hippocrates *de alimento*, it is termed *Alimentum*

mentum non Alimentum, a nouriſhment and no nouriſhment. That is, in a large acception, but not in propriety of language; conſerving the body, not nouriſhing the ſame; not repairing it by aſſimulation, but preſerving it by ventilation; for thereby the naturall flame is preſerved from extinction, and ſo the individuum ſupported in ſome way like nutrition. And ſo when it is ſaid by the ſame Author, *Pulmo contrarium corpori alimentum trahit, reliqua omnia idem*, it is not to be taken in a ſtrict and proper ſenſe; but the quality in the one, the ſubſtance is meant in the other. For air in regard of our naturall heat is cold, and in that quality contrary unto it; but what is properly aliment, of what quality ſoever, is potentially the ſame, and in a ſubſtantiall identity unto it.

Again, Some are ſo farre from affirming the air to afford any nutriment, that they plainly deny it to be any element, or that it entreth into mixt bodies as any principle in their compoſitions, but performeth other offices in the univerſe, as to fill all vacuities about the earth or beneath it, to convey the heat of the ſun, to maintain fires and flames, to ſerve for the flight of volatils, reſpiration of breathing animals, and refrigeration of others. And although we receive it as an element, yet ſince the tranſmutation of elements and ſimple bodies, is not beyond great queſtion, ſince alſo it is no eaſie matter to demonſtrate that air is ſo much as convertible into water; how tranſmutable it is into fleſh, may be of deeper doubt.

And although the air attracted may be conceived to nouriſh the inviſible flame of life, in as much as common and culinary flames are nouriſhed by the air about them; I confeſſe we doubt that air is the pabulous ſupply of fire, much leſſe that flame is properly air kindled. And the ſame before us, hath been denied by the Lord of Verulam, in his Tract of life and death, and alſo by Dr Jorden in his book of Minerall waters. For that which ſubſtantially maintaineth the fire, is the combuſtible matter in the kindled body, and not the ambient air, which affordeth exhalation to its fuliginous atomes; nor that which cauſeth the flame properly to be termed air, but rather as he expreſſeth it, the accenſion of fuliginous exhalations, which contain an unctuoſity in them, and ariſe from the matter of fuell; which opinion is very probable, and will ſalve many doubts, whereof the common conceit affordeth no ſolution.

What the matter of Culinary or Kitchin fire is.

As firſt, How fire is ſtricken out of flints? that is not by kindling the air from the colliſion of two hard bodies; for then Diamonds ſhould doe the like better then flints; but rather from the ſulphur and inflamable effluviums contained in them. The like ſaith Jorden we obſerve in canes and woods, that are unctuous and full of oyle, which will yeeld fire by frication, or colliſion, not by kindling the air about them, but the inflamable oyle within them. Why the fire goes out without air? that is, becauſe the fuliginous exhalations wanting evaporation recoyle upon the flame and choak it, as is evident in cupping-glaſſes; and the artifice of charcoals, where if the air be altogether excluded, the fire goes out. Why ſome lamps included in cloſe bodies have burned many hundred years, as that diſcovered in the ſepulchre of Tullia the ſiſter of Cicero, and that of Olibius many years after, near Padua? becauſe whatever was their matter, either a preparation gold, or Naptha, the duration proceeded from the purity of their oyle which yeelded no fuliginous exhalations to ſuffocate the fire; For if air had nouriſhed the flame, it had not continued many minutes, for it would have been ſpent and waſted by the fire. Why a piece of flax will kindle, although it touch not the flame? becauſe the fire extendeth further, then indeed it is viſible, being at ſome diſtance from the week, a pellucide and tranſparent body, and thinner

Why fire goes out commonly wanting air,

and why ſometimes continued many ages in flame without fuell.

then the air it ſelf. Why mettals in their liquation, although they intenſly heat the air above their ſurface, ariſe not yet into a flame, nor kindle the air about them? becauſe their ſulphur is more fixed, and they emit not inflamable exhalations. And laſtly, why a lamp or candle burneth only in the air about it, and inflameth not the air at a diſtance from it? becauſe the flame extendeth not beyond the inflamable effluence, but cloſely adheres unto the originall of its inflamation; and therefore it only warmeth, not kindleth the air about it. Which notwithſtanding it will doe, if the ambient air be impregnate with ſubtile inflamabilities, and ſuch as are of quick accenſion; as experiment is made in a cloſe room, upon an evaporation of ſpirits of wine and Camphire; as ſubterraneous fires doe ſometimes happen; and as Creuſa and Alexanders boy in the bath were ſet on fire by Naptha.

Laſtly, The Element of air is ſo far from nouriſhing the body, that ſome have queſtioned the power of water; many conceiving it enters not the body in the power of aliment, or that from thence there proceeds a ſubſtantiall ſupply. For beſide that ſome creatures drink not at all, unto others it performes the common office of air, and ſerves for refrigeration of the heart, as unto fiſhes, who receive it, and expell it by the gils; even unto our ſelves, and more perfect animals, though many waies aſſiſtent thereto, it performs no ſubſtantiall nutrition, ſerving for refrigeration, dilution of ſolid aliment, and its elixation in the ſtomack; which from thence as a vehicle it conveys through leſſe acceſſible cavities into the liver, from thence into the veines, and ſo in a rorid ſubſtance through the capillary cavities into every part; which having performed, it is afterward excluded by urine, ſweat and ſerous ſeparations. And this opinion ſurely poſſeſſed the Ancients; for when they ſo highly commended that water which is ſuddenly hot and cold, which is without all ſavour, the lighteſt, the thinneſt, and which will ſooneſt boile Beans or Peaſe, they had no conſideration of nutrition; whereunto had they had reſpect; they would have ſurely commended groſſe and turbid ſtreames, in whoſe confuſion at leaſt, there might be contained ſome nutriment; and not jejune or limpid water, nearer the ſimplicity of its Element. Although, I confeſs, our cleareſt waters and ſuch as ſeem ſimple unto ſenſe, are much compounded unto reaſon, as may be obſerved in the evaporation of large quantities of water; wherein beſide a terreous reſidence ſome ſalt is alſo found, as is alſo obſervable in rain water; which appearing pure and empty, is full of ſeminall principles, and carrieth vitall atomes of plants and animals in it, which have not periſhed in the great circulation of nature, as may be diſcovered from ſeverall inſects generated in raine water, from the prevalent fructification of plants thereby; and (beſide the reall plant of Cornerius) from vegetable figurations, upon the ſides of glaſſes, ſo rarely delineated in froſts.

A ſeed of plants and animals contained in rain-water.

Libonius tom. 4 *Clym.*

All which conſidered, ſeverer heads will be apt enough to conceive the opinion of this animall, not much unlike unto that of the Aſtomi, or men without mouthes in Pliny; ſutable unto the relation of the Mares in Spain, and their ſubventaneous conceptions, from the Weſtern winde; and in ſome way more unreaſonable then the figment of Rabican the famous horſe in Arioſto, which being conceived by flame and winde, never taſted graſſe, or fed on any groſſer provinder then air; for this way of nutrition was anſwerable unto the principles of his generation; which being not airy, but groſſe and ſeminall in the Chameleon, unto its conſervation there is required a ſolid paſture, and a food congenerous unto the principles of its nature.

The

The grounds of this opinion are many; the first observed by Theophrastus, was the inflation or swelling of the body, made in this animall upon inspiration or drawing in its breath; which people observing, have thought it to feed upon air. But this effect is rather occasioned upon the greatnesse of its lungs, which in this animall are very large, and by their backward situation, afford a more observable dilatation; and though their lungs be lesse, the like inflation is also observable in Toads.

A second is the continuall hiation or holding open its mouth, which men observing conceive the intention thereof to receive the aliment of air; but this is also occasioned by the greatnesse of its lungs; for repletion whereof not having a sufficient or ready supply by its nostrils, it is enforced to dilate and hold open the jawes.

The third is the paucity of bloud observed in this animall, scarce at all to be found but in the eye, and about the heart; which defect being observed, inclined some into thoughts, that the air was a sufficient maintenance for these exanguious parts. But this defect or rather paucity of bloud, is also agreeable unto many other animals, whose solid nutriment we doe not controvert; as may be observed in other sorts of Lizards, in Frogs and divers Fishes; and therefore an Horse-leech will hardly be made to fasten upon a fish; and we doe not reade of much bloud that was drawn from Frogs by Mice, in that famous battell of Homer.

The last and most common ground which begat or promoted this opinion, is the long continuation hereof without any visible food, which some observing precipitously conclude they eat not any at all. It cannot be denied it is (if not the most of any) a very abstemious animall, and such as by reason of its frigidity, paucity of bloud, and latitancy in the winter (about which time the observations are often made) will long subsist without a visible sustentation. But a like condition may be also observed in many other animals; for Lizards and Leeches, as we have made triall, will live some moneths without sustenance, and we have included Snailes in glasses all winter, which have returned to feed again in the spring. Now these notwithstanding, are not conceived to passe all their lives without food; for so to argue is fallacious, and is moreover sufficiently convicted by experience. And therefore probably other relations are of the same verity, which are of the like affinity; as is the conceit of the Rhintace in Persia, the Canis Levis of America, and the Manucodiata or bird of Paradise in India.

To assign a reason of this abstinence in animals, or declare how without a supply there ensueth no destructive exhaustion, exceedeth the limits and intention of my discourse. Fortunius Licetus in his excellent Tract, *De his qui diu vivunt sine alimento*, hath very ingeniously attempted it; deducing the cause hereof from an equall conformity of naturall heat and moisture, at least no considerable exuperancy in either; which concurring in an unactive proportion, the naturall heat consumeth not the moisture (whereby ensueth no exhaustion) and the condition of naturall moisture is able to resist the slender action of heat (whereby it needeth no reparation) and this is evident in Snakes, Lizards, Snailes, and divers other insects latitant many moneths in the year; which being cold creatures, containing a weak heat in a crasse or copious humidity, doe long subsist without nutrition: For the activity of the agent, being not able to overmaster the resistance of the patient, there will ensue no deperdition. And upon the like grounds it is, that cold and phlegmatick bodies, and (as Hippocrates determineth) that old men will best endure fasting. Now the same harmony and stationary constitution, as it happeneth in many species, so doth it fall out sometime in

Individuals. For we reade of many who have lived long time without aliment; and beſide deceits and impoſtures, there may be veritable Relations of ſome, who without a miracle, and by peculiarity of temper, have far outfaſted Elias. Which notwithſtanding doth not take off the miracle, for that may be miraculouſly effected in one, which is naturally cauſable in another. Some naturally living unto an hundred, unto which age, others notwithſtanding could not attain without a miracle.

Chap. XXII.

Of the Oeſtridge.

THe common opinion of the Oeſtridge, Struthiocamelus or Sparrow-Camell conceives that it digeſteth Iron; and this is confirmed by the affirmations of many; beſide ſwarmes of others, Rhodiginus in his prelections taketh it for granted, Johannes Langius in his Epiſtles pleadeth experiment for it; the common picture alſo confirmeth it, which uſually deſcribeth this animall with an horſhoe in its mouth. Notwithſtanding upon enquiry we finde it very queſtionable, and the negative ſeems moſt reaſonably entertained; whoſe verity indeed we doe the rather deſire, becauſe hereby we ſhall relieve our ignorance of one occult quality; for in the liſt thereof it is accounted, and in that notion imperiouſly obtruded upon us. For my own part, although I have had the ſight of this animall, I have not had the opportunity of its experiment, but have received great occaſions of doubt, from learned diſcourſers thereon.

For Ariſtotle and Oppianus who have particularly treated hereof are ſilent in this ſingularity; either omitting it as dubious, or as the Comment ſaith, rejecting it as fabulous. Pliny ſpeaketh generally, affirming only, the digeſtion is wonderfull in this animall; Ælian delivereth, that it digeſteth ſtones, without any mention of Iron; Leo Africanus, who lived in thoſe Countries wherein they moſt abound, ſpeaketh diminutively, and but half way into this aſſertion; *Surdum ac ſimplex animal eſt, quicquid invenit, abſque delectu, uſque ad ferrum devorat:* Fernelius in his ſecond book *De abditis rerum cauſis*, extenuates it, and Riolanus in his Comment thereof poſitively denies it. Some have experimentally refuted it, as Albertus Magnus; and moſt plainly Ulyſſes Aldrovandus, whoſe words are theſe; *Ego ferri fruſta devorare, dum Tridenti eſſem, obſervavi, ſed quæ incocta rurſus excerneret*, that is, at my being at Trent, I obſerved the Oeſtridge to ſwallow Iron, but yet to exclude it undigeſted again.

How (poſſibly) the ſtomack of the Oeſtridge may alter Iron.

Now beſide experiment, it is in vain to attempt againſt it by Philoſophicall argument, it being an occult quality, which contemns the law of Reaſon, and defends it ſelf by admitting no reaſon at all. As for its poſſibility we ſhall not at preſent diſpute; nor will we affirm that Iron ingeſted, receiveth in the ſtomack of the Oeſtridge no alteration at all; but if any ſuch there be, we ſuſpect this effect rather from ſome way of corroſion, then any of digeſtion; not any liquid reduction or tendance to chilification by the power of naturall heat, but rather ſome attrition from an acide and vitriolous humidity in the ſtomack, which may abſterſe and ſhave the ſcorious parts thereof. So ruſty Iron crammed down the throat of a Cock, will become terſe and clear again in its gizard: So the Counter which according to the relation of *Amatus*, remained a whole year in the body of a youth, and came out much conſumed at laſt; might

might ſuffer this diminution, rather from ſharp and acide humours, then the ſtrength of naturall heat, as he ſuppoſeth, So ſilver ſwallowed and retained ſometime in the body, will turn black, as if it had been dipped in *Aqua fortis*, or ſome corroſive water; but Lead will remain unaltered; for that mettall containeth in it a ſweet ſalt or ſugar, whereby it reſiſteth ordinary corroſion, and will not eaſily diſſolve even in *Aqua fortis*. So when for medicall uſes, we take down the filings of Iron or Steel, we muſt not conceive it paſſeth unaltered from us; for though the groſſer parts be excluded again, yet are the diſſoluble parts extracted, whereby it becomes effectuall in decoctions; and therefore for ſpeedier operation we make extinctions, infuſions, and the like, whereby we extract the ſalt and active parts of the medicine; which being in ſolution, more eaſily enter the veins. And this is that the Chymiſts mainly drive at in the attempt of their *Aurum Potabile*; that is, to reduce that indigeſtible ſubſtance into ſuch a form as may not be ejected by ſiege, but enter the cavities, and leſſe acceſſible parts of the body, without corroſion.

What the Chymiſts would have by their *Aurum Potabile*.

The ground of this conceit is its ſwallowing down fragments of Iron, which men obſerving, by a froward illation, have therefore conceived it digeſteth them; which is an inference not to be admitted, as being a fallacy of the conſequent, that is, concluding a poſition of the conſequent, from the poſition of the antecedent. For many things are ſwallowed by animals, rather for condiment, guſt or medicament, then any ſubſtantiall nutriment. So Poultrey, and eſpecially the Turkey, doe of themſelves take down ſtones; and we have found at one time in the gizard of a Turkey no leſſe then ſeven hundred. Now theſe rather concurre unto digeſtion, then are themſelves digeſted; for we have found them alſo in the guts and excrements; but their deſcent is very ſlow, for we have given them ſtones and ſmall pieces of iron, which eighteen daies after we have found remaining in the gizard. And therefore the experiment of Langius and others might be miſtaken, whilſt after the taking they expected it ſhould come down within a day or two after. Thus alſo we ſwallow cherry-ſtones, but void them unconcocted, and we uſually ſay they preſerve us from ſurfet; for being hard bodies they conceive a ſtrong and durable heat in the ſtomack, and ſo prevent the crudities of their fruit; And upon the like reaſon do culinary operators obſerve, that fleſh boils beſt, when the bones are boiled with it. Thus dogs will eat graſſe, which they digeſt not: Thus Camels to make the water ſapid, doe raiſe the mud with their feet: thus horſes will knabble at wals, Pigeons delight in ſalt ſtones, Rats will gnaw Iron, and Ariſtotle ſaith the Elephant ſwalloweth ſtones. And thus may alſo the Oeſtridge ſwallow Iron; not as his proper aliment, but for the ends above expreſſed, and even as we obſerve the like in other animals.

How Cherry-ſtones may be thought to prevent ſurfets upon eating Cherries.

What effect therefore may be expected from the ſtomack of an Oeſtridge by application alone to further digeſtion in ours, beſide the experimentall refute of Galen, we referre it unto conſiderations above alledged; Or whether there be any more credit to be given unto the medicine of Ælian, who affirms the ſtones they ſwallow have a peculiar vertue for the eyes, then that of Hermolaus and Pliny drawn from the urine of this animall; let them determine who can ſwallow ſo ſtrange a tranſmiſſion of qualities, or beleeve that any Bird or flying animall doth urine beſide the Bat.

That therefore an Oeſtridge will ſwallow or take down iron, is eaſily to be granted: that oftentimes they paſſe entire away, if we admit of ocular teſtimony not to be denied; and though ſome experiment may alſo plead, that ſometimes they are ſo altered, as not to be found or excluded in any diſcern,

discernable parcels: yet whether this be not effected by some way of corrosion, from sharp and dissolving humidities, rather then any proper digestion, chilifactive mutation, or alimentall conversion, is with good reason doubted.

Chap. XXIII.

Of Unicorns horn.

Great account and much profit is made of Unicorns horn, at least of that which beareth the name thereof; wherein notwithstadding, many I perceive suspect an Imposture, and some conceive there is no such animall extant. Herein therefore to draw up our detetminations, beside the severall places of Scripture mentioning this animall (which some perhaps may contend to be only meant of the Rhinoceros) we are so far from denying there is any Unicorn at all, that we affirm there are many kindes thereof. In the number of Quadrupedes, we will concede no lesse then five; that is, the Indian Oxe, the Indian Asse, the Rhinoceros, the Oryx, and that which is more eminently termed *Monoceros*, or *Unicornis*: Some in the list of fishes; as that described by Olaus, Albertus and others: and some unicorns we will allow even among insects; as those four kindes of nasicornous Beetles described by Muffetus.

Some doubt to be made what רְאֵם signifieth in Scripture.

Secondly, Although we concede there be many Unicornes, yet are we still to seek; for whereunto to affix this horn in question, or to determine from which thereof we receive this magnified medicine, we have no assurance, or any satisfactory decision. For although we single out one, and eminently thereto assigne the name of the Unicorn, yet can we not be secure what creature is meant thereby, what constant shape it holdeth, or in what number to be received. For as far as our endeavours discover, this animall is not uniformly described, but differently set forth by those that undertake it. Pliny affirmeth it is a fierce and terrible creature; Vartomannus a tame and mansuete animall: those which Garcias ab Horto described about the cape of good hope, were beheld with heads like horses; those which Vartomannus beheld, he described with the head of a Deere; Pliny, Ælian, Solinus, and after these from ocular assurance, Paulus Venetus affirmeth the feet of the Unicorn are undivided, and like the Elephants: But those two which Vartomannus beheld at Mecha, were as he describeth footed like a Goate. As Ælian describeth, it is in the bignesse of an Horse, as Vartomannus of a Colt; that which Thevet speaketh of was not so big as an Heifer; but Paulus Venetus affirmeth, they are but little lesse then Elephants. Which are discriminations very materiall, and plainly declare, that under the same name Authors describe not the same animall: so that the Unicorns horne of one, is not that of another, although we proclaim an equall vertue in either.

The Vnicorn how variously reported by Authors.

Thirdly, Although we were agreed what animall this was, or differed not in its description, yet would this also afford but little satisfaction; for the horne we commonly extoll, is not the same with that of the Ancients; for that in the description of Ælian and Pliny was black; this which is shewed amongst us is commonly white, none black; and of those five which Scaliger beheld, though one spadiceous, or of a light red, and two inclining to red, yet was there not any of this complexion among them.

Fourthly, What horns soever they be which passe amongst us, they are not

not ſurely the horns of any one kinde of animall, but muſt proceed from ſeverall ſorts of Unicorns. For ſome are wreathed, ſome not: That famous one which is preſerved at S. Dennis near Paris, hath wreathy ſpires, and chocleary turnings about it, which agreeth with the deſcription of the Unicorns horn in Ælian: Thoſe two in the treaſure of S. Mark are plain, and beſt accord with thoſe of the Indian Aſſe, or the deſcriptions of other Unicorns: Albertus Magnus deſcribeth one ten foot long, and at the baſe about thirteen inches compaſſe: And that of Antwerpe which Goropius Becanus deſcribeth, is not much inferiour unto it; which beſt agree unto the deſcriptions of the Sea-Unicorns; for theſe, as Olaus affirmeth, are of that ſtrength and bigneſſe, as able to penetrate the ribs of ſhips. The ſame is more probable, in that it was brought from Iſland, from whence, as Becanus affirmeth, three other were brought in his daies: And we have heard of ſome which have been found by the ſea ſide, and brought unto us from America. So that while we commend the Unicorns horne, and conceive it peculiar but unto one animall; under apprehenſion of the ſame vertue, we uſe very many; and commend that effect from all, which every one confineth unto ſome one he hath either ſeen or deſcribed.

Fifthly, Although there be many Unicorns, and conſequently many horns, yet many there are which bear that name, and currantly paſſe among us, which are no horns at all. Such are thoſe fragments and pieces of *Lapis Ceratites*, commonly termed *Cornu foſſile*, whereof Bœtius had no leſſe then twenty ſeverall ſorts preſented him for Unicorns horn. Hereof in ſubterraneous cavities, and under the earth there are many to be found in ſeverall parts of Germany; which are but the Lapideſcencies and petrifactive mutations of hard bodies; ſometime of horn, of teeth, of bones, and branches of trees, whereof there are ſome ſo imperfectly converted, as to retain the odor and qualities of their originals; as he relateth of pieces of Aſhe and Wallnut. Again, in moſt if not all which paſſe amongſt us, and are extolled for precious horns, we diſcover not one affection common unto other horns; that is, they mollifie not with fire, they ſoften not upon decoction or infuſion, nor will they afford a jelly, or mucilaginous concretion in either; which notwithſtanding we may effect in Goates horns, Sheeps, Cowes and Harts horn, in the horn of the Rhinoceros, the horn of the Priſtis or Sword-fiſh. Nor doe they become friable or eaſily powderable by Philoſophicall calcination, that is, from the vapor or ſteame of water, but ſplit and rift contrary to other horns. Briefly that which is commonly received, and whereof there be ſo many fragments preſerved in England; is not only no horn, but a ſubſtance harder then a bone, that is, the tooth of a Morſe or Sea-horſe; in the midſt of the ſolider part containing a curdled grain, which is not to be found in Ivory. This in Northern regions is of frequent uſe for hafts of knives, or hilts of ſwords, and being burnt becomes a good remedy for fluxes: but Antidotally uſed, and expoſed for Unicorns horn, it is an inſufferable deluſion; and with more veniable deceit, it might have been practiſed in Harts horn.

Vnicorns horn commonly uſed in England, what it is.

The like deceit may be practiſed in the teeth of other Sea-animals; in the teeth alſo of the Hippopotamus, or great animall which frequenteth the river Nilus: For we reade that the ſame was anciently uſed in ſtead of Ivory or Elephants tooth. Nor is it to be omitted, what hath been formerly ſuſpected, but now confirmed by Olaus Wormius, and Thomas Bartholinus, that thoſe long hornes preſerved as pretious rarities in many places, are but the teeth of Narhwhales; to be found about Iſland, Greenland and other Northern regions, of many feet long, commonly wreathed, very deeply faſtened in the upper jaw, and ſtanding directly forward, graphically deſcribed in

De Unicornu.

Bartholinus, according unto one ſent from a Biſhop of Iſland, not ſeparated from the crany. Hereof Mercator hath taken notice in his deſcription of Iſland: ſome relations hereof there ſeem to be in Purchas, who alſo delivereth that the horn at Windſore, was in his ſecond voyage brought hither by Frobiſher. Theſe before the Northern diſcoveries as unknown rarities were carried by Merchants into all parts of Europe; and though found on the Sea ſhoar were ſold at very high rates, but are now become more common, and probably in time will prove of little eſteem, and the bargain of Julius the third, be accounted a very hard one, who ſtuck not to give many thouſand crowns for one.

Nor is it great wonder we may be ſo deceived in this, being daily gulled in the brother antidote Bezoar; whereof though many be falſe, yet one there paſſeth amongſt us of more intolerable deluſion; ſomewhat paler then the true ſtone, and given by women in the extremity of great diſeaſes, which notwithſtanding is no ſtone, but ſeems to be the ſtony ſeed of ſome Lithoſpermum or greater Grumwell; for being broken, it diſcovereth a kernell of a leguminous ſmell and taſt, bitter like a Lupine, and will ſwell and ſprout if ſet in the ground, and therefore more ſerviceable for iſſues, then dangerous and virulent diſeaſes.

Sixtly, Although we were ſatisfied we had the Unicornes horn, yet were it no injury unto reaſon to queſtion the efficacy thereof, or whether thoſe vertues pretended doe properly belong unto it. For what we obſerve (and it eſcaped not the obſervation of Paulus Jovius many years paſt) none of the Ancients aſcribed any medicinall or antidotall vertue unto the Unicorns horn; and that which Ælian extolleth, who was the firſt and only man of the Ancients who ſpake of the medicall vertue of any Unicorn, was the horn of the Indian Aſſe; whereof, ſaith he, the Princes of thoſe parts make bowles and drink therein, as preſervatives againſt poiſon, Convulſions and the Falling-ſickneſſe. Now the deſcription of that horn is not agreeable unto that we commend; for that (ſaith he) is red above, white below, and black in the middle; which is very different from ours, or any to be ſeen amongſt us. And thus, though the deſcription of the Unicorn be very ancient, yet was there of old no vertue aſcribed unto it; and although this amongſt us receive the opinion of the ſame vertue, yet is it not the ſame horn whereunto the Ancients aſcribed it.

Laſtly, Although we allow it an Antidotall efficacy, and ſuch as the Ancients commended, yet are there ſome vertues aſcribed thereto by Moderns not eaſily to be received; and it hath ſurely faln out in this as other magnified medicines, whoſe operations effectuall in ſome diſeaſes, are preſently extended unto all. That ſome antidotall quality it may have we have no reaſon to deny; for ſince Elkes hoofes and hornes are magnified for Epilepſies, ſince not only the bone in the heart, but the horn of a Deere is Alexipharmacall, and ingredient into the confection of Hyacinth, and the Electuary of Maximilian; we cannot without prejudice except againſt the efficacy of this. But when we affirm it is not only Antidotall to proper venomes, and ſubſtances deſtructive by qualities we cannot expreſſe; but that it reſiſteth alſo Sublimate Arſenick, and poiſons which kill by ſecond qualities, that is, by corroſion of parts; I doubt we exceed the properties of its nature, and the promiſes of experiment will not ſecure the adventure. And therefore in ſuch extremities, whether there be not more probable relief from fat and oily ſubſtances, which are the open tyrants of ſalt and corroſive bodies, then precious and cordiall medicines which operate by ſecret and diſputable proprieties; or whether he that ſwallowed Lime, and drank down Mercury water, did not more

Expulſive of Poiſons.

more reasonably place his cure in milk, butter or oyle, then if he had recurred unto Pearle and Bezoar; common reason at all times, and necessity in the like case would easily determine.

Since therefore there be many Unicornes; since that whereto we appropriate a horn is so variously described, that it seemeth either never to have been seen by two persons, or not to have been one animall; Since though they agreed in the description of the animall, yet is not the horn we extoll the same with that of the Ancients; Since what hornes soever they be that passe among us, they are not the hornes of one, but severall animals: Since many in common use and high esteem are no hornes at all: Since if they were true hornes, yet might their vertues be questioned: Since though we allowed some vertues, yet were not others to be received; with what security a man may rely on this remedy, the mistresse of fools hath already instructed some, and to wisdome (which is never too wise to learn) it is not too late to consider.

Chap. XXIV.

That all Animals of the Land, are in their kinde in the Sea.

That all Animals of the Land, are in their kinde in the Sea, although received as a principle, is a tenent very questionable, and will admit of restraint. For some in the Sea are not to be matcht by any enquiry at Land, and hold those shapes which terrestrious formes approach not; as may be observed in the Moon-fish, or Orthragoriscus, the severall sorts of Raia's, Torpedo's, Oysters, and many more; and some there are in the Land which were never maintained to be in the Sea, as Panthers, Hyæna's, Camels, Sheep, Molls, and others, which carry no name in Ichthyology, nor are to be found in the exact descriptions of Rondeletius, Gesner, or Aldrovandus. History of Fishes.

Again, Though many there be which make out their nominations, as the Hedge-hog, Sea-serpents, and others; yet are there also very many that bear the name of animals at Land, which hold no resemblance in corporall configuration; in which account we compute *Vulpecula*, *Canis*, *Rana*, *Passer*, *Cuculus*, *Asellus*, *Turdus*, *Lepus*, &c. wherein while some are called the Fox, the Dog, the Sparrow or Frog-fish, and are known by common names with those at Land; as their describers attest, they receive not these appellations from a totall similitude in figure, but any concurrence in common accidents, in colour, condition or single conformation. As for Sea-horses which much confirm this assertion; in their common descriptions, they are but Crotesco deliniations which fill up empty spaces in Maps, and meer pictoriall inventions, not any Physicall shapes: sutable unto those which (as Pliny delivereth) Praxiteles long agoe set out in the Temple of Domitius. For that which is commonly called a Sea-horse is properly called a Morse, and makes not out that shape. That which the Ancients named Hippocampus is a little animall about six inches long, and not preferred beyond the classis of Insects. That they tearmed Hippopotamus an amphibious animall, about the River Nile, so little resembleth an horse, that as Mathiolus observeth in all, except the feet, it better makes out a swine. That which they tearmed a Lion, was but a kinde of Lobster: and that they called the Bear, was but one kinde of Crab; and that which

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For first there is no absolute necessity to feed on any; and if we resist not the streame of Authority, and severall diductions from holy Scripture; there was no Sarcophagie before the flood; and without the eating of flesh, our fathers from vegetable aliments, preserved themselves unto longer lives, then their posterity by any other. For whereas it is plainly said, I have given you every herb which is upon the face of all the earth, and every tree, to you it shall be for meat; presently after the deluge, when the same had destroyed or infirmed the nature of vegetables, by an expression of enlargement, it is again delivered: Every moving thing that liveth, shall be meat for you, even as the green herb, have I given you all things.

Eating of Flesh.

Gen. 1.29.

The naturall vertue of vegetables impaired by the deluge.

Gen. 9.3.

And therefore although it be said that Abel was a Shepherd, and it be not readily conceived, the first men would keep sheep, except they made food thereof: great Expositors will tell us, that it was partly for their skinnes, wherewith they were cloathed, partly for their milk, whereby they were sustained; and partly for Sacrifices, which they also offered.

And though it may seem improbable, that they offered flesh, yet eat not thereof; and Abel can hardly be said to offer the firstlings of his flock, and the fat or acceptable part, if men used not to taste the same, whereby to raise such distinctions: some will confine the eating of flesh unto the line of Cain, who extended their luxury, and confined not unto the rule of God. That if at any time the line of Seth eat flesh, it was extraordinary and only at their sacrifices; or else (as Grotius hinteth) if any such practice there were, it was not from the beginning; but from that time when the waies of men were corrupted, and whereof it is said, that the wickednesse of mans heart was great; the more righteous part of man-kinde probably conforming unto the diet prescribed in Paradise. and the state of innocency: and yet however the practice of men conformed, this was the injunction of God, and might be therefore sufficient, without the food of flesh.

Eating of Flesh (probably) not so common before the flood.

That they fed not on flesh, at least the faithfull party before the flood, may become more probable, because they refrained the same for some time after. For so was it generally delivered of the golden age and raigne of Saturne; which is conceived the time of Noah, before the building of Babel. And he that considereth how agreeable this is unto the traditions of the Gentiles; that that age was of one tongue; that Saturn devoured all his sonnes but three; that he was the sonne of Oceanus and Thetis; that a Ship was his Symbole; that he taught the culture of vineyards, and the art of husbandry, and was therefore described with a sickle; may well conceive, these traditions had their orignall in Noah. Nor did this practice terminate in him, but was continued at least in many after: as (beside the Pythagoreans of old, and Bannyans now in India, who upon single opinions refrain the food of flesh) ancient records doe hint or plainly deliver. Although we descend not so low, as that of Æsclepiades delivered by Porphyrius, that men began to feed on flesh in the raigne of Pygmaleon brother of Dido, who invented severall torments, to punish the eaters of flesh.

μετεμψύχωσις.

Nor did men only refrain from the flesh of beasts at first, but as some will have it, beasts from one another. And if we should beleeve very grave conjecturers, carnivorous animals now, were not flesh devourers then, according to the expression of the divine provision for them. To every beast of the earth, and to every fowle of the ayre, I have given every green herbe for meate, and it was so. As is also collected from the store laid up in the Ark; wherein there seems to have been no fleshie provision for carnivorous Animals. For of every kinde of unclean beast there went but two into the Ark: and therefore no stock of flesh to sustain them many daies, much lesse almost a year.

Gen. 1,30.

But when ever it be acknowledged that men began to feed on flesh, yet how they betook themselves after to particular kindes thereof, with rejection of many others, is a point not cleerly determined. As for the distinction of clean and unclean beasts, the originall is obscure, and salveth not our practice. For no Animall is naturally unclean, or hath this character in nature; and therefore whether in this distinction there were not some mysticall intention; whether Moses after the distinction made of unclean beasts, did not name these so before the flood by anticipation: whether this distinction before the flood, were not only in regard of sacrifices, as that delivered after was in regard of food: (for many were clean for food, which were unclean for sacrifice) or whether the denomination were but comparative, and of beasts lesse commodious for food, although not simply bad, is not yet resolved.

How Moses might distinguish beasts into clean and unclean before the flood.

And as for the same distinction in the time of Moses, long after the flood, from thence we hold no restriction, as being no rule unto Nations besides the Jews in dieteticall consideration, or naturall choice of diet, they being enjoined or prohibited certain foods upon remote and secret intentions; especially thereby to avoid community with the Gentiles upon promiscuous commensality: or to divert them from the Idolatry of Ægypt whence they came, they were enjoined to eat the Gods of Egypt in the food of Sheep and Oxen. Withall in this distinction of Animals the consideration was hieroglyphicall; in the bosome and inward sense implying an abstinence from certain vices symbolically intimated from the nature of those animals; as may be well made out in the prohibited meat of Swine, Cony, Owl, and many more.

At least the intention was not medicall, or such as might oblige unto conformity or imitation; For some we refrain which that Law alloweth, as Locusts and many others; and some it prohibiteth, which are accounted good meat in strict and medicall censure; as beside many fishes which have not finnes and scales, the Swine, Cony and Hare, a dainty dish with the Ancients; as is delivered by Galen, testified by Martial, as the popular opinion implied, that men grew fair by the flesh thereof; by the diet of Cato that is Hare and Cabbage; and the *Jus nigrum* or Black broath of the Spartans; which was made with the blood and bowels of an Hare.

Inter quadrupedes mattya prima Lepus.

And if we take a view of other Nations, we shall discover that they refrained many meats upon like considerations. For in some the abstinence was symbolicall; so Pythagoras enjoined abstinence from fish: that is, luxurious and dainty dishes, So according to Herodotus, some Ægyptians refrained swines flesh, as an impure and sordid animall; which whoever but touched, was fain to wash himself.

Some abstained superstitiously or upon religious consideration: So the Syrians refrained Fish and Pigeons; the Ægyptians of old, Dogges, Eeles and Crocodiles; though Leo Africanus delivers, that many of late, doe eat them with good gust; and Herodotus also affirmeth, that the Egyptians of Elephantina (unto whom they were not sacred,) did eat thereof in elder times: and Writers testifie, that they are eaten at this day in India and America. And so, as Cæsar reports, unto the ancient Britains it was piaculous to taste a Goose, which dish at present no table is without.

Lib. 5. de bello Gall.

Unto some Nations the abstinence was politicall and for some civill advantage: So the Thessalians refrained Storkes, because they destroyed their serpents; and the like in sundry animals is observable in other Nations.

And under all these considerations were some Animals refrained; so the Jews abstained from Swine at first symbolically, as an Embleme of impurity; and not for fear of the Leprosie, as Tacitus would put upon them. The

Cretians

Cretians superstitiously, upon tradition that Jupiter was suckled in that country by a Sowe. Some Ægyptians politically, because they supplied the labour of plowing by rooting up the ground. And upon like considerations perhaps the Phœnicians and Syrians fed not on this animall: and as Solinus reports the Arabians also and Indians; a great part of mankinde refraining one of the best foods, and such as Pythagoras himself would eat; who, as Aristoxenus records, refus'd not to feed on Pigges. *Aul. Gell. lib. 4.*

Moreover while we single out severall dishes and reject others, the selection seems but arbitrary, or upon opinion: for many are commended and cried up in one age, which are decried and nauseated in another. Thus in the daies of Mecenas, no flesh was preferred before young Asses; which notwithstanding became abominable unto succeeding appetites. At the table of Heliogabalus the combes of Cocks were an esteemed service; which country stomacks will not admit at ours. The Sumen or belly and dugges of swine with pigge, and sometimes beaten and bruised unto death: the wombe of the same animall, especially that was barren, or else had cast her young ones, though a tough and membranous part, was magnified by Roman Palats; whereunto nevertheless we cannot perswade our stomacks. How Alec, Muria and Garum, would humour our gust I know not; but surely few there are that could delight in their Cyceon; that is, the common draught of Honey, Cheese, parcht Barley-flower, Oyl and Wine; which notwithstanding was a commended mixture, and in high esteem among them. We mortifie our selves with the diet of fish, and think we fare coursly if we refrain from the flesh of other animals. But antiquity held another opinion hereof: when Pythagoras in prevention of luxury advised, not so much as to taste on fish. Since the Rhodians were wont to call them clowns that eat flesh; and since Plato to evidence the temperance of the noble Greeks before Troy, observed, that it was not found they fed on fish, though they lay so long near the Hellespont; and was only observed in the companions of Menelaus, that being almost starved, they betook themselves to fishing about Pharos. *Odyss. 4°*

Certain dishes in great request with the Ancients, not so much esteemed now.

Nor will (I fear) the attest or prescript of Philosophers and Physitians, be a sufficient ground to confirm or warrant common practice, as is deducible from ancient Writers, from Hippocrates, Galen, Simeon Sethi; and the later tracts of Nonnus and Castellanus. So Aristotle and Albertus commend the flesh of young Hawkes; Galen the flesh of Foxes about Autumne when they feed on Grapes; but condemneth Quailes, and ranketh Geese but with Oestriges; which notwithstanding present practice and every table extolleth. Men think they have fared hardly, if in times of extremity they have descended so low as Doggs; but Galen delivereth, that young, fat and gelded, they were the food of many Nations; and Hippocrates ranketh the flesh of Whelps with that of Birds; who also commends them against the Spleen, and to promote conception. The opinion in Galens time, which Pliny also followeth, deeply condemned Horsflesh, and conceived the very blood thereof destructive; but no diet is more common among the Tartars, who also drink their blood. And though this may only seem an adventure of Northern stomacks, yet as Herodotus tells us, in the hotter clime of Persia, the same was a conviviall dish, and solemnly eaten, at the feasts of their nativities: whereat they dressed whole Horses, Camels and Asses; contemning the poverty of Grecian feasts, as unfurnish'd of dishes sufficient to fill the bellies of their guests.

Non. de re ciharia. Cast. de esu carnium. Gal. Alim. fac. lib. 3.

Gal. Simpl. fac. lib. 3. Hip de morbis de superfit.

Again, While we confine our diet in severall places, all things almost are eaten, if we take in the whole earth: for that which is refused in one country is accepted in another, and in the collective judgement of the world, particular distinctions are overthrown. Thus were it not hard to shew, that Tygers,

Tigers, Elephants, Camels, Mice, Bats and others, are the food of severall countries; and Lerius with others delivers, that some Americans eat of all kindes, not refraining Toads and Serpents: and some have runne so high, as not to spare the flesh of man: a practice inexcusable, nor to be drawn into example; a diet beyond the rule and largest indulgence of God.

As for the objection against beasts and birds of prey, it acquitteth not our practice, who observe not this distinction in fishes: nor regard the same in our diet of Pikes, Perches and Eeles; Nor are we excused herein, if we examine the stomacks of Mackerels, Cods and Whitings. Nor is the foulnesse of feed sufficient to justifie our choice; for (beside that their naturall heat is able to convert the same into laudable aliment) we refuse not many whose diet is more impure then some which we reject; as may be considered in hogs, ducks, puets and many more.

Thus we perceive the practice of diet doth hold no certain course, nor solid rule of selection or confinement; Some in an indistinct voracity eating almost any, others out of a timorous preopinion, refraining very many. Wherein indeed necessity, reason and Physick, are the best determinators. Surely many animals may be fed on, like many plants; though not in alimentall yet medicall considerations: Whereas having raised Antipathies by prejudgement or education, we often nauseate proper meats, and abhorre that diet which disease or temper requireth.

A Problem.

Now whether it were not best to conform unto the simple diet of our forefathers, whether pure and simple waters were not more healthfull then fermented liquors; whether there be not an ample sufficiency without all flesh, in the food of honey, oyl, and the severall parts of milk: in the variety of grains, pulses, and all sorts of fruits; since either bread or beverage may be made almost of all? whether nations have rightly confined unto severall meats? or whether the common food of one countrey be not more agreeable unto another? how indistinctly all tempers apply unto the same, and how the diet of youth and old age is confounded: were considerations much concerning health, and might prolong our daies, but must not this discourse.

Chap. XXVI.

Compendiously of sundry Tenents concerning other Animals, which examined prove either false or dubious.

1. And first from great Antiquity, and before the Melody of Syrens, the Musicall note of Swans hath been commended, and that they sing most sweetly before their death. For thus we reade in Plato, that from the opinion of Metempsuchosis, or transmigration of the soules of men into the bodies of beasts most sutable unto their humane condition, after his death, Orpheus the Musician became a Swan. Thus was it the bird of Apollo the god of Musick by the Greeks; and an Hieroglyphick of Musick among the Ægyptians, from whom the Greeks derived the conception; hath been the affirmation of many Latines, and hath not wanted assertors almost from every Nation.

Of Swans, and their singing before death.

All which notwithstanding, we finde this relation doubtfully received by Ælian, as an hearsay account by Bellonius, as a false one by Pliny; expresly

presly refuted by Myndius in Athenæus; and severely rejected by Scaliger; whose words unto Cardan are these. *De Cygni vero cantu suavissimo quem cum parente mendaciorum Gracia jactare ausus es, ad Luciani tribunal, apud quem novi aliquid dicas, statuo.* Authors also that countenance it, speak not satisfactorily of it. Some affirming they sing not till they die; some that they sing, yet die not. Some speak generally, as though this note were in all; some but particularly, as though it were only in some; some in places remote, and where we can have no triall of it; others in places where every experience can refute it; as Aldrovandus upon relation, delivered, concerning the Musick of the Swans on the river of Thames near London.

Now that which countenanceth, and probably confirmeth this opinion, is the strange and unusuall conformation of the winde pipe, or vocall organ in this animall: observed first by Aldrovandus, and conceived by some contrived for this intention: for in its length it farre exceedeth the gullet; and hath in the chest a sinuous revolution, that is, when it ariseth from the lungs, it ascendeth not directly unto the throat, but ascending first into a capsulary reception of the breast bone, by a Serpentine and Trumpet recurvation it ascendeth again into the neck; and so by the length thereof a great quantity of air is received, and by the figure thereof a musicall modulation effected. But to speak indifferently, this formation of the Weazon, is not peculiar unto the Swan, but common also unto the Platea or Shovelard, a bird of no Musicall throat; And as Aldrovandus confesseth may thus be contrived in the Swan to contain a larger stock of air, whereby being to feed on weeds at the bottom, they might the longer space detain their heads under water. But were this formation peculiar, or had they unto this effect an advantage from this part: yet have they a known and open disadvantage from another; that is, a flat bill. For no Latirostrous animall (whereof nevertheless there are no slender numbers) were ever commended for their note, or accounted among those animals which have been instructed to speak.

The figuration to be found in Elkes, and not in common Swans.

When therefore we consider the dissention of Authors, the falsity of relations, the indisposition of the Organs, and the immusicall note of all we ever beheld or heard of; if generally taken and comprehending all Swans, or of all places, we cannot assent thereto. Surely he that is bit with a Tarantula, shall never be cured by this Musick; and with the same hopes we expect to hear the harmony of the Spheres.

2. That there is a speciall propriety in the flesh of Peacocks rost or boiled, to preserve a long time incorrupted, hath been the assertion of many; stands yet confirmed by Austin, *De Civitate Dei*; by Gygas Sempronius, in Aldrovandus, and the same experiment we can confirm our selves, in the brawn or fleshy parts of Peacocks so hanged up with thred, that they touch no place whereby to contract a moisture; and hereof we have made triall both in summer and winter. The reason, some, I perceive, attempt to make out from the siccity and drineſſe of its flesh, and some are content to rest in a secret propriety thereof. As for the siccity of the flesh, it is more remarkable in other animals, as Eagles, Hawkes, and birds of prey; That it is a propriety or agreeable unto none other, we cannot with reason admit: for the same preservation, or rather incorruption we have observed in the flesh of Turkeys, Capons, Hares, Partridge, Venison, suspended freely in the air, and after a year and a half, dogs have not refused to eat them.

Of the Peacock.

As for the other conceit that a Peacock is ashamed when he looks on his legges, as is commonly held, and also delivered by Cardan; beside what hath been said against it by Scaliger, let them beleeve that hold specificall deformities; or that any part can seem unhansome to their eies, which hath

appeared good and beautifull unto their makers. The occasion of this conceit, might first arise from a common observation, that when they are in their pride, that is, advance their train, if they decline their neck to the ground, they presently demit and let fall the same: which indeed they cannot otherwise do; for contracting their body, and being forced to draw in their foreparts, to establish the hinder in the elevation of the train; if the foreparts depart and incline to the ground, the hinder grow too weak, and suffer the train to fall. And the same in some degree is also observable in Turkeys.

Of the Stork. 3. That Storkes are to be found and will only live in Republikes or free States, is a pretty conceit to advance the opinion of popular policies, and from Antipathies in nature, to disparage Monarchicall government. But how farre agreeable unto truth, let them consider who reade in Pliny, that among the Thessalians who were governed by Kings, and much abounded with Serpents, it was no lesse then capitall to kill a Stork. That the ancient Ægyptians honoured them, whose government was from all times Monarchicall. That Bellonius affirmeth, men make them nests in France. That relations make them common in Persia, and the dominions of the great Turk. And lastly, how Jeremy the Prophet delivered himself unto his countreymen, whose government was at that time Monarchicall. The Stork in the heaven knoweth her appointed times, the Turtle, Crane and Swallow observe the time of their coming, but my people know not the judgement of the Lord. Wherein to exprobrate their stupidity, he induceth the providence of Storks. Now if the bird had been unknown, the illustration had been obscure, and the exprobation not so proper.

Jer. 8. 7.

Of the Bittor. 4. That a Bittor maketh that mugient noise, or as we term it Bumping by putting its bill into a reed as most beleeve, or as Bellonius and Aldrovandus conceive, by putting the same in water or mud, and after a while retaining the air by suddenly excluding it again, is not so easily made out. For my own part, though after diligent enquiry, I could never behold them in this motion; Notwithstanding by others whose observations we have expressely requested, we are informed, that some have beheld them making this noise on the shore, their bils being far enough removed from reed or water; that is, first strongly attracting the air, and unto a manifest distention of the neck, and presently after with great contention and violence excluding the same again. As for what others affirm of putting their bill in water or mud, it is also hard to make out. For what may be observed from any that walketh the Fens, there is little intermission, nor any observable pawse, between the drawing in and sending forth of their breath. And the expiration or breathing forth doth not only produce a noise, but the inspiration or hailing in of the air, affordeth a sound that may be heard almost a flight-shot.

Now the reason of this strange and peculiar noise, is well deduced from the conformation of the windepipe, which in this bird is different from other volatiles. For at the upper extream it hath no Larinx, or throttle to qualifie the sound, and at the other end, by two branches deriveth it self into the Lungs. Which division consisteth only of Semicircular fibers, and such as attain but half way round the part; By which formation they are dilatable into larger capacities, and are able to contain a fuller proportion of air; which being with violence sent up the weazon, and finding no resistance by the Larinx, it issueth forth in a sound like that from cavernes, and such as sometimes subterraneous eruptions, from hollow rocks afford; As Aristotle observeth in a Problem of the 25. Section, and is observable in pichers, bottles, and that instrument which Aponensis upon that Problem describeth, wherewith in Aristotles time Gardiners affrighted birds.

5. That

Of Whelps.

5. That whelps are blinde nine daies and then begin to see, is the common opinion of all, and some will be apt enough to descend unto oathes upon it. But this I finde not answerable unto experience; for upon a strict observation of many, I have not found any that see the ninth day, few before the twelfth, and the eies of some not open before the fourteenth day. And this is agreeable unto the determination of Aristotle: who computeth the time of their anopsie or invision by that of their gestation. For some, saith he, do go with their young, the sixt part of a year, or two over or under, that is, about sixty daies or nine weeks; and the whelps of these see not till twelve daies. Some go the fift part of a year, that is, seventy one daies, and these saith he, see not before the fourteenth day. Others doe go the fourth part of a year, that is, three whole moneths, and these, saith he, are without sight no lesse then seventeen daies. Wherein although the accounts be different, yet doth the least thereof exceed the term of nine daies which is so generally received. And this compute of Aristotle doth generally overthrow the common cause alleadged for this effect, that is, a precipitation or over-hasty exclusion before the birth be perfect, according unto the vulgar Adage, *Festinans canis cæcos parit catulos:* for herein the whelps of longest gestation, are also the latest in vision. The manner hereof is this. At the first littering their eies are fastly closed, that is, by coalition or joining together of the eielids, and so continue untill about the twelfth day; at which time they begin to separate, and may be easily divelled or parted asunder; they open at the inward canthis or greater angle of the eye, and so by degrees dilate themselves quite open. An effect very strange, and the cause of much obscurity, wherein as yet mens enquiries are blinde, and satisfaction acquirable from no man. What ever it be, thus much we may observe, those animals are only excluded without sight, which are multiparous and multifidous, that is, which have many at a litter, and have also their feet divided into many portions. For the Swine although multiparous, yet being bisulcous, and only cloven hoofed, is not excluded in this manner, but farrowed with open eies, as other bisulcous animals.

Of a Toad and a Spider.

6. The Antipathy between a Toad and a Spider, and that they poisonously destroy each other, is very famous, and solemne Stories have been written of their combats, wherein most commonly the victory is given unto the Spider. Of what Toades and Spiders it is to be understood, would be considered. For the Phalangium and deadly Spiders, are different from those we generally behold in England. However the verity hereof, as also of many others, we cannot but desire; for hereby we might be surely provided of proper Antidotes in cases which require them; But what we have observed herein, we cannot in reason conceale; who having in a glasse included a Toad with severall Spiders, we beheld the Spiders without resistance to sit upon his head and passe over all his body, which at last upon advantage he swallowed down, and that in few houres, unto the number of seven. And in the like manner will Toades also serve Bees, and are accounted enemies unto their Hives.

Of a Lion and a Cock.

7. Whether a Lion be also afraid of a Cock, as is related by many, and beleeved by most, were very easie in some places to make triall. Although how farre they stand in fear of that animall, we may sufficiently understand, from what is delivered by Camerarius, whose words in his Symbola are these; *Nostris temporibus in Aula serenissimi Principis Bavariæ, unus ex Leonibus miris saltibus in vicinam cujusdam domus aream sese dimisit, ubi Gallinaciorum cantum aut clamores nihil reformidans, ipsos unà cum plurimis gallinis devoravit.* That is, In our time in the Court of the Prince of Bavaria, one

of the Lions leaped down into a neighbours yard, where nothing regarding the crowing or noiſe of the Cocks, he eat them up with many other Hens. And therefore a very unſafe defenſative it is againſt the fury of this animall (and ſurely no better then Virginity or bloud Royall) which Pliny doth place in Cock broth: For herewith, ſaith he, who ever is anointed (eſpecially if Garlick be boiled therein) no Lion or Panther will touch him. But of an higher nature it were, and more exalted antipathy, if that were certain which Proclus delivers, that ſolary Dæmons and ſuch as appear in the ſhape of Lions, will diſappear and vaniſh, if a Cock be preſented upon them.

De ſacrificiis & magia.

8. It is generally conceived, an earwigge hath no wings, and is reckoned amongſt impennous inſects by many; but he that ſhall narrowly obſerve them, or ſhall with a needle put aſide the ſhort and ſheathie caſes on their back, may extend and draw forth two winges of a proportionable length for flight, and larger then in many flies. The experiment of Pennius is yet more perfect, who with a ruſh or briſtle ſo pricked them as to make them flie.

Of Wormes.

9. That Wormes are exanguious animals and ſuch as have no bloud at all, is the determination of Philoſophy, the generall opinion of Scholers, and I know not well to diſſent from thence my ſelf. If ſo, ſurely we want a proper term whereby to expreſſe that humor in them which ſo ſtrictly reſembleth bloud: and we refer it unto the diſcernment of others what to determine of that red and ſanguineous humor, found more plentifully about the Torquis or carneous circle of great Wormes in the ſpring, affording in linnen or paper an indiſcernable tincture from bloud; or wherein that differeth from a vein, which in an apparent blew runneth along the body; and if dexterouſly pricked with a lancet, emitteth a red drop, which pricked on either ſide it will not readily afford.

In the upper parts of Wormes, there are likewiſe found certain white and ovall glanduloſities which Authors terme egges, and in magnifying glaſſes, they alſo repreſent them: how properly, may alſo be enquired; ſince if in them there be diſtinction of Sexes, theſe egges are to be found in both. For in that which is preſumed to be their coition, that is, their uſuall complication, or laterall adheſion above the ground, dividing ſuddenly with two knives the adhering parts of both, I have found theſe egges in either.

10. That Flies, Bees, *&c.* doe make that noiſe or humming ſound by their mouth, or as many beleeve with their wings only, would be more warily aſſerted, if we conſulted the determination of Ariſtotle, who as in ſundry other places, ſo more expreſſely in his book of reſpiration, affirmeth this ſound to be made by the alliſion of an inward ſpirit upon a pellicle or little membrane about the precinct or pectorall diviſion of their body. If we alſo conſider that a Bee or Flie, ſo it be able to move the body, will buz though its head be off; that it will doe the like if deprived of wings, reſerving the head whereby the body may be the better moved. And that ſome alſo which are big and lively will humme without either head or wing.

Nor is it only the beating upon this little membrane, by the inward and connaturall ſpirit as Ariſtotle determines, or the outward air as Scaliger conceiveth which affordeth this humming noiſe, but moſt of the other parts may alſo concurre hereto, as will be manifeſt if while they humme we lay our finger on the back or other parts; for thereupon will be felt a ſerrous or jarring motion like that which happeneth while we blow on the teeth of a comb through paper; and ſo if the head or other parts of the trunk be touched with oile, the ſound will be much impaired, if not deſtroied: for thoſe being alſo dry and membranous parts, by attrition of the ſpirit doe help to advance the noiſe: And therefore alſo the ſound is ſtrongeſt in dry weather, and very weak

weak in rainy ſeaſon, and toward winter; for then the air is moiſt, and the inward ſpirit growing weak, makes a languid and dumb alliſion upon the parts.

Of a Taina.

11. There is found in the Summer a kinde of Spider called a Tainct, of a red colour, and ſo little of body that ten of the largeſt will hardly outway a grain; this by Countrey people is accounted a deadly poiſon unto Cowes and Horſes; who, if they ſuddenly die, and ſwell thereon, aſcribe their death hereto, and will commonly ſay, they have licked a Tainct. Now to ſatisfie the doubts of men, we have called this tradition unto experiment; we have given hereof unto Dogs, Chickens, Calves and Horſes, and not in the ſingular number; yet never could finde the leaſt diſturbance enſue. There muſt be therefore other cauſes enquired of the ſudden death and ſwelling of cattell; and perhaps this inſect is miſtaken, and unjuſtly accuſed for ſome other. For ſome there are which from elder times have been obſerved pernicious unto cattell, as the Bupreſtis or Burſtcow, the Pityocampe or eruca Pinuum, by Dioſcorides, Galen and Ætius, the Staphilinus deſcribed by Ariſtotle and others, or thoſe red Phalangious Spiders like Cantharides mentioned by Muffetus. Now although the animall may be miſtaken and the opinion alſo falſe, yet in the ground and reaſon which makes men moſt to doubt the verity hereof, there may be truth enough, that is, the inconſiderable quantity of this inſect. For that a poiſon cannot deſtroy in ſo ſmall a bulk, we have no reaſon to affirm. For if as Leo Africanus reporteth, the tenth part of a grain of the poiſon of Nubia will diſpatch a man in two hours; if the bite of a Viper and ſting of a Scorpion, is not conceived to impart ſo much; if the bite of an Aſp will kill within an hour, yet the impreſſion ſcarce viſible, and the poiſon communicated not ponderable; we cannot as impoſſible reject this way of deſtruction; or deny the power of death in ſo narrow a circumſcription.

Of the Glow-worm.

12. Wondrous things are promiſed from the Glow-worm; thereof perpetuall lights are pretended, and waters ſaid to be diſtilled which afford a luſtre in the night; and this is aſſerted by Cardan, Albertus, Gaudentius, Mizaldus and many others. But hereto we cannot with reaſon aſſent: for the light made by this animall depends upon a living ſpirit, and ſeems by ſome vitall irradiation to be actuated into this luſtre. For when they are dead they ſhine not, nor alwaies while they live; but are obſcure or light, according to the diffuſion of this ſpirit, and the protruſion of their luminous parts, as obſervation will inſtruct us. For this flammeous light is not over all the body, but only viſible on the inward ſide, in a ſmall white part near the taile. When this is full and ſeemeth protruded, there ariſeth a double flame of a circular figure and Emerald green colour; which is diſcernable in any dark place in the day; but when it falleth and ſeemeth contracted, the light diſappeareth, and the colour of the part only remaineth. Now this light, as it appeareth and diſappeareth in their life, ſo doth it go quite out at their death. As we have obſerved in ſome, which preſerved in freſh graſſe have lived and ſhined eighteen daies; but as they declined their light grew languid, and at laſt went out with their lives. Thus alſo the Torpedo which alive hath a power to ſtupifie at a diſtance, hath none upon contaction being dead, as Galen and Rondeletius particularly experimented. And this hath alſo diſappointed the miſchief of thoſe intentions, which ſtudy the advancement of poiſons; and fancie deſtructive compoſitions from Aſpes or Vipers teeth, from Scorpions or Hornet ſtings. For theſe omit their efficacy in the death of the individuall, and act but dependantly on their formes. And thus far alſo thoſe Philoſophers concurre with us which held the Sun and Stars were living creatures, for they conceived their luſtre depended on their lives; but if they ever died their light muſt periſh alſo.

True it is, that a Glow-worm will afford a faint light, almoſt a daies ſpace when many will conceive it dead; but this is a miſtake in the compute of death, and term of diſanimation; for indeed, it is not then dead, but if it be diſtended will ſlowly contract it ſelf again, which when it cannot doe, it ceaſeth to ſhine any more. And to ſpeak ſtrictly it is no eaſie matter to determine the point of death in inſects and creatures who have not their vitalities radically confined unto one part; for they are not dead when they ceaſe to move or afford the viſible evidences of life; as may be obſerved in flies, who when they appear even deſperate and quite forſaken of their formes; by vertue of the Sun or warm aſhes will be revoked unto life, and perform its functions again.

13. The wiſdom of the Piſmire is magnified by all, and in the Panegyricks of their providence we alwaies meet with this, that to prevent the growth of corn which they ſtore up, they bite off the end thereof: And ſome have conceived that from hence they have their name in Hebrew: From whence ariſeth a conceit that corn will not grow if the extreams be cut or broken. What other proviſion they make for this intention we know not, but herein we finde no ſecurity to prevent its germination; as having made triall in grains whoſe ends cut off have notwithſtanding ſuddenly ſprouted, and according to the law of their kindes; that is, the roots of barley and oates at contrary ends, of wheat and rye at the ſame. And therefore ſome have delivered that after rainy weather they dry theſe grains in the Sun; which if effectuall, we muſt conceive to be made in a high degree and above the progreſſion of Malt; for that Malt will grow, this year hath informed us and that unto a perfect ear.

Nemalah à Namal circumcidit.

And if that be true which is delivered by many, and we ſhall further experiment, that a decoction of Toad-ſtooles if poured upon earth, will produce the ſame again: If Sowthiſtles will abound in places manured with dung of Hogs, which feed much upon that plant: If Horſedung reproduceth oates; If windes and rains will tranſport the ſeminals of plants, it will not be eaſie to determine where the power of generation ceaſeth. The forms of things may lie deeper then we conceive them; ſeminall principles may not be dead in the divided atomes of plants; but wandring in the ocean of nature, when they hit upon proportionable materials, may unite, and return to their viſible ſelves again.

A naturall viciſſitude of generation in Homogeneous things.

Chap. XXVII.

Of ſome others.

That a Chicken is formed out of the yelk of the egge, with ſome ancient Philoſophers the people ſtill opinion. Whether it be not rather the nutriment of the Pullet, may alſo be conſidered: Since umbilicall veſſels are carried unto it: Since much of the yelk remaineth after the Chicken is formed: Since in a Chicken newly hatched, the ſtomack is tincted yellow, and the belly full of yelk, which is drawn in at the navell or umbilicall veſſels toward the vent, as may be diſcerned in Chickens, within a day or two before excluſion.

Of the Chicken.

Whether the Chicken be made out of the white, or that be not alſo its aliment, is likewiſe very queſtionable: Since one umbilicall veſſell is derived unto it: Since after the formation and perfect ſhape of the Chicken, much of the white remaineth.

Whether

Whether it be not made out of the grando gallature, germe or tredde of the egge, as Aquapendente and ſtricter enquiry informeth us, doth ſeem of leſſer doubt: for at the blunter end it is not diſcovered after the Chicken is formed; by this alſo the yelk and white are continued, whereby it may conveniently receive its nutriment from them both.

Now that from ſuch ſlender materials, nature ſhould effect this production, it is no more then is obſerved in other animals, and even in grains and kernels, the greateſt part is but the nutriment of that generative particle, ſo diſproportionable unto it.

A greater difficulty in the doctrine of egges, is, how the ſperm of the Cock improlificates and makes the ovall conception fruitfull, or how it attaineth unto every egge; ſince the vitellary or place of the yelk is very high: Since the ovary or part where the white involveth it, is in the ſecond region of the matrix, which is ſomewhat long and inverted: Since alſo a Cock will in one day fertilitate the whole racemation or cluſter of egges, which are not excluded in many weeks after. Of Egges.

That the ſex is diſcernable from the figure of egges, or that Cocks or Hens proceed from long or round ones, as many contend, experiment will eaſily fruſtrate.

The Ægyptians obſerved a better way to hatch their egges in ovens, then the Babylonians to roaſt them at the bottom of a ſling, by ſwinging them round about, till heat from motion had concocted them; for that confuſeth all parts without any ſuch effect.

Though ſlight diſtinction be made between boiled and roaſted egges, yet is there no ſlender difference, for the one is much drier then the other: the egge expiring leſſe in the elixation or boiling; whereas in the aſſation or roaſting, it will ſometimes abate a dragme, that is threeſcore grains in weight. So a new laid egge will not ſo eaſily be boiled hard, becauſe it contains a greater ſtock of humid parts; which muſt be evaporated, before the heat can bring the inexhalable parts into conſiſtence.

Why the Hen hatcheth not the egge in her belly, or maketh not at leaſt ſome rudiment thereof within her ſelf, by the naturall heat of inward parts, ſince the ſame is performed by incubation from an outward warmth after? Why the egge is thinner at one extream? Why there is ſome cavity or emptineſſe at the blunter end? Why we open them at that part? Why there is alſo a little grando or tred at the leſſer end? Why the greater end is firſt excluded? Why ſome egges are not ovall but round, as thoſe of fiſhes? *&c.* are problemes, whoſe deciſions would too much enlarge this diſcourſe.

That Snakes and Vipers doe ſting or tranſmit their miſchief by the taile, is a common expreſſion not eaſily to be juſtified; and a determination of their venoms unto a part, wherein we could never finde it, the poiſon lying about the teeth, and communicated by bite, in ſuch are deſtructive: And therefore when biting Serpents are mentioned in the Scripture, they are not differentially ſet down from ſuch as miſchief by ſtings, nor can concluſions be made conformable to this opinion, becauſe when the rod of Moſes was turned into a Serpent, God determinately commanded him to take up the ſame by the taile. Of Snakes, *&c.*

Nor are all Snakes of ſuch empoiſoning qualities, as common opinion preſumeth; as is confirmable from the ordinary green Snake with us, from ſeverall hiſtories of domeſtick Snakes, from ophiophagous nations and ſuch as feed upon Serpents.

Surely the deſtructive deluſion of Satan in this ſhape, hath much enlarged the opinion of their miſchief. Which notwithſtanding was not ſo high with the

the heathens, in whom the devil had wrought a better opinion of this animall, being ſacred unto the Ægyptians, Greeks and Romans, and the common ſymbole of ſanity; in the ſhape whereof Æſculapius the god of health appeared unto the Romans, accompanied their Embaſſadors to Rome from Epidaurus; and the ſame did ſtand in the Tiberine Iſle upon the Temple of Æſculapius.

Some doubt many have of the Tarantula or poiſonous Spider of Calabria, and that magicall cure of the bite thereof by Muſick: But ſince we obſerve that many atteſt it from experience: Since the learned Kircherius hath poſitively averred it, and ſet down the ſongs and tunes ſolemnly uſed for it; Since ſome alſo affirm the Tarantula it ſelf will daunce upon certain ſtroaks, whereby they ſet their inſtruments againſt its poiſon; we ſhall not at all queſtion it.

Much wonder is made of the Boramez, that ſtrange plant-animall or vegetable Lamb of Tartary, which Wolves delight to feed on, which hath the ſhape of a Lamb, affordeth a bloudy juice upon breaking, and liveth while the plants be conſumed about it; and yet if all this be no more then the ſhape of a Lamb in the flower or ſeed, upon the top of the ſtalk, as we meet with the formes of Bees, Flies and Dogs in ſome others, he hath ſeen nothing that ſhall much wonder at it.

It may ſeem too hard to queſtion the ſwiftneſſe of Tigers, which hath therefore given names unto Horſes, Ships and Rivers, nor can we deny what all have thus affirmed; yet cannot but obſerve, that Jacobus Bontius late Phyſitian at Java in the Eaſt Indies, as an ocular and frequent witneſſe is not afraid to deny it; to condemn Pliny who affirmeth it, and that indeed it is but a ſlow and tardigradous animall, preying upon advantage, and otherwiſe may be eſcaped.

Many more there are whoſe ſerious enquiries we muſt requeſt of others, and ſhall only awake conſiderations, Whether that common opinion that Snakes doe breed out of the back or ſpinall marrow of man, doth build upon any conſtant root or ſeed in nature; or did not ariſe from contingent generations in ſome ſingle bodies remembred by Pliny or others, and might be paralleld ſince in living corruptions of the guts and other parts; which regularly proceed not to putrifactions of that nature.

Whether the ſtory of the Remora be not unreaſonably amplified; whether that of Bernacles and Gooſetrees be not too much enlarged; whether the common hiſtory of Bees will hold, as large accountants have delivered; whether the brains of Cats be attended with ſuch deſtructive malignities, as Dioſcorides and others put upon them.

Whether the faſting ſpittle of man be poiſon unto Snakes and Vipers, as experience hath made us doubt? Whether the Nightingals ſetting with her breaſt againſt a thorn, be any more then that ſhe rooſteth in thorny and prickly places, where Serpents may leaſt approach her? Whether Mice may be bred by putrifaction as well as univocall production, as may be eaſily beleeved, if that receit to make Mice out of wheat will hold, which Helmont hath delivered. Whether Quailes from any idioſyncracy or peculiarity of conſtitution, doe innocuouſly feed upon Hellebore, or rather ſometime but medically uſe the ſame; becauſe we perceive that ſtares, which are commonly ſaid harmleſſely to feed on Hemlock, doe not make good the tradition; and he that obſerves what vertigoes, cramps and convulſions follow thereon in theſe animals, will be of our belief.

Helm. Imago fermenti, &c.

THE

THE FOURTH BOOK:

Of many popular and received Tenents concerning Man, which examined, prove either false or dubious.

Chap. I.

Of the erectneſſe of Man.

THat onely Man hath an erect figure, and for to behold and look up toward heaven, according to that of the Poet,

Pronaque cum ſpectant animalia cætera terram,
Os homini ſublime dedit, cælumque tueri
Juſſit, & erectos ad ſydera tollere vultus,

is a double aſſertion, whoſe firſt part may be true; if we take erectneſſe ſtrictly, and ſo as Galen hath defined it; for they only, ſaith he, have an erect figure, whoſe ſpine and thigh-bone are carried in right lines; and ſo indeed of any we yet know, Man only is erect. For the thighes of other animals doe ſtand at angles with their ſpine, and have rectangular poſitions in birds, and perfect Quadrupeds; nor doth the Frog, though ſtretched out, or ſwimming, attain the rectitude of man, or carry its thigh without all angularity. And thus is it alſo true that man only ſitteth, if we define ſitting to be a firmation of the body upon the Iſchias: wherein if the poſition be juſt and naturall, the thigh-bone lieth at right angles to the ſpine, and the leg bone or tibia to the thigh. For others when they ſeem to ſit, as Dogs, Cats, or Lions, doe make unto their ſpine acute angles with their thigh, and acute to the thigh with their ſhank. Thus is it likewiſe true, what Ariſtotle alledgeth in that Problem; why man alone ſuffereth pollutions in the night? becauſe man only lieth upon his back; if we define not the ſame by every ſupine poſition, but when the ſpine is in rectitude with the thigh, and both with the armes lie parallell to the Horizon; ſo that a line through their navel will paſſe through the Zenith and centre of the earth; and ſo cannot other animals lie upon their backs; for though the ſpine lie parallell with the Horizon, yet will their legs incline, and lie at angles unto it. And upon theſe three divers poſitions in man, wherein the ſpine can only be at right lines with the thigh, ariſe thoſe remarkable poſtures, prone, ſupine and erect; which are but differenced in ſituation or inangular poſtures upon the back, the belly and the feet.

What figure in animals is properly erect.

What ſciante or ſitting.

ἐξεστηκότες.

But if erectneſſe be popularly taken, and as it is largely oppoſed unto proneneſſe, or the poſture of animals looking downwards, carrying their venters or oppoſite part to the ſpine directly towards the earth, it may admit of queſtion. For though in Serpents and Lizards we may truly allow a proneneſſe, yet Galen acknowledgeth that perfect Quadrupeds, as Horſes, Oxen and Camels, are but partly prone, and have ſome part of erectneſſe. And birds or flying animals, are ſo farre from this kinde of proneneſſe, that they are almoſt erect; advancing the head and breaſt in their progreſſion, and only prone in the act of volitation. And if that be true which is delivered of the Penguin or *Anſer Magellanicus*, often deſcribed in Maps about thoſe Straits, that they go erect like men, and with their breaſt and belly doe make one line perpendicular unto the axis of the earth; it will make up the exact erectneſſe of man. Nor will that inſect come very ſhort which we have often beheld, that is, one kinde of Locuſt which ſtands not prone, or a little inclining upward, but in a large erectneſſe; elevating alwaies the two fore legs, and ſuſtaining it ſelf in the middle of the other four; by Zoographers called *mantis*, and by the common people of Province, *Prega Dio*, the Prophet and praying Locuſt; as being generally found in the poſture of ſupplication, or ſuch as reſembleth ours, when we lift up our hands to heaven.

Obſerve alſo the *Uria Belonij* and *Mergus major*.

Deſcribers of Animals.

As for the end of this erection, to look up toward heaven; though confirmed by ſeverall teſtimonies, and the Greek Etymology of man, it is not ſo readily to be admitted; and as a popular and vain conceit was anciently rejected by Galen; who in his third, *De uſu partium*, determines, that man is erect becauſe he was made with hands, and was therewith to exerciſe all Arts, which in any other figure he could not have performed; as he excellently declareth in that place, where he alſo proves that man could have been made neither Quadruped nor Centaur.

And for the accompliſhment of this intention, that is, to look up and behold the heavens, man hath a notable diſadvantage in the eyelid; whereof the upper is farre greater then the lower, which abridgeth the ſight upwards; contrary to thoſe of birds, who herein have the advantage of man: Inſomuch that the learned Plempius is bold to affirm that if he had had the formation of the eyelids, he would have contrived them quite otherwiſe.

Plemp. Opthalmographia.

The ground and occaſion of this conceit was a literall apprehenſion of a figurative expreſſion in Plato, as Galen thus delivers; To opinion that man is erect to look up and behold the heavens, is a conceit only fit for thoſe that never ſaw the fiſh Uranoſcopus, that is, the Beholder of heaven; which hath its eyes ſo placed, that it lookes up directly to heaven; which man doth not, except he recline, or bend his head backward: and thus to look up to heaven, agreeth not only unto Men, but Aſſes; to omit birds with long necks, which look not only upwards, but round about at pleaſure; and therefore men of this opinion underſtood not Plato when he ſaid that man doth *Surſum aſpicere*; for thereby was not meant to gape, or look upward with the eye, but to have his thoughts ſublime; and not only to behold, but ſpeculate their nature, with the eye of the underſtanding.

Now although Galen in this place makes inſtance but in one, yet are there other fiſhes, whoſe eies regard the heavens, as Plane, and cartilagineous fiſhes, as pectinals, or ſuch as have their bones made laterally like a comb; for when they apply themſelves to ſleep or reſt upon the white ſide, their eies on the other ſide look upward toward heaven. For birds, they generally carry their heads erectly like man, and have advantage in their upper eyelid; and many that have long necks, and bear their heads ſomewhat backward,

backward, behold farre more of the heavens, and seem to look above the æquinoxiall circle; and so also in many Quadrupeds, although their progression be partly prone, yet is the sight of their eye direct, not respecting the earth but heaven; and makes an higher arch of altitude then our own. The position of a Frogge with his head above water exceedeth these; for therein he seemes to behold a large part of the heavens, and the acies of his eye to ascend as high as the Tropick; but he that hath beheld the posture of a Bittor, will not deny that it beholds almost the very Zenith.

Point of heaven over our heads.

Chap. II.

Of the Heart.

That the Heart of Man is seated in the left side, is an asseveration, which strictly taken, is refutable by inspection; whereby it appears the base and centre thereof is in the midst of the chest; true it is that the Mucro or point thereof inclineth unto the left; for by this position it giveth way unto the ascension of the midriffe, and by reason of the hollow veine could not commodiously deflect unto the right. From which diversion, nevertheless we cannot so properly say 'tis placed in the left, as that it consisteth in the middle, that is, where its centre resteth; for so doe we usually say a Gnomon or needle is in the middle of a Diall, although the extreams may respect the North or South and approach the circumference thereof.

How a mans heart is placed in his body.

The ground of this mistake is a generall observation from the pulse or motion of the heart, which is more sensible on this side; but the reason hereof is not to be drawn from the situation of the heart, but the site of the left ventricle wherein the vitall spirits are laboured; and also the great Artery that conveyeth them out; both which are situated on the left; and upon this reason epithems or cordiall applications are justly applied unto the left brest; and the wounds under the fift rib may be more suddenly destructive if made on the siniſter side; and the spear of the souldier that pierced our Saviour, is not improperly described when Painters direct it a little towards the left.

The other ground is more particular and upon inspection; for in dead bodies especially lying upon the spine, the heart doth seem to incline unto the left. Which happeneth not from its proper site; but besides its siniſtrous gravity, is drawn that way by the great artery, which then subsideth and haleth the heart unto it. And therefore strictly taken, the heart is seated in the middle of the chest; but after a careless and inconsiderate aspection, or according to the readiest sense of pulsation, we shall not quarrell if any affirm it is seated toward the left. And in these considerations must Aristotle be salved, when he affirmeth the heart of man is placed in the left side; and thus in a popular acception may we receive the periphrasis of Persius, when he taketh the part under the left pap for the heart; and if rightly apprehended, it concerneth not this controversie, when it is said in Ecclesiastes; The heart of a wise man is in the right side, but that of a fool in the left; for thereby may be implied, that the heart of a wise man delighteth in the right way, or in the path of vertue, that of a fool in the left, or road of vice; according to the mystery of the letter of Pythago-

—*Levâ in parte mamillæ.*

ras, or that expreſſion in Jonah, concerning ſixſcore thouſand, that could not diſcern between their right hand and their left, or knew not good from evil.

That aſſertion alſo that man proportionally hath the largeſt brain, I did I confeſſe ſomewhat doubt; and conceived it might have failed in birds, eſpecially ſuch as having little bodies, have yet large cranies, and ſeem to contain much brain, as Snipes, Woodcocks, *&c.* but upon triall I finde it very true. The brains of a man Archangelus and Bauhinus obſerve to weigh four pound, and ſometime five and an half. If therefore a man weigh one hundred and fourty pounds, and his brain but five, his weight is 27. times as much as his brain, deducting the weight of that five pound which is allowed for it. Now in a Snipe which weighed four ounces two dragmes, I finde the brains to weigh but half a dragme; ſo that the weight of the body (allowing for the brain) exceeded the weight of the brain, ſixty ſeven times and an half.

More controvertible it ſeemeth in the brains of Sparrows, whoſe cranies are rounder and ſo of larger capacity: and moſt of all in the heads of birds, upon the firſt formation in the egge, wherein the head ſeems larger then all the body, and the very eies almoſt as big as either. A Sparrow in the totall we found to weigh ſeven dragmes and four and twenty grains; whereof the head a dragme, but the brain not fifteen grains; which anſwereth not fully the proportion of the brain of man. And therefore it is to be taken of the whole head with the brains, when Scaliger objecteth that the head of a man is the fifteenth part of his body, that of a Sparrow, ſcarce the fift.

Hiſtor. Animal. lib. 1.

Chap. III.

Of Pleuriſies.

That Pleuriſies are only on the left ſide, is a popular Tenent, not only abſurd but dangerous. From the miſapprehenſion hereof, men omitting the opportunity of remedies, which otherwiſe they would not neglect. Chiefly occaſioned by the ignorance of Anatomy and the extent of the part affected; which in an exquiſite Pleuriſie is determined to be the skin or membrane which inveſteth the ribbes, for ſo it is defined, *Inflammatio membranæ coſtas ſuccingentis*; An Inflammation, either ſimple conſiſting only of an hot and ſanguineous affluxion; or elſe denominable from other humours, according to the predominancy of melancholy, flegme, or choler. The veſſels whereby the morbificall matter is derived unto this membrane, are either the aſcending branches of the hollow veine, which diſperſe themſelves into the four upper ribbs; or elſe the Azygos, or *vena ſine pari*, whoſe furcles are diſpoſed unto the other lower. The membrane thus inflamed, is properly called *Pleura*; from whence the diſeaſe hath its name; and this inveſteth not only one ſide, but overſpreadeth the cavity of the cheſt, and affordeth a common coat unto the parts contained therein.

What a Pleuriſie is.

Now therefore the *Pleura* being common unto both ſides, it is not reaſonable to confine the inflammation unto one, nor ſtrictly to determine it is alwaies in the ſide; but ſometimes before and behinde, that is, inclining to the ſpine or breſtbone, for thither this coat extendeth; and therefore with equall propriety we may affirm, that ulcers of the lungs, or Apoſtems of the brain doe

doe happen only in the left side; or that Ruptures are confinable unto one side, whereas the peritoneum or rimme of the belly may be broke, or its perforations relaxed in either.

Chap. IV.

Of the Ring-finger.

AN opinion there is, which magnifies the condition of the fourth finger of the left hand; presuming therein a cordiall relation, that a particular vessel, nerve, vein or artery is conferred thereto from the heart, and therefore that especially hath the honour to bear our rings. Which was not only the Christian practice in Nuptiall contracts, but observed by heathens, as Alexander *ab Alexandro*, Gellius, Macrobius and Pierius have delivered, as lately Levinus Lemnius hath confirmed, who affirms this peculiar vessell to be an artery, and not a nerve, as Antiquity hath conceived it; adding moreover that rings hereon peculiarly affect the heart; that in Lipothymies or swoundings he used the frication of this finger with saffron and gold; that the ancient Physitians mixed up their Medicines herewith; that this is seldom or last of all affected with the Gout, and when that becometh nodous, men continue not long after. Notwithstanding all which we remain unsatisfied, nor can we think the reasons alledged sufficiently establish the preheminency of this finger.

For first, Concerning the practice of antiquity, the custome was not generall to wear their rings either on this hand or finger; for it is said, and that emphatically in Jeremiah, *Si fuerit Jeconias filius Joachim regis Judæ annulus in manu dextrâ meâ, inde evellam eum:* Though Coniah the son of Joachim King of Judah were the signet on my right hand, yet would I pluck thee thence. So is it observed by Pliny that in the portraits of their Gods the rings were worn on the finger next the thumb; that the Romans wore them also upon their little finger, as Nero is described in Petronius: some wore them on the middle finger as the ancient Gaules and Britans, and some upon the forefinger, as is deduceable from Julius Pollux, who names that ring Corionos.

Again, That the practice of the Ancients had any such respect of cordiality or reference unto the heart, will much be doubted if we consider their rings were made of Iron; such was that of Prometheus who is conceived the first that brought them in use; so, as Pliny affirmeth, for many yeares the Senators of Rome did not wear any rings of Gold: but the slaves wore generally Iron rings untill their manumission or preferment to some dignity. That the Lacedemonians continued their Iron rings unto his daies, Pliny also delivereth; and surely they used few of Gold; for beside that Lycurgus prohibited that mettall, we reade in Athenæus, that having a desire to guild the face of Apollo, they enquired of the oracle where they might purchase so much gold; and were directed unto Crœsus King of Lydia.

Rings anciently of Iron.

Moreover whether the Ancients had any such intention, the grounds which they conceived in vein, nerve or artery, are not to be justified, nor will inspection confirm a peculiar vessell in this finger. For as Anatomy informeth, the Basilica vein dividing into two branches below the cubit, the outward sendeth two surcles unto the thumb, two unto the forefinger, and one

unto the middle finger in the inward ſide; the other branch of the Baſilica ſendeth one ſurcle unto the outſide of the middle finger, two unto the Ring, and as many unto the little fingers; ſo that they all proceed from the Baſilica, and are in equall numbers derived unto every one. In the ſame manner are the branches of the axillary artery diſtributed into the hand; for below the cubit it divideth into two parts, the one running along the Radius, and paſſing by the wreſt or place of the pulſe, is at the fingers ſubdivided into three branches; whereof the firſt conveieth two ſurcles unto the thumb, the ſecond as many to the fore finger, and the third one unto the middle finger; the other or lower diviſion of the artery deſcendeth by the ulna, and furniſheth the other fingers; that is the middle with one ſurcle, and the ring and little fingers with two. As for the nerves, they are diſpoſed much after the ſame manner, and have their originall from the brain, and not the heart, as many of the Ancients conceived; which is ſo farre from affording nerves unto other parts, that it receiveth very few it ſelf from the ſixt conjugation, or pair of nerves in the brain.

Whence the nerves proceed.

Laſtly, Theſe propagations being communicated unto both hands, we have no greater reaſon to wear our rings on the left, then on the right, nor are there cordiall conſiderations in the one, more then the other. And therefore when Foreſtus for the ſtanching of bloud makes uſe of Medicall applications unto the fourth finger, he confines not that practice unto the left, but varieth the ſide according to the noſtrill bleeding. So in fevers, where the heart primarily ſuffereth, we apply medicines unto the wreſts of either arme; ſo we touch the pulſe of both, and judge of the affections of the heart by the one as well as the other. And although in indiſpoſitions of liver or ſpleen, conſiderations are made in Phlebotomy reſpectively to their ſituation; yet when the heart is affected, men have thought it as effectuall to bleed on the right as the left; and although alſo it may be thought, a nearer reſpect is to be had of the left, becauſe the great artery proceeds from the left ventricle, and ſo is nearer that arme; it admits not that conſideration. For under the channell bones the artery divideth into two great branches, from which trunk or point of diviſion the diſtance unto either hand is equall, and the conſideration anſwerable.

And therefore Macrobius diſcuſſing the point, hath alleadged another reaſon, affirming that the geſtation of rings upon this hand and finger, might rather be uſed for their conveniency and preſervation, then any cordiall relation. For at firſt (ſaith he) it was both free and uſuall to wear rings on either hand; but after that luxury encreaſed, when pretious gems and rich inſculptures were added, the cuſtome of wearing them on the right hand was tranſlated unto the left; for that hand being leſſe emploied, thereby they were beſt preſerved. And for the ſame reaſon they placed them on this finger; for the thumb was too active a finger, and is commonly imploied with either of the reſt: the Index or fore finger was too naked whereto to commit their pretioſities, and hath the tuition of the thumb ſcarce unto the ſecond joint: the middle and little finger they rejected as extreams, and too big or too little for their rings, and of all choſe out the fourth, as being leaſt uſed of any, as being guarded on either ſide, and having in moſt this peculiar condition that it cannot be extended alone and by it ſelf, but will be accompanied by ſome finger on either ſide. And to this opinion aſſenteth Alexander *ab Alexandro, Annulum nuptialem prior ætas in ſiniſtrâ ferebat, crediderim ne attereretur.*

Now that which begat or promoted the common opinion, was the common conceit that the heart was ſeated on the left ſide; but how farre this

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is verified, we have before declared. The Ægyptian practice hath much advanced the ſame, who unto this finger derived a nerve from the heart, and therefore the Prieſt anointed the ſame with pretious oyles before the altar. But how weak Anatomiſts they were, which were ſo good Embalmers, we have already ſhewed. And though this reaſon took moſt place, yet had they another which more commended that practice; and that was the number whereof this finger was an Hieroglyphick. For by holding down the fourth finger of the left hand, while the reſt were extended, they ſignified the perfect and magnified number of ſix. For as Pierius hath graphically declared, Antiquity expreſſed numbers by the fingers of either hand; on the left they accounted their digits and articulate numbers unto an hundred, on the right hand hundreds and thouſands; the depreſſing this finger which in the left hand implied but ſix, in the right indigitated ſix hundred. In this way of numeration may we conſtrue that of Juvenal concerning Neſtor,

——*Qui per tot ſecula mortem*
Diſtulit, atq; ſuos jam dextrâ computat annos.

And however it were intended, in this ſenſe it will be very elegant what is delivered of Wiſdome, Prov. 3. Length of daies is in her right hand, and in her left hand riches and honour.

As for the obſervation of Lemnius an eminent Phyſitian, concerning the gowt, however it happened in his country, we may obſerve it otherwiſe in ours; that is, that chiragricall perſons doe ſuffer in this finger as well as in the reſt, and ſometimes firſt of all, and ſometimes no where elſe. And for the mixing up medicines herewith, it is rather an argument of opinion, then any conſiderable effect; and we as highly conceive of the practice in Diapalma, that is in the making of that plaiſter, to ſtirre it with the ſtick of a Palme.

Hand-gowty perſons.

CHAP. V.

Of the right and left Hand.

IT is alſo ſuſpitious, and not with that certainty to be received, what is generally beleeved concerning the right and left hand, that men naturally make uſe of the right, and that the uſe of the other is a digreſſion or aberration from that way which nature generally intendeth. And truly we doe not deny that almoſt all Nations have uſed this hand, and aſcribed a preheminence thereto: hereof a remarkable paſſage there is in the 48. of Geneſis, And Joſeph took them both, Ephraim in his right hand towards Iſraels left hand, and Manaſſes in his left hand towards Iſraels right hand, and Iſrael ſtretched out his right hand and laid it upon Ephraims head, who was the younger, and his left hand upon Manaſſes head, guiding his hands wittingly, for Manaſſes was the firſt-born; and when Joſeph ſaw that his father laid his right hand upon the head of Ephraim, it diſpleaſed him, and he held up his fathers hand to remove it from Ephraims head unto Manaſſes head, and Joſeph ſaid, Not ſo my father, for this is the firſt-born, put thy right hand upon his head: The like appeareth from the ordinance of Moſes in the conſecration of their Prieſts, Then ſhalt thou kill the Ram, and take of his bloud, and put it upon the tip of the right eare of Aaron, and upon the tip of the right eare of his ſonnes, and upon the thumb of the right hand, and upon

upon the great toe of the right foot, and ſprinkle the blood on the Altar round about: That the Perſians were wont herewith to plight their faith, is teſtified by Diodorus: That the Greeks and Romans made uſe hereof, beſide the teſtimony of divers Authors, is evident from their cuſtom of diſcumbency at their meales, which was upon their left ſide, for ſo their right hand was free, and ready for all ſervice. Nor was this only in uſe with divers Nations of men, but was the cuſtome of whole Nations of women, as is deduceable from the Amazones in the amputation of their right breaſt, whereby they had the freer uſe of their bow. All which doe ſeem to declare a naturall preferment of the one unto motion before the other; wherein notwithſtanding in ſubmiſſion to future information, we are unſatisfied unto great dubitation.

For firſt, If there were a determinate prepotency in the right, and ſuch as ariſeth from a conſtant root in nature, we might expect the ſame in other animals, whoſe parts are alſo differenced by dextrality; wherein notwithſtanding we cannot diſcover a diſtinct and complying account; for we finde not that Horſes, Buls or Mules, are generally ſtronger on this ſide. As for animals whoſe forelegs more ſenſibly ſupply the uſe of armes, they hold, if not an equality in both, a prevalency oft times in the other, as Squirrels, Apes, and Monkeys; the ſame is alſo diſcernible in Parrets; and men obſerve that the eye of a Tumbler is biggeſt, not conſtantly in one, but in the bearing ſide.

That there is alſo in men a naturall prepotency in the right, we cannot with conſtancy affirm, if we make obſervation in children; who permitted the freedome of both, doe oft times confine unto the left, and are not without great difficulty reſtrained from it. And therefore this prevalency is either uncertainly placed in the laterality, or cuſtome determines its indifferency. Which is the reſolution of Ariſtotle in that Probleme, which enquires why the right ſide being better then the left, is equall in the ſenſes? becauſe, ſaith he, the right and left doe differ by uſe and cuſtome, which have no place in the ſenſes. For right and left as parts inſervient unto the motive faculty, are differenced by degrees from uſe and aſſuefaction, according whereto the one grows ſtronger, and oft times bigger then the other. But in the ſenſes it is otherwiſe; for they acquire not their perfection by uſe or cuſtome, but at the firſt we equally hear and ſee with one eye, as well as with another. And therefore, were this indifferency permitted, or did not inſtitution, but Nature determine dextrality, there would be many more Scevolaes then are delivered in ſtory; nor needed we to draw examples of the left, from the ſonnes of the right hand; as we reade of ſeven thouſand in the Army of the Benjamites. True it is, that although there be an indifferency in either, or a prevalency indifferent in one, yet is it moſt reaſonable for uniformity, and ſundry reſpective uſes, that men ſhould apply themſelves to the conſtant uſe of one; for there will otherwiſe ariſe anomalous diſturbances in manuall actions, not only in civil and artificiall, but alſo in Military affairs, and the ſeverall actions of warre.

Whence the dextrall activity in men proceeds.

Benjamin filius dextræ.

Secondly, The grounds and reaſons alleadged for the right, are not ſatisfactory, and afford no reſt in their deciſion. Scaliger finding a defect in the reaſon of Ariſtotle, introduceth one of no leſſe deficiency himſelf; *Ratio materialis* (ſaith he) *ſanguinis craſſitudo ſimul & multitudo*, that is, the reaſon of the vigour of this ſide, is the craſſitude and plenty of bloud; but this is no way ſufficient; for the craſſitude or thickneſſe of bloud, affordeth no reaſon why one arme ſhould be enabled before the other, and the plenty thereof, why both not enabled equally. Fallopius is of another conceit, deducing

deducing the reason from the Azygos or *vena sine pari*, a large and considerable veine arising out of the *cava* or hallow veine, before it enters the right ventricle of the heart, and placed only in the right side. But neither is this perswasory; for the Azygos communicates no branches unto the armes or legs on either side, but dispersеth into the ribs on both, and in its descent doth furnish the left Emulgent with one veine, and the first veine of the loines on the right side with another; which manner of derivation doth not conferre a peculiar addition unto either. *Celius Rodiginus* undertaking to give a reason of Ambidexters and left-handed men, delivereth a third opinion: Men, saith he, are Ambidexters, and use both hands alike, when the heat of the heart doth plentifully disperse into the left side, and that of the Liver into the right, and the spleen be also much dilated; but men are left-handed when ever it happeneth that the heart and Liver are seated on the left side, or when the Liver is on the right side, yet so obducted and covered with thick skins, that it cannot diffuse its vertue into the right. Which reasons are no way satisfactory; for herein the spleen is injustly introduced to invigorate the sinister side, which being dilated it would rather infirm and debilitate. As for any tunicles or skins which should hinder the Liver from enabling the dextrall parts; we must not conceive it diffuseth its vertue by meer irradiation, but by its veines and proper vessels, which common skins and teguments cannot impede. And for the seat of the heart and Liver in one side whereby men become left-handed, it happeneth too rarely to countenance an effect so common; for the seat of the Liver on the left side is very monstrous, and scarce at all to be met with in the observations of Physitians. Others not considering ambidextrous and left handed men, doe totally submit unto the efficacy of the Liver; which though seated on the right side, yet by the subclavian division doth equidistantly communicate its activity unto either arme; nor will it salve the doubts of observation; for many are right-handed whose Livers are weakly constituted, and many use the left, in whom that part is strongest; and we observe in Apes and other animals, whose Liver is in the right, no regular prevalence therein.

And therefore the brain, especially the spinall marrow, which is but the brain prolonged, hath a fairer plea hereto; for these are the principles of motion, wherein dextrality consists; and are divided within and without the Crany. By which division transmitting nerves respectively unto either side; according to the indifferency, or originall and native prepotency, there ariseth an equality in both, or prevalency in either side. And so may it be made out, what many may wonder at, why some most actively use the contrary arme and leg; for the vigour of the one dependeth upon the upper part of the spine, but the other upon the lower.

And therefore many things are Philosophically delivered concerning right and left, which admit of some suspension. That a woman upon a masculine conception advanceth her right leg, will not be found to answer strict observation; That males are conceived in the right side of the womb, females in the left, though generally delivered, and supported by ancient testimony, will make no infallible account; it happening oft times that males and females doe lie upon both sides, and Hermaphrodites for ought we know on either. It is also suspitious what is delivered concerning the right and left testicle, that males are begotten from the one, and females from the other. For though the left seminall veine proceedeth from the Emulgent, and is therefore conceived to carry down a serous and feminine matter; yet the seminall Arteries which send forth the active materials, are both

derived from the great Artery. Beſide, this originall of the left veine was thus contrived, to avoid the pulſation of the great Artery, over which it muſt have paſſed to attain unto the teſticle. Nor can we eaſily inferre ſuch different effects from the divers ſituation of parts which have one end and office; for in the kidneys which have one office, the right is ſeated lower then the left, whereby it lieth free, and giveth way unto the Liver; and therefore alſo that way which is delivered for maſculine generation, to make a ſtrait ligature about the left teſticle, thereby to intercept the evacuation of that part, deſerveth conſideration. For one ſufficeth unto generation, as hath been obſerved in ſemicaſtration, and oft times in carnous ruptures. Beſide, the ſeminall ejaculation proceeds not immediatly from the teſticle, but from the ſpermatick glandules; and therefore Ariſtotle affirms (and reaſon cannot deny) that although there be nothing diffuſed from the teſticles, an Horſe or Bull may generate after caſtration; that is, from the ſtock and remainder of ſeminall matter, already prepared and ſtored up in the Proſtates or glandules of generation.

How an Horſe or Bull may generate after they be gelt.

Thirdly, Although we ſhould concede a right and left in Nature, yet in this common and received account we may erre from the proper acception; miſtaking one ſide for another; calling that in man and other animals the right which is the left, and that the left which is the right, and that in ſome things right and left, which is not properly either.

For firſt the right and left, are not defined by Philoſophers according to common acception, that is, reſpectively from one man unto another, or any conſtant ſite in each; as though that ſhould be the right in one, which upon confront or facing ſtands athwart or diagonially unto the other; but were diſtinguiſhed according to the activity and predominant locomotion upon either ſide. Thus Ariſtotle in his excellent Tract *de inceſſu animalium*, aſcribeth ſix poſitions unto animals, anſwering the three dimenſions; which he determineth not by ſite or poſition unto the heavens, but by their faculties and functions; and theſe are *Imum ſummum, Antè Retrò, Dextra & Siniſtra*: that is the ſuperiour part, where the aliment is received, that the lower extream, where it is laſt expelled; ſo he termeth a man a plant inverted; for he ſuppoſeth the root of a tree the head or upper part thereof, whereby it receiveth its aliment, although therewith it reſpects the Center of the earth, but with the other the Zenith; and this poſition is anſwerable unto longitude. Thoſe parts are anterior and meaſure profundity, where the ſenſes, eſpecially the eies are placed, and thoſe poſterior which are oppoſite hereunto. The dextrous and ſiniſtrous parts of the body make up the latitude; and are not certain and inalterable like the other; for that, ſaith he, is the right ſide, from whence the motion of the body beginneth, that is, the active or moving ſide; but that the ſiniſter which is the weaker or more quieſcent part. Of the ſame determination were the Platonicks and Pythagorians before him; who conceiving the heavens an animated body, named the Eaſt the right or dextrous part, from whence began their motion: and thus the Greeks from whence the Latines have borrowed their appellation, have named this hand δεξια, denominating it not from the ſite, but office, from δέχομαι *capio*, that is, the hand which receiveth, or is uſually implied in that action.

Now upon theſe grounds we are moſt commonly miſtaken, defining that by ſituation which they determined by motion; and giving the term of right hand to that which doth not properly admit it. For firſt, Many in their infancy are ſiniſtrouſly diſpoſed, and divers continue all their life Αμφιδέξιοι, that is, left handed, and have but weak and imperfect uſe of the right; now unto theſe

these that hand is properly the right, and not the other esteemed so by situation. Thus may Aristotle be made out, when he affirmeth the right claw of Crabs and Lobsters is biggest, if we take the right for the most vigorous side, and not regard the relative situation; for the one is generally bigger then the other, yet not alwaies upon the same side. So may it be verified what is delivered by Scaliger in his Comment, that Palsies doe oftnest happen upon the left side, if understood in this sense; the most vigorous part protecting it self, and protruding the matter upon the weaker and lesse resistive side. And thus the Law of Common-Weales, that cut off the right hand of Malefactors, if Philosophically executed, is impartiall; otherwise the amputation not equally punisheth all.

Some are Ἀμφιδέξιοι, that is, ambidexterous or right-handed on both sides; which happeneth only unto strong and Athleticall bodies, whose heat and spirits are able to afford an ability unto both. And therefore Hippocrates saith, that women are not ambidexterous, that is, not so often as men; for some are found, which indifferently make use of both. And so may Aristotle say, that only man ambidexter; of this constitution was Asteropæus in Homer, and Parthenopeus the Theban Captain in Statius; and of the same doe some conceive our Father Adam to have been, as being perfectly framed, and in a constitution admitting least defect. Now in these men the right hand is on both sides, and that is not the left which is opposite unto the right according to common acception. Apt for contention.

Again, Some are Ἀμφαριστεροὶ as Galen hath expressed: that is, Ambilevous or left-handed on both sides; such as with agility and vigour have not the use of either; who are not gymnastically composed; nor actively use those parts. Now in these there is no right hand: of this constitution are many women, and some men; who though they accustome themselves unto either hand, doe dexterously make use of neither. And therefore although the Politicall advice of Aristotle be very good, that men should accustome themselves to the command of either hand; yet cannot the execution or performance thereof be generall; for though there be many found that can use both, yet will there divers remain that can strenuously make use of neither. Strongly or fit for corporal exercise.

Lastly, These lateralities in man are not only fallible, if relatively determined unto each other, but made in reference unto the heavens and quarters of the Globe: for those parts are not capable of these conditions in themselves, nor with any certainty respectively derived from us, nor from them to us again. And first in regard of their proper nature, the heavens admit not these sinister and dexter respects; there being in them no diversity or difference, but a simplicity of parts, and equiformity in motion continually succeeding each other; so that from what point soever we compute, the account will be common unto the whole circularity. And therefore though it be plausible, it is not of consequence hereto what is delivered by Solinus, That man was therefore a Microcosme or little world, because the dimensions of his positions were answerable unto the greater. For as in the heavens the distance of the North and Southern pole, which are esteemed the superiour and inferiour points, is equall unto the space between the East and West, accounted the dextrous and sinistrous parts thereof; so is it also in man: for the extent of his fathome or distance betwixt the extremity of the fingers of either hand upon expansion, is equall unto the space between the sole of the foot and the crown. But this doth but petionarily inferre a dextrality in the heavens, and we may as reasonably conclude a right and left laterality in the Ark or navall edifice of Noah. For the length thereof was

thirty cubits, the breadth fifty, and the height or profundity thirty; which well agreeth unto the proportion of man; whose length, that is a perpendicular from the vertex unto the sole of the foot is sextuple unto his breadth, or a right line drawn from the ribs of one side to another; and decuple unto his profundity; that is, a direct line between the breast bone and the spine.

Declarable from the originall expression, Psal. 89. 13.

Again, They receive not these conditions with any assurance or stability from our selves. For the relative foundations and points of denomination, are not fixed and certain, but variously designed according to imagination. The Philosopher accounts that East from whence the heavens begin their motion. The Astronomer regarding the South and Meridian Sun, cals that the dextrous part of heaven which respecteth his right hand; and that is the West. Poets respecting the West assign the name of right unto the North, which regardeth their right hand; and so must that of Ovid be explained, *utq; duæ dextrâ zona totidemq; sinistrâ.* But Augurs or Southsayers turning their face to the East, did make the right in the South; which was also observed by the Hebrews and Chaldæans. Now if we name the quarters of heaven respectively unto our sides, it will be no certain or invariable denomination. For if we call that the right side of heaven which is seated Easterly unto us, when we regard the Meridian Sun; the inhabitants beyond the Æquator and Southern Tropick when they face us regarding the Meridian, will contrarily define it; for unto them, the opposite part of heaven will respect the left, and the Sun arise to their right.

And thus have we at large declared that although the right be most commonly used, yet hath it no regular or certain root in nature. Since it is not confirmable from other animals: Since in children it seems either indifferent or more favourable in the other; but more reasonable for uniformity in action that men accustome unto one: Since the grounds and reasons urged for it do no way support it: Since if there be a right and stronger side in nature, yet may we mistake in its denomination; calling that the right which is the left, and the left which is the right. Since some have one right, some both, some neither. And lastly, Since these affections in man are not only fallible in relation unto one another, but made also in reference unto the heavens; they being not capable of these conditions in themselves, nor with any certainty from us, nor we from them again.

And therefore what admission we owe unto many conceptions concerning right and left requireth circumspection. That is, how farre we ought to relye upon the remedy in Kiranides, that is, the left eye of an Hedgehog fried in oyle to procure sleep, and the right foot of a frog in a Deers skin for the gowt; or that to dream of the losse of right or left tooth presageth the death of male or female kindred, according to the doctrine of Artemidorus. What verity there is in that numerall conceit in the laterall division of man by even and odde, ascribing the odde unto the right side, and even unto the left; and so by parity or imparity of letters in mens names to determine misfortunes on either side of their bodies; by which account in Greek numeration Hephæstus or Vulcan was lame in the right foot, and Anibal lost his right eye. And lastly, what substance there is in that Auspiciall principle, and fundamentall doctrine of Ariolation, that the left hand is ominous, and that good things doe passe sinistrously upon us; because the left hand of man respected the right hand of the Gods, which handed their favours unto us.

Chap.

CHAP. VI.

Of Swimming.

THat men ſwim naturally, if not diſturbed by fear; that men being drowned and ſunk, do float the ninth day when their gall breaketh; that women drowned ſwim prone, but men ſupine, or upon their backs; are popular affirmations, whereto we cannot aſſent. And firſt, that man ſhould ſwim naturally, becauſe we obſerve it is no leſſon unto others, we cannot well conclude; for other animals ſwim in the ſame manner as they goe, and need no other way of motion for natation in the water, then for progreſſion upon the land. And this is true whether they move *per latera*, that is, two legs of one ſide together, which is Tollutation or ambling; or *per diametrum*, lifting one foot before, and the croſſe foot behinde, which is ſuccuſſation or trotting; or whether *per frontem* or *quadratum*, as Scaliger termes it, upon a ſquare baſe, the legs of both ſides moving together, as Frogs and ſalient animals, which is properly called leaping. For by theſe motions they are able to ſupport and impell themſelves in the water, without alteration in the ſtroak of their legs, or poſition of their bodies.

But with man it is performed otherwiſe: for in regard of ſite he alters his naturall poſture and ſwimmeth prone, whereas he walketh erect. Again, in progreſſion the arms move parallell to the legs, and the arms and legges unto each other; but innatation they interſect and make all ſorts of Angles. And laſtly, in progreſſive motion, the arms and legges do move ſucceſſively, but in natation both together; all which aptly to perform, and ſo as to ſupport and advance the body, is a point of art, and ſuch as ſome in their young and docile years could never attain. But although it be acquired by art, yet is there ſomewhat more of nature in it then we obſerve in other habits, nor will it ſtrictly fall under that definition; for once obtained it is not to be removed; nor is there any who from diſuſe did ever yet forget it.

Secondly, That perſons drowned ariſe and float the ninth day when their gall breaketh, is a queſtionable determination both in the time and cauſe. For the time of floating, it is uncertain according to the time of putrefaction, which ſhall retard or accelerate according to the ſubject and ſeaſon of the year, for as we obſerved cats and mice will ariſe unequally and at different times, though drowned at the ſame. Such as are fat do commonly float ſooneſt, for their bodies ſooneſt ferment, and that ſubſtance approacheth neareſt unto air: and this is one of Ariſtotles reaſons why dead Eeles will not float, becauſe ſaith he, they have but ſlender bellies, and little fat.

Why drowned bodies float after a time.

As for the cauſe, it is not ſo reaſonably imputed unto the breaking of the gall as the putrefaction of the body, whereby the unnaturall heat prevailing, the putrifying parts doe ſuffer a turgeſcence and inflation, and becoming aery and ſpumous affect to approach the ayr, and aſcend unto the ſurface of the water. And this is alſo evidenced in egges, whereof the ſound ones ſink, and ſuch as are addled ſwim, as doe alſo thoſe which are termed hypenemia or winde-egges; and this is alſo a way to ſeparate ſeeds, whereof ſuch as are corrupted and ſterill, ſwim; and this agreeth not only unto the ſeed of plants lockt up and capſulated in their huſks, but alſo unto the ſperm and ſeminall humour of man; for ſuch a paſſage hath Ariſtotle upon the Inquiſition and teſt of its fertility.

That the breaking of the gall is not the cauſe hereof experience hath informed us. For opening the *abdomen*, and taking out the gall in cats and mice, they did notwithſtanding ariſe: and becauſe we had read in Rhodiginus of a Tyrant, who to prevent the emergencie of murdered bodies did uſe to cut off their lungs, and found mens mindes poſſeſſed with this reaſon; we committed ſome unto the water without lungs, which notwithſtanding floated with the others. And to compleat the experiment, although we took out the guts and bladder, and alſo perforated the Cranium, yet would they ariſe, though in a longer time. From theſe obſervations in other animals, it may not be unreaſonable to conclude the ſame in man, who is too noble a ſubject on whom to make them expreſly, and the caſuall opportunity too rare almoſt to make any. Now if any ſhall ground this effect from gall or choler, becauſe it is the higheſt humour and will be above the reſt; or being the fiery humour will readieſt ſurmount the water, we muſt confeſſe in the common putrefcence it may promote elevation, which the breaking of the bladder of gall, ſo ſmall a part in man, cannot conſiderably advantage.

Laſtly, That women drowned float prone, that is with their bellies downward, but men ſupine or upward, is an aſſertion wherein the *Lori* or point it ſelf is dubious; and were it true, the reaſon alledged for it is of no validity. The reaſon yet currant was firſt expreſſed by Pliny, *veluti pudori defunctorum parcente naturâ*, nature modeſtly ordaining this poſition to conceal the ſhame of the dead; which hath been taken up by Solinus, Rhodiginus, and many more. This indeed (as Scaliger termeth it) is *ratio civilis non philoſophica*, ſtrong enough for morality or Rhetoricks, not for Philoſophy or Phyſicks: for firſt, in nature the concealment of ſecret parts is the ſame in both ſexes, and the ſhame of their reveal equall: ſo Adam upon the taſte of the fruit was aſhamed of his nakedneſſe as well as Eve: and ſo likewiſe in America and countries unacquainted with habits, where modeſty conceals theſe parts in one ſex, it doth it alſo in the other; and therefore had this been the intention of nature, not only women but men alſo had ſwimmed downwards; the poſture in reaſon being common unto both where the intent is alſo common.

Again, While herein we commend the modeſty, we condemn the wiſdom of nature: for that prone poſition we make her contrive unto the woman, were beſt agreeable unto the man, in whom the ſecret parts are very anterior and more diſcoverable in a ſupine and upward poſture. And therefore Scaliger declining this reaſon hath recurred unto another from the difference of parts in both ſexes; *Quod ventre vaſto ſunt mulieres plenoq́, inteſtinis, itaq́, minus impletur & ſubſidet, inanior maribus quibus nates præponderant:* If ſo, then men with great bellies will float downward, and only Callipygæ and women largely compoſed behinde, upward. But Anatomiſts obſerve that to make the larger cavity for the Infant, the hanch bones in women, and conſequently the parts appendant are more protuberant then they are in men. They who aſcribe the cauſe unto the breaſts of women, take not away the doubt; for they reſolve not why children float downward who are included in that ſex, though not in the reaſon alledged. But hereof we ceaſe to diſcourſe, leſt we undertake to afford a reaſon of the * golden tooth, that is, to invent or aſſign a cauſe, when we remain unſatisfied or unaſſured of the effect.

* Of the cauſe whereof much diſpute was made, and at laſt proved an impoſture.

That a Mare will ſooner drown then an Horſe, though commonly opinion'd, is not I fear experienced: nor is the ſame obſerved, in the drowning of whelps and kitlins. But that a man cannot ſhut or open his eyes under water, eaſie

experiment

experiment may convict. Whether Cripples and mutilated persons, who have lost the greatest part of their thighs, will not sink but float, their lungs being abler to waft up their bodies, which are in others overpoised by the hinder legges; we have not made experiment. Thus much we observe, that animals drown downwards, and the same is observeable in Frogges, when the hinder legges are cut off. But in the air most seem to perish headlong from high places, however Vulcan thrown from heaven, be made to fall on his feet.

Chap. VII.

Concerning Weight.

That men weigh heavier dead then alive, if experiment hath not failed us, we cannot reasonably grant. For though the triall hereof cannot so well be made on the body of Man, nor will the difference be sensible in the abate of scruples or dragmes, yet can we not confirm the same in lesser animalls from whence the inference is good; and the affirmative of Pliny saith that it is true in all: for exactly weighing and strangling a Chicken in the Scales; upon an immediate ponderation, we could discover no sensible difference in weight; but suffering it to lie eight or ten howres, untill it grew perfectly cold, it weighed most sensibly lighter; the like we attempted, and verified in Mice, and performed their trials in Scales that would turn upon the eighth or tenth part of a grain.

Now whereas some alledge that spirits are light substances, and naturally ascending doe elevate and waft the body upward, whereof dead bodies being destitute contract a greater gravity; although we concede that spirits are light, comparatively unto the body, yet that they are absolutely so, or have no weight at all, we cannot readily allow. For since Philosophy affirmeth that spirits are middle substances between the soul and body, they must admit of some corporiety which supposeth weight or gravity. Beside, in carcasses warme and bodies newly disanimated, while transpiration remaineth, there doe exhale and breathe out vaporous and fluid parts, which carry away some power of gravitation. Which though we allow, we doe not make answerable unto living expiration; and therefore the Chicken or Mice were not so light being dead, as they would have been after ten houres kept alive; for in that space a man abateth many ounces. Nor if it had slept, for in that space of sleep, a man will sometimes abate fourty ounces; nor if it had been in the middle of summer, for then a man weigheth some pounds lesse then in the height of winter; according to experience, and the statick aphorismes of Sanctorius.

Again, Whereas men affirm they perceive an addition of ponderosity in dead bodies, comparing them usually unto blocks and stones, whensoever they lift or carry them; this accessionall preponderancy is rather in appearance then reality. For being destitute of any motion, they conferre no relief unto the Agents or Elevators; which makes us meet with the same complaints of gravity in animated and living bodies, where the nerves subside, and the faculty locomotive seems abolished; as may be observed in the lifting or supporting of persons inebriated, Apoplecticall, or in Lipothymies and swoundings.

Many are also of opinion, and some learned men maintain, that men are lighter

lighter after meales then before, and that by a ſupply and addition of ſpirits obſcuring the groſſe ponderoſity of the aliment ingeſted; but the contrary hereof we have found in the triall of ſundry perſons in different ſex and ages. And we conceive men may miſtake if they diſtinguiſh not the ſenſe of levity unto themſelves, and in regard of the ſcale or deciſion of trutination. For after a draught of wine a man may ſeem lighter in himſelf from ſudden refection, although he be heavier in the balance, from a corporall and ponderous addition; but a man in the morning is lighter in the ſcale, becauſe in ſleep ſome pounds have perſpired; and is alſo lighter unto himſelf, becauſe he is refected.

And to ſpeak ſtrictly, a man that holds his breath is weightier while his lungs are full, then upon expiration. For a bladder blown is weighter then one empty, and if it contain a quart, expreſſed and emptied it will abate about half a grain; and we ſomewhat miſtruſt the experiment of a pumice-ſtone taken up by Montanus, in his Comment upon Avicenna, where declaring how the rarity of parts, and numeroſity of pores, occaſioneth a lightneſſe in bodies, he affirms that a pumice-ſtone powdered, is lighter then one entire; which is an experiment beyond our ſatisfaction; for beſide that abatement can hardly be avoided in the Trituration; if a bladder of good capacity will ſcarce include a grain of air, a pumice of three or four dragmes, cannot be preſumed to contain the hundred part thereof; which will not be ſenſible upon the exacteſt beames we uſe. Nor is it to be taken ſtrictly what is delivered by the learned Lord Verulam, and referred unto further experiment; That a diſſolution of Iron in *Aqua fortis*, will bear as good weight as their bodies did before, notwithſtanding a great deale of waſte by a thick vapour that iſſueth during the working; for we cannot finde it to hold neither in Iron nor Copper, which is diſſolved with leſſe ebullition; and hereof we made triall in Scales of good exactneſſe; wherein if there be a defect, or ſuch as will not turn upon quarter graines, there may be frequent miſtakes in experiments of this nature. But ſtranger is that, and by the favourableſt way of triall we cannot make out what is delivered by *Hamerus Poppius*, that Antimony calcin'd or reduced to aſhes by a burning glaſſe, although it emit a groſſe and ponderous exhalation, doth rather exceed then abate its former gravity. Nevertheleſſe, ſtrange it is, how very little and almoſt inſenſible abatement, there will be ſometimes in ſuch operations, or rather ſome encreaſe, as in the refining of metals, in the teſt of bone aſhes, according to experience; and in a burnt brick, as Monſieur de Clave affirmeth. Miſtake may be made in this way of triall, when the Antimony is not weighed immediately upon the calcination; but permitted the air, it imbibeth the humidity thereof, and ſo repaireth its gravity.

Baſilica Antimonij.

Det Pierres.

Chap. VIII.

Of the paſſage of Meat and Drink.

That there are different paſſages for Meat and Drink, the Meat or dry aliment deſcending by the one, the Drink or moiſtning vehicle by the other, is a popular Tenent in our daies, but was the aſſertion of learned men of old; for the ſame was affirmed by Plato, maintained by Euſtathius in Macrobius, and is deducible from Eratoſthenes, Eupolis and Euripides. Now herein men contradict experience, not well underſtanding Anatomy, and the uſe of parts.

For

For at the throat there are two cavities or conducting parts; the one the Oesophagus or gullet, seated next the spine, a part officiall unto nutrition, and whereby the aliment both wet and dry is conveyed unto the stomack; the other (by which 'tis conceived the Drink doth passe) is the weazon, rough artery, or winde-pipe, a part inservient to voice and respiration; for thereby the air descendeth into the lungs, and is communicated unto the heart. And therefore all animals that breath or have lungs, have also the weazon; but many have the gullet or feeding channell, which have no lungs or winde-pipe; as fishes which have gils, whereby the heart is refrigerated; for such thereof as have lungs and respiration, are not without the weazon, as Whales and cetaceous animals.

Again, Beside these parts destin'd to divers offices, there is a peculiar provision for the winde-pipe, that is, a cartilagineous flap upon the opening of the Larinx or throttle, which hath an open cavity for the admission of the air; but lest thereby either meat or drink should descend, Providence hath placed the *Epiglottis*, *Ligula*, or flap like an Ivy leaf, which alwaies closeth when we swallow, or when the meat and drink passeth over it into the gullet. Which part although all have not that breathe, as all cetaceous and oviparous animals, yet is the weazon secured some other way; and therefore in Whales that breathe, lest the water should get into the lungs, an ejection thereof is contrived by a Fistula or spout at the head. And therefore also though birds have no Epiglottis, yet can they so contract the rime or chink of their Larinx, as to prevent the admission of wet or dry ingested; either whereof getting in occasioneth a cough, untill it be ejected. And this is the reason why a man cannot drink and breathe at the same time; why if we laugh while we drink, the drink flies out at the nostrils; why when the water enters the weazon, men are suddenly drowned; and thus must it be understood, when we reade of one that died by the seed of a Grape, and another by an hair in milk.

Why a man cannot drink and breathe at once.

Anacreon the Poet, if the story be taken literally.

Now if any shall still affirm, that some truth there is in the assertion, upon the experiment of Hippocrates, who killing an Hog after a red potion, found the tincture thereof in the Larinx; if any will urge the same from medical practice, because in affections both of Lungs and weazon, Physitians make use of syrupes, and lambitive medicines; we are not averse to acknowledge, that some may distill and insinuate into the winde-pipe, and medicines may creep down, as well as the rheume before them; yet to conclude from hence, that air and water have both one common passage, were to state the question upon the weaker side of the distinction, and from a partiall or guttulous irrigation, to conclude a totall descension.

Chap. IX.

of Sneezing.

Concerning Sternutation or Sneezing, and the custome of saluting or blessing upon that motion, it is pretended, and generally beleeved to derive its originall from a disease, wherein Sternutation proved mortall, and such as Sneezed died. And this may seem to be proved from Carolus Sigonius, who in his History of Italy, makes mention of a Pestilence in the time of Gregory the Great, that proved pernitious and deadly to those that Sneezed. Which notwithstanding will not sufficiently determine the grounds hereof: that custome having an elder Æra, then this Chronology affordeth.

For although the age of Gregory extend above a thousand, yet is this custome mentioned by Apuleius in the fable of the Fullers wife, who lived three hundred years before; by Pliny in that Probleme of his, *Cur Sternutantes salutantur*; and there are also reports that Tiberius the Emperour otherwise a very sowre man, would perform this rite most punctually unto others, and expect the same from others, unto himself; Petronius Arbiter, who lived before them both, and was Proconsul of Bythinia in the reign of Nero, hath mentioned it in these words; *Gyton collectione spiritus plenus, ter continuò ita sternutavit ut grabatum concuteret, ad quem motum Eumolpus conversus, Salvere Gytona jubet.* Cælius Rhodiginus hath an example hereof among the Greeks, far antienter then these, that is, in the time of Cyrus the younger; when consulting about their retreat, it chanced that one among them Sneezed; at the noise whereof, the rest of the souldiers called upon Jupiter Soter. There is also in the Greek Anthology a remarkable mention hereof, in an Epigram upon one Proclus; the Latine whereof we shall deliver, as we finde it often translated.

A Collection of Greek Epigrams. *Titulo ἐις δυσκόλους.*

Non potis est Proclus digitis emungere nasum,
Namq; est pro nasi mole pusilla manus:
Non vocat ille Jovem sternutans, quippe nec audit
Sternutamentum, tam procul aure sonat.

Proclus with's hand his nose can never wipe,
His hand too little is his nose to gripe;
He Sneezing cals not Jove, for why? he hears
Himself not Sneeze, the sound's so far from's ears:

Nor was this only an ancient custome among the Greeks and Romans, and is still in force with us; but is received at this day in remotest parts of Africa. For so we reade in Codignus; that upon a Sneeze of the Emperour of Monomotapa, there passed acclamations successively through the city.

De rebus Abassinorum.

Now the ground of this ancient custome was probably the opinion the ancients held of Sternutation which they generally conceived to be a good sign or a bad, and so upon this motion accordingly used, a Salve or Ζεῦ σῶσον, as a gratulation for the one, and a deprecation from the other. Now of the waies whereby they enquired and determined its signality; the first was naturall, arising from Physicall causes and consequences often times naturally succeeding this motion; and so it might be justly esteemed a good signe. For Sneezing being properly a motion of the brain, suddenly expelling through the nostrils what is offensive unto it, it cannot but afford some evidence of its vigour; and therefore saith Aristotle, they that hear it, θεραπεύειν δὲ ἴσως, honour it as somewhat Sacred, and a signe of Sanity in the diviner part; and this he illustrates from the practice of Physitians, who in persons near death doe use Sternutatories, or such medicines as provoke unto Sneezing; when if the faculty arise and Sternutation ensueth, they conceive hopes of life, and with gratulation receive the signes of safety. And so is it also of good signality, according to that of Hippocrates, that Sneezing cureth the hickett, and is profitable unto women in hard labour; and so is it good in Lethargies, Apoplexies, Catalepsies and Coma's. And in this naturall way it is sometime likewise of bad effects or signes, and may give hints of deprecation; as in diseases of the chest; for therein Hippocrates condemneth it as too much exagitating; in the beginning of Catarrhs according unto Avicenna as hindering concoction; in new and tender conceptions (as Pliny observeth) for then it endangers abortion.

Whence Sternutation or Sneezing proceeds.

Problem Sect. 33.

In what cases a sign of good.

2 King. 4. 35.

In what of bad.

The second way was superstitious and Augurial, as Cælius Rhodiginus hath illustrated in testimonies, as ancient as Theocritus and Homer; as appears

pears from the Athenian master, who would have retired, because a boatman Sneezed; and the testimony of Austine, that the Ancients were wont to go to bed again if they Sneezed while they put on their shooe. And in this way it was also of good and bad signification; so Aristotle hath a Probleme, why Sneezing from noon unto midnight was good, but from night to noon unlucky? So Eustathius upon Homer observes, that Sneezing to the left hand was unlucky, but prosperous unto the right; so, as Plutarch relateth, when Themistocles sacrificed in his galley before the battell of Xerxes, and one of the assistants upon the right hand Sneezed; Euphrantides the Southsayer presaged the victory of the Greeks, and the overthrow of the Persians.

Thus we may perceive the custome is more ancient then commonly is conceived; and these opinions hereof in all ages, not any one disease to have been the occasion of this salute and deprecation. Arising at first from this vehement and affrighting motion of the brain, inevitably observable unto the standers by; from whence some finding dependent effects to ensue; others ascribing hereto as a cause what perhaps but casually or inconnexedly succeeded; they might proceed unto forms of speeches, felicitating the good, or deprecating the evil to follow.

Chap. X.

Of the Jews.

That Jews stinck naturally, that is, that in their race and nation there is an evil savour, is a received opinion we know not how to admit; although concede many questionable points, and dispute not the verity of sundry opinions which are of affinity hereto. We will acknowledge that certain odours attend on animals, no lesse then certain colours; that pleasant smels are not confined unto vegetables, but found in divers animals, and some more richly then in plants. And though the Probleme of Aristotle enquire why none smels sweet beside the Parde? yet later discoveries adde divers sorts of Monkeys, the Civet Cat and Gazela, from which our Musk proceedeth. We confesse that beside the smell of the species, there may be Individuall odours, and every man may have a proper and peculiar savour; which although not perceptible unto man, who hath this sense, but weak, yet sensible unto Dogs, who hereby can single out their Masters in the dark. We will not deny that particular men have sent forth a pleasant savour, as Theophrastus and Plutarch report of Alexander the great, and Tzetzes and Cardan doe testifie of themselves. That some may also emit an unsavoury odour, we have no reason to deny; for this may happen from the quality of what they have taken; the Fœtor whereof may discover it self by sweat and urine, as being unmasterable by the naturall heat of man, not to be dulcified by concoction beyond an unsavoury condition: the like may come to passe from putrid humors, as is often discoverable in putrid and malignant fevers. And sometime also in grosse and humid bodies even in the latitude of sanity; the naturall heat of the parts being insufficient for a perfect and through-digestion, and the errors of one concoction not rectifiable by another: but that an unsavoury odour is gentilitious or nationall unto the Jews, if rightly understood, we cannot well concede; nor will the information of reason or sense induce it.

For first, Upon consult of reason, there will be found no easie assurance for to fasten a materiall or temperamentall propriety upon any nation; there being scarce any condition (but what depends upon clime) which is not exhausted or obscured from the commixture of introvenient nations either by commerce or conquest; much more will it be difficult to make out this affection in the Jews, whose race however pretended to be pure, must needs have suffered inseparable commixtures with nations of all sorts, not only in regard of their proselytes, but their universall dispersion; some being posted from severall parts of the earth, others quite lost, and swallowed up in those nations where they planted. For the tribes of Reuben, Gad, part of Manasses and Naphthali, which were taken by Assur, and the rest at the sacking of Samaria which were led away by Salmanasser into Assyria, and after a year and half arrived at Arsereth, as is delivered in Esdras, these I say never returned, and are by the Jews as vainly expected as their Messias. Of those of the tribe of Juda and Benjamin, which were led captive into Babylon by Nebuchadnezzar, many returned unto Zorobabel; the rest remained, and from thence long after upon invasion of the Saracens, fled as far as India; where yet they are said to remain, but with little difference from the Gentiles.

The Tribes that returned to Judea, were afterward widely dispersed; for beside sixteen thousand which Titus sent to Rome unto the triumph of his father Vespasian, he sold no lesse then an hundred thousand for slaves; not many years after Adrian the Emperour, who ruined the whole Countrey, transplanted many thousands into Spain, from whence they dispersed into divers Countreys, as into France and England, but were banished after from both: from Spain they dispersed into Africa, Italy, Constantinople, and the dominions of the Turke, where they remain as yet in very great numbers. And if (according to good relations) where they may freely speak it, they forbear not to boast that there are at present many thousand Jews in Spain, France and England, and some dispensed withall, even to the degree of Priesthood; it is a matter very considerable, and could they be smelled out, would much advantage, not only the Church of Christ, but also the coffers of Princes.

Now having thus lived in severall Countries, and alwaies in subjection, they must needs have suffered many commixtures, and we are sure they are not exempted from the common contagion of Venery contracted first from Christians. Nor are fornications unfrequent between them both; there commonly passing opinions of invitement, that their Women desire copulation with them, rather then their own Nation, and affect Christian carnality above circumcised venery. It being therefore acknowledged, that some are lost, evident that others are mixed, and scarce probable that any are distinct, it will be hard to establish this quality upon the Jews, unlesse we also transferre the same, unto those whose generations are mixed, whose genealogies are Jewish, and naturally derived from them.

Again, If we concede a Nationall unsavourinesse in any people, yet shall we finde the Jews lesse subject hereto then any, and that in those regards which most powerfully concurre to such effects, that is, their diet and generation. As for their diet, whether in obedience unto the precepts of reason, or the injunctions of parsimony, therein they are very temperate, seldome offending in ebriety or excesse of drink, nor erring in gulosity or superfluity of meats; whereby they prevent indigestion and crudities, and consequently putrescence of humours. They have in abomination all flesh maimed, or the inwards any way vitiated, and therefore eat no meat but of their own killing.

The Iews generally very temperate.

They

They observe not only fasts at certain times, but are restrained unto very few dishes at all times; so few, that whereas S. Peters sheet will hardly cover our tables, their Law doth scarce permit them to set forth a Lordly feast; nor any way to answer the luxury of our times, or those of our forefathers. For of flesh their Law restrains them many sorts, and such as compleat our feasts: That animall, *Propter convivia natum*, they touch not, nor any of its preparations, or parts so much in respect at Roman tables; nor admit they unto their board, Hares, Conies, Herons, Plovers or Swans. Of Fishes they only taste of such as have both finnes and scales; which are comparatively but few in number, such only, saith Aristotle, whose egge or spawn is arenaceous, whereby are excluded all cetacious and cartilagineous fishes; many pectinall, whose ribs are rectilineall; many costall, which have their ribs embowed; all spinall, or such as have no ribs, but only a back bone, or somewhat analogous thereto, as Eeles, Congers, Lampries; all that are testaceous, as Oysters, Cocles, Wilks, Schollops, Muscles; and likewise all crustaceous, as Crabs, Shrimps and Lobsters. So that observing a spare and simple diet, whereby they prevent the generation of crudities; and fasting often whereby they might also digest them; they must be lesse inclinable unto this infirmity then any other Nation, whose proceedings are not so reasonable to avoid it.

Quanta est gula, quæ sibi totos ponit Apros! Animal propter convivia natum

As for their generations and conceptions (which are the purer from good diet,) they become more pure and perfect by the strict observation of their Law; upon the injunctions whereof, they severely observe the times of Purification, and avoid all copulation, either in the uncleanneſse of themselves, or impurity of their Women. A rule, I fear, not so well observed by Christians; whereby not only conceptions are prevented, but if they proceed, so vitiated and defiled, that durable inquinations, remain upon the birth; which, when the conception meets with these impurities, must needs be very potent; since in the purest and most fair conceptions, learned men derive the cause of Pox and Meazles, from principles of that nature; that is, the menstruous impurities in the mothers bloud, and virulent tinctures contracted by the Infant, in the nutriment of the wombe.

The originall or materiall cau'es of the Pox and Meazels.

Lastly, Experience will convict it; for this offensive odor is no way discoverable in their Synagogues where many are, and by reason of their number could not be concealed: nor is the same discernible in commerce or conversation with such as are cleanly in Apparell, and decent in their Houses. Surely the Viziars and Turkish Basha's are not of this opinion; who as Sir Henry Blunt informeth, doe generally keep a Jew of their private Counsell. And were this true, the Jews themselves doe not strictly make out the intention of their Law; for in vain doe they scruple to approach the dead, who livingly are cadaverous, or fear any outward pollution, whose temper pollutes themselves. And lastly, were this true, our opinion is not impartiall; for unto converted Jews who are of the same seed, no man imputeth this unsavoury odor; as though Aromatized by their conversion, they amitted their sent with their Religion, and smelt no longer then they favoured of the Jew.

Now the ground that begat or propagated this assertion, might be the distastfull aversenesse of the Christian from the Jew, from the villany of that fact, which made them abominable and stinck in the nostrils of all men. Which reall practice, and metaphoricall expression, did after proceed into a literall construction; but was a fraudulent illation; for such an evil savour their father Jacob acknowledged in himself, when he said, his sons had made him stinck in the land, that is, to be abominable unto the inhabitants thereof. Gen. 34.

of. Now how dangerous it is in ſenſible things to uſe metaphoricall expreſſions unto the people, and what abſurd conceits they will ſwallow in their literals; an impatient example we have in our own profeſſion; who having called an eating Ulcer by the name of a Wolfe, common apprehenſion conceives a reality therein; and againſt our ſelves ocular affirmations are pretended to confirm it.

The naſtineſſe of that Nation, and ſluttiſh courſe of life hath much promoted the opinion, occaſioned by their ſervile condition at firſt, and inferiour waies of parſimony ever ſince; as is delivered by Mr Sandys, They are generally fat, ſaith he, and ranck of the ſavours which attend upon ſluttiſh corpulency: The Epithetes aſſigned them by ancient times have alſo advanced the ſame; for Ammianus Marcellinus deſcribeth them in ſuch language; and Martiall more ancient, in ſuch a relative expreſſion ſets forth unſavoury Baſſa,

Quod jejunia Sabbatariorum
Mallem, quàm quod oles, olere Baſſa.

From whence notwithſtanding we cannot inferre an inward imperfection in the temper of that Nation; it being but an effect in the breath from outward obſervation, in their ſtrict and tedious faſting; and was a common effect in the breaths of other Nations, became a Proverbe among the Greeks, and the reaſon thereof begot a Probleme in Ariſtotle.

Νηστείας ὄζειν, *Jejunia olere.*

Laſtly, If all were true, and were this ſavour conceded, yet are the reaſons alledged for it no way ſatisfactory. Hucherius in his Tract *de Sterilitate*, and after him Alſarius Crucius in his medicall Epiſtles, imputes this effect unto their abſtinence from ſalt or ſalt meats; which how to make good in the preſent diet of the Jews we know not; nor ſhall we conceive it was obſerved of old, if we conſider they ſeaſoned every Sacrifice, and all oblations whatſoever; whereof we cannot deny a great part was eaten by the Prieſts; and if the offering were of fleſh, it was ſalted no leſſe then thrice, that is, once in the common chamber of ſalt, at the footſtep of the Altar, and upon the top thereof, as is at large delivered by Maimonides. Nor if they refrained all ſalt, is the illation very urgent; for many there are not noted for ill odours, which eat no ſalt at all; as all carnivorous Animals, moſt Children, many whole Nations, and probably our Fathers after the Creation; there being indeed in every thing we eat, a naturall and concealed ſalt, which is ſeparated by digeſtions, as doth appear in our tears, ſweat and urines, although we refrain all ſalt, or what doth ſeem to contain it.

Another cauſe is urged by Campegius, and much received by Chriſtians; that this ill ſavour is a curſe derived upon them by Chriſt, and ſtands as a badge or brand of a generation that crucified their *Salvator*. But this is a conceit without all warrant; and an eaſie way to take off diſpute in what point of obſcurity ſoever. A method of many Writers, which much depreciates the eſteem and value of miracles; that is, therewith to ſalve not only reall verities, but alſo nonexiſtencies. Thus have elder times not only aſcribed the immunity of Ireland from any venemous beaſt, unto the ſtaffe or rod of Patrick; but the long tayles of Kent unto the malediction of Auſtin.

Thus therefore, although we concede that many opinions are true which hold ſome conformity unto this, yet in aſſenting hereto, many difficulties muſt ariſe: it being a dangerous point to annex a conſtant property unto any Nation, and much more this unto the Jew; ſince 'tis not verifiable by obſervation; ſince the grounds are feeble that ſhould eſtabliſh it; and laſtly, ſince if all were true, yet are the reaſons alleadged for it, of no ſufficiency to maintain it.

Chap.

Chap. XI.

Of Pigmies.

BY Pigmies we understand a dwarfish race of people, or lowest diminution of mankinde, comprehended in one cubit, or as some will have it, in two foot or three spans; not taking them single, but nationally considering them, and as they make up an aggregated habitation. Whereof although affirmations be many, and testimonies more frequent then in any other point which wise men have cast into the list of fables, yet that there is, or ever was such a race or Nation, upon exact and confirmed testimonies, our strictest enquiry receives no satisfaction.

I say, exact testimonies, first, In regard of the Authors from whom we derive the account; for though we meet herewith in Herodotus, Philostratus, Mela, Pliny, Solinus and many more; yet were they derivative Relators, and the primitive Author was Homer; who, using often similies, as well to delight the ear, as to illustrate his matter, in the third of his Iliads, compareth the Trojanes unto Cranes, when they descend against the Pigmies; which was more largely set out by Oppian, Juvenall, Mantuan and many Poets since; and being only a pleasant figment in the fountain, became a solemn story in the stream, and current still among us.

Again, Many professed enquirers have rejected it; Strabo an exact and judicious Geographer, hath largely condemned it as a fabulous story in the first of his Geographie. Julius Scaliger a diligent enquirer, accounts thereof, but as a Poeticall fiction; Ulysses Aldrovandus a most exact Zoographer in an expresse discourse hereon, concludes the story fabulous, and a poeticall account of Homer; and the same was formerly conceived by Eustathius his excellent commentator. *Albertus Magnus* a man oft times too credulous, herein was more then dubious; for he affirmeth, if any such dwarfes were ever extant, they were surely some kinde of Apes; which is a conceit allowed by Cardan, and not esteemed improbable by many others.

There are I confesse two testimonies, which from their authority admit of consideration. The first of Aristotle, whose words are these, in the eighth of his History of animals, ἔστι δὲ τόπος, &c. That is, *Hic locus est quem incolunt Pygmei, non enim id fabula est, sed pusillum genus, ut aiunt.* Wherein indeed Aristotle plaies the Aristotle, that is, the wary and evading assertor; For though with *non est id fabula*, he seem at first to confirm it, yet at the last he claps in, *Sicunt aiunt*, and shakes the belief he put before upon it. And therefore I observe Scaliger hath not translated the first; perhaps supposing it surreptitious or unworthy so great an assertor. And truly for those books of animals, or work of eight hundred talents, as Atheneus termes it, although ever to be admired, and contain most excellent truths; yet are many things therein delivered upon relation, and some things repugnant unto the history of our senses; as we are able to make out in some, and Scaliger hath observed in many more, as he hath freely declared in his Comment upon that piece.

The second testimony is deduced from holy Scripture; that is, Ezech. 27. verse 11. thus rendered in the vulgar translation, *Sed & Pygmai qui erant in turribus tuis, pharetras suas suspenderunt in muris tuis per gyrum:* from whence notwithstanding we cannot inferre this assertion; for first the Translatours

ſlatours accord not, and the Hebrew word *Gamadim* is very variouſly rendred. Though Aquila, Vatablus and Lyra will have it *Pygmæi*, yet in the Septuagint, it is no more then Watchmen; in the Chaldie, Cappadocians; in Symmachus, Medes. Theodotion of old, and Tremellius of late, have retained the Textuarie word; and ſo have the Italian, French and Engliſh Tranſlatours, that is, the men of Arvad were upon thy walls round about, and the Gammadims were in thy towers.

Nor doe men only diſſent in the Tranſlation of the word, but in the Expoſition of the ſenſe and meaning thereof; for ſome by Gammadims underſtand a people of Syria, ſo called from the city Gamala; ſome hereby underſtand the Cappadocians, many the Medes, and hereof Forerius hath a ſingular Expoſition, conceiving the Watchmen of Tyre, might well be called Pigmies, the Towers of that City being ſo high, that unto men below they appeared in a cubitall ſtature. Others expounded it quite contrary to common acception, that is, not men of the leaſt, but of the largeſt ſize; ſo doth Cornelius conſtrue *Pygmæi* or *viri cubitales*, that is, not men of a cubit high, but of the largeſt ſtature, whoſe height like that of Giants is rather to be taken by the cubit then the foot; in which phraſe we reade the meaſure of Goliah whoſe height is ſaid to be ſix cubits and a ſpan. Of affinity hereto is alſo the Expoſition of Jerom; not taking Pigmies for Dwarfes, but ſtout and valiant Champions; not taking that ſenſe of πυγμὴ, which ſignifies the cubit meaſure, but that which expreſſeth Pugils; that is, men fit for combat and the exerciſe of the fiſt. Thus can there be no ſatisfying illation from this text, the diverſity or rather contrariety of Expoſitions and Interpretations, diſtracting more then confirming the truth of the ſtory.

Again, I ſay, exact teſtimonies; in reference unto circumſtantiall relations ſo diverſly or contrarily delivered. Thus the relation of Ariſtotle placeth them above Ægypt towards the head of Nyle in Africa; Philoſtratus affirms they are about Ganges in Aſia; and Pliny in a third place, that is Gerania in Scythia: ſome write they fight with Cranes, but Menecles in Atheneus affirmes they fight with Partridges; ſome ſay they ride on Partridges, and ſome on the backs of Rams.

Laſtly, I ſay, confirmed teſtimonies; for though *Paulus Jovius* delivers there are Pigmies beyond Japan; Pigafeta, about the Molucca's; and Olaus Magnus placeth them in Greenland; yet wanting frequent confirmation in a matter ſo confirmable, their affirmation carrieth but ſlow perſwaſion; * and wiſe men may think there is as much reality in the † Pigmies of Paracelſus; that is, his non-Adamicall men, or middle natures betwixt men and ſpirits.

There being thus no ſufficient confirmation of their verity, ſome doubt may ariſe concerning their poſſibility; wherein, ſince it is not defined in what dimenſions the ſoul may exerciſe her faculties, we ſhall not conclude impoſſibility; or that there might not be a race of Pigmies, as there is ſometimes of Giants. So may we take in the opinion of Auſtine, and his Comment Ludovicus; but to beleeve they ſhould be in the ſtature of a foot or ſpan, requires the preaſpection of ſuch a one as Philetas the Poet in Athenæus; who was fain to faſten lead unto his feet leſt the winde ſhould blow him away; or that other in the ſame Author, who was ſo little, *ut ad obolum accederet*; a ſtory ſo ſtrange that we might herein accuſe the Printer, did not the account of Ælian accord unto it, as Cauſabone hath obſerved in his learned Animadverſions.

Laſtly, If any ſuch Nation there were, yet is it ridiculous what men have

* The ſtory of Pigmies rejected.

† By Pigmies intending Fairies and other ſpirits about the earth, as by Nymphs and Salamanders, ſpirits of fire and water, *Lib. De Pigmæis Nymphis*, &c.

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Plato, and moſt of the Platoniſts abounds in numerall conſiderations; above all Philo the learned Jew, hath acted this part even to ſuperſtition; beſtowing divers pages in ſumming up every thing which might advantage this number. Which notwithſtanding when a ſerious Reader ſhall perpend, he will hardly finde any thing that may convince his judgement, or any further perſwade, then the lenity of his belief, or prejudgement of reaſon inclineth.

For firſt, Not only the number of 7 and 9 from conſiderations abſtruſe have been extolled by moſt, but all or moſt of the other digits have been as myſtically applauded; for the number of One and Three have not been only admired by the Heathens, but from adorable grounds, the unity of God, and myſtery of the Trinity admired by many Chriſtians. The number of four ſtands much admired not only in the quaternity of the Elements, which are the principles of bodies, but in the letters of the Name of God, which in the Greek, Arabian, Perſian, Hebrew and Ægyptian, conſiſteth of that number; and was ſo venerable among the Pythagoreans, that they ſwore by the number four. That of ſix hath found many leaves in its favour; not only for the daies of the Creation, but its naturall conſideration, as being a perfect number, and the firſt that is compleated by its parts; that is, the ſixt, the half, and the third, 1. 2. 3. which drawn into a ſumme make ſix: The number of Ten hath been as highly extolled, as containing even, odde, long and plain, quadrate and cubicall numbers; and Ariſtotle obſerved with admiration, that Barbarians as well as Greeks, did uſe a numeration unto Ten; which being ſo generall was not to be judged caſuall, but to have a foundation in nature. So that not only 7 and 9, but all the reſt have had their Elogies, as may be obſerved at large in Rhodiginus, and in ſeverall Writers ſince: every one extolling number, according to his ſubject, and as it advantaged the preſent diſcourſe in hand.

Again, They have been commended not only from pretended grounds in nature, but from artificiall, caſuall or fabulous foundations: ſo have ſome endeavoured to advance their admiration, from the 9 Muſes, from the 7 Wonders of the World, and from the 7 Gates of Thebes; in that 7 Cities contended for Homer, in that there are 7 Starres in Urſa minor, and 7 in Charles wayne or Plauſtrum of Urſa major. Wherein indeed although the ground be naturall, yet either from conſtellations or their remarkable parts, there is the like occaſion to commend any other number; the number 5 from the Starres in Sagitta, 3 from the girdle of Orion, and 4 from Equiculus, Cruſero, or the feet of the Centaure; yet are ſuch as theſe clapt in by very good Authors, and ſome not omitted by Philo.

Nor are they only extolled from Arbitrary and Poeticall grounds, but from foundations and principles falſe or dubious. That Women are menſtruant and Men pubeſcent at the year of twice ſeven, is accounted a punctuall truth; which period nevertheleſſe we dare not preciſely determine, as having obſerved a variation and latitude in moſt; agreeably unto the heat of clime or temper; men ariſing variouſly unto virility, according to the activity of cauſes that promote it. *Sanguis menſtruoſus ad diem, ut plurimum, ſeptimum durat*, ſaith Philo. Which notwithſtanding is repugnant unto experience, and the doctrine of Hippocrates, who in his book, *de diæta*, plainly affirmeth, it is thus but with few Women, and only ſuch as abound with pituitous and watery humours.

It is further conceived to receive addition, in that there are 7 heads of Nyle, but we have made manifeſt elſewhere, that by the deſcription of Geographers they have been ſometime more, and are at preſent fewer.

In that there were 7 Wiſe men of Greece; which though generally received,

ved, yet having enquired into the verity thereof, we cannot so readily determine it; for in the life of Thales who was accounted in that number, Diogines Laertius plainly saith *Magna de eorum numero discordia est*; some holding but four, some ten, others twelve, and none agreeing in their names, though according in their number.

In that there are just 7 Planets or errant Starres in the lower orbs of heaven; but it is now demonstrable unto sense, that there are many more; as Galileo hath declared in his *Nuncius Syderens*; that is, two more in the orbe of Saturne, and no lesse then four more in the sphere of Jupiter. And the like may be said of the Pleiades or 7 Starres, which are also introduced to magnifie this number; for whereas scarce discerning six, we account them 7, by his relation in the same book, there are no lesse then fourty.

That the heavens are encompassed with 7 circles, is also the allegation of Philo; which are in his account, the Artick, Antartick, the Summer and Winter Tropicks, the Æquator, Zodiack and the Milky circle; whereas by Astronomers they are received in greater number. For though we leave out the Lacteous circle (which Aratus, Geminus, and Proclus out of him hath numbred among the rest) yet are there more by four then Philo mentions; that is, the Horizon, Meridian and both the Colures; circles very considerable and generally delivered, not only by Ptolomie and the Astronomers since his time, but such as flourished long before, as Hipparchus and Eudoxus. So that for ought I know, if it make for our purpose, or advance the theme in hand, with equall liberty, we may affirm there were 7 Sybills, or but 7 signes in the Zodiack circle of heaven.

That verse in Virgil translated out of Homer, *O terq; quaterq; beati*; that is, as men will have it, 7 times happy, hath much advanced this number in criticall apprehensions; yet is not this construction so indubitably to be received, as not at all to be questioned: for though Rhodiginus, Beroaldus and others from the authority of Macrobius so interpret it, yet Servius his excellent Commentator conceives no more thereby then a finite number for indefinite, and that no more is implied then often happy. Strabo the ancienteſt of them all, in the first of his Geography conceives no more by this in Homer, then a full and excessive expression; whereas in common phrase and received language he should have termed them thrice happy; herein exceeding that number he called them four times happy, that is, more then thrice. And this he illustrates by the like expression of Homer, in the speech of Circe; who to expresse the dread and terrour of the Ocean, sticks not unto the common forme of speech in the strict account of its reciprocations, but largely speaking, saith, it ebbes and flowes no lesse then thrice a day, *terq; die revomit fluctus, iterumq; resorbet*. And so when 'tis said by Horace, *felices ter & amplius*, the exposition is sufficient, if we conceive no more then the letter fairly beareth, that is, four times, or indefinitely more then thrice.

Τὸς μάκαρας Δαναοὶ καὶ τετράκις.

But the main considerations which most set off this number are observations drawn from the motions of the Moon, supposed to be measured by sevens; and the criticall or decretory daies dependant on that number. As for the motion of the Moon, though we grant it to be measured by sevens, yet will not this advance the same before its fellow numbers; for hereby the motion of other Starres are not measured, the fixed Starres by many thousand years, the Sunne by 365 daies, the superiour Planets by more, the inferiour by somewhat lesse. And if we consider the revolution of the first Movable, and the daily motion from East to West, common unto all the Orbs, we shall finde it measured by another number; for being performed in four and twen-

ty hours, it is made up of 4 times 6: and this is the measure and standard of other parts of time, of moneths, of years, Olympiades, Lustres, Indictions, Cycles, Jubilies, &c.

What a solary moneth is.

Again, Moneths are not only Lunary, and measured by the Moon, but also Solary, and determined by the motion of the Sun; that is, the space wherein the Sun doth passe 30 degrees of the Ecliptick. By this moneth Hippocrates computed the time of the Infants gestation in the wombe; for 9 times 30, that is, 270 daies, or compleat 9 moneths, make up fourty weeks the common compute of Women. And this is to be understood, when he saith, 2 daies makes the fifteenth, and 3 the tenth part of a moneth. This was the moneth of the ancient Hebrews before their departure out of Ægypt; and hereby the compute will fall out right, and the account concurre, when in one place it is said, the waters of the flood prevailed an hundred and fifty daies; and in another it is delivered, that they prevailed from the seventeenth day of the second moneth, unto the seventeenth day of the seventh. As for hebdomadall periods or weeks, although in regard of their Sabbaths they were observed by the Hebrews, yet is it not apparent, the ancient Greeks or Romans used any; but had another division of their moneths into Ides, Nones and Calends.

De octimestri partu.

Moreover, moneths howsoever taken, are not exactly divisible into septenaries or weeks, which fully contain seven daies; whereof four times doe make compleatly twenty eight. For, beside the usuall or Calendary moneth, there are but four considerable; the moneth of Peragration, of Apparition, of Consecution, and the medicall or Decretoriall moneth; whereof some come short, others exceed this account. A moneth of Peragration, is the time of the Moons revolution from any part of the Zodiack, unto the same again; and this containeth but 27 daies, and about 8 houres; which cometh short to compleat the septenary account. The moneth of Consecution, or as some will terme it, of Progression, is the space between one conjunction of the Moon with the Sun, unto another; and this containeth 29 daies and an half: for the Moon returning unto the same point wherein it was kindled by the Sun, and not finding it there again (for in the mean time, by its proper motion it hath passed through 2 signes,) it followeth after, and attains the Sun in the space of 2 daies, and 4 hours more, which added unto the account of Peragration, makes 29 daies and an half; so that this moneth exceedeth the latitude of Septenaries, and the fourth part comprehendeth more then 7 daies. A moneth of Apparition, is the space wherein the Moon appeareth (deducting three daies wherein it commonly disappeareth; and being in combustion with the Sun, is presumed of lesse activity,) and this containeth but 26 daies and 12 houres. The Medicall moneth not much exceedeth this, consisting of 26 daies, and 22 houres, and is made up out of all the other moneths. For if out of 29 and an half, the moneth of Consecution, we deduct 3 daies of disappearance, there will remain the moneth of Apparition 26 daies and 12 houres; whereto if we adde 27 daies and 8 houres, the moneth of Peragration, there will arise 53 daies and 10 houres; which divided by 2, makes 26 daies and 22 houres, called by Physitians the Medicall moneth; introduced by Galen against Archigenes, for the better compute of Decretory or Criticall daies.

What a Criticall day is.

As for the Criticall daies (such I mean wherein upon a decertation between the disease and nature, there ensueth a sensible alteration, either to life or death,) the reasons thereof are rather deduced from Astrology, then Arithmetick; for accounting from the beginning of the disease, and reckoning on unto the seventh day, the Moon will be in a Tetragonall or Quadrate aspect,

aſpect, that is, 4 ſignes removed from that wherein the diſeaſe began; in the fourteenth day it will be in an oppoſite aſpect; and at the end of the third ſeptenary Tetragonall again; as will moſt graphically appear in the figures of Aſtrologers, eſpecially Lucas Gauricus, *De diebus decretorijs.*

Again, (Beſide that computing by the Medicall moneth, the firſt hebdomade or ſeptenary conſiſts of 6 daies, ſeventeen houres and an half, the ſecond happeneth in 13 daies and eleven houres, and the third but in the twentieth naturall day) what Galen firſt, and Aben-Ezra ſince obſerved in his Tract of Criticall daies, in regard of Eccentricity and the Epicycle or leſſer orbe wherein it moveth, the motion of the Moon is various and unequall; whereby the Criticall account muſt alſo vary: for though its middle motion be equall, and of 13 degrees, yet in the other it moveth ſometimes fifteen, ſometimes leſſe then twelve. For moving in the upper part of its orbe, it performeth its motion more ſlowly then in the lower; inſomuch that being at the height it ariveth at the Tetragonall and oppoſite ſignes ſooner, and the Criticall day will be in 6 and 13, and being at the loweſt, the criticall account will be out of the latitude of 7, nor happen before the 8 or ninth day. Which are conſiderations not to be neglected in the compute of decretory daies, and manifeſtly declare that other numbers muſt have a reſpect herein as well as 7 and fourteen.

Laſtly, Some things to this intent are deduced from holy Scripture; thus is the year of Jubile introduced to magnifie this number, as being a year made out of 7 times 7; wherein notwithſtanding there may be a miſapprehenſion; for this ariſeth not from 7 times 7, that is, 49; but was obſerved the fiftieth year, as is expreſſed, Levit. 25. And you ſhall hallow the fiftieth year, a Jubile ſhall that fiftieth year be unto you. Anſwerable whereto is the expoſition of the Jews themſelves, as is delivered by Ben-Maimon; that is, the year of Jubile cometh not into the account of the years of 7, but the fourty ninth is the Releaſe, and the fiftieth the year of Jubilie. Thus is it alſo eſteemed no ſmall advancement unto this number, that the Genealogy of our Saviour is ſummed up by 14, that is, this number doubled; according as is expreſſed, Matth. 1. So all the generations from Abraham to David are fourteen generations, and from David unto the carrying away into Babylon, are fourteen generations; and from the carrying away into Babylon unto Chriſt, are fourteen generations. Which nevertheleſſe muſt not be ſtrictly underſtood as numerall relations require; for from David unto Jeconiah are accounted by Matthew but 14 generations; whereas according to the exact account in the hiſtory of Kings, there were at leaſt 17; and 3 in this account, that is, Ahazias, Joas and Amazias are left out. For ſo it is delivered by the Evangeliſt; And Joram begat Ozias; whereas in the Regall genealogy there are 3 ſucceſſions between; for Ozias or Uzziah was the ſon of Amazias, Amazias of Joas, Joas of Azariah, and Azariah of Joram; ſo that in ſtrict account Joram was the *Abavus* or grandfather twice removed, and not the father of Ozias. And theſe omitted deſcents made a very conſiderable meaſure of time, in the Royall chronology of Judah; for though Azariah reigned but one year, yet Joas reigned fourty, and Amazias no leſſe then nine and twenty. However therefore theſe were delivered by the Evangeliſt, and carry (no doubt) an incontroulable conformity unto the intention of his delivery; yet are they not appliable unto preciſe numerality, nor ſtrictly to be drawn unto the rigid teſt of numbers.

Laſtly, Though many things have been delivered by Authors concerning number, and they transferred unto the advantage of their nature, yet are

they oft times otherwiſe to be underſtood, then as they are vulgarly received in active and cauſall conſiderations; they being many times delivered Hieroglyphically, Metaphorically, Illuſtratively, and not with reference unto action or cauſality. True it is, that God made all things in number, weight and meaſure, yet nothing by them or through the efficacy of either. Indeed our daies, actions and motions being meaſured by time (which is but motion meaſured) what ever is obſervable in any, fals under the account of ſome number; which notwithſtanding cannot be denominated the cauſe of thoſe events. So doe we injuſtly aſſign the power of Action even unto Time it ſelf; nor doe they ſpeak properly who ſay that Time conſumeth all things; for Time is not effective, nor are bodies deſtroyed by it, but from the action and paſſion of their Elements in it; whoſe account it only affordeth; and meaſuring out their motion, informs us in the periods and termes of their duration, rather then effecteth or Phyſically produceth the ſame.

De annis Climacteriis. *De occultis naturæ miraculis.* *Bell. lib. 5.*

A ſecond conſideration which promoteth this opinion, are confirmations drawn from Writers, who have made obſervations or ſet down favourable reaſons for this Climacteriall year; ſo have *Henricus Ranzovius*, *Baptiſta Codronchus*, and *Livinus Lemnius* much confirmed the ſame; but above all, that memorable Letter of Auguſtus ſent unto his Nephew Caius, wherein he encourageth him to celebrate his nativity, for he had now eſcaped Sixty three the great Climacterical and dangerous year unto man; which notwithſtanding rightly perpended, it can be no ſingularity to queſtion it, nor any new Paradox to deny it.

For firſt, It is implicitely, and upon conſequence denied by Ariſtotle in his Politicks, in that diſcourſe againſt Plato, who meaſured the viciſſitude and mutation of States, by a periodicall fatality of number. Ptolomie that famous Mathematician planly ſaith, he will not deliver his doctrines by parts and numbers which are ineffectuall, and have not the nature of cauſes; now by theſe numbers ſaith Rhodiginus and Mirandula, he implieth Climacterical years, that is, ſeptenaries, and novenaries ſet down by the bare obſervation of numbers. Cenſorinus an Author of great authority, and ſufficient antiquity, ſpeaks yet more amply in his book *De die Natali*, wherein expreſſely treating of Climacterical daies, he thus delivereth himſelf. Some maintain that 7 times 7 that is, fourty nine, is moſt dangerous of any other, and this is the moſt generall opinion; others unto 7 times 7 adde 9 times 9, that is, the year of eighty one, both which conſiſting of ſquare and quadrate numbers, were thought by Plato and others to be of great conſideration; as for this year of Sixty three or 7 times 9, though ſome eſteem it of moſt danger, yet doe I conceive it leſſe dangerous then the other; for though it containeth both numbers above named, that is, 7 and 9, yet neither of them ſquare or quadrate; and as it is different from them both, ſo is it not potent in either. Nor is this year remarkable in the death of many famous men. I finde indeed that Ariſtotle died this year, but he by the vigour of his minde, a long time ſuſtained a naturall infirmity of ſtomack; ſo that it was a greater wonder he attained unto Sixty three, then that he lived no longer. The Pſalme of Moſes hath mentioned a year of danger differing from all theſe: and that is ten times 7 or ſeventy; for ſo it is ſaid, The daies of Man are threeſcore and ten; and the very ſame is affirmed by Solon, as Herodotus relates in a ſpeech of his unto Cræſus, *Ego annis ſeptuaginta humanæ vitæ modum definio:* and ſurely that year muſt be of greateſt danger, which is the Period of all the reſt; and feweſt ſafely paſſe thorow that, which is ſet as a bound for few or none to paſſe. And therefore the conſent of elder

times,

times, setling their conceits upon Climacters, not only differing from this of ours, but one another; though severall Nations and ages doe fancy unto themselves different years of danger, yet every one expects the same event, and constant verity in either.

Again, Though Varro divided the daies of man into five portions, Hippocrates into 7, and Solon into ten; yet probably their divisions were to be received with latitude, and their considerations not strictly to be confined unto their last unities. So when Varro extendeth *Pueritia* unto 15. *Adolescentia* unto 30. *Juventus* unto 35. there is a latitude between the termes or Periods of compute, and the verity holds good in the accidents of any years between them. So when Hippocrates divideth our life into 7 degrees or stages, and maketh the end of the first 7, of the second 14. of the third 28. of the fourth 35. of the fift 47. of the sixt 56. and of the seventh, the last year when ever it happeneth; herein we may observe he maketh not his divisions precisely by 7 and 9 and omits the great Climactericall; beside there is between every one at least the latitude of 7 years, in which space or intervall, that is either in the third or fourth year, what ever falleth out is equally verified of the whole degree, as though it had happened in the seventh. Solon divided it into ten Septenaries, because in every one thereof, a man received some sensible mutation; in the first is Dedentition or falling of teeth: in the second Pubescence; in the third the beard groweth; in the fourth strength prevailes; in the fift maturity for issue; in the sixth moderation of appetite; in the seventh prudence, *&c.* Now herein there is a tolerable latitude, and though the division proceed by 7 yet is not the totall verity to be restrained unto the last year; nor constantly to be expected the beard should be compleat at 21. or wisdome acquired just in 49. and thus also though 7 times 9 contain one of those septenaries, and doth also happen in our declining years; yet might the events thereof be imputed unto the whole septenary; and be more reasonably entertained with some latitude, then strictly reduced unto the last number; or all the accidents from 56. imputed unto Sixty three.

Thirdly, Although this opinion may seem confirmed by observation, and men may say it hath been so observed, yet we speak also upon experience, and doe beleeve that men from observation will collect no satisfaction. That other years may be taken against it, especially if they have the advantage to precede it; as sixty against Sixty three, and Sixty three against 66. for fewer attain to the latter then the former; and so surely in the first septenary doe most die, and probably also in the very first year; for all that ever lived were in the account of that year; beside, the infirmities that attend it are so many, and the body that receives them so inconfirmed, we scarce count any alive that is not past it.

Fabritius Paduanius in his work *De catena temporis*, discoursing of the great Climactericall, attempts a numeration of eminent men, who died in that year; but in so small a number, as not sufficient to make a considerable Induction; he mentioneth but four, Diogenes Cynicus, Dionysius Heracleoticus, Xenocrates Platonicus, and Plato: as for Dionysius, as Censorinus witnesseth, he famished himself in the 82 year of his life; Xenocrates by the testimony of Laertius fell into a cauldron, and died the same year; and Diogenes the Cynick by the same testimony lived almost unto ninety. The date of Platoes death is not exactly agreed on, but all dissent from this which he determineth; Neanthes in Laertius extendeth his daies unto 84. Suidas unto 82, but Hermippus defineth his death in 81; and this account seemeth most exact; for if, as he delivereth, Plato was born in the 88 Olympiade,

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fouler on them who caſt up the lives of Kingdomes, and ſumme up their duration by particular numbers; as Plato firſt began, and ſome have endeavoured ſince by perfect and ſpherical numbers, by the ſquare and cube of 7 and 9 and 12, the great number of Plato. Wherein indeed Bodine hath attempted a particular enumeration; but (beſide the miſtakes committible in the ſolary compute of years) the difference of Chronologie diſturbes the ſatisfaction and quiet of his computes; ſome adding, others detracting, and few punctually according in any one year; whereby indeed ſuch accounts ſhould be made up; for the variation in an unite deſtroies the totall illation.

Math. Hiſter.

Thirdly, the compute may be unjuſt not only in a ſtrict acception, of few daies or houres, but in the latitude alſo of ſome years; and this may happen from the different compute of years in divers Nations, and even ſuch as did maintain the moſt probable way of account; their year being not only different from one another, but the civill and common account diſagreeing much from the naturall year, whereon the conſideration is founded. Thus from the teſtimony of Herodotus, Cenſorinus and others, the Greeks obſerved the Lunary year, that is, twelve revolutions of the Moon, 354 daies; but the Ægyptians, and many others adhered unto the Solary account, that is, 365 daies, that is eleven daies longer; now hereby the account of the one would very much exceed the other: A man in the one would account himſelf 63, when one in the other would think himſelf but 61; and ſo although their nativities were under the ſame hour, yet did they at different years beleeve the verity of that which both eſteemed affixed and certain unto one. The like miſtake there is in a tradition of our daies; men conceiving a peculiar danger in the beginning daies of May, ſet out as a fatall period unto conſumptions and Chronicall diſeaſes; wherein notwithſtanding we compute by Calenders, not only different from our anceſtors, but one another; the compute of the one anticipating that of the other; ſo that while we are in April, others begin May, and the danger is paſt unto one, while it beginneth with another.

The Lunary year what.

The Solary year what.

Fourthly, Men were not only out in the number of ſome daies, the latitude of a few years, but might be wide by whole Olympiades and divers Decades of yeares. For as Cenſorinus relateth, the ancient Arcadians obſerved a year of three moneths, the Carians of ſix, the Iberians of four; and as Diodorus and Xenophon *de Æquivocis*, alleadgeth, the ancient Ægyptians have uſed a year of three, two, and one moneth: ſo that the Climacterical was not only different unto thoſe Nations, but unreaſonably diſtant from ours; for Sixty three will paſſe in their account, before they arive ſo high as ten in ours.

The different account or meaſure of a year.

Nor if we ſurvey the account of Rome it ſelf, may we doubt they were miſtaken, and if they feared Climacterical years, might erre in their numeration; for the civill year whereof the people took notice, did ſometime come ſhort, and ſometimes exceed the naturall. For according to Varro, Suetonius and Cenſorinus, their year conſiſted firſt of ten moneths which comprehended but 304 daies, that is 61 leſſe then ours containeth; after by Numa or Tarquine from a ſuperſtitious conceit of imparity were added 51 daies, which made 355, one day more then twelve revolutions of the Moon. And thus a long time it continued, the civill compute exceeding the naturall; the correction whereof, and the due ordering of the Leap-year was referred unto the Pontifices; who either upon favour or malice, that ſome might continue their offices a longer or ſhorter time; or from the magnitude of the year that men might be advantaged or endamaged in their contracts, by arbitrary intercalations depraved the whole account. Of this abuſe Cicero

Cicero accuſed Verres; which at laſt proceeded ſo farre that when Julius Cæſar came unto that office, before the redreſſe hereof he was fain to inſert two intercalary moneths unto November and December, when he had already inſerted 23 daies unto February; ſo that that year conſiſted of 445 daies; a quarter of a year longer then that we obſerve; and though at the laſt the year was reformed, yet in the mean time they might be out wherein they ſummed up Climactericall obſervations.

Laſtly, One way more there may be of miſtake, and that not unuſuall among us, grounded upon a double compute of the year; the one beginning from the 25 of March, the other from the day of our birth unto the ſame again, which is the naturall account. Now hereupon many men frequently miſcaſt their daies; for in their age they diduce the account not from the day of their birth, but the year of our Lord, wherein they were born. So a man that was born in January 1582, if he live to fall ſick in the latter end of March 1645, will ſumme up his age, and ſay I am now Sixty three, and in my Climactericall and dangerous year; for I was born in the year 1582, and now it is 1645, whereas indeed he wanteth many moneths of that year, conſidering the true and naturall account unto his birth; and accounteth two moneths for a year: and though the length of time and accumulation of years doe render the miſtake inſenſible; yet is it all one, as if one born in January 1644, ſhould be accounted a year old the 25 of March 1645.

All which perpended, it may be eaſily perceived with what inſecurity of truth we adhere unto this opinion; aſcribing not only effects depending on the naturall period of time unto arbitrary calculations, and ſuch as vary at pleaſure; but confirming our tenets by the uncertain account of others and our ſelves. There being no poſitive or indiſputable ground where to begin our compute; that if there were, men have been ſeverall waies miſtaken; the beſt in ſome latitude, others in greater, according to the different compute of divers ſtates, the ſhort and irreconcilable years of ſome, the exceeding error in the naturall frame of others, and the lapſes and falſe deductions of ordinary accountants in moſt.

Which duly conſidered, together with a ſtrict account and criticall examen of reaſon, will alſo diſtract the witty determinations of Aſtrology. That Saturn the enemy of life, comes almoſt every ſeventh year, unto the quadrate or malevolent place, unto that where it begun: that as the Moon about every ſeventh day ariveth unto a contrary ſigne, ſo Saturne, which remaineth about as many years, as the Moon doth daies in one ſigne, and holdeth the ſame conſideration in years as the Moon in daies; doth cauſe theſe periculous periods. Which together with other Planets, and profection of the Horoſcope, unto the ſeventh houſe, or oppoſite ſignes every ſeventh year; oppreſſeth living natures, and cauſeth obſervable mutations, in the ſtate of ſublunary things.

Further ſatisfaction may yet be had from the learned diſcourſe of Salmaſius lately publiſhed, if any deſire to be informed how different the preſent obſervations are from thoſe of the ancients, how every one hath different Climactericalls; with many other obſervables, impugning the preſent opinion. *De annis Climactericis.*

Chap. XIII.

Of the Canicular or Dog-daies.

WHereof to ſpeak diſtinctly: among the Southern Conſtellations two there are which bear the name of the Dog; the one in 16 degrees of latitude, containing on the left thigh a Star of the firſt magnitude, uſually called Procyon or Anticanis; becauſe ſay ſome it riſeth before the other; which if truly underſtood, muſt be reſtrained unto thoſe habitations, who have elevation of pole above thirty two degrees. Mention thereof there is in Horace, who ſeems to miſtake or confound the one with the other; and after him in Galen, who is willing the remarkableſt Starre of the other ſhould be called by this name, becauſe it is the firſt that ariſeth in the conſtellation; which notwithſtanding, to ſpeak ſtrictly, it is not; unleſſe we except one of the third magnitude in the right paw in his own and our elevation, and two more on his head in and beyond the degree of ſixty: A ſecond and more conſiderable one there is, and neighbour unto the other, in 40 degrees of latitude, containing 18 Starres, whereof that in his mouth of the firſt magnitude the Greeks call Σειριος, the Latines *Canis major*, and we emphatically the Dog-Starre.

Iam Procyon fuerit & ſtella veſani Leonis.

What the Dog-ſtarre is.

Now from the riſing of this Starre, not coſmically, that is, with the Sun, but Heliacally, that is, its emerſion from the raies of the Sunne, the Ancients computed their canicular daies; concerning which there generally paſſeth an opinion, that during thoſe daies, all medication or uſe of Phyſick is to be declined, and the cure committed unto Nature; and therefore as though there were any feriation in nature, or juſtitiums imaginable in profeſſions, whoſe ſubject is naturall, and under no intermiſſive, but conſtant way of mutation; this ſeaſon is commonly termed the Phyſitians vacation, and ſtands ſo received by moſt men. Which conceit however generall, is not only erroneous, but unnaturall; and ſubſiſting upon foundations either falſe, uncertain, miſtaken or miſapplied, deſerves not of mankinde that indubitable aſſent it findeth.

For firſt, which ſeemes to be the ground of this aſſertion, and not to be drawn into queſtion, that is, the magnified quality of this Starre conceived to cauſe or intend the heat of this ſeaſon, whereby theſe daies become more obſervable then the reſt; we finde that wiſer Antiquity was not of this opinion. For, ſeventeen hundred years ago it was as a vulgar error rejected by Geminus, a learned Mathematician in his Elements of Aſtronomy; wherein he plainly affirmeth, that common opinion made that a cauſe, which was at firſt obſerved but as a ſigne. The riſing and ſetting both of this Starre and others being obſerved by the Ancients, to denote and teſtifie certain points of mutation, rather then conceived to induce or effect the ſame. For our forefathers, ſaith he, obſerving the courſe of the Sun, and marking certain mutations to happen in his progreſſe through particular parts of the Zodiack, they regiſtred and ſet them down in their Parapegmes, or Aſtronomicall Canons; and being not able to deſigne theſe times by daies, moneths or years (the compute thereof, and the beginning of the year being different, according unto different Nations) they thought beſt to ſettle a generall account unto all; and to determine theſe alterations by ſome known and invariable ſignes; and ſuch did they conceive the riſing and ſetting of the fixed Starres; not aſcribing thereto any part of cauſality, but notice and ſignification. And thus

thus much ſeems implied in that expreſſion of Homer, when ſpeaking of the Dog-Starre, he concludeth—κακὸν δὲ τε σῆμα τέτυκται, *Malum autem ſignum eſt*; The ſame as Petavius obſerveth, is implied in the word of Ptolomy, and the Ancients, περὶ ἐπισημασιῶν, that is, of the ſignification of Starres. The terme of Scripture alſo favours it, as that of Iſaiah, *Nolite timere à ſignis cœli*; and that in Geneſis, *Ut ſint in ſigna & tempora*: Let there be lights in the firmament, and let them be for ſignes and for ſeaſons.

The Primitive magnifyers of this Starre were the Ægyptians: who notwithſtanding chiefly regarded it, in relation unto their river Nilus. The greateſt encreaſe thereof, falling out about the ariſe of the Starre: which as Dionyſius delivers was by the Æthiopians named *Siris*. From whence that the Sirius or Dog-Starre had its name, is not improbably conjectur'd. *In Periegeſi.* *Bainbrigij Canicularia.*

But if all were ſilent, Galen hath explained this point unto the life; who expounding the reaſon why Hippocrates declared the affections of the year by the riſing and ſetting of Starres; it was ſaith he, becauſe he would proceed on ſignes and principles beſt known unto all Nations. And upon his words, in the firſt of the Epidemicks, *In Thaſo Autumno circa Equinoxium & ſub virgilias pluvia erant multæ*, he thus enlargeth. If (ſaith he) the ſame compute of times and moneths were obſerved by all Nations, Hippocrates had never made any mention either of Arcturus, Pleiades or the Dog-Starre; but would have plainly ſaid, In Macedonia, in the moneth Dion, thus or thus was the aire diſpoſed. But for as much as the Moneth Dion is only known unto the Macedonians, but obſcure unto the Athenians and other Nations, he found more generall diſtinctions of time, and inſtead of naming moneths, would uſually ſay, at the Æquinox, the riſing of the Pleiades, or the Dog-Starre. And by this way did the Ancients divide the ſeaſons of the year, the Autumne, Winter, Spring, and Summer. By the riſing of the Pleiades, denoting the beginning of Summer, and by that of the Dog-Starre, the declination thereof. By this way Ariſtotle through all his books of Animals, diſtinguiſheth their times of generation, latitancy, migration, ſanity and venation. And this were an allowable way of compute, and ſtill to be retained, were the ſite of the Starres as inalterable, and their aſſents as invariable as primitive Aſtronomy conceived them. And therefore though Ariſtotle frequently mentioneth this Starre, and particularly affirmeth that Fiſhes in the Boſphorus are beſt to be catched from the ariſe of the Dog-Starre, muſt we conceive the ſame a meer effect thereof? Nor though Scaliger from hence be willing to inferre the efficacy of this Starre, are we induced hereto; except becauſe the ſame Philoſopher affirmeth; that Tunny is fat about the riſing of the Pleiades, and departs upon Arcturus, or that moſt inſects are latent, from the ſetting of the 7 Starres; except, I ſay, he give us alſo leave to inferre that theſe particular effects and alterations proceed from thoſe Starres; which were indeed but deſignations of ſuch quarters and portions of the year, wherein the ſame were obſerved. Now what Pliny affirmeth of the Orix, that it ſeemeth to adore this Starre, and taketh notice thereof by voice and ſternutation; untill we be better aſſured of its verity, we ſhall not ſalve the ſympathy. How the Ancients divided the ſeaſons of the year.

Secondly, What ſlender opinion the Ancients held of the efficacy of this Starre is declarable from their compute. For as Geminus affirmeth, and Petavius his learned Commentator proveth, they began their account from its Heliacall emerſion, and not its coſmicall aſcent. The coſmicall aſcenſion of a Starre we terme that, when it ariſeth together with the Sun, or the ſame degree of the Ecliptick wherein the Sun abideth: and that the Heliacall, when a Starre which before for the vicinity of the Sun was not viſible, being further What the Coſmicall, what the Heliacal aſcent of Stars is.

removed beginneth to appear. For the annuall motion of the Sun from West to East being farre swifter then that of the fixed Starres, he must of necessity leave them on the East whilst he hastneth forward, and obscureth others to the West: and so the Moon who performs its motion swifter then the Sun (as may be observed in their Conjunctions and Eclipses,) gets Eastward out of his rayes, and appears when the Sun is set. If therefore the Dog-Starre had this effectuall heat which is ascribed unto it, it would afford best evidence thereof, and the season would be most fervent, when it ariseth in the probablest place of its activity, that is, the cosmicall ascent; for therein it ariseth with the Sun, and is included in the same irradiation. But the time observed by the Ancients was long after this ascent, and in the Heliacall emersion; when it becomes at greatest distance from the Sun, neither rising with it nor near it. And therefore, had they conceived any more then a bare signality in this Starre, or ascribed the heat of the season thereunto; they would not have computed from its Heliacall ascent, which was of inferiour efficacy; nor imputed the vehemency of heat unto those points wherein it was more remisse, and where with lesse probability they might make out its action.

Thirdly, Although we derive the authority of these daies from observations of the Ancients, yet are our computes very different, and such as confirm not each other. For whereas they observed it Heliacally, we seem to observe it Cosmically; for before it ariseth Heliacally unto our latitude, the Summer is even at an end. Again, we compute not only from different ascents, but also from divers Starres; they from the greater Dog-starre, we from the lesser; they from Orions, we from Cephalus his Dog; they from Seirius, we from Procyon; for the beginning of the Dog-daies with us is set down the 19 of July, about which time the lesser Dog-star ariseth with the Sun, whereas the Starre of the greater Dog ascendeth not untill after that moneth. And this mistake will yet be larger if the compute be made stricter, and as D^r^ Bainbrigge late professor of Astronomy in Oxford, hath set it down. Who in the year 1629 computed, that in the Horizon of Oxford the Dog-star arose not before the fifteenth day of August; when in our Almanack accounts those daies are almost ended. So that the common and received time not answering the true compute, it frustrates the observations of our selves. And being also different from the calculations of the Ancients, their observations confirm not ours, nor ours theirs, but rather confute each other.

Nor will the computes of the Ancients be so authentick unto those, who shall take notice, how commonly they applied the celestiall descriptions of other climes unto their own; wherein the learned Bainbrigius justly reprehendeth Manilius, who transferred the Ægyptian descriptions unto the Roman account; confounding the observation of the Greek and Barbarick spheres.

Fourthly, (which is the Argument of Geminus) were there any such effectuall heat in this Starre, yet could it but weakly evidence the same in Summer; it being about 40 degrees distant from the Sunne; and should rather manifest its warming power in the Winter, when it remains conjoyned with the Sunne in its Hybernall conversion. For about the 29 of October, and in the 16 of Scorpius, and so again in January, the Sunne performes his revolution in the same parallell with the Dogge-starre. Again, If we should impute the heat of this season, unto the cooperation of any Starres with the Sunne, it seems more favourable for our times, to ascribe the same unto the constellation of Leo. Where besides that the Sunne

Sunne is in his proper houſe, it is conjoined with many Starres; whereof two of the firſt magnitude; and in the 8th of Auguſt is corporally conjoined with Baſiliſcus; a Starre of eminent name in Aſtrology, and ſeated in the very Ecliptick.

Fiftly, If all were granted, that obſervation and reaſon were alſo for it, and were it an undeniable truth that an effectuall fervour proceeded from this Starre; yet would not the ſame determine the opinion now in queſtion; it neceſſarily ſuffering ſuch reſtrictions as take off generall illations. For firſt in regard of different latitudes; unto ſome the canicular daies are in the Winter; as unto ſuch as have no latitude, but live in a right Sphere that is under the Æquinoctiall line; for unto them it ariſeth when the Sunne is about the Tropick of Cancer, which ſeaſon unto them is Winter, and the Sun remoteſt from them. Nor hath the ſame poſition in the Summer, that is, in the Æquinoctiall points, any advantage from it; for in the one point the Sun is at the Meridian, before the Dog-ſtarre ariſeth; in the other the Starre is at the Meridian before the Sunne aſcendeth.

What latitudes have no Dog-daies at all.

Some latitudes have no canicular daies at all; as namely all thoſe which have more then 73 degrees of Northern Elevation; as the territory of *Nova Zembla*, part of Greenland and Tartary; for unto that habitation the Dog-ſtarre is inviſible, and appeareth not above the Horizon.

Unto ſuch latitudes as it ariſeth, it carrieth a various and a very different reſpect; unto ſome it aſcendeth when Summer is over, whether we compute Heliacally or Coſmically; for though unto Alexandria it ariſeth in Cancer, it ariſeth not unto Biarmia Coſmically before it be in Virgo, and Heliacally about the Autumnall æquinox. Even unto the latitude of 52 the efficacy thereof is not much conſiderable, whether we conſider its aſcent, Meridian altitude or abode above the Horizon; for it ariſeth very late in the year, about the eighteenth of Leo, that is, the 31 of July. Of Meridian Altitude it hath but 23 degrees, ſo that it plaies but obliquely upon us, and as the Sun doth about the 23 of January. And laſtly, his abode above the Horizon is not great; for in the eighteenth of Leo, the 31 of July, although they ariſe together, yet doth it ſet above 5 houres before the Sun, that is, before two of the clock, after which time we are more ſenſible of heat, then all the day before.

What the longitude of a Starre is.

Secondly, In regard of the variation of the longitude of the Starres, we are to conſider (what the Ancients obſerved not) that the ſite of the fixed Starres is alterable, and that ſince elder times they have ſuffered a large and conſiderable variation of their longitudes. The longitude of a Starre to ſpeak plainly, is its diſtance from the firſt point of numeration toward the Eaſt; which firſt point unto the Ancients was the vernall æquinox. Now by reaſon of their motion from Weſt to Eaſt, they have very much varied from this point: The firſt Starre of Aries in the time of Meton the Athenian was placed in the very interſection, which is now elongated and removed Eaſtward 28 degrees; inſomuch that now the ſigne of Aries poſſeſſeth the place of Taurus, and Taurus that of Gemini. Which variation of longitude muſt very much diſtract the opinion of the Dogge-ſtarre, not only in our daies, but in times before and after; for ſince the world began it hath ariſen in Taurus, and before it end, may have its aſcent in Virgo; ſo that we muſt place the canicular daies, that is, the hotteſt time of the year in the Spring in the firſt Age, and in the Autumn in ages to come.

Thirdly, The Starres have not onely varied their longitudes, whereby their aſcents have altered; but have alſo changed their declinations, whereby

What the declination of a Starr is.

by their rising at all, that is, their appearing hath varied. The declination of a Starre we call its shortest distance from the Æquator. Now though the poles of the world and the Æquator be immovable, yet because the Starres in their proper motions from West to East, doe move upon the poles of the Ecliptick distant 23 degrees and an half from the poles of the Æquator, and describe circles parallell not unto the Æquator, but the Ecliptick; they must be therefore sometimes nearer, sometimes removed further from the Æquator. All Starres that have their distance from the Ecliptick Northward not more then 23 degrees and an half (which is the greatest distance of the Ecliptick from the Æquator) may in progression of time have declination Southward, and move beyond the Æquator: but if any Starre hath just this distance of 23 and an half (as hath Capella on the back of Ericthonius) it may hereafter move under the Æquinoctiall; and the same will happen respectively unto Starres which have declination Southward. And therefore many Starres may be visible in our Hemisphere, which are not so at present; and many which are at present, shall take leave of our Horizon, and appear unto Southerne habitations. And therefore the time may come that the Dogge-starre may not be visible in our Horizon, and the time hath been, when it hath not shewed it self unto our neighbour latitudes. So that canicular daies there have been none nor shall be; yet certainly in all times some season of the year more notable hot then other.

Lastly, We multiply causes in vain; and for the reason hereof, we need not have recourse unto any Starre but the Sunne, and continuity of its action. For the Sunne ascending into the Northerne signes, begetteth first a temperate heat in the air; which by his approach unto the solstice he intendeth, and by continuation increaseth the same even upon declination. For running over the same degrees again, that is, in Leo, which he hath done in Taurus, in July which he did in May; he augmenteth the heat in the later which he began in the first, and easily intendeth the same by continuation which was well promoted before. So is it observed, that they which dwell between the Tropicks and the Æquator, have their second Summer hotter and more maturative of fruits then the former. So we observe in the day (which is a short year) the greatest heat about two in the afternoon, when the Sunne is past the Meridian (which is his diurnall Solstice) and the same is evident from the Thermometer or observations of the weather-glasse. So are the colds of the night sharper in the Summer about two or three after midnight, and the frosts in Winter stronger about those hours: so likewise in the year we observe the cold to augment, when the daies begin to increase, though the Sunne be then ascensive, and returning from the Winter Tropick. And therefore if we rest not in this reason for the heat in the declining part of Summer, we must discover freezing Starres that may resolve the latter colds of Winter; which whoever desires to invent, let him study the Starres of Andromeda, or the nearer constellation of Pegasus, which are about that time ascendent.

Why the Dog-daies be so hot.

It cannot therefore unto reasonable constructions seem strange, or savour of singularity that we have examined this point; since the same hath been already denied by some, since the authority and observations of the Ancients rightly understood doe not confirm it, since our present computes are different from those of the Ancients, whereon notwithstanding they depend; since there is reason against it, and if all were granted, yet must it be maintained with manifold restraints, farre otherwise then is received. And lastly, since from plain and naturall principles, the doubt may be fairly

salved

ſalved, and not clapt up from petitionary foundations and principles uneſtabliſhed.

But that which chiefly promoted the conſideration of theſe daies, and medically advanced the ſame, was the doctrine of Hippocrates a Phyſitian of ſuch repute, that he received a teſtimony from a Chriſtian, that might have been given unto Chriſt: The firſt in his book, *de Aere, Aquis, & locis. Syderum ortus*, &c. That is, we are to obſerve the riſing of Starres, eſpecially the Dogge-ſtarre, Arcturus, and the ſetting of the Pleiades or ſeven Starres. From whence notwithſtanding we cannot in generall inferre the efficacie of theſe Starres, or coefficacie particular in medications: probably expreſſing no more hereby then if he ſhould have plainly ſaid, eſpeciall notice we are to take of the hotteſt time in Summer, of the beginning of Autumne and Winter; for by the riſing and ſetting of thoſe Starres were theſe times and ſeaſons defined. And therefore ſubjoines this reaſon, *Quoniam his temporibus morbi finiuntur*, becauſe at theſe times diſeaſes have their ends; as Phyſitians well know, and he elſewhere affirmeth, that ſeaſons determine diſeaſes, beginning in their contraries; as the ſpring the diſeaſes of Autumne, and the Summer thoſe of Winter. Now (what is very remarkable) whereas in the ſame place he adviſeth to obſerve the times of notable mutations, as the Æquinoxes, and the Solſtices, and to decline Medication ten daies before and after; how preciſely ſoever canicular cautions be conſidered, this is not obſerved by Phyſitians, nor taken notice of by the people. And indeed ſhould we blindly obey the reſtraints both of Phyſitians and Aſtrologers, we ſhould contract the liberty of our preſcriptions, and confine the utility of Phyſick unto a very few daies; for obſerving the Dog-daies, and, as is expreſſed, ſome daies before, likewiſe ten daies before and after the Æquinoctiall and Solſticiall points; by this obſervation alone are exempted an hundred daies. Whereunto if we adde the two Ægyptian daies in every moneth, the interlunary and plenilunary exemptions, the Eclipſes of Sunne and Moon, conjunctions and oppoſitions Planeticall, the houſes of Planets, and the ſite of the Luminaries under the ſignes (wherein ſome would induce a reſtraint of Purgation or Phlebotomy) there would ariſe above an hundred more; ſo that of the whole year the uſe of Phyſick would not be ſecure much above a quarter. Now as we doe not ſtrictly obſerve theſe daies, ſo need we not the other; and although conſideration be made hereof, yet might we preferre the nearer Indications, before thoſe which are drawn from the time of the year, or other cæleſtiall relations.

Qui nec fallere poteſt nec falli.

Diſeaſes commonly determined by what ſeaſons.

The ſecond Teſtimony is taken out of the laſt piece of his Age, and after the experience (as ſome think) of no leſſe then an hundred years, that is his book of Aphoriſmes, or ſhort and definitive determinations in Phyſick. The Aphoriſme alleadged is this; *Sub Cane & ante Canem difficiles ſunt purgationes. Sub Cane & Anticane*, ſay ſome, including both the Dog-ſtarres; but that cannot conſiſt with the Greek ὑπὸ κυνὸς καὶ πρὸ κυνός, nor had that Criticiſme been ever omitted by Galen; now how true this ſentence was in the mouth of Hippocrates, and with what reſtraint it muſt be underſtood by us, will readily appear from the difference between us both in circumſtantiall relations.

And firſt, Concerning his time and Chronology; he lived in the reign of Artaxerxes Longimanus, about the 82 Olympiade, 450 yeares before Chriſt; and from our times above two thouſand. Now ſince that time (as we have already declared) the Starres have varied their longitudes; and having made large progreſſions from Weſt to Eaſt, the time of the Dog-

When Hippocrates lived.

ſtarres aſcent muſt alſo very much alter. For it ariſeth later now in the year, then it formerly did in the ſame latitude; and farre later unto us who have a greater elevation; for in the daies of Hippocrates this Starre aſcended in Cancer which now ariſeth in Leo; and will in progreſſion of time ariſe in Virgo. And therefore in regard of the time wherein he lived, the Aphoriſme was more conſiderable in his daies then in ours, and in times farre paſt then preſent, and in his Country then ours.

The place of his nativity was Coos, an Iland in the Myrtoan Sea; not farre from Rhodes, deſcribed in Mappes by the name of Lango, and called by the Turkes who are maſters thereof, Stancora; according unto Ptolomy of Northern latitude 36 degrees. That he lived and writ in theſe parts, is not improbably collected from the Epiſtles that paſſed betwixt him and Artaxerxes; as alſo between the Citizens of Abdera, and Coos, in the behalf of Democritus. Which place being ſeated from our latitude of 52, 16 degrees Southward, there will ariſe a different conſideration; and we may much deceive our ſelves if we conform the aſcent of Starres in one place unto another, or conceive they ariſe the ſame day of the moneth in Coos and in England. For as Petavius computes in the firſt Julian year, at Alexandria of latitude 31, the Starre aroſe coſmically in the twelfth degree of Cancer, Heliacally the 26, by the compute of Geminus about this time at Rhodes of latitude 37, it aſcended coſmically the 16 of Cancer, Heliacally the firſt of Leo; and about that time at Rome of latitude 42, coſmically the 22 of Cancer and Heliacally the firſt of Leo; for unto places of greater latitude it ariſeth ever later; ſo that in ſome latitudes the coſmicall aſcent happeneth not before the twentieth degree of Virgo, ten daies before the Autumnall Æquinox, and if they compute Heliacally, after it, in Libra.

Again, Should we allow all, and only compute unto the latitude of Coos; yet would it not impoſe a totall omiſſion of Phyſick. For if in the hotteſt ſeaſon of that clime, all Phyſick were to be declined, then ſurely in many other, none were to be uſed at any time whatſoever; for unto many parts, not only in the Spring and Autumne, but alſo in the Winter, the Sun is nearer, then unto the clime of Coos in the Summer.

Three degrees of purgations.

The third conſideration concerneth purging medicines, which are at preſent farre different from thoſe implied in this Aphoriſme, and ſuch as were commonly uſed by Hippocrates. For three degrees we make of purgative medicines: The firſt thereof is very benigne, nor farre removed from the nature of Aliment, into which upon defect of working, it is oft times converted; and in this forme doe we account Manna, Caſſia, Tamarindes and many more; whereof we finde no mention in Hippocrates. The ſecond is alſo gentle, having a familiarity with ſome humor, into which it is but converted if it fail of its operation; of this ſort are Aloe, Rhabarbe, Senna, *&c.* whereof alſo few or none were known unto Hippocrates. The third is of a violent and venemous quality, which fruſtrate of its action, aſſumes as it were the nature of poiſon; ſuch as are Scammoneum, Colocynthis, Elaterium, Euphorbium, Tithymallus, Laureola, Peplum, *&c.* of this ſort it is manifeſt Hippocrates made uſe, even in Fevers, Pleuriſies and Quinſies; and that compoſition is very remarkable which is aſcribed unto Diogenes in Ætius; that is of Pepper, Sal Armoniac, Euphorbium, of each an ounce, the Doſis whereof four ſcruples and an half; which whoſoever ſhould take, would finde in his bowels more then a canicular heat though in the depth of Winter; many of the like nature may be obſerved in Ætius Tetrab. 1. Serm. 3. or in the book *De Dinamidiis*, aſcribed unto Galen, which is the ſame *verbatim* with the other.

Now

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losophy, or speculation here below. What power soever they have upon our bodies, it is not requisite they should destroy our reasons, that is, to make us rely on the strength of Nature, when she is least able to relieve us; and when we conceive the heaven against us, to refuse the assistance of the earth created for us. This were to suffer from the mouth of the Dog above, what others doe from the teeth of Dogs below; that is, to be afraid of their proper remedy, and refuse to approach any water, though that hath often proved a cure unto their disease. There is in wise men a power beyond the Stars; and Ptolomy encourageth us, that by fore-knowledge, we may evade their actions; for, being but universall causes, they are determined by particular agents; which being inclined, not constrained, contain within themselves the casting act, and a power to command the conclusion.

Upon the biting of a mad dog there ensues an hydrophobia or fear of water.

Lastly, If all be conceded, and were there in this Aphorisme an unrestrained truth, yet were it not reasonable to inferre from a caution a non-usance or abolition, from a thing to be used with discretion, not to be used at all. Because the Apostle bids us beware of Philosophy, heads of extremity will have none at all; an usuall fallacy in vulgar and lesse distinctive brains, who having once overshot the mean, run violently on, and finde no rest but in the extreams.

Now hereon we have the longer insisted, because the error is materiall, and concerns oft times the life of man; an error to be taken notice of by State, and provided again by Princes who are of the opinion of Solomon, that their riches consist in the multitude of their Subjects. An error worse then some reputed Heresies; and of greater danger to the body, then they unto the soul; which whosoever is able to reclaim, he shall save more in one Summer then Themison destroied in any Autumne; he shall introduce a new way of cure, preserving by Theory, as well as practice, and men not only from death, but from destroying themselves.

A Physitian. *Quot Themison ægros autumno occiderit uno.* Juvenal.

THE

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unto the Pelecan from the Vulture, as Pierius hath moſt plainly delivered. *Sed quod Pelicanum (ut etiam aliis pleriſq; perſuaſum eſt) roſtro pectus diſſecantem pingunt, ita ut ſuo ſanguine filios alat, ab Ægyptiorum hiſtoriâ valde alienum eſt, illi enim vulturem tantum id facere tradiderunt.*

And laſtly, As concerning the picture, if naturally examined, and not Hieroglyphically conceived, it containeth many improprieties, diſagreeing almoſt in all things from the true and proper deſcription. For firſt, whereas it is commonly ſet forth green or yellow, in its proper colour, it is inclining to white; excepting the extremities or tops of the wing feathers, which are black. It is deſcribed in the bigneſſe of a Hen, whereas it approacheth and ſometimes exceedeth the magnitude of a Swan. It is commonly painted with a ſhort bill; whereas that of the Pelecan attaineth ſometimes the length of two ſpans. The bill is made acute or pointed at the end; whereas it is flat and broad, and ſomewhat inverted at the extream. It is deſcribed like fiſſipedes, or birds which have their feet or claws divided; whereas it is palmipedous, or fin-footed like Swans and Geeſe; according to the Method of nature, in latiroſtrous or flat-bild birds; which being generally ſwimmers, the organ is wiſely contriv'd unto the action, and they are framed with fins or oares upon their feet; and therefore they neither light, nor build on trees, if we except Cormorants, who make their neſts like Herons. Laſtly, There is one part omitted more remarkable then any other, that is the chowle or crop adhering unto the lower ſide of the bill, and ſo deſcending by the throat; a bagge or ſachell very obſervable, and of capacity almoſt beyond credit; which notwithſtanding, this animall could not want; for therein it receiveth Oyſters, Cochles, Scollops, and other teſtaceous animals, which being not able to break, it retains them untill they open, and vomiting them up, takes out the meat contained. This is that part preſerved for a rarity, and wherein (as Sanctius delivers) in one diſſected, a Negro childe was found.

The bigneſſe of a Pelecan.

Of her crop.

Chap. II.

Of the picture of Dolphins.

That Dolphins are crooked, is not only affirmed by the hand of the Painter, but commonly conceived their naturall and proper figure; which is not only the opinion of our times, but ſeems the belief of elder times before us: for, beſide the expreſſions of Ovid and Pliny, their Pourtraicts in ſome ancient Coynes are framed in this figure, as will appear in ſome thereof in Geſner, others in Goltſius, and Lævinus Hulſius in his deſcription of Coynes, from Julius Cæſar unto Rhodulphus the ſecond.

Notwithſtanding, to ſpeak ſtrictly in their naturall figure they are ſtreight, nor have they their ſpine convexed, or more conſiderably embowed, then Sharks, Porpoſes, Whales, and other Cetaceous animals, as Scaliger plainly affirmeth: *Corpus habet non magis curvum quam reliqui piſces.* As ocular enquiry informeth; and as unto ſuch as have not had the opportunity to behold them, their proper pourtraicts will diſcover in Rondeletius, Geſner, and Aldrovandus; and as indeed is deducible from pictures themſelves; for though they be drawn repandous, or convexedly crooked in one piece, yet the Dolphin that carrieth Arion is concavouſly inverted, and hath its ſpine depreſſed in another.

And

And therefore what is delivered of their incurvity, muſt either be taken Emphatically, that is, not really but in appearance; which happeneth, when they leap above water, and ſuddenly ſhoot down again; which is a fallacy in viſion, whereby ſtraight bodies in a ſudden motion protruded obliquely downward, appear unto the eye crooked; and this is the conſtruction of Bellonius: or if it be taken really, it muſt not univerſally and perpetually; that is, not when they ſwimme and remain in their proper figures, but only when they leape, or impetuouſly whirle their bodies any way; and this is the opinion of Geſnerus. Or laſtly, It muſt be taken neither really nor emphatically, but only Emblematically; for being the Hyeroglyphick of celerity, and ſwifter then other animals, men beſt expreſſed their velocity by incurvity, and under ſome figure of a bowe; and in this ſenſe probably doe Heralds alſo receive it, when from a Dolphin extended, they diſtinguiſh a Dolphin embowed.

And thus alſo muſt that picture be taken of a Dolphin claſping an Anchor; that is not really, as is by moſt conceived out of affection unto man, conveighing the Anchor unto the ground; but Emblematically, according as Pierius hath expreſſed it, The ſwifteſt animall conjoined with that heavy body, implying that common morall, *Feſtina lentè*; and that celerity ſhould alwaies be contempered with cunctation.

Chap. III.

Of the Picture of a Graſhopper.

THere is alſo among us a common deſcription and picture of a Graſhopper, as may be obſerved in the pictures of Emblematiſts in the coats of ſeverall families, and as the word *Cicada* is uſually tranſlated in Dictionaries. Wherein to ſpeak ſtrictly, if by this word Graſhopper, we underſtand that animall which is implied by τέττιξ with the Greeks, and by *Cicada* with the Latines; we may with ſafety affirm the picture is widely miſtaken, and that for ought enquiry can inform, there is no ſuch inſect in England. Which how paradoxicall ſoever, upon a ſtrict enquiry, will prove undeniable truth.

For firſt, That animall the French tearm *Sauterelle*, we a Graſhopper, and which under this name is commonly deſcribed by us, is named ἀκρὶς by the Greeks, by the Latines *Locuſta*, and by our ſelves in proper ſpeech a Locuſt; as in the diet of John Baptiſt, and in our Tranſlation, Prov. 30. The Locuſts have no King, yet go they forth all of them by bands. Again, Between the *Cicada* and that we call a Graſhopper, the differences are very many, as may be obſerved in themſelves, or their deſcriptions in Matthiolus, Aldrovandus and Muffetus. For firſt, They are differently cucullated or capuched upon the head and back, and in the *Cicada* the eyes are more prominent: the Locuſts have *Antennæ* or long horns before, with a long falcation or forcipated taile behinde; and being ordained for ſaltation, their hinder legs doe farre exceed the other. The Locuſt or our Graſhopper hath teeth, the *Cicada* none at all; nor any mouth according unto Ariſtotle; the *Cicada* is moſt upon trees; and laſtly, the note or fritiniancy thereof is farre more ſhrill then that of the Locuſt, and its life ſo ſhort in Summer, that for proviſion it needs not recourſe unto the providence of the Piſmire in Winter.

And

And therefore where the *Cicada* must be understood, the pictures of Heralds and Emblematists are not exact, nor is it safe to adhere unto the interpretation of Dictionaries, and we must with candour make out our own Translations: for in the plague of Ægypt, Exodus 10. the word Ἀκρὶς is translated a Locust, but in the same sense and subject, Wisdome 16. it is translated a Grashopper; For them the bitings of Grashoppers and flies killed: whereas we have declared before, the *Cicada* hath no teeth, but is conceived to live upon dew; and the possibility of its subsistence is disputed by Licetus. Hereof I perceive Muffetus hath taken notice, dissenting from Langius and Lycostenes, while they deliver, the Cicada's destroied the fruits in Germany, where that insect is not found; and therefore concludeth, *Tam ipsos quam alios deceptos fuisse autumo, dum locustas cicadas esse vulgari errore crederent.*

And hereby there may be some mistake in the due dispensation of medicines desumed from this animall; particularly of Diatettigon commended by Ætius in the affections of the kidnies. It must be likewise understood with some restriction what hath been affirmed by Isidore, and yet delivered by many, that Cicades are bred out of Cuccow spittle, or Woodseare; that is, that spumous, frothy dew or exudation, or both, found upon Plants, especially about the joints of Lavender and Rosemary, observable with us about the latter end of May. For here the true Cicada is not bred, but certain it is, that out of this, some kinde of Locust doth proceed; for herein may be discovered a little insect of a festucine or pale green, resembling in all parts a Locust, or what we call a Grashopper.

Lastly, The word it self is improper, and the terme of Grashopper not appliable unto the Cicada; for therein the organs of motion are not contrived for saltation, nor are the hinder legges of such extension, as is observable in salient animals, and such as move by leaping, Whereto the Locust is very well conformed; for therein the legges behinde are longer then all the body, and make at the second joint acute angles, at a confiderable advancement above their backs.

The mistake therefore with us might have its originall from a defect in our language; for having not the insect with us, we have not fallen upon its proper name, and so make use of a term common unto it and the Locust; whereas other countries have proper expressions for it. So the Italian calls it Cicada, the Spaniard Cigarra, and the French Cigale; all which appellations conform unto the originall, and properly expresse this Animall.

Chap. IV.

Of the Picture of the Serpent tempting Eve.

IN the Picture of Paradise, and delusion of our first Parents, the Serpent is often described with humane visage; not unlike unto Cadmus, or his wife, in the act of their Metamorphosis. Which is not meerly a pictoriall contrivance or invention of the Picturer, but an ancient tradition and conceived reality, as it stands delivered by Beda and Authors of some antiquity; that is, that Sathan appeared not unto Eve in the naked form of a Serpent, but with a Virgins head, that thereby he might become more acceptable, and his temptation finde the easier entertainment. Which nevertheless is a conceit not to be admitted, and the plain and received figure, is with better reason embraced.

For

For first, as Pierius observeth from Barcephas, the assumption of humane shape, had proved a disadvantage unto Sathan; affording not only a suspicious amazement in Eve, before the fact, in beholding a third humanity beside her self and Adam; but leaving some excuse unto the woman, which afterward the man took up with lesser reason; that is, to have been deceived by another like her self.

Again, There was no inconvenience in the shape assumed, or any considerable impediment that might disturb that performance in the common form of a Serpent. For whereas it is conceived the woman must needs be afraid thereof, and rather flie then approach it; it was not agreeable unto the condition of Paradise and state of innocencie therein; if in that place as most determine, no creature was hurtfull or terrible unto man, and those destructive effects they now discover succeeded the curse, and came in with thorns and briars; and therefore Eugubinus (who affirmeth this Serpent was a Basilisk) incurreth no absurdity, nor need we inferre that Eve should be destroied immediatly upon that Vision. For noxious animals could offend them no more in the Garden, then Noah in the Ark: as they peaceably received their names so they friendly possessed their natures: and were their conditions destructive unto each other, they were not so unto man, whose constitutions then were antidotes, and needed not fear poisons. And if (as most conceive) there were but two created of every kinde, they could not at that time destroy either man or themselves; for this had frustrated the command of multiplication, destroied a species, and imperfected the Creation. And therefore also if Cain were the first man born, with him entred not only the act, but the first power of murther, for before that time neither could the Serpent nor Adam destroy Eve, nor Adam and Eve each other; for that had overthrown the intention of the world, and put its Creator to act the sixt day over again.

Moreover, Whereas in regard of speech, and vocall conference with Eve, it may be thought he would rather assume an humane shape and organs, then the improper form of a Serpent; it implies no materiall impediment. Nor need we to wonder how he contrived a voice out of the mouth of a Serpent, who hath done the like out of the belly of a Pythonissa, and the trunk of an Oak; as he did for many years at Dodona.

Lastly, Whereas it might be conceived that an humane shape was fitter for this enterprise, it being more then probable she would be amazed to hear a Serpent speak; some conceive she might not yet be certain that only man was priviledged with speech, and being in the novity of the Creation, and inexperience of all things, might not be affrighted to hear a Serpent speak: Beside she might be ignorant of their natures who was not versed in their names, as being not present at the genrall survey of Animals, when Adam assigned unto every one a name concordant unto its nature. Nor is this only my opinion, but the determination of Lombard and Tostatus; and also the reply of Cyril unto the objection of Julian, who compared this story unto the fables of the Greeks.

Why Eve wondered not at the Serpents speaking.

Chap. V.

Of the Picture of Adam and Eve with Navels.

ANother miſtake there may be in the Picture of our firſt Parents, who after the manner of their poſterity are both delineated with a Navell. And this is obſervable not only in ordinary and ſtained peeces, but in the Authentick draughts of Urbin, Angelo and others. Which notwithſtanding cannot be allowed, except we impute that unto the firſt cauſe, which we impoſe not on the ſecond; or what we deny unto nature, we impute unto Naturity it ſelf; that is, that in the firſt and moſt accompliſhed peece, the Creator affected ſuperfluities, or ordained parts without all uſe or office.

What the Navell is, and for what uſe

For the uſe of the Navell is to continue the infant unto the Mother, and by the veſſels thereof to convey its aliment and ſuſtentation. The veſſels whereof it conſiſteth, are the umbilicall vein, which is a branch of the Porta, and implanted in the liver of the Infant; two Arteries likewiſe ariſing from the Iliacall branches, by which the Infant receiveth the purer portion of bloud and ſpirits from the mother; and laſtly, the Urachos or ligamentall paſſage derived from the bottome of the bladder, whereby it diſchargeth the wateriſh and urinary part of its aliment. Now upon the birth when the Infant forſaketh the wombe, although it dilacerate, and break the involving membranes, yet doe theſe veſſels hold, and by the mediation thereof the Infant is connected unto the wombe, not only before, but a while alſo after the birth. Theſe therefore the midwife cutteth off, contriving them into a knot cloſe unto the body of the Infant; from whence enſueth that tortuoſity or complicated nodoſity we uſually call the Navell; occaſioned by the colligation of veſſels before mentioned. Now the Navell being a part, not precedent, but ſubſequent unto generation, nativity or parturition, it cannot be well imagined at the creation or extraordinary formation of Adam, who immediately iſſued from the Artifice of God; nor alſo that of Eve; who was not ſolemnly begotten, but ſuddenly framed, and anomalouſly proceeded from Adam.

That Adam and Eve had not Navels.

And if we be led into concluſions that Adam had alſo this part, becauſe we behold the ſame in our ſelves, the inference is not reaſonable; for if we conceive the way of his formation, or of the firſt animals, did carry in all points a ſtrict conformity unto ſucceeding productions, we might fall into imaginations that Adam was made without Teeth; or that he ran through thoſe notable alterations in the veſſels of the heart, which the Infant ſuffereth after birth: we need not diſpute whether the egge or Bird were firſt; and might conceive that Dogges were created blinde, becauſe we obſerve they are litered ſo with us. Which to affirm, is to confound, at leaſt to regulate creation unto generation, the firſt Acts of God, unto the ſecond of Nature, which were determined in that generall indulgence, Encreaſe and multiply, produce or propagate each other; that is, not anſwerably in all points, but in a prolonged method according to ſeminall progreſſion. For the formation of things at firſt was different from their generation after; and although it had nothing to precede it, was aptly contrived for that which ſhould ſucceed it. And therefore though Adam were framed without this part, as having no other wombe then that of his proper principles, yet was not his poſterity without the ſame: for the ſeminality of his fabrick contained the power thereof; and was endued with the ſcience of thoſe parts whoſe predeſtinations upon ſucceſſion it did accompliſh.

All

All the Navell therefore and conjunctive part we can ſuppoſe in Adam, was his dependency on his Maker, and the connexion he muſt needs have unto heaven, who was the Sonne of God. For holding no dependence on any preceding efficient but God; in the act of his production there may be conceived ſome connexion, and Adam to have been in a momentall Navell with his Maker. And although from his carnality and corporall exiſtence, the conjunction ſeemeth no nearer then of cauſality and effect; yet in his immortall and diviner part he ſeemed to hold a nearer coherence, and an umbilicality even with God himſelf. And ſo indeed although the propriety of this part be found but in ſome animals, and many ſpecies there are which have no Navell at all; yet is there one link and common connexion, one generall ligament, and neceſſary obligation of all whatever unto God. Whereby although they act themſelves at diſtance, and ſeem to be at looſe; yet doe they hold a continuity with their Maker. Which catenation or conſerving union when ever his pleaſure ſhall divide, let goe, or ſeparate; they ſhall fall from their exiſtence, eſſence, and operations; in brief, they muſt retire unto their primitive nothing, and ſhrink into that Chaos again.

They who hold the egge was before the Bird, prevent this doubt in many other animals, which alſo extendeth unto them; for Birds are nouriſhed by umbilicall veſſels, and the Navell is manifeſt ſometimes a day or two after excluſion; the ſame is probable in all oviparous excluſions, if the leſſer part of egges muſt ſerve for the formation, the greater part for nutriment. The ſame is made out in the egges of Snakes; and is not improbable in the generation of Porwiggles or Tadpoles; and may be alſo true in ſome vermiparous excluſions; although (as we have obſerved the daily progreſſe thereof) the whole Maggot is little enough to make a Flye, without any part remaining.

Chap. VI.

Of the Pictures of Eaſtern Nations, and the Jews at their Feaſts, eſpecially our Saviour at the Paſſeover.

Concerning the Pictures of the Jews, and Eaſtern Nations at their Feaſts, concerning the geſture of our Saviour at the Paſſeover, who is uſually deſcribed ſitting upon a ſtool or bench at a ſquare table, in the middeſt of the twelve, many make great doubt; and (though they concede a table-geſture) will hardly allow this uſuall way of Seſſion.

Wherein reſtraining no mans enquiry, it will appear that accubation, or lying down at meales was a geſture uſed by very many Nations. That the Perſians uſed it, beſide the teſtimony of humane writers, is deducible from that paſſage in either. That when the King returned into the place of the banquet of wine, Haman was fallen upon the bed whereon Eſther was. That the Parthians uſed it, is evident from Athenæus, who delivereth out of Poſſidonius, that their King lay down at meales, on an higher bed then others. That Cleopatra thus entertained Anthony, the ſame Authour manifeſteth when he ſaith, ſhe prepared twelve Tricliniums. That it was in uſe among the Greeks, the word Triclinium implieth, and the ſame is alſo declarable from many places in the Sympoſiacks of Plutarch. That it was not out of faſhion in the daies of Ariſtotle, he declareth in his politicks; when among the Inſtitutionary rules of youth, he adviſeth they might not be permitted to hear Iambicks Eſth. 7.

Iambicks and Tragedies before they were admitted unto discumbency or lying along with others at their meales. That the Romanes used this gesture at repast, beside many more is evident from Lipsius, Mercurialis, Salmasius and Ciaconius, who have expresly and distinctly treated hereof.

Now of their accumbing places, the one was called Stibadion and Sigma, carrying the figure of an half Moon, and of an uncertain capacity, whereafter it received the name of Hexaclinon, Octoclinon, according unto that of Martial,

Accipe Lunata scriptum testudine Sigma:
Octo capit, veniat quisquis amicus erit.

Hereat in severall ages the left and right horn were the principall places, and the most honourable person, if he were not master of the feast, possessed one of those roomes. The other was termed Triclinium, that is, Three beds encompassing a table, as may be seen in the figures thereof, and particularly in the Rhamnusian Triclinium, set down by Mercurialis. The customary use hereof was probably deduced from the frequent use of bathing, after which they commonly retired to bed, and refected themselves with repast; and so that custome by degrees changed their cubiculary beds into discubitory, and introduced a fashion to goe from the bathes unto these.

Merc. De Arte Gymnastica.

As for their gesture or position, the men lay down leaning on their left elbow, their back being advanced by some pillow or soft substance; the second lay so with his back towards the first, that his head attained about his bosome; and the rest in the same order. For women, they sat sometimes distinctly with their sex, sometime promiscuously with men, according to affection or favour, as is delivered by Juvenal,

The ancient gesture or position of the body at Feasts

Gremio jacuit nova nupta mariti.

And by Suetonius of Caligula, that at his feasts he placed his sisters, with whom he had been incontinent, successively in order below him.

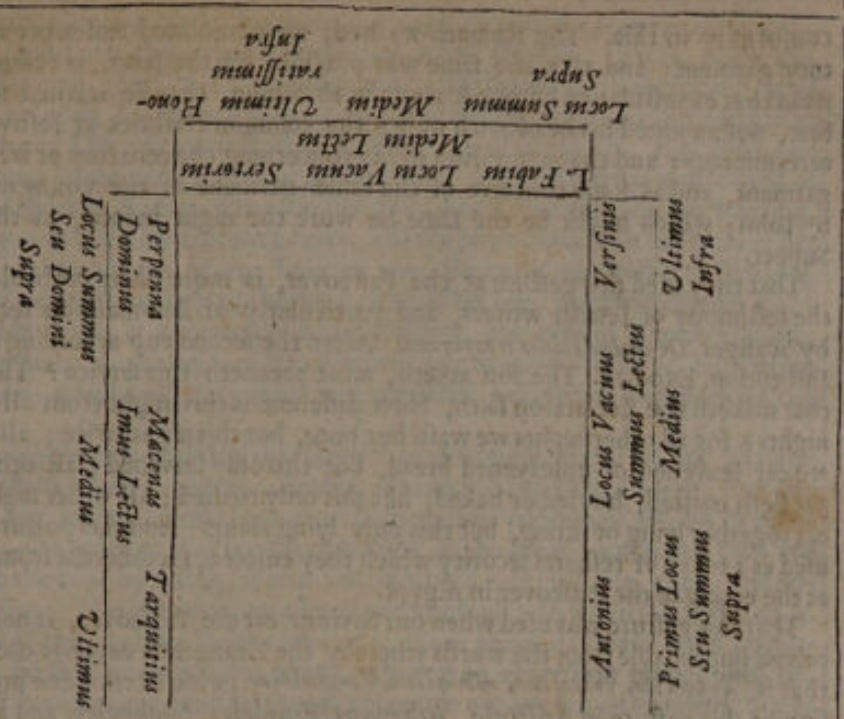
Again, As their beds were three, so the guests did not usually exceed that number in every one; according to the ancient Laws, and proverbiall observations to begin with the Graces, and make up their feasts with the Muses. And therefore it was remarkable in the Emperour Lucius Verus, that he lay down with twelve: which was, saith Julius Capitolinus, *prater exempla majorum*, not according to the custome of his Predecessors, except it were at publick and nuptiall suppers. The regular number was also exceeded in this last supper, whereat there were no lesse then thirteen, and in nò place fewer then ten, for, as Josephus delivereth, it was not lawfull to celebrate the Passeover, with fewer then that number.

Lastly, For the disposing and ordering of the persons: The first and middle beds were for the guests, the third and lowest for the Master of the house and his family; he alwaies lying in the first place of the last bed, that is, next the middle bed; but if the wife or children were absent, their rooms were supplied by the Umbræ, or hangers on, according to that of Juvenal — *Locus est & pluribus Umbris.* For the Guests, the honourablest place in every bed was the first, excepting the middle or second bed; wherein the most honourable Guest of the feast was placed in the last place, because by that position he might be next the Master of the feast. For the Master lying in the first of the last bed, and the principall Guest in the last place of the second, they must needs be next each other; as this figure doth plainly declare, and whereby we may apprehend the feast of *Perpenna* made unto Sertorius, described by Salustius, whose words we shall thus reade with Salmasius: *Igitur discubuere, Sertorius inferior in medio lecto, supra Fabius; Antonius in summo, Infra Scriba Sertorii Versus; alter scriba Mecenas in Imo, medius inter Tarquitium & Dominum Perpennam.*

Who the Vmbræ were at Banquets.

Iul. Scalig. familiarium exercitationum Problema 1.

At



At this feast there were but seven; the middle places of the highest and middle bed being vacant; and hereat was Sertorius the Generall and principall guest slain; and so may we make out what is delivered by Plutarch in his life, that lying on his back, and raising himself up, Perpenna cast himself upon his stomack; which he might very well doe being Master of the feast, and lying next unto him. And thus also from this Tricliniary disposure, we may illustrate that obscure expression of Seneca; That the Northwinde was in the middle, the North-East on the higher side, and the North-West on the lower. For as appeareth in the circle of the windes, the North-East will answer the bed of Antonius, and the North-West that of Perpenna.

That the custome of feasting upon beds was in use among the Hebrews, many diduce from the 23. of Ezekiel. Thou satteſt upon a stately bed, and a table prepared before it. The custome of Discalceation or putting off their shoes at meales, is conceived to confirm the same; as by that means keeping their beds clean, and therefore they had a peculiar charge to eat the Passeover with their shoes on; which Injunction were needlesse, if they used not to put them off. However it were in times of high antiquity, probable it is that in after ages they conformed unto the fashions of the Assyrians and Eastern nations, and lastly of the Romans, being reduced by Pompey unto a Provinciall subjection.

That this discumbency at meals was in use in the daies of our Saviour, is conceived probable from severall speeches of his expressed in that phrase, even unto common Auditors, as Luke 14. *Cum Invitatus fueris ad nuptias, non discumbas in primo loco*, and besides many more, Matthew 23. when reprehending the Scribes and Pharisees, he saith, *Amant protocliſias, id est, primos recubitus in cænis, & protocathedrias, sive primas cathedras, in Synagogis*: wherein the terms are very distinct, and by an Antitheſis doe plainly distinguish the posture of sitting, from this of lying on beds. The consent of the Jews with the Romans in other ceremonies and rites of feasting, makes probable their

conformity in this. The Romans washed, were anointed and wore a cenatory garment: and that the same was practised by the Jews, is deduceable from that expostulation of our Saviour with Simon, that he washed not his feet, nor anointed his head with oyle; the common civilities at festivall entertainments: and that expression of his concerning the cenatory or wedding garment, and as some conceive of the linnen garment of the young man or S^t^ John; which might be the same he wore the night before, at the last Supper.

Luk. 7.

Matth 22.

That they used this gesture at the Passeover, is more then probable from the testimony of Jewish writers, and particularly of Ben-maimon recorded by Scaliger *De emendatione temporum.* After the second cup according to the Institution, Exod. 12. The son asketh, what meaneth this service? Then he that maketh the declaraion saith, How different is this night from all other nights? for all other nights we wash but once, but this night twice; all other we eat leavened or unleavened bread, but this only leavened; all other we eat flesh roasted, boyled or baked, but this only roasted; all other nights we eat together lying or sitting, but this only lying along. And this posture they used as a token of rest and security which they enjoied, far different from that, at the eating of the Passeover in Ægypt.

That this gesture was used when our Saviour eat the Passeover, is not conceived improbable from the words whereby the Evangelists expresse the same, that is, ἀναπίπτειν, ἐγκλίνεσθαι, κατακλίνεσθαι, ἀνακλιθῆναι, which terms doe properly signifie this gesture in Aristotle, Athenæus, Euripides, Sophocles, and all humane Authors; and the like we meet with in the paraphrasticall expression of Nonnus.

Lastly, If it be not fully conceded, that this gesture was used at the Passeover, yet that it was observed at the last supper, seems almost incontrovertible: for at this feast or cenatory convention, learned men make more then one supper, or at least many parts thereof. The first was that Legall one of the Passeover, or eating of the Paschall Lamb with bitter herbs, and ceremonies described by Moses. Of this it is said, that when the even was come he sate down with the twelve. This is supposed when it is said, that the Supper being ended, our Saviour arose, took a towell and washed the Disciples feet. The second was common and Domesticall, consisting of ordinary and undefined provisions; of this it may be said, that our Saviour took his garment, and sate down again, after he had washed the Disciples feet, and performed the preparative civilities of suppers; at this 'tis conceived the soppe was given unto Judas, the Originall word implying some broath or decoction, not used at the Passeover. The third or later part was Eucharisticall, which began at the breaking and blessing of the bread, according to that of Matthew, And as they were eating, Jesus took bread and blessed it.

Matth. 26. John 13.

Now although at the Passeover or first supper, many have doubted this Reclining posture, and some have affirmed that our Saviour stood; yet that he lay down at the other, the same men have acknowledged, as Chrysostome, Theophylact, Austin, and many more. And if the tradition will hold, the position is unquestionable; for the very Triclinium is to be seen at Rome, brought thither by Vespasian, and graphically set forth by Casalius.

De veterum ritibus.

Thus may it properly be made out; what is delivered Joh. 13. *Erat recumbens unus ex Discipulis ejus in sinu Jesu quem diligebat*; Now there was leaning on Jesus bosome one of his Disciples whom Jesus loved; which gesture will not so well agree unto the position of sitting, but is naturall, and cannot be avoided in the Laws of accubation. And the very same expression is to be found in Pliny, concerning the Emperour Nerva and Veiento whom he favoured;

favoured; *Canabat Nerva cum paucis, Veiento recumbebat proprius atque etiam in sinu*; and from this custome arose the word ἀναπεσὼν, that is, a neer and bosome friend. And therefore Causabon justly rejecteth Theophylact, who not considering the ancient manner of decumbency, imputed this gesture of the beloved Disciple unto Rusticity, or an act of incivility. And thus also have some conceived, it may be more plainly made out what is delivered of Mary Magdalen, Luk.7. That she stood at Christs feet behinde him weeping, and began to wash his feet with tears, and did wipe them with the hairs of her head; which actions, if our Saviour sate, she could not perform standing, and had rather stood behinde his back, then at his feet. And therefore it is not allowable, what is observable in many pieces, and even of Raphael Urbin; wherein Mary Magdalen is pictured before our Saviour, washing his feet on her knees; which will not consist with the strict description and letter of the Text. Not. *in Evang.*

Now whereas this position may seem to be discountenanced by our Translation, which usually renders it sitting, it cannot have that illation; for the French and Italian Translations expressing neither position of session or recubation, doe only say that he placed himself at the table; and when ours expresseth the same by sitting, it is in relation unto our custome, time, and apprehension. The like upon occasion is not unusuall: so when it is said, Luk.4. ἀπλίξας τὸ βιβλίον, and the Vulgar renders it, *Cum plicasset librum*, ours translateth it, he shut or closed the book; which is an expression proper unto the paginall books of our times, but not so agreeable unto volumes or rolling books in use among the Jews, not only in elder times, but even unto this day. So when it is said, the Samaritan delivered unto the host two pence for the provision of the Levite; and when our Saviour agreed with the Labourers for a peny a day; in strict translation it should be seven pence half peny; and is not to be conceived our common peny, the sixtieth part of an ounce. For the word in the Originall is δηνάριον, in Latine, *Denarius*, and with the Romans did value the eight part of an ounce, which after five shillings the ounce amounteth unto seven pence half peny of our money. What Denarius, or the peny in the Gospel is.

Lastly, Whereas it might be conceived that they ate the Passeover standing rather then sitting, or lying down, according to the Institution, Exod.12. Thus shall you eat, with your loins girded, your shoes on your feet, and your staff in your hand; the Jews themselves reply, this was not required of succeeding generations, and was not observed, but in the Passeover of Ægypt. And so also many other injunctions were afterward omitted, as the taking up of the Paschall Lamb, from the tenth day, the eating of it in their houses dispersed; the striking of the bloud on the door posts, and the eating thereof in haste. Solemnities and Ceremonies primitively enjoined, afterward omitted; as was also this of station, for the occasion ceasing, and being in security, they applied themselves unto gestures in use among them. Ceremonies of the Passeover omitted.

Now in what order of recumbency Christ and the Disciples were disposed, is not so easily determined. Casalius from the Lateran Triclinium will tell us, that there being thirteen, five lay down in the first bed, five in the last, and three in the middle bed; and that our Saviour possessed the upper place thereof. That John lay in the same bed seems plain, because he leaned on our Saviours bosome. That Peter made the third in that bed, conjecture is made, because he beckned unto John, as being next him, to ask of Christ, who it was that should betray him. That Judas was not farre off seems probable, not only because he dipped in the same dish, but because he was so near, that our Saviour could hand the sop unto him.

CHAP.

Chap. VII.

Of the Picture of our Saviour with long hair.

ANother Picture there is of our Saviour described with long hair, according to the custome of the Jews, and his description sent by Lentulus unto the Senate. Wherein indeed the hand of the Painter is not accusable, but the judgement of the common Spectator; conceiving he observed this fashion of his hair, because he was a Nazarite, and confounding a Nazarite by vow, with those by birth or education.

The Nazarite by vow is declared, Numb. 6. and was to refrain three things, drinking of Wine, cutting the hair, and approaching unto the dead; and such a one was Samson. Now that our Saviour was a Nazarite after this kinde, we have no reason to determine; for he drank Wine, and was therefore called by the Pharisees οἰνοπότης, a Wine-bibber; he approached also the dead, as when he raised from death Lazarus, and the daughter of Jairus.

The other Nazarite was a Topicall appellation, and appliable unto such as were born in Nazareth, a City of Galilee, and in the Tribe of Napthali. Neither if strictly taken was our Saviour in this sense a Nazarite; for he was born in Bethlehem in the Tribe of Judah; but might receive that name, because he abode in that City; and was not only conceived therein, but there also passed the silent part of his life, after his return from Ægypt; as is delivered by Matthew, And he came and dwelt in a City called Nazareth, that it might be fulfilled which was spoken by the Prophet, He shall be called a Nazarene. Both which kindes of Nazarites, as they are distinguishable by Zain, and Tsade in the Hebrew, so in the Greek, by Alpha and Omega; for as Jansenius observeth, where the votary Nazarite is mentioned, it is written, Ναζαρεῖος, as Levit. 6. and Lament. 4. where it is spoken of our Saviour, we reade it, Ναζωραῖος, as in Matthew, Luke and John; only Mark who writ his Gospel at Rome did Latinize and wrote it Ναζαρηνός

Ianſ. concordia Evangelica.

Chap. VIII.

Of the Picture of Abraham sacrificing Isaac.

IN the Picture of the Immolation of Isaac, or Abraham sacrificing his son, Isaac is described as a little boy; which notwithstanding is not consentaneous unto the authority of Expositors, or the circumstance of the Text. For therein it is delivered that Isaac carried on his back the wood for the sacrifice; which being an holocaust or burnt offering to be consumed unto ashes, we cannot well conceive the wood a burthen for a boy; but such a one unto Isaac, as that which it typified was unto Christ, that is, the wood or crosse whereon he suffered; which was too heavy a load for his shoulders, and was fain to be relieved therein by Simon of Cyrene.

Again, He was so farre from a boy, that he was a man grown, and at his full stature, if we beleeve Josephus, who placeth him in the last of Adolescency, and makes him twenty five years old. And whereas in the Vulgar Translation he is termed *puer*, it must not be strictly apprehended (for that age properly

properly endeth in puberty, and extendeth but unto fourteen) but respectively unto Abraham, who was at that time above sixscore. And therefore also herein he was not unlike unto him, who was after led dumb unto the slaughter, and commanded by others, who had legions at command, that is, in meekneſſe and humble submiſſion; for had he reſiſted, it had not been in the power of his aged parent to have enforced; and many at his years have performed ſuch acts, as few beſides at any. David was too ſtrong for a Lion and a Bear; Pompey had deſerved the name of Great; Alexander of the ſame cognomination was Generaliſſimo of Greece; and Aniball but one year after, ſucceeded Aſdruball in that memorable Warre againſt the Romans.

Men of eminent fame and proweſs at 25.

Chap. IX.

Of the Picture of Moſes with hornes.

IN many pieces, and ſome of ancient Bibles, Moſes is deſcribed with hornes. The ſame deſcription we finde in a ſilver Medall; that is upon one ſide Moſes horned, and on the reverſe the commandment againſt ſculptile Images. Which is conceived to be a coynage of ſome Jews, in deriſion of Chriſtians, who firſt began that Pourtract.

The ground of this abſurdity, was ſurely a miſtake of the Hebrew Text, in the hiſtory of Moſes when he deſcended from the Mount; upon the affinity of *Karen* and *Karan*, that is, an horn, and to ſhine, which is one quality of horn: the Vulgar Tranſlation conforming unto the former. *Ignorabat quod cornuta eſſet facies ejus. Qui videbant faciem Moſis eſſe cornutam.* But the Chaldee paraphraſe, tranſlated by Paulus Fagius, hath otherwiſe expreſſed it. *Moſes neſciebat quod multus eſſet ſplendor gloriæ vultus ejus. Et viderunt filii Iſrael quod multa eſſet claritas gloriæ faciei Moſes.* The expreſſion of the Septuagint is as large, Δεδόξασται ὄψις τῆς χρωμάτος τοῦ προσώπου *Glorificatus eſt aſpectus cutis, ſeu coloris faciei.*

Exo. 34. 29, 35.

And this paſſage of the old Teſtament, is well explained by another of the New; wherein it is delivered, that they could not ſtedfaſtly behold the face of Moſes, διὰ τὴν δόξαν τοῦ προσώπου; that is, for the glory of his countenance. And ſurely the expoſition of one Text is beſt performed by another; men vainly interpoſing their conſtructions, where the Scripture decideth the controverſie. And therefore ſome have ſeemed too active in their expoſitions, who in the ſtory of Rahab the harlot, have given notice that the word alſo ſignifieth an Hoſteſſe; for in the Epiſtle to the Hebrews, ſhe is plainly termed πόρνη, which ſignifies not an Hoſteſſe, but a pecuniary and proſtituting Harlot; a term applied unto Lais by the Greeks, and diſtinguiſhed from ἑταίρας or *amica*, as may appear in the thirteenth of Athenæus.

2 Corinth. 3.

What kinde of Harlot ſhe was, reade Camer. *De vita Eliæ.*

And therefore more allowable is the Tanſlation of Tremellius, *Quod ſplendida facta eſſet cutis faciei ejus*; or rather as Eſtius hath interpreted it, *facies ejus erat radioſa*, his face was radiant, and diſperſing beams like many hornes and cones about his head; which is alſo conſonant unto the originall ſignigcation, and yet obſerved in the pieces of our Saviour, and the Virgin Mary, who are commonly drawn with ſcintillations, or radient Halo's about their head; which after the French expreſſion are uſually termed, the Glory.

Now if beſides this occaſionall miſtake, any man ſhall contend a propriety

in this picture, and that no injury is done unto Truth by this description, because an horn is the hieroglyphick of authority, power and dignity, and in this Metaphor is often used in Scripture; the piece I confesse in this acception is harmlesse and agreeable unto Moses; and under such emblematicall constructions, we finde that Alexander the Great, and Attila King of Hunnes, in ancient Medals are described with hornes. But if from the common mistake, or any solary consideration we persist in this description; we vilifie the mystery of the irradiation, and authorize a dangerous piece conformable unto that of Jupiter Hammon; which was the Sunne, and therefore described with hornes; as is delivered by Macrobius; *Hammonem quem Deum solem occidentem Lybies existimant, arietinis cornibus fingunt, quibus id animal valet, sicut radiis Sol.* We herein also imitate the picture of Pan, and Pagan emblem of Nature. And if (as Macorobius and very good Authors concede) Bacchus (who is also described with hornes) be the same Diety with the Sun; and if (as Vossius well contendeth) Moses and Bacchus were the same person; their descriptions must be relative, or the Tauricornous picture of the one, perhaps the same with the other.

Moses and Bacchus supposed to be the same person *De origine Idolatriæ.*

Chap. X.

Of the Scucheons of the Tribes of Israel.

WE will not passe over the Scucheons of the tribes of Israel, as they are usually described in the Mappes of Canaan and severall other pieces; generally conceived to be the proper coats, and distinctive badges of their severall Tribes. So Reuben is conceived to bear three Barres wave, Judah a Lion Rampant, Dan a Serpent nowed, Simeon a sword inpale the point erected, *&c.* the ground whereof is the last Benediction of Jacob, wherein he respectively draweth comparisons from things here represented. Gen 49.

Now herein although we allow a considerable measure of truth, yet whether as they are usually described, these were the proper cognizances, and coat-armes of the Tribes; whether in this manner applied, and upon the grounds presumed, materiall doubts remain.

For first, They are not strictly made out, from the Propheticall blessing of Jacob; for Simeon and Levi have distinct coats, that is a Sword, and the two Tables; yet are they by Jacob included in one Propheste, Simeon and Levi are brethren, Instruments of cruelties are in their habitations. So Joseph beareth an Ox, whereof notwithstanding there is no mention in this Propheste; for therein it is said Joseph is a fruitfull bough, even a fruitfull bough by a well; by which repetion are intimated the two Tribes descending from him, Ephraim and Manasses; whereof notwithstanding Ephraim only beareth an Ox: True it is, that many years after in the benediction of Moses, it is said of Joseph, His glory is like the firstlings of his Bullock; and so we may concede, what Vossius learnedly declareth, that the Ægyptians represented Joseph in the symbole of an Ox; for thereby was best implied the dream of Pharaoh, which he interpreted, the benefit by Agriculture, and provident provision of corn which he performed, and therefore did Serapis bear a bushell upon his head. Deut. 33.

Again, If we take these two benedictions together, the resemblances are not appropriate, and Moses therein conforms not unto Jacob; for that which

in

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The Antiquity of bearing Scucheons.

tiquity; for hereof more ancient examples there are, then the Scucheons of the Tribes, if Osyris, Mizraim or Jupiter the Just, were the son of Cham; for of his two sons, as Diodorus delivereth, the one for his Device gave a Dog, the other a Wolfe; and, beside the shield of Achilles, and many ancient Greeks; if we receive the conjecture of Vossius, that the Crow upon Corvinus his head, was but the figure of that Animall upon his helmet, it is an example of Antiquity among the Romans.

But more widely must we walk, if we follow the doctrine of the Cabalists, who in each of the four banners inscribe a letter of the Tetragrammaton or quadriliterall name of God: and mysterizing their ensignes, doe make the particular ones of the twelve Tribes, accommodable unto the twelve signes in the Zodiack, and twelve moneths in the year: But the Tetrarchicall or generall banners, of Judah, Ruben, Ephraim and Dan, unto the signes of Aries, Cancer, Libra and Capricornus; that is the four cardinall parts of the Zodiak, and seasons of the year.

Recius *de cele. sti Agricultura. lib.* 4.

Chap. XI.

Of the Pictures of the Sibyls.

The Pictures of the Sibyls are very common, and for their Propheſies of Christ in high esteem with Christians; described commonly with youth-faces, and in a defined number; common pieces making twelve, and many precisely ten, observing therein the account of learned Varro; that is, Sibylla Delphica, Erythræa, Samia, Cumana, Cumæa, or Cimmeria, Hellespontiaca, Lybica, Phrygia, Tiburtina, Persica. In which enumeration I perceive learned men are not satisfied, and many conclude an irreconcilable incertainty; some making more, others fewer, and not this certain number. For Suidas though he affirm that in divers ages there were ten, yet the same denomination he affordeth unto more; Boyssardus in his Tract of Divination hath set forth the Icons of these Ten, yet addeth two others, Epirotica, and Ægyptia; and some affirm that Propheſying women were generally named Sibyls.

Others make them fewer: Martianus Capella two; Pliny and Solinus three; Ælian four; and Salmatius in effect but seven. For discoursing hereof in his Plinian Exercitations, he thus determineth; *Ridere licet hodiernos Pictores, qui tabulas proponunt Cumanæ, Cumeæ, & Erythrææ, quasi trium diversarum Sibyllarum; cum una eademque fuerit Cumana, Cumæa, & Erythræa, ex plurium & doctissimorum Authorum sententia.* Boyssardus gives us leave to opinion there was no more then one; for so doth he conclude, *In tantâ Scriptorum varietate liberum relinquimus Lectori credere, an una & eadem in diversis regionibus peregrinata, cognomen sortita sit ab iis locis ubi oracula reddidisse comperitur, an plures extiterint:* And therefore not discovering a resolution of their number from pens of the best Writers, we have no reason to determine the same from the hand and pencill of Painters.

As touching their age, that they are generally described as young women, History will not allow; for the Sibyll whereof Virgill speaketh is termed by him *longæva sacerdos*, and Servius in his Comment amplifieth the same. The other that sold the books unto Tarquin, and whose History is plainer then any, by Livie and Gellius is termed *Anus*; that is properly no woman of ordinary age, but full of years, and in the daies of dotage, according to the Etymology

Anus, *quasi* Avñs, *sine mente.*

logy of Festus; and consonant unto the History; wherein it is said, that Tarquine thought she doted with old age. Which duly perpended, the *Licentia pictoria* is very large; with the same reason they may delineate old Nestor like Adonis, Hecuba with Helens face, and Time with Absolons head; but this absurdity that eminent artist Michael Angelo hath avoided, in the Pictures of the Cumean and Persian Sibylls, as they stand described from the printed sculptures of Adam Mantuanus.

Chap. XII.

Of the Picture describing the death of Cleopatra.

The Picture concerning the death of Cleopatra with two Aspes or venemous Serpents unto her arms, or breasts, or both, requires consideration: for therein (beside that this variety is not excusable) the thing it self is questionable; nor is it indisputably certain what manner of death she died. Plutarch in the life of Antonie plainly delivereth, that no man knew the manner of her death; for some affirmed she perished by poison, which she alwaies carried in a little hollow combe, and wore it in her hair. Beside, there were never any Aspes discovered in the place of her death, although two of her maids perished also with her; only it was said, two small and almost insensible pricks were found upon her arm; which was all the ground that Cæsar had to presume the manner of her death. Galen who was contemporary unto Plutarch, delivereth two waies of her death: that she killed her self by the bite of an Aspe, or bit an hole in her arm, and poured poison therein. Strabo that lived before them both, hath also two opinions; that she died by the bite of an Aspe, or else a poisonous ointment.

We might question the length of the Aspes, which are sometimes described exceeding short; whereas the Cherſæa or land-Aspe which most conceive she used, is above four cubits long. Their number is not unquestionable; for whereas there are generally two described, Augustus (as Plutarch relateth) did carry in his triumph the Image of Cleopatra but with one Aspe unto her arm. As for the two pricks, or little spots in her arm, they rather infer the sex, then plurality: for like the Viper, the female Aspe hath four, but the male two teeth; whereby it left this impression, or double puncture behinde it.

And lastly, We might question the place; for some apply them unto her breast, which notwithstanding will not consist with the history; and Petrus Victorius hath well observed the same. But herein the mistake was easie; it being the custome in capitall malefactors to apply them unto the breast, as the Author *De Theriaca ad Pisonem*, an eye witnesse hereof in Alexandria, where Cleopatra died, determineth: I beheld, saith he, in Alexandria, how suddenly these Serpents bereave a man of life; for when any one is condemned to this kinde of death, if they intend to use him favourably, that is, to dispatch him suddenly, they fasten an Aspe unto his breast; and bidding him walk about, he presently perisheth thereby.

Chap. XIII.

Of the Pictures of the Nine Worthies.

THe Pictures of the nine Worthies are not unqueſtionable, and to criticall ſpectators may ſeem to contain ſundry improprieties. Some will enquire why Alexander the Great is deſcribed upon an Elephant: for, we doe not finde he uſed that animall in his Armies, much leſſe in his own perſon; but his Horſe is famous in Hiſtory, and its name alive to this day. Beſide, he fought but one remarkable battell, wherein there were any Elephants, and that was with Porus King of India; in which notwithſtanding, as Curtius, Arrianus, and Plutarch report, he was on horſeback himſelf. And if becauſe he fought againſt Elephants, he is with propriety ſet upon their backs; with no leſſe or greater reaſon is the ſame deſcription agreeable unto Judas Maccabeus, as may be obſerved from the hiſtory of the Maccabees; and alſo unto Julius Cæſar, whoſe triumph was honoured with captive Elephants, as may be obſerved in the order thereof, ſet forth by *Jacobus Laurus*. And if alſo we ſhould admit this deſcription upon an Elephant, yet were not the manner thereof unqueſtionable, that is, in his ruling the beaſt alone; for, beſide the Champion upon their back, there was alſo a guide or ruler, which ſate more forward to command or guide the beaſt. Thus did King Porus ride when he was overthrown by Alexander; and thus are alſo the towred Elephants deſcribed, Maccab. 2. 6. Upon the beaſts there were ſtrong towres of wood, which covered every one of them, and were girt faſt unto them by devices; there were alſo upon every one of them thirty two ſtrong men, beſide the Indian that ruled them.

In ſplendore urbis Antiquæ.

Others will demand, not only why Alexander upon an Elephant, but Hector upon an Horſe; whereas his manner of fighting, or preſenting himſelf in battel, was in a Chariot, as did the other noble Trojans, who as Pliny affirmeth were the firſt inventers thereof; the ſame way of fight is teſtified by Diodorus, and thus delivered by Sr Walter Rawleigh. Of the vulgar little reckoning was made, for they fought all on foot, ſlightly armed, and commonly followed the ſucceſſe of their Captains; who rode not upon Horſes, but in Chariots drawn by two or three Horſes; and this was alſo the ancient way of fight among the Britains, as is delivered by Diodorus, Cæſar, and Tacitus; and there want not ſome who have taken advantage hereof, and made it one argument of their originall from Troy.

Laſtly, By any man verſed in Antiquity, the queſtion can hardly be avoided, why the Horſes of theſe Worthies, eſpecially of Cæſar, are deſcribed with the furniture of great ſadles, and ſtirrops? for ſadles largely taken, though ſome defence there may be, yet that they had not the uſe of ſtirrops, ſeemeth out of doubt; as Pancirollus hath obſerved, as Polydore Virgil, and Petrus Victorius have confirmed, expreſly diſcourſing hereon; as is obſervable from Pliny, and cannot eſcape our eyes in the ancient monuments, medals and Triumphant arches of the Romanes. Nor is there any genuine or claſſick word in Latin to expreſſe them; for *ſtaphia* or *ſtapes* is not to be found in Authors of Antiquity. And whereas the name might promiſe ſome Antiquity, becauſe among the three ſmall bones in the Auditory Organ, or Phyſitians termed *Incus*, *Malleus* and *ſtapes*, one thereof from ſome reſemblance doth bear this name; theſe bones were not obſerved, much leſſe named by Hippocrates, Galen or any ancient Phyſitian. But as Laurentius obſerveth concerning the invention

Da inventione rerum, variæ Lectiones.

The uſe of ſtirrops not ancient.

invention of the ſtapes or ſtirrop bone, there is ſome contention between *Columbus* and *Ingraſſias*; the one of Sicilia, the other of Cremona, and both within the compaſſe of this Century.

The ſame is alſo deduceable from very approved Authors: Polybius ſpeaking of the way which Aniball marched into Italy, uſeth the word βεκυμάτους, that is ſaith Petrus Victorius, it was ſtored with devices for men to get upon their horſes; which aſcents were termed *Bemata*; and in the life of Caius Gracchus, Plutarch expreſſeth as much. For endeavouring to ingratiate himſelf with the people, beſides the placing of ſtones at every miles end; he made at nearer diſtances certain elevated places, and Scalary aſcents, that by the help thereof they might with better eaſe aſcend or mount their horſes. Now if we demand how Cavaliers then deſtitute of ſtirrops did uſually mount their horſes; Vegetius reſolves us, that they uſed to vault or leape up, and therefore they had wooden horſes in their houſes and abroad; that thereby young men might enable themſelves in this action; wherein by inſtruction and practice they grew ſo perfect, that they could vault up on the right or left, and that with their ſword in hand, according to that of Virgil *De re Milit.*

Poſcit equos atque arma ſimul, ſaltuq; ſuperbus
Emicat. And again:
Infrenant alii currus & corpora ſaltu
Injiciunt in equos.

So Julius Pollux adviſeth to teach horſes to incline, dimit, and bow down their bodies, that their riders may with better eaſe aſcend them. And thus may it more cauſally be made out, what Hippocrates affirmeth of the Scythians, that uſing continuall riding, they were generally moleſted with the Sciatica or hip-gowt; or what Suetonius delivereth of Germanicus, that he had ſlender legs, but encreaſed them by riding after meals; that is, the humours deſcending upon their penduloſity, they having no ſupport or ſuppedaneous ſtability.

Now if any ſhall ſay that theſe are petty errors and minor lapſes, not conſiderably injurious unto truth, yet is it neither reaſonable nor ſafe to contemn inferiour falſities; but rather as between falſhood and truth, there is no medium, ſo ſhould they be maintained in their diſtances; nor the contagion of the one, approach the ſincerity of the other.

CHAP. XIV.

Of the Picture of Jephthah ſacrificing his daughter.

THE hand of the Painter confidently ſetteth forth the Picture of Jephthah in the poſture of Abraham, ſacrificing his only daughter; Thus is it commonly received, and hath had the atteſt of many worthy Writers. Notwithſtanding upon enquiry we finde the matter doubtfull, and many upon probable grounds to have been of another opinion; conceiving in this oblation not a naturall but a civil kinde of death, and a ſeparation only unto the Lord. For that he purſued not his vow unto a literall oblation, there want not arguments both from the Text and reaſon. *That Jephthah did not kill his daughter. Judg. 11. 39.*

For firſt, It is evident that ſhe deplored her Virginity, and not her death; Let me go up and down the mountains, and bewaile my Virginity, I and my fellows.

Secondly, When it is ſaid, that Jephthah did unto her according unto his vow,

vow, it is immediatly ſubjoined, *Et non cognovit virum*, and ſhe knew no man; which as immediate in words, was probably moſt neer in ſenſe unto the vow.

Thirdly, It is ſaid in the Text, that the daughters of Iſrael went yearly to talk with the daughter of Jepthah four daies in the year; which had ſhe been ſacrificed, they could not have done; For whereas the word is ſometime tranſlated to lament, yet doth it alſo ſignifie to talk or have conference with one, and by Tremellius who was well able to judge of the Originall, it is in this ſenſe tranſlated: *Ibant filii Iſraelitarum, ad confabulandum cum filia Iephthaci, quatuor diebus quotannis:* And ſo it is alſo ſet down in the marginall notes of our Tranſlation. And from this annuall concourſe of the daughters of Iſrael, it is not improbable in future Ages, the daughter of Jephthah came to be worſhipped as a Deity; and had by the Samaritans an annuall feſtivity obſerved unto her honour, as Epiphanius hath left recorded in the hereſie of the Melchidecians.

It is alſo repugnant unto reaſon; for the offering of mankinde was againſt the Law of God, who ſo abhorred humane ſacrifice, that he admitted not the oblation of unclean beaſts, and confined his altars but unto few kindes of Animals, the Ox, the Goat, the Sheep, the Pigeon and its kindes: In the cleanſing of the leper, there is I confeſſe, mention made of the Sparrow, but great diſpute may be made whether it be properly rendred. And therefore the Scripture with indignation oft times makes mention of humane ſacrifice among the Gentiles; whoſe oblations ſcarce made ſcruple of any Animall; ſacrificing not only man, but Horſes, Lions, Ægles; and though they come not into holocauſts, yet doe we reade the Syrians did make oblations of fiſhes unto the goddeſſe Derceto. It being therefore a ſacrifice ſo abominable unto God, although he had purſued it, it is not probable the Prieſts and wiſdome of Iſrael would have permitted it; and that not only in regard of the ſubject or ſacrifice it ſelf, but alſo the ſacrificator, which the Picture makes to be Jephthah; who was neither Prieſt, nor capable of that office; for he was a Gileadite, and as the text affirmeth, the ſon alſo of an harlot; And how hardly the Prieſthood would endure encroachment upon their function, a notable example there is in the ſtory of Ozias.

Secondly, The offering up of his daughter was not only unlawfull, and entrenched upon his Religion, but had been a courſe that had much condemned his diſcretion; that is, to have puniſhed himſelf in the ſtricteſt obſervance of his vow, when as the Law of God had allowed an evaſion; that is, by way of commutation or redemption, according as is determined, Levit. 27: whereby if ſhe were between the age of five and twenty, ſhe was to be eſtimated but at ten ſhekels, and if between twenty and ſixty, not above thirty; a ſumme that could never diſcourage an indulgent Parent; it being but the value of a ſervant ſlain; the inconſiderable Salary of Judas; and will make no greater noiſe then three pound fifteen ſhillings with us. And therefore their conceit is not to be exploded, who ſay that from the ſtory of Jephthah ſacrificing his own daughter, might ſpring the fable of Agamemnon, delivering unto ſacrifice his daughter Iphigenia, who was alſo contemporary unto Jephthah; wherein to anſwer the ground that hinted it, Iphigenia was not ſacrificed her ſelf, but redeemed with an Hart, which Diana accepted for her.

Laſtly, Although his vow run generally for the words, Whatſoever ſhall come forth, &c. yet might it be reſtrained in the ſenſe, for whatſoever was ſacrificable, and juſtly ſubject to lawfull immolation: and ſo would not have ſacrifiſed either Horſe or Dog, if they had come out upon him. Nor was he obliged

obliged by oath unto a ſtrict obſervation of that which promiſſorily was unlawfull; or could he be qualified by vow to commit a fact which naturally was abominable. Which doctrine had Herod underſtood, it might have ſaved John Baptiſts head; when he promiſed by oath to give unto Herodias whatſoever ſhe would ask; that is, if it were in the compaſſe of things, which he could lawfully grant. For his oath made not that lawfull which was illegall before: and if it were unjuſt to murder John, the ſupervenient oath did not extenuate the fact, or oblige the Jurer unto it.

Now the ground at leaſt which much promoted the opinion, might be the dubious words of the text, which contain the ſenſe of his vow; moſt men adhering unto their common and obvious acception. Whatſoever ſhall come forth of the doors of my houſe ſhall ſurely be the Lords, and I will offer it up for a burnt offering. Now whereas it is ſaid, *Erit Jehovæ, & offeram illud holocauſtum*, The word ſignifying both & and *aut*, it may be taken disjunctively; *aut offeram*, that is, it ſhall either be the Lords by ſeparation, or elſe, an holocauſt by common oblation; even as our marginall tranſlation advertiſeth; and as Tremellius rendreth it, *Erit inquam Jehovæ, aut offeram illud holocauſtum*: and for the vulgar tranſlation, it uſeth often &, where *aut* muſt be preſumed, as Exod. 21. *Si quis percuſſerit patrem & matrem*, that is, not both, but either. There being therefore two waies to diſpoſe of her, either to ſeparate her unto the Lord, or offer her as a ſacrifice, it is of no neceſſity the later ſhould be neceſſary; and ſurely leſſe derogatory unto the ſacred text, and hiſtory of the people of God, muſt be the former.

Chap. XV.

Of the Picture of John the Baptiſt.

The Picture of John the Baptiſt, in a Camels skin is very queſtionable, and many I perceive have condemned it. The ground or occaſion of this deſcription are the words of the holy Scripture, eſpecially of Matthew and Mark, for Luke and John are ſilent herein; by them it is delivered, his garment was of Camels hair, and had a leathern girdle about his loines. Now here it ſeems the Camels hair is taken by Painters for the skinne or pelt with the hair upon it: But this expoſition will not ſo well conſiſt with the ſtrict acceptation of the words; for Mark 1. It is ſaid, he was ἐνδεδυμένος τρίχας καμήλου, and Matthew 3. εἶχε τὸ ἔνδυμα ἀπὸ τριχῶν καμήλου, that is, as the vulgar tranſlation, that of Beza, that of Sixtus Quintus, and Clement the eight hath rendred it, *veſtimentum habebat e pilis camelinis*; which is as ours tranſlateth it, a garment of Camels hair; that is, made of ſome texture of that hair, a courſe garment, a cilicious or ſackcloth habit; ſutable to the auſterity of his life; the ſeverity of his Doctrine, Repentance; and the place thereof, the wilderneſſe, his food and diet, locuſts and wilde hony; agreeable unto the example of Elias, who 2 Kings 1.8. is ſaid to be *vir piloſus*, that is, as Junius and Tremellius interpret, *Veſte villoſo cinctus*; anſwerable unto the habit of the ancient Prophets, according to that of Zachary 13. In that day the Prophets ſhall be aſhamed, neither ſhall they wear a rough garment to deceive; and ſutable to the Cilicious and hairy Veſts of the ſtricteſt Orders of Friers, who derive the inſtitution of their Monaſtick life from the example of John and Elias.

As for the wearing of skinnes, where that is properly intended, the ex-

preſſion of the Scripture is plain, ſo is it ſaid, Heb. 11. they wandred about ἐν δέρμασι αἰγείοις, that is, in Goats skinnes; and ſo it is ſaid of our firſt Parents, Gen. 3. that God made them χιτῶνας δερματίνους *Veſtes pelliceas*, or coats of skinnes; which though a naturall habit unto all, before the invention of Texture, was ſomething more unto Adam, who had newly learned to die; for unto him a garment from the dead, was but a dictate of death, and an habit of mortality.

Now if any man will ſay this habit of John, was neither of Camels skinne, nor any courſe Texture of its hair, but rather ſome finer weave of Camelot, Grograine or the like, in as much as theſe ſtuffes are ſuppoſed to be made of the hair of that Animall, or becauſe that Ælian affirmeth, that Camels hair of Perſia, is as fine as Mileſian wooll, wherewith the great ones of that place were clothed; they have diſcovered an habit, not only unſutable unto his leathern cincture, and the courſneſſe of his life; but not conſiſtent with the words of our Saviour, when reaſoning with the people concerning John, he ſaith; What went you out into the wilderneſſe to ſee? a man clothed in ſoft raiment? Behold they that wear ſoft raiment are in Kings houſes.

Chap. XVI.

Of the Picture of S^t Chriſtopher.

THe Picture of S^t Chriſtopher, that is, a man of a Giantlike ſtature, bearing upon his ſhoulders our Saviour Chriſt, and with a ſtaff in his hand, wading thorow the water, is known unto children, common over all Europe, not only as a ſign unto houſes, but is deſcribed in many Churches, and ſtands Coloſſus like in the entrance of *Noſtre Dame* in *Paris*.

Now from hence, common eyes conceive an hiſtory ſutable unto this deſcription, that he carried our Saviour in his Minority over ſome river or water; which notwithſtanding we cannot at all make out. For we reade not thus much in any good Author, nor of any remarkable Chriſtopher, before the reign of Decius; who lived 250 years after Chriſt. This man indeed according unto Hiſtory ſuffered as a Martyr in the ſecond year of that Emperour, and in the Roman Calender takes up the 21 of July.

The ground that begat or promoted this opinion was, firſt the fabulous adjections of ſucceeding ages, unto the veritable acts of this Martyr, who in the moſt probable accounts was remarkable for his ſtaff, and a man of a goodly ſtature.

The ſecond might be a miſtake or miſapprehenſion of the Picture; moſt men conceiving that an Hiſtory which was contrived at firſt but as an Emblem or Symbolicall fancy; as from the Annotations of Baronius upon the Roman Martyrology, Lipellous in the life of S^t Chriſtopher hath obſerved in theſe words; *Acta S. Chriſtophori à multis depravata inveniuntur; quod quidem non aliunde originem ſumpſiſſe certum eſt, quam quod Symbolicas figuras imperiti ad veritatem ſucceſſu temporis tranſtulerint; itaq; cuncta illa de Sancto Chriſtophoro pingi conſueta, Symbola potius, quam hiſtoriæ alicujus exiſtimandum eſt eſſe expreſſam imaginem*; that is, The acts of S^t Chriſtopher are depraved by many: which ſurely began from no other ground, then, that in proceſſe of time, unskilfull men tranſlated ſymbolicall figures unto reall verities: and therefore what is uſually deſcribed in the Picture of S^t Chriſtopher, is rather to be received

Lip. *De vitis Sanctorum.*

ceived as an Emblem, or Symbolicall deſcription, then any reall Hiſtory. Now what Emblem this was, or what its ſignification, conjectures are many; Pierius hath ſet down one, that is, of the Diſciple of Chriſt; for he that will carry Chriſt upon his ſhoulders, muſt relie upon the ſtaffe of his direction, whereon if he firmeth himſelf, he may be able to overcome the billows of reſiſtance, and in the vertue of this ſtaffe, like that of Jacob, paſſe over the waters of Jordan. Or otherwiſe thus; He that will ſubmit his ſhoulders unto Chriſt, ſhall by the concurrence of his power encreaſe into the ſtrength of a Giant; and being ſupported by the ſtaffe of his holy Spirit, ſhall not be overwhelmed by the waves of the world, but wade through all reſiſtance.

Chap. XVII.

Of the Picture of S^t George.

The Picture of S^t George killing the Dragon, and, as moſt ancient draughts doe run, with the daughter of a King ſtanding by, is famous amongſt Chriſtians; and upon this deſcription dependeth a ſolemne ſtory, how by this achievement he redeemed a Kings daughter; which is more eſpecially beleeved by the Engliſh, whoſe Protectour he is; and in which form and hiſtory, according to his deſcription in the Engliſh Colledge at Rome, he is ſet forth in the Icons or Cuts of Martyrs by Cevallerius; and all this according to the *Hiſtoria Lombardica*, or golden legend of Jacobus de Voragine. Now of what authority ſoever this Piece be amongſt us, it is I perceive received with different beliefs: for ſome beleeve the perſon and the ſtory; ſome the perſon, but not the ſtory; and others deny both.

That ſuch a perſon there was, we ſhall not contend: for beſides others, D^r Heilin hath clearly aſſerted it in his Hiſtory of S^t George. The indiſtinction of many in the community of name, or the miſapplication of the act of one unto another, hath made ſome doubt thereof; For of this name we meet with more then one in hiſtory, and no leſſe then two conceived of Cappadocia; the one an Arrian, who was ſlain by the Alexandrians in the time of Julian; the other a valiant Souldier and Chriſtian Martyr, beheaded in the reign of Diocleſian. This is the George conceived in this Picture, who hath his day in the Roman Calender, on whom ſo many fables are delivered, whoſe ſtory is ſet forth by Metaphraſtes, and his miracles by Turonenſis.

As for the ſtory depending hereon, ſome conceive as lightly thereof, as of that of Perſeus and Andromeda; conjecturing the one to be the father of the other; and ſome too highly aſſert it. Others with better moderation, doe entertain the ſame as a fabulous addition unto the true and authentick ſtory of S^t George; or elſe conceive the literall acception to be a miſconſtruction of the ſymbolicall expreſſion; apprehending a veritable hiſtory, in an Emblem or piece of Chriſtian Poeſie. And this Emblematicall conſtruction hath been received by men not forward to extenuate the acts of Saints; as from Baronius, Lipellous the Carthaſian hath delivered in the life of S^t George; *Picturam illam S. Georgij quâ effingitur eques armatus, qui haſtæ cuſpide hoſtem interficit, juxta quam etiam virgo poſita manus ſupplices tendens ejus explorat auxilium, Symboli potius quam hiſtoriæ alicujus cenſenda expreſſa Imago. Conſuevit quidem ut equeſtris militiæ miles equeſtri imagine referri:* that is, The Picture of S^t George, wherein he is deſcribed like a Curaſſier or horſeman compleatly armed, *&c.* is rather a ſymbolicall image, then any proper figure.

Now in the picture of this Saint and Souldier, might be implied the Christian Souldier and true Champion of Christ. A horsman armed *Cap a pe*, intimating the Panoplia or compleat armour of a Christian; combating with the Dragon, that is, with the Divel; in defence of the Kings daughter, that is the Church of God. And therefore although the history be not made out, it doth not disparage the Knights and Noble order of S^t George; whose cognisance is honourable in the Emblem of the Souldier of Christ; and is a worthy memoriall to conform unto its mystery. Nor, were there no such person at all, had they more reason to be ashamed, then the Noble order of Burgundy, and Knights of the golden Fleece; whose badge is a confessed fable.

Chap. XVIII.

Of the Picture of Jerome.

THe Picture of Jerome usually described at his study, with a Clock hanging by, is not to be omitted; for though the meaning be allowable, and probable it is that industrious Father did not let slip his time without account; yet must not perhaps that Clock be set down to have been his measure thereof. For Clocks or Automatous organs, whereby we now distinguish of time, have found no mention in any ancient Writers; but are of late invention, as Pancirollus observeth; and Polydore Virgil discoursing of new inventions whereof the authors are not known, makes instance in Clocks and Guns. Now Jerome is no late Writer, but one of the ancient Fathers, and lived in the fourth Century, in the reign of Theodosius the first.

Clocks no very ancient Invention.

It is not to be denied that before the daies of Jerome there were Horologies, and severall accounts of time; for they measured the hours not only by drops of water in glasses called Clepsydræ, but also by sand in glasses called Clepsammia. There were also from great antiquity, Sciotericall or Sun Dialls, by the shadow of a stile or gnomon denoting the hours of the day: an invention ascribed unto Anaximenes by Pliny. Hereof a memorable one there was in Campus Martius, from an obelisk erected, and golden figures placed horozontally about it; which was brought out of Ægypt by Augustus, and described by Jacobus Laurus. And another of great antiquity we meet with in the story of Ezechias; for so it is delivered in King. 2. 20. That the Lord brought the shadow backward ten degrees, by which it had gone down in the Diall of Ahaz. That is, say some, ten degrees, not lines; for the hours were denoted by certain divisions or steps in the Diall, which others distinguished by lines, according to that of Persius

Stertimus indomitum quod despumare Falernum
Sufficiat, quintâ dum linea tangitur umbrâ.

That is, the line next the Meridian, or within an hour of noon.

A peculiar description and particular construction hereof out of *R. Chomer*, is let down. *Curiat de Caffarel. cap 9.*

Of later years there succeeded new inventions, and horologies composed by Trochilick or the artifice of wheeles; whereof some are kept in motion by weight, others performe without it. Now as one age instructs another, and time that brings all things to ruine perfects also every thing; so are these indeed of more generall and ready use then any that went before him. By the Water-glasses the account was not regular; for from attenuation and condensation, whereby that Element is altered, the hours were shorter in hot weather then in cold, and in Summer then in Winter. As for Sciotericall Dialls, whether of the Sunne or Moon, they are only of use in the actuall radiation of those

Doctrine of circular motions.

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As for the Unicorne, if it have the head of a Deer, and the taile of a Boar, as Vartomannus deſcribeth it; how agreeable it is in this picture every eye may diſcern. If it be made biſulcous or cloven footed, it agreeth unto the deſcription of Vartomannus, but ſcarce of any other; and Ariſtotle ſuppoſeth that ſuch as divide the hoof, doe alſo double the horn; they being both of the ſame nature, and admitting diviſion together. And laſtly, if the horn have this ſituation, and be ſo forwardly affixed, as is deſcribed, it will not be eaſily conceived, how it can feed from the ground; and therefore we obſerve, that Nature in other cornigerous animals, hath placed the horns higher and reclining, as in Bucks; in ſome inverted upwards, as in the Rhinoceros, the Indian Aſſe, and Unicornous Beetles; and thus have ſome affirmed it is ſeated in this animall.

We cannot but obſerve that in the Picture of Jonah and others, Whales are deſcribed with two prominent ſpouts on their heads; whereas indeed they have but one in the forehead, and terminating over the windepipe. Nor can we overlook the Picture of Elephants with Caſtles on their backs, made in the forme of land Caſtles, or ſtationary fortifications, and anſwerable unto the Armes of Caſtile, or S^t John Old Caſtle; whereas the towres they bore, were made of wood, and girt unto their bodies; as is delivered in the books of Maccabees, and as they were appointed in the Army of Antiochus.

We will not diſpute the Pictures of Telary Spiders, and their poſition in the web, which is commonly made laterall, and regarding the Horizon; although, if it be obſerved, we ſhall commonly finde it downward, and their heads reſpecting the Center. We will not controvert the Picture of the ſeven Starres; although if thereby be meant the Pleiades, or ſubconſtellation upon the back of Taurus, with what congruity they are deſcribed, either in ſite or magnitude, in a clear night an ordinary eye may diſcover, from July unto Aprill. We will not queſtion the tongues of Adders and Vipers, deſcribed like an Anchor; nor the Picture of the Flower *de Luce*; though how farre they agree unto their naturall draughts, let every Spectator determine.

Where the ſeven Starres be ſituated.

Whether the Cherubims about the Ark be rightly deſcribed in the common Picture, that is, only in humane heads, with two wings; or rather in the ſhape of Angels or young men, or ſomewhat at leaſt with feet, as the Scripture ſeems to imply. Whether the Croſſe ſeen in the air by Conſtantine, were of that figure wherein we repreſent it; or rather made out of X and P the two firſt letters of χριστος. Whether the Croſſe of Chriſt did anſwer the common figure; whether ſo farre advanced above his head; whether the feet were ſo diſpoſed, that is, one upon another, or ſeparately nailed, as ſome with reaſon deſcribe it; we ſhall not at all contend. Much leſſe whether the houſe of Diogenes were a Tub framed of wood, and after the manner of ours; or rather made of earth, as learned men conceive, and ſo more clearly make out that expreſſion of Juvenal. We ſhould be too criticall to queſtion the letter Y, or bicornous element of Pythagoras, that is, the making of the hornes equall: or the left leſſe then the right, and ſo deſtroying the ſymbolicall intent of the figure; confounding the narrow line of vertue, with the larger roade of vice; anſwerable unto the narrow door of heaven, and the ample gates of hell, expreſſed by our Saviour, and not forgotten by Homer, in that Epithete of Pluto's houſe.

2 Chron. 3. 13.

---*Dolia magni non erdent Y nici*, &c.

Εὐρυπυλὰς.

Many more there are whereof our pen ſhall take no notice, nor ſhall we urge their enquiry; we ſhall not enlarge with what incongruity, and how diſſenting from the pieces of Antiquity, the Pictures of their gods and goddeſſes

desses are described, and how hereby their symbolicall sense is lost; although herein it were not hard, to be informed from Phornutus, Fulgentius, and Albricus. Whether Hercules be more properly described strangling then tearing the Lion, as Victorius hath disputed; nor how the characters and figures of the Signes and Planets be now perverted, as Salmasius hath learnedly declared. We will dispence with Beares with long tailes, such as are described in the figures of heaven; We shall tolerate flying Horses, black Swans, Hydrae's, Centaur's, Harpies and Satyres; for these are monstrosities, rarities, or else Poeticall fancies, whose shadowed moralities requite their substantiall falsities. Wherein indeed we must not deny a liberty; nor is the hand of the Painter more restrainable then the pen of the Poet. But where the reall works of Nature, or veritable acts of story are to be described, digressions are aberrations; and Art being but the Imitator or secondary representor, it must not vary from the verity of the example, or describe things otherwise then they truly are or have been: for hereby introducing false Idea's of things, it perverts and deformes the face and symmetry of truth.

Phornut. de natura deorum Fulg. mythologica. Albric. de deorum imaginibus.

CHAP. XX.

Of the Hieroglyphicall Pictures of the Ægyptians.

CErtainly of all men that suffered from the confusion of Babel, the Ægyptians found the best evasion; for, though words were confounded, they invented a language of things, and spake unto each other by common notions in Nature. Whereby they discoursed in silence; and were intuitively understood from the theory of their Expresses. For they assumed the shapes of animals common unto all eies; and by their conjunctions and compositions were able to communicate their conceptions, unto any that coapprehended the Syntaxis of their natures. This many conceive to have been the primitive way of writing, and of greater antiquity then letters; and this indeed might Adam well have spoken, who understanding the nature of things, had the advantage of naturall expressions; which the Ægyptians but taking upon trust, upon their own or common opinion; from conceded mistakes they authentically promoted errors; describing in their Hieroglyphicks creatures of their own invention; or from known and conceded animals, erecting significations not inferrible from their natures.

And first, Although there were more things in Nature then words which did expresse them; yet even in these mute and silent discourses, to expresse complexed significations, they took a liberty to compound and piece together creatures of allowable formes into mixtures inexistent. Thus began the descriptions of Griphins, Basilisks, Phenix, and many more; which Emblematists and Heralds have entertained with significations answering their institutions; Hieroglyphically adding Martegres, Wivernes, Lion-fishes, with divers others. Pieces of good and allowable invention unto the prudent Spectator, but are lookt on by vulgar eyes as literall truths, or absurd impossibilities; whereas, indeed they are commendable inventions, and of laudable significations.

Again, Beside these pieces fictitiously set down, and having no copy in Nature; they had many unquestionably drawn, of inconsequent signification, nor naturally verifying their intention. We shall instance but in few, as they stand recorded

recorded by Orus. The male ſex they expreſſed by a Vulture, becauſe of Vultures all are females, and impregnated by the winde; which authentically tranſmitted hath paſſed many pens, and became the aſſertion of Ælian, Ambroſe, Baſil, Iſidore, Tzetzes, Philes, and others. Wherein notwithſtanding what injury is offered unto the Creation in this confinement of ſex, and what diſturbance unto Philoſophy in the conceſſion of windy conceptions, we ſhall not here declare. By two dragmes they thought it ſufficient to ſignifie an heart; becauſe the heart at one year weigheth two dragmes, that is, a quarter of an ounce, and unto fifty years annually encreaſeth the weight of one dragme; after which in the ſame proportion it yearly decreaſeth; ſo that the life of a man doth not naturally extend above an hundred; and this was not only a popular conceit, but conſentaneous unto their Phyſicall principles, as Heurnius hath accounted it.

In his *Philoſophia Barbarica.*

A woman that hath but one childe, they expreſſe by a Lioneſſe; for that conceiveth but once. Fecundity they ſet forth by a Goat, becauſe but ſeven daies old, it beginneth to uſe coition. The abortion of a woman they deſcribe by an Horſe kicking a Wolfe; becauſe a Mare will caſt her fole if ſhe tread in the track of that animall. Deformity they ſignifie by a Bear; and an unſtable man by an Hyæna, becauſe that animall yearly exchangeth its ſex. A woman delivered of a female childe, they imply by a Bull looking over his left ſhoulder; becauſe if in coition a Bull part from a Cow on that ſide, the Calf will prove a female.

All which with may more, how farre they conſent with truth, we ſhall not diſparage our Reader to diſpute; and though ſome way allowable unto wiſer conceits, who could diſtinctly receive their ſignifications; yet carrying the majeſty of Hieroglyphicks, and ſo tranſmitted by Authors, they crept into a belief with many, and favourable doubt with moſt. And thus, I fear, it hath fared with the Hieroglyphicall ſymboles of Scripture; which excellently intended in the ſpecies of things ſacrificed, in the prohibited meats, in the dreams of Pharaoh, Joſeph, and many other paſſages; are oft times wrackt beyond their ſymbolizations, and inlarg'd into conſtructions diſparaging their true intentions.

CHAP. XXI.

Compendiouſly of many queſtionable Cuſtomes, Opinions, Pictures, Practiſes, and Popular Obſervations.

1. IF an Hare croſſe the high way, there are few above threeſcore that are not perplexed thereat; which notwithſtanding is but an Auguriall terror, according to that received expreſſion, *Inauſpicatum dat iter oblatus Lepus.* And the ground of the conceit was probably no greater then this, that a fearfull animall paſſing by us portended unto us ſome thing to be feared; as upon the like conſideration the meeting of a Fox preſaged ſome future impoſture. Which was a ſuperſtitious obſervation prohibited unto the Jews, as is expreſſed in the Idolatry of Maimonides, and is referred unto the ſin of an obſerver of Fortunes; or that abuſeth events unto good or bad ſignes, forbidden by the Law of Moſes; which notwithſtanding ſometimes ſucceeding, according to fears or deſires; have left impreſſions and timerous expectations in credulous mindes for ever.

The ground of many vain obſervations. Deut. 18.

2. That Owles and Ravens are ominous appearers, and preſignifying unlucky events,

events, as Christians yet conceit, was also an Auguriall conception. Because many Ravens were seen when Alexander entered Babylon, they were thought to preominate his death; and because an Owle appeared before the battell, it presaged the ruine of Crassus. Which though decrepite superstions, and such as had their nativity in times beyond all history, are fresh in the observation of many heads, and by the credulous and feminine party still in some Majesty among us. And therefore the Embleme of Superstition was well set out by Ripa, in the picture of an Owle, an Hare, and an old woman; and it no way confirmeth the Auguriall consideration, that an Owle is a forbidden food in the Law of Moses; or that Jerusalem was threatned by the Raven and the Owle, in that expression of Esay 34. That it should be a court for Owles, that the Cormorant and the Bittern should possesse it, and the Owle and the Raven dwell in it. For thereby was only implied their ensuing desolation, as is expounded in the words succeeding; He shall draw upon it the line of confusion, and the stones of emptinesse.

The Embleme of superstition. *Iconologia de Cæsare Ripa.*

3. The falling of Salt is an authentick presagement of ill luck, nor can every temper contemn it; from whence notwithstanding nothing can be naturally feared: nor was the same a generall prognostick of future evill among the Ancients, but a particular omination concerning the breach of friendship: for Salt as incorruptible, was the Symbole of friendship, and before the other service was offered unto their guests; which if it casually fell, was accounted ominous, and their amity of no duration. But whether Salt were not only a Symbole of friendship with man, but also a figure of amity and reconciliation with God, and was therefore observed in sacrifices; is an higher speculation.

4. To break the eggeshell after the meat is out, we are taught in our childehood, and practise it all our lives; which nevertheless is but a superstitious relict according to the judgement of Pliny; *Huc pertinet ovorum, ut exorbuerit quisq; calices protinus frangi, aut eosdem cochlearibus perforari*; and the intent hereof was to prevent witchcraft; for lest witches should draw or prick their names therein, and veneficiously mischief their persons, they broke the shell, as Dalecampius hath observed.

5. The true lovers knot is very much magnified and still retained in presents of love among us; which though in all points it doth not make out, had perhaps its originall from Nodus Herculanus, or that which was called Hercules his knot, resembling the snaky complication in the caduceus or rod of Hermes; and in which form the Zone or woollen girdle of the Bride was fastened, as Turnebus observeth in his Adversaria.

6. When our cheek burneth or ear tingleth, we usually say that some body is talking of us; which is an ancient conceit, and ranked among superstitious opinions by Pliny. *Absentes tinnitu aurium præsentire sermones de se receptum est*, according to that Distick noted by Dalecampius.

Garrula quid totis resonas mihi noctibus auris?
Nescio quem dicis nunc meminisse mei.

Which is a conceit hardly to be made out without the concession of a signifying Genius, or universall Mercury; conducting sounds unto their distant subjects, and teaching us to hear by touch.

7. When we desire to confine our words, we commonly say they are spoken under the Rose; which expression is commendable, if the Rose from any naturall property may be the Symbole of silence, as Nazianzene seems to imply in these translated verses:

The originall of the Proverbe, *Under the Rose be it, &c.*

Utq; latet Rosa Verna suo putamine clausa,
Sic os vincla ferat, validisq; arcteturhabenis,

Indicatq; ſuis prolixa ſilentia labris:

And is alſo tolerable, if by deſiring a ſecrecy to words ſpoke under the Roſe, we only mean in ſociety and compotation, from the ancient cuſtome in Symposiack meetings, to wear chaplets of Roſes about their heads: and ſo we condemn not the Germane cuſtome, which over the Table deſcribeth a Roſe in the ſeeling. But more conſiderable it is, if the originall were ſuch as Lemnius and others have recorded; that the Roſe was the flower of Venus, which Cupid conſecrated unto Harpocrates the God of ſilence, and was therefore an Emblem thereof to conceale the pranks of Venery; as is declared in this Tetraſtick,

Eſt Roſa flos veneris, cujus quo facta laterent,
Harpocrati matris, dona dicavit Amor;
Inde Roſam menſis hoſpes ſuſpendit Amicis,
Conviva ut ſub eâ dicta tacenda ſciant.

8. That ſmoak doth follow the faireſt is an uſuall ſaying with us, and in many parts of Europe; whereof although there ſeem no naturall ground, yet is it the continuation of a very ancient opinion, as Petrus Victorius and Cauſabon have obſerved from a paſſage in Athenæus, wherein a Paraſite thus deſcribeth himſelf:

To every table firſt I come,
Whence Porridge I am cal'd by ſome:
A Capaneus at ſtaves I am,
To enter any room a Ramme;
Like whipps and thongs to all I ply,
Like ſmoak unto the fair I fly.

9. To ſit croſſe legg'd, or with our fingers pectinated or ſhut together is accounted bad, and friends will perſwade us from it. The ſame conceit religiouſly poſſeſſed the Ancients, as is obſervable from Pliny. *Poſtes alternis genibus imponere nefas olim*; and alſo from Athenæus, that it was an old veneficious practice, and Juno is made in this poſture to hinder the delivery of Alcmæna. And therefore, as Pierius obſerveth, in the Medall of Julia Pia the right hand of Venus, was made extended with the inſcription of Venus Genetrix; for the complication or pectination of the fingers was an Hieroglyphick of impediment, as in that place he declareth.

10. The ſet and ſtatary times of pairing of nailes, and cutting of hair is thought by many a point of conſideration; which is perhaps but the continuation of an ancient ſuperſtition. For piaculous it was unto the Romans to pare their nailes upon the nundinæ, obſerved every ninth day; and was alſo feared by others in certain daies of the week, according to that of Auſonius, Ungues Mercurio, Barbam Jove, Cypride *crines*; and was one part of the wickedneſſe that filled up the meaſure of Manaſſes, when 'tis delivered he obſerved times, 2 Chron. 33.

11. A common faſhion it is to nouriſh hair upon the mouls of the face; which is the perpetuation of a very ancient cuſtome; and though innocently practiſed among us, may have a ſuperſtitious originall, according to that of Pliny; *Nævos in facie tondere religioſum habent nunc multi*; from the like might proceed the fears of poling Elvelocks or complicated haires of the head, and alſo of locks longer then the other hair; they being votary at firſt, and dedicated upon occaſion; preſerved with great care, and accordingly eſteemed by others, as appears by that of Apuleius; *Adjuro per dulcem capilli tui nodulum.*

12. A cuſtome there is in moſt parts of Europe to adorn Aqueducts, ſpouts and Ciſternes with Lions heads; which though no illaudable ornament, is an

an Ægyptian continuation, who practiſed the ſame under a ſymbolicall illation. For becauſe the Sun being in Leo, the floud of Nilus was at the full, and water became conveied into every part, they made the ſpouts of their Aqueducts through the head of a Lion: and upon ſome celeſtiall reſpects it is not improbable the great Mogull or Indian King doth bear for his Armes a Lion and the Sun.

13. Many conceive there is ſomewhat amiſſe, and that as we uſually ſay, they are unbleſt untill they put on their girdle. Wherein (although moſt know not what they ſay) there are involved unknown conſiderations; for by a girdle or cincture are ſymbolically implied Truth, Reſolution and readineſſe unto action, which are parts and vertues required in the ſervice of God. According whereto we finde that the Iſraelites ate the Paſchall Lamb with their loins girded, and the Almighty challenging Job, bids him gird up his loins like a man; ſo runneth the expreſſion of Peter, Gird up the loins of your mindes, be ſober and hope to the end; ſo the high Prieſt was girt with the girdle of fine linnen; ſo is it part of the holy habit to have our loins girt about with truth; and ſo is it alſo ſaid concerning our Saviour, Righteouſneſſe ſhall be the girdle of his loines, and faithfulneſſe the girdle of his reines. Iſa. 11.

Symbolicall ſignifications of the girdle.

Moreover by the girdle the heart and parts which God requires are divided from the inferiour and epithumeticall organs; implying thereby a memento unto purification and cleanneſſe of heart, which is commonly defiled from the concupiſcence and affection of thoſe parts; and therefore unto this day the Jews doe bleſſe themſelves when they put on their zone or cincture. And thus may we make out the doctrine of Pythagoras, to offer ſacrifice with our feet naked, that is, that our inferiour parts and fartheſt removed from reaſon might be free, and of no impediment unto us. Thus Achilles though dipped in Styx, yet having his heel untouched by that water, although he were fortified elſewhere, he was ſlain in that part, as only vulnerable in the inferiour and brutall part of Man. This is that part of Eve and her poſterity the devil ſtill doth bruiſe; that is, that part of the ſoul which adhereth unto earth, and walks in the paths thereof. And in this ſecondary and ſymbolicall ſenſe it may be alſo underſtood, when the Prieſts in the Law waſhed their feet before the ſacrifice; when our Saviour waſhed the feet of his Diſciples, and ſaid unto Peter, If I waſh not thy feet thou haſt no part in me; and thus is it ſymbollically explainable and implieth purification and cleanneſſe, when in the burnt offerings the Prieſt is commanded to waſh the inwards and legs thereof in water; and in the peace and ſin-offerings, to burn the two kidneys, the fat which is about the flanks, and as we tranſlate it, the Caul above the Liver. But whether the Jews when they bleſſed themſelves, had any eye unto the words of Jeremy, wherein God makes them his Girdle; or had therein any reference unto the Girdle, which the Prophet was commanded to hide in the hole of the rock of Euphrates, and which was the type of their captivity, we leave unto higher conjecture. Jer. 13.

Concupiſcentiall.

14. The Picture of the Creator, or God the Father in the ſhape of an old Man, is a dangerous piece, and in this fecundity of ſects may revive the Anthropomorphites. Which although maintained from the expreſſion of Daniel, I beheld where the Ancient of daies did ſit, whoſe hair of his head was like the pure wooll; yet may it be alſo derivative from the Hieroglyphicall deſcription of the Ægyptians; who to expreſſe their Eneph, or Creator of the world, deſcribed an old man in a blew mantle, with an egge in his mouth, which was the embleme of the world. Surely thoſe heathens, that notwithſtanding the exemplary advantage in heaven, would endure no pictures of

Certain Heteticks who aſcribed humane figure unto God, after which they conceived he created man in his likeneſſe.

Sunne or Moon, as being visible unto all the world, and needing no representation; doe evidently accuse the practice of those pencils, that will describe invisibles. And he that challenged the boldest hand unto the picture of an Echo, must laugh at this attempt, not only in the description of invisibility, but circumscription of Ubiquity, and fetching under lines incomprehensible circularity.

The Pictures of the Ægyptians were more tolerable, and in their sacred letters more veniably expressed the apprehension of Divinity. For though they implied the same by an eye upon a Scepter, by an Eagles head, a Crocodile and the like; yet did these manuall descriptions pretend no corporall representations; nor could the people misconceive the same unto reall correspondencies. So though the Cherub carried some apprehension of Divinity, yet was it not conceived to be the shape thereof: and so perhaps becaus it is metaphorically predicated of God, that he is a consuming fire, he may be harmlesly described by a flaming representation, Yet if, as some will have it, all mediocrity of folly is foolish, and becaus an unrequitable evil may ensue, an indifferent convenience must be omitted; we shall not urge such representments; we could spare the holy Lamb for the picture of our Saviour, and the Dove or fiery Tongues to represent the holy Ghost.

15. The Sunne and Moon are usually described with humane faces; whether herein there be not a Pagan imitation, and those visages at first implied Apollo and Diana, we may make some doubt; and we finde the statua of the Sunne was framed with raies about the head, which were the indiciduous and unshaven locks of Apollo. We should be too Iconomicall to question the pictures of the winds, as commonly drawn in humane heads, and with their cheeks distended; which notwithstanding we finde condemned by Minutius, as answering poeticall fancies, and the gentile description of Æolus, Boreas, and the feigned Deities of winds.

Or quarrelsom with pictures Dionys. *Ep. 7. ad Policar. & Pet. Hall Not. in vit. S. Dionys.*

16. We shall not, I hope, disparage the Resurrection of our Redeemer, if we say the Sun doth not dance on Easter day. And though we would willingly assent unto any sympatheticall exultation, yet cannot conceive therein any more then a Tropicall expression. Whether any such motion there were in that day wherein Christ arised, Scripture hath not revealed, which hath been punctuall in other records concerning solary miracles: and the Areopagite that was amazed at the Eclipse, took no notice of this. And if metaphoricall expressions go so farre, we may be bold to affirm, not only that one Sunne danced, but two arose that day: That light appeared at his nativity, and darknesse at his death, and yet a light at both; for even that darknesse was a light unto the Gentiles illuminated by that obscurity. That 'twas the first time the Sunne set above the Horizon; that although there were darknesse above the earth there was light beneath it, nor dare we say that hell was dark if he were in it.

17. Great conceits are raised of the involution or membranous covering, commonly called the Silly-how, that sometimes is found about the heads of children upon their birth, and is therefore preserved with great care, not only as medicall in diseases; but effectuall in successe, concerning the Infant and others; which is surely no more then a continued superstition. For hereof we reade in the life of Antoninus delivered by Spartianus, that children are born sometimes with this naturall cap; which Midwives were wont to sell unto credulous Lawyers, who had an opinion it advantaged their promotion.

But to speak strictly the effect is naturall, and thus to be conceived, the Infant hath three teguments, or membranous filmes which cover it in the womb, that is, the Corion, Amnios, and Allantois; the Corion is the outward membrane

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Seghnirim, that is, rough and hairy Goats, becauſe in that ſhape the Devil moſt often appeared; as is expounded by the Rabbins, as Tremellius hath alſo explained; and as the word Aſcimah, the god of Emath is by ſome conceived. Nor did he only aſſume this ſhape in elder times, but commonly in later daies, eſpecially in the place of his worſhip: If there be any truth in the confeſſion of Witches, and as in many ſtories it ſtands confirmed by Bodinus. And therefore a Goat is not improperly made the Hieroglyphick of the devil, as Pierius hath expreſſed it; ſo might it be the Emblem of ſinne, as it was in the ſin offering; and ſo likewiſe of wicked and ſinfull men, according to the expreſſion of Scripture in the method of the laſt diſtribution; when our Saviour ſhall ſeparate the Sheep from the Goats, that is, the ſons of the Lamb from the children of the devil.

In his Dæmonomania.

Chap. XXII.

Of ſome others.

De varietate rerum.

1. That temperamentall dignotions, and conjecture of prevalent humours, may be collected from ſpots in our nails, we are not averſe to concede. But yet not ready to admit ſundry divinations, vulgarly raiſed upon them. Nor doe we obſerve it verified in others, what Cardan diſcovered as a property in himſelf: to have found therein ſome ſignes of moſt events that ever happened unto him. Or that there is much conſiderable in that doctrine of Cheiromancy, that ſpots in the top of the nailes doe ſignifie things paſt; in the middle, things preſent; and at the bottome, events to come. That white ſpecks preſage our felicity, blew ones our misfortunes. That thoſe in the nail of the thumb have ſignifications of honour, thoſe in the forefinger of riches, and ſo reſpectively in other fingers, (according to Planeticall relations, from whence they receive their names) as Tricaſſus hath taken up, and Picciolus well rejecteth.

We ſhall not proceed to querie, what truth there is in Palmiſtrie, or divination from thoſe lines in our hands, of high denomination. Although if any thing be therein, it ſeems not confinable unto man; but other creatures are alſo conſiderable: as is the forefoot of the Moll, and eſpecially of the Monkey; wherein we have obſerved the table line, that of life, and of the liver.

2. That Children committed unto the ſchool of Nature, without inſtitution would naturally ſpeak the primitive language of the world, was the opinion of ancient heathens, and continued ſince by Chriſtians; who will have it our Hebrew tongue, as being the language of Adam. That this were true were much to be deſired, not only for the eaſie attainment of that uſefull tongue, but to determine the true and primitive Hebrew. For whether the preſent Hebrew, be the unconfounded language of Babel, and that which remaining in Heber was continued by Abraham and his poſterity; or rather the language of Phœnicia and Canaan, wherein he lived, ſome learned men I perceive doe yet remain unſatisfied. Although I confeſſe probability ſtands faireſt for the former; nor are they without all reaſon, who think that at the confuſion of tongues, there was no conſtitution of a new ſpeech in every family; but a variation and permutation of the old, out of one common language raiſing ſeverall dialects; the primitive tongue remaining ſtill entire. Which they who retained might make a ſhift to underſtand moſt of the reſt. By vertue whereof in

How Abraham might underſtand the language of ſeverall Nations.

in those primitive times and greener confusions, Abraham of the family of Heber was able to converse with the Chaldeans, to understand Mesopotamians, Chananites, Philistins and Ægyptians; whose severall dialects he could reduce unto the originall and primitive tongue, and so be able to understand them.

3. Though useless unto us and rather of molestation, we commonly refrain from killing Swallows, and esteem it unlucky to them: whether herein there be not a pagan relique, we have some reason to doubt. For we reade in Ælian, that these birds were sacred unto the Penates or household gods of the ancients, and therefore were preserved. The same they also honoured as the nuncio's of the spring; and we finde the Rhodians had a solemn song to welcome in the Swallow. The same is extant in the 8th of Athenæus.

4. That Candles and lights burn dimme and blew at the apparition of spirits, may be true, if the ambient ayre be full of sulphurious spirits, as it happeneth oft times in mines; where damps and acide exhalations are able to extinguish them. And may be also verified, when spirits doe make themselves visible by bodies of such effluviums. But of lower consideration is the common foretelling of strangers, from the fungous parcells about the weeks of Candles: which only signifieth a moist and pluvious ayre about them, hindering the avolation of the light and favillous particles: whereupon they are forced to settle upon the snast. Why Candles may burn blue, before the apparition of a spirit.

5. Though Corall doth properly preserve and fasten the Teeth in men, yet is it used in children to make an easier passage for them: and for that intent is worn about their necks. But whether this custome were not superstitiously founded, as presumed an amulet or defensative against fascination, is not beyond all doubt. For the same is delivered by Pliny. *Aruspices religiosum Coralli gestamen amoliendis periculis arbitrantur; & furculi infantiæ alligati, tutelam habere creduntur.* *Lib. 32.*

6. A strange kinde of exploration and peculiar way of Rhabdomancy is that which is used in minerall discoveries; that is, with a forked hazell, commonly called Moses his rod, which freely held forth, will stirre and play if any mine be under it. And though many there are who have attempted to make it good, yet untill better information, we are of opinion with Agricola, that in it self it is a fruitlesse exploration, strongly senting of Pagan derivation, and the *virgula Divina*, proverbially magnified of old. The ground whereof were the Magicall rods in Poets; that of Pallas in Homer, that of Mercury that charmed Argus, and that of Circe which transformed the followers of Ulysses; too boldly usurping the name of Moses rod; from which notwithstanding, and that of Aaron were probably occasioned the fables of all the rest. For that of Moses must needs be famous unto the Ægyptians; and that of Aaron unto many other nations, as being preserved in the Arke, untill the destruction of the Temple built by Solomon. *De re metallica. lib. 2.*

7. A practise there is among us to determine doubtfull matters, by the opening of a book, and letting fall a staff; which notwithstanding are ancient fragments of Pagan divinations The first an imitation of *Sortes Homericæ*, or *Virgilianæ*, drawing determinations from verses casually occurring. The same was practised by Severus, who entertained ominous hopes of the Empire, from that verse in Virgil, *Tu regere imperio populos Romane memento*; and Gordianus who reigned but few daies was discouraged by another, that is, *Ostendunt terris hunc tantum fata nec ultra esse sinunt.* Nor was this only performed in Heathen Authours, but upon the sacred text of Scripture, as Gregorius Turonensis hath left some account; and as the practise of the Emperor Heraclius, before his Expedition into Asia minor, is delivered by Cedrenus.

As

Hoſea 4.

Ezekiel 24.

2 King. 13. 15.

As for the Divination or deciſion from the ſtaffe, it is an Auguriall relique, and the practiſe thereof is accuſed by God himſelf; My people ask counſel or their ſtocks, and their ſtaffe declareth unto them. Of this kinde of Rhabdomancy was that practiſed by Nabuchadonoſor in that Caldean miſcellany, delivered by Ezekiel; The King of Babylon ſtood at the parting of the way, at the head of the two waies to uſe divination, he made his arrowes bright, he conſulted with Images, he looked in the Liver; at the right hand were the divinations of Jeruſalem. That is, as Eſtius expoundeth it, the left way leading unto Rabbah the chief city of the Ammonites, and the right unto Jeruſalem, he conſulted Idols and entrails, he threw up a bundle of Arrows, to ſee which way they would light; and falling on the right hand he marched towards Jeruſalem. A like way of Belomancy or Divination by Arrowes hath been in requeſt with Scythians, Alanes, Germans, with the Africans and Turks of Algier. But of another nature was that which was practiſed by Eliſha, when by an Arrow ſhot from an Eaſtern window, he preſignified the deſtruction of Syria; or when according unto the three ſtroaks of Joaſh, with an Arrow upon the ground, he foretold the number of his victories. For thereby the Spirit of God particular'd the ſame, and determined the ſtroaks of the King unto three, which the hopes of the Prophet expected in twice that number.

We are unwilling to enlarge concerning many other; only referring unto Chriſtian conſiderations, what naturall effects can reaſonably be expected, when to prevent the Ephialtes or night-Mare we hang up an hollow ſtone in our ſtables; when for amulets againſt Agues we uſe the chips of Gallowes and places of Execution. When for Warts we rub our hands before the Moon, or commit any maculated part unto the touch of the dead. Swarms hereof our learned Selden and criticall Philologers might illuſtrate, whoſe abler performances our adventures doe but ſollicite; mean while I hope they will plauſibly receive our attempts, or candidly correct our miſconjectures.

Dion. Caſſi. lib. 37.

8. We cannot omit to obſerve, the tenacity of ancient cuſtomes, in the nominall obſervation of the ſeverall daies of the week, according to Gentile and Pagan appellations: for the Originall is very high, and as old as the ancient Ægyptians, who named the ſame according to the ſeven Planets, the admired Starres of heaven, and reputed deities among them. Unto every one aſſigning a ſeverall day; not according to their celeſtiall order, or as they are diſpoſed in heaven; but after a diateſſeron or muſicall fourth. For beginning Saturday with Saturn the ſupremeſt Planet, they accounted by Jupiter and Mars unto Sol, making Sunday. From Sol in like manner by Venus and Mercurie unto Luna, making Munday; and ſo through all the reſt. And the ſame order they confirmed by numbring the houres of the day unto twenty four, according to the naturall order of the Planets. For beginning to account from Saturn, Jupiter, Mars, and ſo about unto twenty four, the next day will fall unto Sol; whence accounting twenty four, the next will happen unto Luna, making Munday. And ſo with the reſt, according to the account and order obſerved ſtill among us.

The Jews themſelves in their Aſtrologicall conſiderations, concerning Nativities and Planetary hours, obſerve the ſame order, upon as witty foundations. Becauſe by an equall intervall, they make ſeven triangles, the baſes whereof are the ſeven ſides of a ſeptilaterall figure, deſcribed within a circle. That is, If a figure of ſeven ſides be deſcribed in a circle, and at the angles thereof the names of the Planets be placed, in their naturall order on it: if we begin with Saturn, and ſucceſſively draw lines from angle to angle, untill

untill ſeven equicrurall triangles be deſcribed, whoſe baſes are the ſeven ſides of the ſeptilaterall figure; the triangles will be made by this order. The firſt being made by Saturn, Sol and Luna, that is, Saturday, Sunday and Munday; and ſo the reſt in the order ſtill retained.

Vſus Icon a. quid doct. Iaffaret. cap. 11. Et Fabrit. Paduantum.

But thus much is obſervable, that however in celeſtiall conſiderations they embraced the received order of the Planets, yet did they not retain either characters or names in common uſe amongſt us; but declining humane denominations, they aſſigned them names from ſome remarkable qualities, as is very obſervable in their red and ſplendent Planets, that is of Mars and Venus. But the change of their names diſparaged not the conſideration of their natures; nor did they thereby reject all memory of theſe remarkable Starres; which God himſelf admitted in his Tabernacle, if conjecture will hold concerning the golden Candleſtick; whoſe ſhaft reſembled the Sunne, and ſix branches the Planets about it.

Maadim. Negab.

Diſce, ſed ira cadat naſo, rugoſaq; ſanna,
Dum veteres avias tibi de pulmone revello.

THE SIXTH BOOK:

Of ſundry common opinions Coſmographicall and Hiſtoricall.

The firſt Diſcourſe comprehended in ſeverall Chapters.

Chap. I.

Concerning the beginning of the World, that the time thereof is not preciſely to be known, as men generally ſuppoſe: Of mens enquiries in what ſeaſon or point of the Zodiack it began. That as they are generally made they are in vain, and as particularly applied uncertain. Of the diviſion of the ſeaſons and four quarters of the year, according to Aſtronomers and Phyſitians. That the common compute of the Ancients, and which is yet retained by moſt, is unreaſonable and erronious. Of ſome divinations and ridiculous diductions from one part of the year to another. And of the providence and wiſdome of God in the ſite and motion of the Sun.

The age of the world not certainly determinable.

COncerning the World and its temporall circumſcriptions, who ever ſhall ſtrictly examine both extreams, will eaſily perceive there is not only obſcurity in its end but its beginning; that as its period is inſcrutable, ſo is its nativity indeterminable: That as it is preſumption to enquire after the one, ſo is there no reſt or ſatisfactory deciſion in the other. And hereunto we ſhall more readily aſſent, if we examine the informations, and take a view of the ſeverall difficulties in this point; which we ſhall more eaſily doe, if we conſider the different conceits of men, and duly perpend the imperfections of their diſcoveries.

And firſt, The hiſtories of the Gentiles afford us ſlender ſatisfaction, nor can they relate any ſtory, or affix a probable point to its beginning. For ſome thereof (and thoſe of the wiſeſt amongſt them) are ſo farre from determining its beginning, that they opinion and maintain it never had any at all; as the doctrine of Epicurus implieth, and more politively Ariſtotle in his books *De Cælo* declareth, endeavouring to confirm it with arguments of reaſon, and thoſe appearingly demonſtrative; wherein his labours are rationall, and uncontroulable upon the grounds aſſumed, that is, of Phyſicall generation, and a primary or firſt matter, beyond which no other hand was apprehended.

But

But herein we remain sufficiently satisfied from Moses, and the doctrine delivered of the Creation; that is, a production of all things out of nothing, a formation not only of matter, but of form, and a materiation even of matter it self.

Others are so farre from defining the originall of the world or of mankinde, that they have held opinions not only repugnant unto Chronology, but Philosophy; that is, that they had their beginning in the soile where they inhabited, assuming or receiving appellations conformable unto such conceits. So did the Athenians term themselves αὐτόχθονες or *Aborigines*, and in testimony thereof did wear a golden Insect on their heads; the same name is also given unto the Inlanders or Midland inhabitants of this Island by Cæsar. But this is a conceit answerable unto the generation of the Giants; not admittable in Philosophy, much lesse in Divinity, which distinctly informeth we are all the seed of Adam, that the whole world perished unto eight persons before the floud, and was after peopled by the Colonies of the sonnes of Noah. There was therefore never any Autochthon, or man arising from the earth but Adam; for the woman being formed out of the rib, was once removed from earth, and framed from that element under incarnation. And so although her production were not by copulation, yet was it in a manner seminall: For if in every part from whence the seed doth flow, there be contained the Idea of the whole; there was a seminality and contracted Adam in the rib; which by the information of a soul, was individuated into Eve. And therefore this conceit applied unto the originall of man, and the beginning of the world, is more justly appropriable unto its end; for then indeed men shall rise out of the earth, the graves shall shoot up their concealed seeds, and in that great Autumne, men shall spring up, and awake from their Chaos again.

Why the Athenians did wear a golden Insect upon their head.

Others have been so blinde in deducing the originall of things, or delivering their own beginnings, that when it hath fallen into controversie, they have not recurred unto Chronologie or the records of time; but betaken themselves unto probabilities, and the conjecturalities of Philosophy. Thus when the two ancient Nations, Ægyptians and Scythians contended for antiquity, the Ægyptians (as Diodorus and Justine relate) pleaded their antiquity from the fertility of their soile, inferring that men there first inhabited, where they were with most facility sustained; and such a land did they conceive was Ægypt.

The Scythians although a cold and heavier Nation urged more acutely, deducing their arguments from the two active elements and principles of all things, Fire and Water; for if of all things there was first an union, and that Fire overruled the rest; surely that part of earth which was coldest would first get free, and afford a place of habitation. But if all the earth were first involved in Water, those parts would surely first appear, which were most high, and of most elevated situation, and such was theirs. These reasons carried indeed the antiquity from the Ægyptians, but confirmed it not in the Scythians; for as Herodotus relateth from Pargitaus their first King unto Darius, they accounted but two thousand years.

As for the Ægyptians they invented another way of triall; for as the same Author relateth, Psamnitichus their King attempted this decision by a new and unknown experiment, bringing up two Infants with Goats, and where they never heard the voice of man; concluding that to be the ancientest Nation, whose language they should first deliver. But herein he forgot that speech was by instruction not instinct, by imitation, not by nature; that men doe speak in some kinde but like Parrets, and as they are instructed, that

That men speak, not by naturall instinct, but by instruction and imitation.

is, in ſimple terms and words, expreſſing the open notions of things; which the ſecond act of reaſon compoundeth into propoſitions, and the laſt into ſyllogiſmes and formes of ratiocination. And howſoever the account of Manethon the Ægyptian Prieſt runne very high, and it be evident that Mizraim peopled that Country (whoſe name with the Hebrews it beareth unto this day) and there be many things of great antiquity related in holy Scripture, yet was their exact account not very ancient; for Ptolomy their Countryman beginneth his Aſtronomicall compute no higher then Nabonaſſer, who is conceived by ſome the ſame with Salmanaſſer. As for the argument deduced from the fertility of the ſoile, duly enquired, it rather overthroweth then promoteth their antiquity; for that Country whoſe fertility they ſo advance, was in ancient times no firm or open land, but ſome vaſt lake or part of the Sea, and became a gained ground by the mud and limous matter brought down by the river Nilus, which ſetled by degrees into a firm land. According as is expreſſed by Strabo, and more at large by Herodotus, both from the Ægyptian tradition and probable inducements from reaſon, called therefore *fluvii donum*, an acceſſion of earth, or tract of land acquired by the river.

Laſtly, Some indeed there are, who have kept records of time, and of a conſiderable duration, yet doe the exacteſt thereof afford no ſatisfaction concerning the beginning of the world, or any way point out the time of its creation. The moſt authentick records and beſt approved antiquity are thoſe of the Chaldeans; yet in the time of Alexander the Great, they attained not ſo high as the floud. For as Simplicius relateth, Ariſtotle required of Caliſthenes who accompanied that Worthy in his expedition, that at his arrive at Babylon, he would enquire of the antiquity of their Records, and thoſe upon compute he found to amount unto 1903 years; which account notwithſtanding ariſeth no higher then 95 years after the floud. The Arcadians I confeſſe, were eſteemed of great antiquity, and it was uſually ſaid they were before the Moon; according unto that of Seneca, *Sydus poſt veteres Arcades editum*; and that of Ovid, *Lunâ gens prior illa fuit*. But this as Cenſorinus obſerveth, muſt not be taken groſſely, as though they were exiſtent before that Luminary; but were ſo eſteemed becauſe they obſerved a ſet courſe of year, before the Greeks conformed their year unto the courſe and motion of the Moon.

Thus the heathens affording no ſatisfaction herein, they are moſt likely to manifeſt this truth who have been acquainted with holy Scripture, and the ſacred Chronology delivered by Moſes, who diſtinctly ſets down this account, computing by certain intervals, by memorable Æra's, Epoche's, or terms of time. As from the creation unto the floud, from thence unto Abraham, from Abraham unto the departure from Ægypt, *&c.* Now in this number have only been Samaritans, Jews and Chriſtians. For the Jews they agree not in their accounts, as Bodine in his method of hiſtory hath obſerved out of Baal Seder, Rabbi Naſſom, Gerſom, and others, in whoſe compute the age of the World is not yet 5400 years. The ſame is more evidently obſervable from two moſt learned Jewes, Philo and Joſephus; who very much differ in the accounts of time, and variouſly ſumme up theſe intervals aſſented unto by all. Thus Philo from the departure out of Ægypt unto the building of the Temple accounts but 920 years, but Joſephus ſets down 1062. Philo from the building of the Temple to its deſtruction 440, Joſephus 470: Philo from the creation to the deſtruction of the Temple 3373, but Joſephus 3513; Philo from the deluge to the deſtruction of the Temple 1718, but Joſephus 1913. In which computes there are

Different accounts upon Scripture concerning the age of the world.

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the year of the world 7154, which doth exactly agree unto this last account 5509, for if unto that summe be added 1645, the product will be 7154, by this Chronology are many Greek Authors to be understood; and thus is Martinus Crusius to be made out, when in his Turcogræcian history he delivers, the City of Constantinople was taken by the Turks in the year 5452 that is, 6961. Now according unto these Chronologists, the Prophecy of Elias the Rabbin, so much in request with the Jews, and in some credit also with Christians, that the world should last but six thousand years; unto these, I say, it hath been long and out of memory disproved, for the Sabbaticall and 7000 year wherein the world should end (as did the Creation on the seventh day) unto them is long agoe expired; they are proceeding in the eight thousand year, and numbers exceeding those daies which men have made the types and shadows of these. But certainly what Marcus Leo the Jew conceiveth of the end of the heavens, exceedeth the account of all that ever shall be; for though he conceiveth the Elementall frame shall end in the seventh or Sabbaticall millenary, yet cannot he opinion the heavens and more durable part of the Creation shall perish before seven times seven, or 49, that is, the Quadrant of the other seven, and perfect Jubilee of thousands.

Thus may we observe the difference and wide dissent of mens opinions, and thereby the great incertainty in this establishment. The Hebrews not only dissenting from the Samaritans, the Latines from the Greeks, but every one from another. Insomuch that all can be in the right it is impossible; that any one is so, not with assurance determinable. And therefore as Petavius confesseth, to effect the same exactly without inspiration it is impossible, and beyond the Arithmetick of any but God himself. And therefore also what satisfaction may be obtained from those violent disputes, and eager enquirers in what day of the moneth the world began, either of March or October; likewise in what face or position of the Moon, whether at the prime or full, or soon after, let our second and serious considerations determine.

The cause of so different accounts about the age of the world.

Now the reason and ground of this dissent, is the unhappy difference between the Greek and Hebrew editions of the Bible, for unto these two Languages have all Translations conformed; the holy Scripture being first delivered in Hebrew, and first translated into Greek. For the Hebrew; it is incontrovertibly the primitive and surest text to rely on, and to preserve the same entire and uncorrupt there hath been used the highest caution humanity could invent. For as R. Ben. Maimon hath declared, if in the copying thereof one letter were written twice, or if one letter but touched another, that copy was not admitted into their Synagogues; but only allowable to be read in Schooles, and private families. Neither were they carefull only in the exact number of their sections of the Law, but had also the curiosity to number every word, and affixed the account unto their severall books. Notwithstanding all which, divers corruptions ensued, and severall depravations slipt in, arising from many and manifest grounds, as hath been exactly noted by Morinus in his preface unto the Septuagint.

Corruption even in the Hebrew Text of the Bible.

As for the Septuagint, it is the first and most ancient Translation; and of greater Antiquity then the Chaldee version; occasioned by the request of Ptolomeus Philadelphus King of Ægypt, for the ornament of his memorable Library; unto whom the high Priest addressed six Jews out of every Tribe, which amounteth unto 72; and by these was effected that Translation we usually terme the Septuagint, or Translation of seventy. Which name however it obtain from the number of their persons, yet in respect of one common Spirit,

Spirit, it was the Translation but as it were of one man. For as the story relateth, although they were set apart and severed from each other, yet were their Translations found to agree in every point, according as is related by Philo and Josephus; although we finde not the same in Aristæus, who hath expresly treated thereof.

The Credit of the Septuagint translation. *Aristeas ad Philocratorem de 72 interpretibus.*

This Translation in ancient times was of great authority; By this many of the Heathens received some notions of the Creation and the mighty works of God; This in expresse terms is often followed by the Evangelists, by the Apostles, and by our Saviour himself in the quotations of the old Testament. This for many years was used by the Jews themselves, that is, such as did Hellenize and dispersedly dwelt out of Palestine with the Greeks; and this also the succeeding Christians and ancient Fathers observed; although there succeeded other Greek versions, that is, of Aquila, Theodosius and Symmachus; for the Latin translation of Jerome, called now the Vulgar, was about 800. years after the Septuagint; although there was also a Latin translation before, called the Italick version. Which was after lost upon the generall reception of the translation of S^t Jerome. Which notwithstanding (as he himself acknowledgeth) had been needlesse, if the Septuagint copies had remained pure, and as they were first translated. But, (beside that different copies were used, that Alexandria and Ægypt followed the copy of Hesychius, Antioch and Constantinople that of Lucian the Martyr, and others that of Origen) the Septuagint was much depraved, not only from the errors of Scribes, and the emergent corruptions of time, but malicious contrivance of the Jews; as Justin Martyr hath declared, in his learned dialogue with Tryphon, and Morinus hath learnedly shewn from many confirmations.

Præfat. in Psalmos.

De Hebræi & Græci textus sinceritate;

Whatsoever Interpretations there have been since, have been especially effected with reference unto these, that is, the Greek and Hebrew text; the Translators sometimes following the one, sometimes adhering unto the other, according as they found them consonant unto truth, or most correspondent unto the rules of faith. Now however it cometh to passe, these two are very different in the enumeration of Genealogies, and particular accounts of time; for in the second intervall, that is, between the floud and Abraham, there is by the Septuagint introduced one Cainan to be the son of Arphaxad and father of Salah; whereas in the Hebrew there is no mention of such a person, but Arphaxad is set down to be the father of Salah. But in the first intervall, that is, from the Creation unto the flood, their disagreement is more considerable; for therein the Greek exceedeth the Hebrew, and common account almost 600 years. And 'tis indeed a thing not very strange, to be at the difference of a third part, in so large and collective an account, if we consider how differently they are set forth in minor and lesse mistakable numbers. So in the Prophesie of Jonah, both in the Hebrew and Latine text, it is said, Yet forty daies and Ninevy shall be overthrown: But the Septuagint saith plainly, and that in letters at length, τρεις ἡμέρας, that is, yet three daies and Ninevy shall be destroied. Which is a difference not newly crept in, but an observation very ancient, discussed by Austin, and Theodoret, and was conceived an error committed by the Scribe. Men therefore have raised different computes of time, according as they have followed their different texts; and so have left the history of times far more perplexed then Chronology hath reduced.

Again, However the texts were plain, and might in their numerations agree, yet were there no small difficulty to set down a determinable Chronology, or establish from hence any fixed point of time. For the doubts concerning the time of the Judges are inexplicable; that of the Raignes and succession of Kings

Kings is as perplexed; it being uncertain whether the years both of their lives and raignes ought to be taken as complete, or in their beginning and but currant accounts. Nor is it unreasonable to make some doubt whether in the first ages, and long lives of our fathers, Moses doth not sometime account by full and round numbers, whereas strictly taken they might be some few years above or under: As in the age of Noah, it is delivered to be just five hundred when he begat Sem; whereas perhaps he might be somewhat above or below that round and complete number. For the same way of speech is usuall in divers other expressions: Thus doe we say the Septuagint, and using the full and articulate number, doe write the Translation of Seventy; whereas we have shewen before, the precise number was Seventy two. So is it said that Christ was three daies in the grave, according to that of Matthew, as Jonas was three daies and three nights in the Whales belly, so shall the Son of man be three daies and three nights in the heart of the earth: which notwithstanding must be taken Synecdochically; or by understanding a part for an whole day; for he remained but two nights in the grave; for he was buried in the afternoon of the first day, and arose very early in the morning on the third; that is, he was interred in the eve of the Sabbath, and arose the morning after it.

Moreover, although the number of years be determined and rightly understood, and there be without doubt a certain truth herein; yet the text speaking obscurely or dubiously, there is oft times no slender difficulty at what point to begin or terminate the account. So when it is said, Exod. 12. the sojourning of the children of Israel who dwelt in Ægypt was 430 years, it cannot be taken strictly, and from their first arivall into Ægypt, for their habitation in that land was farre lesse; but the account must begin from the Covenant of God with Abraham, and must also comprehend their sojourne in the land of Canaan, according as is expressed, Gal. 3. The Covenant that was confirmed before of God in Christ, the Law which was 430 years after cannot disanull. Thus hath it also happened in the account of the 70 years of their captivity, according to that of Jeremy, chap. 20. This whole land shall be a desolation, and these Nations shall serve the King of Babylon 70 years. Now where to begin, or end this compute ariseth no small difficulty: for there were three remarkable captivities, and deportations of the Jews. The first was in the third or fourth year of Joachim, and first of Nabuchodonozor, when Daniel was carried away; the second in the raign of Jeconiah, and the eighth year of the same King; the third and most deplorable in the raign of Zedechias, and in the nineteenth year of Nabuchodonozor, whereat both the Temple and City were burned. Now such is the different conceit of these times, that men have computed from all; but the probablest account and most concordant unto the intention of Jeremy, is from the first of Nabuchodonozor unto the first of King Cyrus over Babylon; although the Prophet Zachary accounteth from the last. O Lord of hostes, How long! Wilt thou not have mercy on Jerusalem, against which thou hast had indignation these threescore and ten years? for he maketh this expostulation in the second year of Darius Histaspes, wherein he propheſied, which is about eighteen years in account after the other.

Chap. 1. 12.

The difficulties of Daniels 70 Weeks.

Thus also although there be a certain truth therein, yet is there no easie doubt concerning the seventy weeks, or seventy times seven years of Daniel; whether they have reference unto the nativity or passion of our Saviour, and especially from whence, or what point of time they are to be computed. For thus is it delivered by the Angel Gabriel: Seventy weeks are determined upon thy people; and again in the following verse: Know therefore and understand,

understand, that from the going forth of the Commandment to restore and to build Jerusalem unto the Messias the Prince, shall be seven weeks, and threescore and two weeks, the street shall be built again, and the wall even in troublesome times; and after threescore and two weeks shall Messiah be cut off. Now the going out of the Commandment to build the City, being the point from whence to compute, there is no slender controversie when to begin. For there are no lesse then four severall Edicts to this effect; the one in the first year of Cyrus, the other in the second of Darius, the third and fourth in the seventh, and in the twentieth of Artaxerxes Longimanus; although as Petavius accounteth, it best accordeth unto the twenty year of Artaxerxes, from whence Nehemiah deriveth his Commission. Now that computes are made uncertainly with reference unto Christ, it is no wonder, since I perceive the time of his Nativity is in controversie, and no lesse his age at his Passion: For Clemens and Tertullian conceive he suffered at thirty; but Irenæus a Father nearer his time, is further off in his account, that is, between fourty and fifty.

Of our B. Saviours age at his Passion.

Longomontanus a late Astronomer, endeavours to discover this secret from Astronomicall grounds, that is, the Apogeum of the Sunne; conceiving the Excentricity invariable, and the Apogeum yearly to move one scruple, two seconds, fifty thirds, &c. Wherefore if in the time of Hipparchus, that is, in the year of the Julian period 4557 it was in the fifth degree of Gemini, and in the daies of Tycho Brahe, that is, in the year of our Lord 1588, or of the world 5554, the same was removed unto the fift degree of Cancer; by the proportion of its motion, it was at the creation first in the beginning of Aries, and the Perigeum or neareſt point in Libra. But this conceit how ingenious or subtile soever is not of satisfaction; it being not determinable, or yet agreed in what time precisely the Apogeum absolveth one degree, as Petavius hath also delivered.

De Doctrina temporum, li. 4.

Lastly, However these or other difficulties intervene, and that we cannot satisfie our selves in the exact compute of time, yet may we sit down with the common and usuall account; nor are these differences derogatory unto the Advent or Passion of Christ, unto which indeed they all doe seem to point; for the Prophecies concerning our Saviour, were indefinitely delivered before that of Daniel; so was that pronounced unto Eve in Paradise, that after of Balaam, those of Isaiah and the Prophets, and that memorable one of Jacob, The Scepter shall not depart from Israell untill Shilo come; which time notwithstanding it did not define at all. In what year therefore soever, either from the destruction of the Temple, from the reedifying thereof, from the floud, or from the Creation he appeared, certain it is, that in the fulnesse of time he came. When he therefore came is not so considerable, as that he is come; in the one there is consolation, in the other no satisfaction. The greater Quere is, when he will come again? and yet indeed it is no Quere at all; for that is never to be known, and therefore vainly enquired: 'tis a professed and authentick obscurity, unknown to all but to the omniscience of the Almighty. Certainly the ends of things are wrapt up in the hands of God, he that undertakes the knowledge thereof forgets his own beginning, and disclaims his principles of earth. No man knows the end of the world, nor assuredly of any thing in it: God sees it, because unto his Eternity it is present; he knoweth the ends of us, but not of himself; and because he knows not this, he knoweth all things, and his knowledge is endlesse, even in the object of himself.

Chap. II.

Of mens Enquiries in what ſeaſon or point of the Zodiack it began, that as they are generally made they are in vain, and as particularly, uncertain.

The world began in all the 4 quarters of the year.

Concerning the Seaſons, that is, the quarters of the year; ſome are ready to enquire, others to determine, in what ſeaſon, whether in the Autumn, Spring, Winter or Summer the World had its beginning. Wherein we affirm, that as the queſtion is generally, and in reſpect of the whole earth propoſed, it is moſt vainly, and with manifeſt injury unto reaſon in any particular determined, becauſe when ever the world had its beginning it was created in all theſe four. For, as we have elſewhere delivered, whatſoever ſign the Sunne poſſeſſeth (whoſe receſſe or vicinity defineth the quarters of the year) thoſe four ſeaſons were actually exiſtent; it being the nature of that Luminary to diſtinguiſh the ſeverall ſeaſons of the year; all which it maketh at one time in the whole earth, and ſucceſſively in any part thereof. Thus if we ſuppoſe the Sunne created in Libra, in which ſigne unto ſome it maketh Autumne, at the ſame time it had been winter unto the Northern-pole; for unto them at that time the Sunne beginneth to be inviſible, and to ſhew it ſelf again unto the pole of the South. Unto the poſition of a right Sphere, or directly under the Æquator, it had been Summer; for unto that ſituation the Sunne is at that time verticall. Unto the latitude of Capricorne, or the Winter Solſtice it had been Spring; for unto that poſition it had been in a middle point, and that of aſcent, or approximation; but unto the latitude of Cancer or the Summer Solſtice it had been Autumne; for then had it been placed in a middle point, and that of deſcent, or elongation.

And if we ſhall take it literally what Moſes deſcribed popularly, this was alſo the conſtitution of the firſt day. For when it was evening unto one longitude, it was morning unto another; when night unto one, day unto another. And therefore that queſtion, whether our Saviour ſhall come again in the twilight (as is conceived he aroſe) or whether he ſhall come upon us in the night, according to the compariſon of a thief, or the Jewiſh tradition, that he will come about the time of their departure out of Ægypt, when they ate the Paſſeover, and the Angel paſſed by the doors of their houſes; this Quere I ſay needeth not further diſpute. For if the earth be almoſt every where inhabited, and his coming (as Divinity affirmeth) muſt needs be unto all; then muſt the time of his appearance be both in the day and night. For if unto Jeruſalem, or what part of the world ſoever he ſhall appear in the night, at the ſame time unto the Antipodes it muſt be day; if twilight unto them, broad day unto the Indians; if noon unto them, yet night unto the Americans; and ſo with variety according unto various habitations, or different poſitions of the Sphear, as will be eaſily conceived by thoſe who underſtand the affections of different habitations, and the conditions of Antæci, Periæci, and Antipodes. And ſo although he appear in the night, yet may the day of Judgement or Doomſday well retain that name; for that implieth one revolution of the Sun, which maketh the day and night, and that one naturall day. And yet to ſpeak ſtrictly, if (as the Apoſtle affirmeth) we ſhall be changed in the twinckling of an eye (and as the Schools determine) the deſtruction of the world ſhall not be ſucceſſive but in an inſtant; we cannot properly apply thereto

Nux ſhuseor.

thereto the usuall distinctions of time; calling that twelve hours, which admits not the parts thereof, or use at all the name of time, when the nature thereof shall perish.

But if the enquiry be made unto a particular place, and the question determined unto some certain Meridian; as namely, unto Mesopotamia, wherein the seat of Paradise is presumed, the Query becomes more reasonable, and is indeed in nature also determinable; yet positively to define that season, there is no slender difficulty; for some contend that it began in the Spring; as (beside Eusebius, Ambrose, Bede, and Theodoret) some few years past Henrico Philippi in his Chronology of the Scripture. Others are altogether for Autumne; and from hence doe our Chronologers commence their compute; as may be observed in Helvicus, Jos. Scaliger, Calvisius and Petavius.

CHAP. III.

Of the Divisions of the seasons and four quarters of the year, according unto Astronomers and Physitians: that the common compute of the Ancients, and which is still retained by some, is very questionable.

AS for the divisions of the year, and the quartering out this remarkable standard of time, there have passed especially two distinctions; the first in frequent use with Astronomers, acccording to the cardinall intersections of the Zodiack, that is, the two Æquinoctials and both the Solstitial points; defining that time to be the Spring of the year, wherein the Sunne doth passe from the Æquinox of Aries unto the Solstice of Cancer; the time between the Solstice and the Æquinox of Libra, Summer; from thence unto the Solstice of Capricornus, Autumne; and from thence unto the Æquinox of Aries again, Winter. Now this division although it be regular and equall, is not universall; for it includeth not those latitudes, which have the seasons of the year double; as have the inhabitants under the Æquator, or else between the Tropicks. For unto them the Sunne is verticall twice a year, making two distinct Summers in the different points of verticality. So unto those which live under the Æquator, when the Sun is in the Æquinox it is Summer; in which points it maketh Spring or Autumne unto us; and unto them it is also Winter when the Sunne is in either Tropick; whereas unto us it maketh alwaies Summer in the one. And the like will happen unto those habitations, which are between the Tropicks and the Æquator.

Between the Tropicks two Summers in a year.

A second and more sensible division there is observed by Hippocrates, and most of the ancient Greeks, according to the rising and setting of divers starres; Dividing the year, and establishing the account of seasons from usuall alterations, and sensible mutations in the air, discovered upon the rising and setting of those starres, Accounting the Spring from the Æquinoxiall point of Aries; from the rising of the Pleiades, or the severall starres on the back of Taurus, Summer; from the rising of Arcturus, a starre between the thighes of Bootes, Autumn; and from the setting of the Pleiades, Winter. Of these divisions becaus they were unequall, they were fain to subdivide the two larger portions, that is of the Summer and Winter quarters; the first part of the Summer they named θέρος, the second unto the arising of the Dog-star, ὦρος, from thence unto the setting of Arcturus, ὀπώρης; the Winter

they divided also into three parts; the first part, or that of seed time they named σπόρος, the middle or proper Winter, χειμών, the last which was their planting or grafting time φυτάλια. This way of division was in former ages received, is very often mentioned in Poets, translated from one Nation to another; from the Greeks unto the Latines, as is received by good Authors; and delivered by physitians, even unto our times.

Now of these two, although the first in some latitude may be retained, yet is not the other in any to be admitted. For in regard of time (as we declare in the Chap. of canicular daies) the starres doe vary their longitudes, and consequently the times of their ascension and descention. That starre which is the term of numeration, or point from whence we commence the account, altering his site and longitude in processe of time, and removing from West to East, almost one degree in the space of 72 years; so that the same starre, since the age of Hippocrates who used this account, is removed in *consequentia* about 27 degrees. Which difference of their longitudes, doth much diversifie the times of their ascents, and rendereth the account unstable which shall proceed thereby.

Again, In regard of different latitudes, this cannot be a setled rule or reasonably applied unto many Nations. For whereas the setting of the Pleiades or seven starres is designed the term of Autumne, and the beginning of Winter; unto some latitudes these starres doe never set, as unto all beyond 67 degrees. And if in severall and farre distant latitudes we observe the same starre as a common term of account unto both, we shall fall upon an unexpected, but an unsufferable absurdity; and by the same account it will be Summer unto us in the North, before it be so unto those, which unto us are Southward, and many degrees approaching nearer the Sun. For if we consult the doctrine of the sphere, and observe the ascension of the Pleiades, which maketh the beginning of Summer, we shall discover that in the latitude of 40, these starres arise in the 16 degree of Taurus; but in the latitude of 50 they ascend in the eleventh degree of the same signe, that is 5 daies sooner; so shall it be Summer unto London before it be unto Toledo, and begin to scorch in England, before it grow hot in Spain.

This is therefore no generall way of compute, nor reasonable to be derived from one Nation unto another; the defect of which consideration hath caused divers errors in Latine Poets, translating these expressions from the Greeks; and many difficulties even in the Greeks themselves; which living in divers latitudes, observed yet the same compute. So that to make them out, we are fain to use distinctions; sometime computing cosmically what they intended heliacally; and sometime in the same expression the rising heliacally, the setting cosmically; otherwise it will be hardly made out, what is delivered by approved Authors; and is an observation very considerable unto those which meet with such expressions, as they are very frequent in the Poets of elder times, especially Hesiod, Aratus, Virgil, Ovid, and Manilius; and Authors Geoponicall, or which have treated *de re Rustica*, as Constantine, Marcus Cato, Columella, Palladius and Varro.

Lastly, The absurdity in making common unto many Nations those considerations, whose verity is but particular unto some, will more evidently appear, if we examine the rules and precepts of some one climate; and fall upon consideration with what incongruity they are transferrible unto others; Thus is it advised by Hesiod

Pleiadibus Atlante natis orientibus
Incipe messem, Arationem vero occidentibus.

Implying hereby the Heliacall ascent and cosmicall descent of those starres.

Now

Now herein he ſetteth down a rule to begin harveſt at the ariſe of the Pleiades; which in his time was in the beginning of May. This indeed was conſonant unto the clime wherein he lived, and their harveſt began about that ſeaſon; but is not appliable unto our own; for therein we are ſo farre from expecting an harveſt, that our Barley ſeed is not ended. Again, correſpondent unto the rule of Heſiod, Virgil affordeth another,

Ante tibi Eoæ Atlantides abſcondantur,
Debita quam ſulcis committas ſemina.

Underſtanding hereby their Coſmicall deſcent, or their ſetting when the Sun ariſeth, and not their Heliacall obſcuration, or their incluſion in the luſtre of the Sun, as Servius upon this place would have it; for at that time theſe ſtarres are many ſignes removed from that luminary. Now herein he ſtrictly adviſeth, not to begin to ſow before the ſetting of theſe ſtarres; which notwithſtanding without injury to agriculture, cannot be obſerved in England; for they ſet unto us about the 12 of November, when our ſeed time is almoſt ended.

And this diverſity of clime and celeſtiall obſervations, preciſely obſerved unto certain ſtarres and moneths, hath not only overthrown the deductions of one Nation to another, but hath perturbed the obſervation of feſtivities and ſtatary ſolemnities, even with the Jews themſelves. For unto them it was commanded that at their entrance into the land of Canaan, in the fourteenth of the firſt moneth (that is Abib or Niſan which is Spring with us) they ſhould obſerve the celebration of the Paſſeover; and on the morrow after, which is the fifteenth day, the feaſt of unleavened bread; and in the ſixteenth of the ſame moneth, that they ſhould offer the firſt ſheafe of the harveſt. Now all this was feaſible and of an eaſie poſſibility in the land of Canaan, or latitude of Jeruſalem; for ſo is it obſerved by ſeverall Authors in later times; and is alſo teſtified by holy Scripture in times very farre before; for when the children of Iſrael paſſed the river Jordan, it is delivered by way of Parentheſis, that the river overfloweth its banks in the time of harveſt; which is conceived the time wherein they paſſed; and it is after delivered, that in the fourteenth day they celebrated the Paſſeover; which according to the Law of Moſes was to be obſerved in the firſt moneth, or moneth of Abib. Joſh. 3. Joſh. 5.

And therefore it is no wonder, what is related by Luke, that the Diſciples upon the Deuteroproton, as they paſſed by, plucked the ears of corn. For the Deuteroproton or ſecond firſt Sabbath, was the firſt Sabbath after the deutera or ſecond of the Paſſeover, which was the ſixteenth of Niſan or Abib. And this is alſo evidenced from the received conſtruction of the firſt and latter rain, delivered Deut. 11. I will give you the rain of your land in his due ſeaſon, the firſt rain and the latter rain; for the firſt rain fell upon the ſeed-time about October, and was to make the ſeed to root, the latter was to fill the ear, and fell in Abib or March, the firſt moneth; according as is expreſſed Joel 2. And he will cauſe to come down for you the rain, the former rain and the latter rain in the firſt moneth; that is the moneth of Abib wherein the Paſſeover was obſerved. This was the Law of Moſes, and this in the land of Canaan was well obſerved according to the firſt inſtitution; but ſince their diſperſion and habitation in Countries, whoſe conſtitutions admit not ſuch tempeſtivity of harveſts; and many not before the latter end of Summer; notwithſtanding the advantage of their Lunary account, and intercalary moneth Veader, affixed unto the beginning of the year, there will be found a great diſparity in their obſervations; nor can they ſtrictly and at the ſame ſeaſon with their forefathers obſerve the commands of God.

What the Sabbaton Deuteroproton, Luk. 6. was.

To adde yet further, thoſe Geoponicall rules and precepts of Agriculture which are delivered by divers Authours, are not to be generally received; but reſpectively underſtood unto climes whereto they are determined. For whereas one adviſeth to ſow this or that at one ſeaſon, a ſecond to ſet this or that at another, it muſt be conceived relatively, and every Nation muſt have its Countrey Farm; for herein we may obſerve a manifeſt and viſible difference, not only in the ſeaſons of harveſt, but in the graines themſelves. For with us Barley-harveſt is made after Wheat-harveſt, but with the Iſraelites and Ægyptians it was otherwiſe; ſo is it expreſſed by way of priority, Ruth the 2. So Ruth kept faſt by the maidens of Boaz to glean unto the end of Barley-harveſt and of Wheat-harveſt; which in the plague of hayl in Ægypt is more plainly delivered Exod. 9. And the Flax and the Barley were ſmitten, for the Barley was in the ear and the Flax was bolled, but the Wheat and the Rye were not ſmitten, for they were not grown up.

And thus we ſee the account eſtabliſhed upon the ariſe or deſcent of the ſtars can be no reaſonable rule unto diſtant Nations at all, and by reaſon of their retrogreſſion but temporary unto any one. Nor muſt theſe reſpective expreſſions be entertained in abſolute conſiderations; for ſo diſtinct is the relation, and ſo artificiall the habitude of this inferiour globe unto the ſuperiour, and even of one thing in each unto the other: that generall rules are dangerous; and applications moſt ſafe that run with ſecurity of circumſtance. Which rightly to effect is beyond the ſubtlety of ſenſe, and requires the artifice of reaſon.

Chap. IIII.

Of ſome computation of daies and diductions of one part of the year unto another.

Fourthly, There are certain vulgar opinions concerning daies of the year, and concluſions popularly deduced from certain daies of the moneth; men commonly beleeving the daies encreaſe and decreaſe equally in the whole year; which notwithſtanding is very repugnant unto truth. For they encreaſe in the moneth of March, almoſt as much as in the two moneths of January and February; and decreaſe as much in September, as they do in July and Auguſt. For the daies encreaſe or decreaſe according to the declination of the Sun, that is, its deviation Northward or Southward from the Æquator. Now this digreſſion is not equall, but near the Æquinoxiall interſections, it is right and greater, near the Solſtices more oblique and leſſer. So from the eleventh of March the vernall Æquinox, unto the eleventh of April the Sun declineth to the North twelve degrees; from the eleventh of April unto the eleventh of May but eight, from thence unto the fifteenth of June, or the Summer Solſtice but three and a half; all which make thirty two degrees and an half, the greateſt declination of the Sunne.

That the daies encreaſe and decreaſe unequally.

And this inequality in the declination of the Sunne in the Zodiack or line of life, is correſpondent unto the growth or declination of man. For ſetting out from infancie we encreaſe not equally, or regularly attain to our ſtate or perfection; nor when we deſcend from our ſtate, is our declination equall, or carrieth us with even paces unto the grave. For, as Hippocrates affirmeth, a man is hotteſt in the firſt day of his life, and coldeſt in the laſt; his naturall heat ſetteth forth moſt vigorouſly at firſt, and declineth moſt ſenſibly at laſt.

And

And so though the growth of man end not perhaps untill twenty one, yet is his stature more advanced in the first septenary then in the second, and in the second, more then in the third, and more indeed in the first seven years, then in the fourteen succeeding; for, what stature we attain unto at seven years, we do sometimes but double, most times come short of at one and twenty. And so doe we decline again; for in the latter age upon the Tropick and first descension from our solstice, we are scarce sensible of declination; but declining further, our decrement accelerates, we set apace, and in our last daies precipitate into our graves. And thus are also our progressions in the womb, that is, our formation, motion, our birth or exclusion. For our formation is quickly effected, our motion appeareth later, and our exclusion very long after: if that be true which Hippocrates and Avicenna have declared, that the time of our motion is double unto that of formation, and that of exclusion treble unto that of motion. As if the Infant be formed at thirty five daies, it moveth at seventy, and is born the two hundred and tenth day, that is, the seventh moneth; or if it receives not formation before fourty five daies, it moveth the ninetieth day, and is excluded in the two hundred and seventy, that is the nineth moneth.

The naturall proportion of humane growth &c. In the world,

and in the womb,

There are also certain popular prognosticks drawn from festivals in the Calendar, and conceived opinions of certain daies in moneths; so is there a generall tradition in most parts of Europe, that inferreth the coldnesse of succeeding winter from the shining of the Sunne upon Candlemas day, or the Purification of the Virgin Mary, according to the proverbiall distich,

Si Sol splendescat Mariâ purificante,
Major erit glacies post festum quam fuit ante.

So is it usuall amongst us to qualifie and conditionate the twelve moneths of the year, answerably unto the temper of the twelve daies in Christmas; and to ascribe unto March certain borrowed daies from April: all which men seem to beleeve upon annuall experience of their own, and the received traditions of their forefathers.

Now it is manifest, and most men likewise know, that the Calenders of these computers, and the accounts of these daies are very different; the Greeks dissenting from the Latines, and the Latines from each other: the one observing the Julian or ancient account, as great Brittain and part of Germany; the other adhering to the Gregorian or new account, as Italy, France, Spain, and the united Provinces of the Netherlands. Now this latter account by ten daies at least anticipateth the other; so that before the one beginneth the account, the other is past it; yet in the severall calculations, the same events seem true, and men with equall opinion of verity, expect and confesse a confirmation from them. Whereby is evident the Oraculous authority of tradition, and the easie seduction of men, neither enquiring into the verity of the substance, nor reforming upon repugnance of circumstance.

And thus may diverse easily be mistaken who superstitiously observe certain times, or set down unto themselves an observation of unfortunate moneths, or daies, or hours; As did the Ægyptians, two in every moneth, and the Romans, the daies after the Nones, Ides and Calends. And thus the Rules of Navigators must often fail, setting down, as Rhodiginus observeth, suspected and ominous daies, in every moneth, as the first and seventh of March, the fift and sixt of April, the sixt, the twelfth and fifteenth of February. For the accounts hereof in these moneths are very different in our daies, and were different with severall nations in Ages past; and how strictly soever the account be made, and even by the self same Calendar, yet is it

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its bare motion, but wonderfull in contriving the line of revolution; which from his artifice is so effected, that by a viciſſitude in one body and light, it ſufficeth the whole earth, affording thereby a poſſible or pleaſurable habitation in every part thereof; and that is the line Ecliptick; all which to effect by any other circle it had been impoſſible. For firſt, if we imagine the Sunne to make his courſe out of the Ecliptick, and upon a line without any obliquity, let it be conceived within that Circle, that is, either on the Æquator, or elſe on either ſide (for if we ſhould place it either in the Meridian or Colures, beſide the ſubverſion of its courſe from Eaſt to Weſt, there would enſue the like incommodities.) Now if we conceive the Sun to move between the obliquity of this Ecliptick in a line upon one ſide of the Æquator, then would the Sunne be viſible but unto one pole, that is, the ſame which was neareſt unto it. So that unto the one it would be perpetuall day, unto the other perpetuall night; the one would be oppreſſed with conſtant heat, the other with inſufferable cold; and ſo the defect of alternation would utterly impugn the generation of all things, which naturally require a viciſſitude of heat to their prodnction, and no leſſe to their encreaſe and conſervation.

Every part of the Earth habitable.

But if we concaive it to move in the Æquator; firſt, unto a parallel ſphere, or ſuch as have the pole for their Zenith, it would have made neither perfect day nor night. For being in the Æquator it would interſect their Horizon, and be half above and half beneath it, or rather it would have made perpetuall night to both: for though in regard of the rationall Horizon, which biſſecteth the Globe into equall parts, the Sunne in the Æquator would interſect the Horizon: yet in reſpect of the ſenſible Horizon (which is defined by the eye) the Sunne would be viſible unto neither, For if as ocular witneſſes report, and ſome do alſo write, by reaſon of the convexity of the Earth, the eye of man under the Æquator cannot diſcover both the poles, neither would the eye under the poles diſcover the Sunne in the Æquator. Thus would there nothing fructifie either near or under them, the Sun being Horizontall to the poles, and of no conſiderable altitude unto parts a reaſonable diſtance from them. Again, unto a right ſphere, or ſuch as dwell under the Æquator, although it made a difference in day and night, yet would it not make any diſtinction of ſeaſons: for unto them it would be conſtant Summer, it being alwaies verticall, and never deflecting from them: So had there been no fructification at all, and the Countries ſubjected would be as unhabitable, as indeed antiquity conceived them.

Laſtly, It moving thus upon the Æquator, unto what poſition ſoever, although it had made a day, yet could it have made no year; for it could not have had thoſe two motions now aſcribed unto it, that is, from Eaſt to Weſt, whereby it makes the day, and likewiſe from Weſt to Eaſt, whereby the year is computed. For according to Aſtronomy, the poles of the Æquator are the ſame with thoſe of the *Primum Mobile*. Now it is impoſſible that on the ſame circle, having the ſame poles, both theſe motions from oppoſite terms, ſhould be at the ſame time performed; all which is ſalved, if we allow the Sunne an obliquity in his annuall motion, and conceive him to move upon the poles of the Zodiack, diſtant from theſe of the world 23 degrees and an half. Thus may we diſcern the neceſſity of its obliquity, and how inconvenient its motion had been upon a circle parallell to the Æquator, or upon the Æquator it ſelf.

Now with what providence this obliquity is determined, we ſhall perceive upon the enſuing inconveniences from any deviation. For firſt, if its obliquity had been leſſe (as in ſtead of twenty three degrees, twelve or the half thereof)

thereof) the viciſſitude of ſeaſons appointed for the generation of all things, would ſurely have been too ſhort; for different ſeaſons would have hudled upon each other, and unto ſome it had not been much better then if it had moved on the Æquator. But had the obliquity been greater then now it is, as double or of 40 degrees; ſeverall parts of the earth had not been able to endure the diſproportionable differences of ſeaſons, occaſioned by the great receſſe, and diſtance of the Sunne; for unto ſome habitations the Summer would have been extream hot, and the Winter extream cold; likewiſe the Summer temperate unto ſome, but exceſſive and in extremity unto others, as unto thoſe who ſhould dwell under the Tropick of Cancer, as then would do ſome part of Spain, or ten degrees beyond, as Germany, and ſome part of England; who would have Summers as now the Moors of Africa; for the Sun would ſometime be verticall unto them: but they would have Winters like thoſe beyond the Artick Circle, for in that ſeaſon the Sun would be removed above 80 degrees from them. Again, it would be temperate to ſome habitations in the Summer, but very extream in the Winter: temperate to thoſe in two or three degrees beyond the Artick Circle, as now it is unto us; for they would be equidiſtant from that Tropick, even as we are from this at preſent; but the Winter would be extreme, the Sunne being removed above an hundred degrees, and ſo conſequently would not be viſible in their Horizon; no poſition of ſphere diſcovering any Starre diſtant above 90 degrees, which is the diſtance of every Zenith from the Horizon. And thus if the obliquity of this Circle had been leſſe, the viciſſitude of ſeaſons had been ſo ſmall as not to be diſtinguiſhed; if greater, ſo large and diſproportionable as not to be endured.

A competent diſtinction of ſeaſons neceſſary, and why.

Now for its ſituation, although it held this Eclyptick line, yet had it been ſeated in any other Orbe, inconveniences would enſue of condition like the former; for had it been placed in the loweſt ſphere, and where is now the Moon, the year would have conſiſted but of one moneth; for in that ſpace of time it would have paſſed through every part of the Ecliptick; ſo would there have been no reaſonable diſtinction of ſeaſons required for the generation and fructifying of all things; contrary ſeaſons which deſtroy the effects of one another, ſo ſuddenly ſucceeding. Beſides by this vicinity unto the earth its heat had been intollerable: for if (as many affirm) there is a different ſenſe of heat from the different points of its proper orbe, and that in the Apogeum or higheſt point (which happeneth in Cancer) it is not ſo hot under that Tropick, on this ſide the Æquator, as unto the other ſide in the Perigeum or loweſt part of the eccentric (which happeneth in Capricornus) ſurely being placed in an orbe farre lower, its heat would be unſufferable; nor needed we a fable to ſet the world on fire.

But had it been placed in the higheſt Orbe or that of the eight ſphere, there had been none but Platoes year, and a farre leſſe diſtinction of ſeaſons; for one year had then been many; and according unto the ſlow revolution of that orbe which abſolveth not his courſe in many thouſand years, no man had lived to attain the account thereof. Theſe are the inconveniences enſuing upon its ſituation in the extreme orbs, and had it been placed in the middle orbs of the Planets, there would have enſued abſurdities of a middle nature unto them.

Now whether we adhere unto the hypotheſis of Copernicus, affirming the Earth to move, and the Sunne to ſtand ſtill; or whether we hold as ſome of late have concluded from the ſpots in the Sunne, which appear and diſappear again; that beſides the revolution it maketh with its Orbs, it hath alſo a dineticall motion and rowles upon its own Poles; whether I ſay we affirm theſe

or

or no, the illations before mentioned are not thereby infringed. We therefore conclude this contemplation, and are not afraid to beleeve, it may be literally ſaid of the wiſedom of God, what men will have figuratively ſpoken of the works of Ghriſt; that if the wonders thereof were duly deſcribed, the whole world, that is, all within the laſt circumference, would not contain them. For as his wiſedom is infinite, ſo cannot the due expreſſions thereof be finite; and if the world compriſe him not, neither can it comprehend the ſtory of him.

Chap. VI.

Concerning the vulgar opinion that the earth was ſlenderly peopled before the Floud.

Beſide the ſlender conſideration men of later times doe hold of the firſt ages, it is commonly opinioned, and at firſt thought generally imagined, that the Earth was thinly inhabited, at leaſt not remotely planted before the the Floud; ſo that ſome conceiving it needleſſe to be univerſall, have made the deluge particular, and about thoſe parts where Noah built his Arke. Which opinion becauſe it is not only injurious to the Text, humane hiſtory, and common reaſon, but alſo derogatory unto that great work of God, the univerſall inundation; it will be needfull to make ſome further inquiſition; and (although predetermined by opinion) whether many might not ſuffer in the firſt Floud, as they ſhall in the laſt Flame, that is, who knew not Adam nor his offence; and many periſh in the deluge, who never heard of Noah or the Arke of his preſervation.

Now for the true enquirie thereof, the means are as obſcure as the matter, which being naturally to be explored by Hiſtory humane or divine, receiveth thereby no ſmall addition of obſcurity. For as for humane relations, they are ſo fabulous in Deucalions floud, that they are of little credit about Ogyges and Noahs. For the Heathens (as Varro accounteth) make three diſtinctions of time: the firſt from the beginning of the World unto the generall Deluge of Ogyges, they terme *Adelon*, that is, a time not much unlike that which was before time, immaniſeſt and unknown, becauſe thereof there is almoſt nothing or very obſcurely delivered: for though divers Authors have made ſome mention of the Deluge, as Manethon the Ægyptian Prieſt, *Xenophon de æquivocis*, *Fabius Pictor de Aureo ſeculo*, *Mar. Cato de originibus*, and Archilochus the Greek, who introduceth alſo the teſtimony of Moſes in his fragment *de temporibus*: yet have they delivered no account of what preceded or went before. Joſephus I confeſſe in his Diſcourſe againſt Appion induceth the antiquity of the Jews unto the Floud, and before, from the teſtimony of humane Writers; inſiſting eſpecially upon Maſeas of Damaſcus, Jeronymus Ægyptius, and Beroſus; and confirming the long duration of their lives, not only from theſe, but the authority of Heſiod, Erathius, Hellanicus and Ageſilaus. Beroſus the Chaldean Prieſt, writes moſt plainly, mentioning the City of Enos, the name of Noah and his ſonnes, the building of the Arke, and alſo the place of its landing. And Diodorus Siculus hath in his third book a paſſage which examined advanceth as high as Adam; for the Chaldeans, ſaith he, derive the originall of their Aſtronomy and letters fourty three thouſand years before the Monarchy of Alexander the Great; now the years whereby they computed the antiquity of their letters being as Xenophon interprets to be

accounted Lunary; the compute will arise unto the time of Adam: for fourty three thousand Lunary years make about three thousand six hundred thirty four years; which answereth the Chronology of time from the beginning of the world unto the reign of Alexander, as Annius of Viterbo computeth in his Comment upon Berosus.

The second space or intervall of time is accounted from the flood unto the first Olympiad, that is the year of the world 3174, which extendeth unto the daies of Isaiah the Prophet, and some twenty years before the foundation of Rome; this they term *Mythicon* or fabulous, because the account thereof, especially of the first part, is fabulously or imperfectly delivered. Hereof some things have been briefly related by the Authors above mentioned; more particularly by Dares Phrygius, Dictys Cretensis, Herodotus, Diodorus Siculus, and Trogus Pompeius; the most famous Greek Poets lived also in this Intervall, as Orpheus, Linus, Musæus, Homer, Hesiod; and herein are comprehended the grounds and first inventions of Poeticall fables, which were also taken up by historicall Writers, perturbing the Chaldean and Ægyptian Records with fabulous additions, and confounding their names and stories, with their own inventions.

The third time succeeding untill their present ages, they term *Historicon*, that is, such wherein matters have been more truly historified, and may therefore be beleeved. Of these times also have written Herodotus, Thucydides, Xenophon, Diodorus; and both of these and the other preceding such as have delivered universall Histories or Chronologies; as (to omit Philo, whose Narrations concern the Hebrews) Eusebius, Julius Africanus, Orosius, Ado of Vienna, Marianus Scotus, *Historia tripartita*, *Urspergensis*, Carion, Pineda, Salian, and with us Sr Walter Raleigh.

Now from the first hereof that most concerneth us, we have little or no assistance, the fragments and broken records hereof inforcing not at all our purpose; and although some things not usually observed, may be from thence collected, yet doe they not advantage our discourse, nor any way make evident the point in hand. For the second, though it directly concernes us not, yet in regard of our last medium and some illustrations therein, we shall be constrained to make some use thereof. As for the last it concernes us not at all; for treating of times farre below us, it can no way advantage us. And though divers in this last Age have also written of the first, as all that have delivered the generall accounts of time, yet are their Tractates little auxiliary unto ours, nor afford us any light to detenebrate and clear this truth.

As for holy Scripture and divine relation, there may also seem therein but slender information, there being only left a brief narration hereof by Moses, and such as affords no positive determination. For the text delivereth but two genealogies, that is, of Cain and Seth; in the line of Seth there are only ten descents, in that of Cain but seven, and those in a right line with mention of father and sonne; excepting that of Lamech, where is also mention of wives, sons, and a daughter. Notwithstanding if we seriously consider what is delivered therein, and what is also deducible, it will be probably declared what is by us intended, that is, the populous and ample habitation of the earth before the floud. Which we shall labour to induce not from postulates and entreated Maximes, but undeniable principles declared in holy Scripture; that is, the length of mens liyes before the floud, and the large extent of time from the Creation thereunto.

That the earth was generally peopled before the floud.

We shall only first crave notice, that although in the relation of Moses there be very few persons mentioned, yet are there many more to be presumed;

med; nor when the Scripture in the line of Seth nominates but ten persons, are they to be conceived all that were of this generation; the Scripture singly delivering the holy line, wherein the world was to be preserved, first in Noah, and afterward in our Saviour. For in this line it is manifest there were many more born then are named; for it is said of them all, that they begat sonnes and daughters. And whereas it is very late before it is said they begat those persons which are named in the Scripture, the sooneſt at 65, it must not be understood that they had none before; but not any in whom it pleased God the holy line should be continued, And although that expression that they begat sonnes and daughters be not determined to be before or after the mention of these, yet must it be before in some; for before it is said that Adam begat Seth at the 130 year, it is plainly affirmed that Cain knew his wife, and had a son; which must be one of the daughters of Adam, one of those whereof it is after said, he begat sons and daughters. And so for ought can be disproved there might be more persons upon earth then are commonly supposed, when Cain slew Abel; nor the fact so hainously to be aggravated in the circumstance of the fourth person living. And whereas it is said upon the nativity of Seth, God hath appointed me another seed instead of Abel, it doth not imply he had no other all this while, but not any of that expectation, or appointed (as his name implies) to make a progression in the holy line; in whom the world was to be saved, and from whom he should be born, that was mystically slain in Abel.

Now our first ground to induce the numerosity of people before the floud, is the long duration of their lives, beyond 7, 8 and 9 hundred years. Which how it conduceth unto populosity we shall make but little doubt, if we consider there are two main causes of numerosity in any kinde or species; that is, a frequent and multiparous way of breeding, whereby they fill the world with others, though they exist not long themselves; or a long duration and subsistence, whereby they doe not only repleniſh the world with a new annumeration of others, but also maintain the former account in themselves. From the first cause we may observe examples in creatures oviparous, as Birds and Fishes; in vermiparous, as Flies, Locusts and Gnats; in animals also viviparous, as Swine and Conies. Of the first there is a great example in the herd of Swine in Galilee, although it were an unclean beast, and forbidden unto the Jews. Of the other a very remarkable one in Atheneus, in the Isle Astipalea, one of the Cyclades now called Stampalia, wherein from two that were imported, the number so encreased, that the Inhabitants were constrained to have recourse unto the Oracle of Delphos, for an invention how to destroy them.

Others there are which make good the paucity of their breed with the length and duration of their daies, whereof there want not examples in animals uniparous: First, in bisulcous or cloven-hooft, as Camels, and Beeves, whereof there is above a million annually slain in England. It is also said of Job, that he had a thousand yoak of Oxen, and six thousand Camels; and of the children of Israel passing into the land of Canaan, that they took from the Midianites threescore and ten thousand Beeves; and of the Army of Semiramis, that there were therein one hundred thousand Camels; for Solipeds or firm-hoosed animals, as Horses, Asses, Mules, *&c.* they are also in mighty numbers; so is it delivered that Job had a thousand she Asses: that the Midianites lost sixty one thousand Asses. For Horses it is affirmed by Diodorus, that Ninus brought against the Bactrians two hundred eighty thousand Horses; after him Semiramis five hundred thousand Horses, and Chariots one hundred thousand. Even in creatures sterill and such as do not generate,

A Million of Beeves yearly killed in England.

the length of life conduceth much unto the multiplicity of the ſpecies; for the number of Mules which live farre longer then their Dammes or Sires, in countries where they are bred is very remarkable, and farre more common then Horſes.

For animals multifidous, or ſuch as are digitated or have ſeverall diviſions in their feet, there are but two that are uniparous, that is, Men and Elephants; in whom though their generations be but ſingle, they are notwithſtanding very numerous. The Elephant (as Ariſtotle affirmeth) carrieth the young two years and conceiveth not again (as Edvardus Lopez affirmeth) in many after; yet doth their age requite this diſadvantage, they living commonly one hundred, ſometime two hundred years. Now although they be unuſuall with us in Europe, and altogether unknown unto America, yet in the two other parts they are abundant, as evidently appears by the relation of *Garcias ab Horto*, Phyſitian to the Viceroy at Goa; who in his Chapter *de Ebore*, relates that at one venation the King of Sian took four thouſand; and is of opinion they are in other parts, in greater number then heards of Beeves in Europe. And though this delivered from a Spaniard unacquainted with our Northern droves, may ſeem very farre to exceed; yet muſt we conceive them very numerous, if we conſider the number of teeth tranſported from one Countrey to another; they having only two great teeth, and thoſe not falling or renewing.

The age of an Elephant.

As for man, the diſadvantage in his ſingle iſſue is the ſame with theſe, and in the lateneſſe of his generation ſomewhat greater then any; yet in the continuall and not interrupted time thereof, and the extent of daies, he becomes at preſent, if not then any other ſpecies, at leaſt more numerous then theſe before mentioned. Now being thus numerous at preſent, and in the meaſure of threeſcore, fourſcore or an hundred years, if their daies extended unto ſix, ſeven, or eight hundred, their generations would be proportionably multiplied; their times of generation being not only multiplied, but their ſubſiſtence continued. For though the great Grandchilde went on, the Petrucius and firſt Originall would ſubſiſt and make one of the world; though he outlived all the termes of conſanguinity, and became a ſtranger unto his proper progeny. So by compute of Scripture Adam lived unto the ninth generation, unto the daies of Lamech the father of Noah; Methuſelah unto the year of the floud, and Noah was contemporary unto all from Enoch unto Abraham. So that although ſome died, the father beholding ſo many deſcents, the number of ſurvivers muſt ſtill be very great; for if half the men were now alive, which lived in the laſt Century, the earth would ſcarce contain their number. Whereas in our abridged and ſeptuageſimall ages, it is very rare and deſerves a diſtich to behold the fourth generation: Xerxes complaint ſtill remaining; and what he lamented in his Army, being almoſt deplorable in the whole world; men ſeldome ariving unto thoſe years whereby Methuſelah exceeded nine hundred, and what Adam came ſhort of a thouſand, was defined long agoe to be the age of man.

The terme for that perſon from whom conſanquineall relations are accounted, as in the *Arbor civilis*.

Mater ait natæ die natæ filia, &c.

Now although the length of daies conduceth mainly unto the numeroſity of mankinde, and it be manifeſt from Scripture they lived very long, yet is not the period of their lives determinable, and ſome might be longer livers, then we account that any were. For (to omit that conceit of ſome, that Adam was the oldeſt man, in as much as he is conceived to be created in the maturity of mankinde, that is, at 60 (for in that age it is ſet down they begat children) ſo that adding this number unto his 930, he was 21 years older then any of his poſterity) that even Methuſelah was the longeſt lived of all the children of Adam, we need not grant; nor is it definitively ſet down by

by Moſes. Indeed of thoſe ten mentioned in Scripture, with their ſeverall ages it muſt be true; but whether thoſe ſeven of the line of Cain and their progeny, or any of the ſons or daughters poſterity after them outlived thoſe, is not expreſſed in holy Scripture; and it will ſeem more probable that of the line of Cain, ſome were longer lived then any of Seth, if we concede that ſeven generations of the one lived as long as nine of the other. As for what is commonly alledged, that God would not permit the life of any unto a thouſand, becauſe (alluding unto that of David) no man ſhould live one day in the ſight of the Lord; although it be urged by divers, yet is it methinks an inference ſomewhat Rabbinicall; and not of power to perſwade a ſerious examinator.

Having thus made manifeſt in generall how powerfully the length of lives conduced unto populoſity of thoſe times, it will yet be eaſier acknowledged if we deſcend to particularities, and conſider how many in ſeven hundred years might deſcend from one man; wherein conſidering the length of their daies, we may conceive the greateſt number to have been alive together. And this that no reaſonable ſpirit may contradict, we will declare with manifeſt diſadvantage; for whereas the duration of the world unto the floud was above 1600 years, we will make our compute in leſſe then half that time. Nor will we begin with the firſt man, but allow the earth to be provided of women fit for marriage the ſecond or third firſt Centuries; and will only take as granted, that they might beget children at ſixty, and at an hundred years have twenty, allowing for that number fourty years. Nor will we herein ſingle out Methuſelah, or account from the longeſt livers, but make choice of the ſhorteſt of any we finde recorded in the Text, excepting Enoch; who after he had lived as many years as there be daies in the year, was tranſlated at 365. And thus from one ſtock of ſeven hundred years, multiplying ſtill by twenty, we ſhall finde the product to be one thouſand, three hundred fourty ſeven millions, three hundred ſixty eight thouſand, four hundred and twenty.

Century	1	20.
	2	400.
	3	8000.
	4	160,000.
	5	3,200,000.
	6	46,000,000.
	7	1,280,000,000.
The Product		1,347,368,420

Now had we computed by Methuſelah the ſumme had exceeded five hundred thouſand millions. As large a number from one ſtock as may be conceived in Europe; eſpecially if in Conſtantinople the greateſt City thereof, there be no more then Botero accounteth; ſeven hundred thouſand ſouls. Which duly conſidered, we ſhall rather admire how the earth contained its inhabitants, then doubt its inhabitation; and might conceive the deluge not ſimply penall, but in ſome way alſo neceſſary; as many have conceived of tranſlations, if Adam had not ſinned, and the race of man had remained upon earth immortall.

Conſtantinople the greateſt City of Europe.

Now whereas ſome to make good their longevity, have imagined that the years of their compute were Lunary; unto theſe we muſt reply; That if by a Lunary year they underſtand twelve revolutions of the Moon, that is, 354 daies, eleven fewer then in the Solary year; there will be no great difference; at leaſt not ſufficient to convince or extenuate the queſtion. But if by

by a Lunary year they mean one revolution of the Moon, that is, a moneth; they first introduce a year never used by the Hebrews, in their Civil accompts; and what is delivered before of the Chaldean years (as Xenophon gives a caution) was only received in the Chronology of their Arts. Secondly, they contradict the Scripture, which makes a plain enumeration of many moneths in the account of the Deluge; for so it is expressed in the Text. In the tenth moneth, in the first day of the moneth were the tops of the mountains seen; Concordant whereunto is the relation of humane Authors, for so saith Xenophon *de Æquivocis, Inundationes plures fuere, prima novimestris inundatio terrarum sub prisco Ogyge*; and the like also Solinus, *Meminisse hoc loco par est post primum diluvium Ogygi temporibus notatum, cum novem & amplius mensibus diem continua nox inumbrasset, Delon ante omnes terras radiis solis illuminatum sortitumque ex eo nomen.* And lastly, they fall upon an absurdity, for they make Enoch to beget children about six years of age. For whereas it is said he begat Methuselah at 65, if we shall account every moneth a year, he was at that time some six years and an half, for so many moneths are contained in that space of time.

Having thus declared how much the length of mens lives conduced unto the populosity of their kinde, our second foundation must be the large extent of time, from the Creation unto the Deluge; that is (according unto received computes about 1655 years) a longer time then hath passed since the nativity of our Saviour; and which we cannot but conceive sufficient for a very large encrease, if we doe but affirm what reasonable enquirers will not deny; That the earth might be as populous in that number of years before the floud, as we can manifest it was in the same number after. And whereas there may be conceived some disadvantage, in regard that at the Creation the originall of mankinde was in two persons, but after the floud their propagation issued at least from six; against this we might very well set the length of their lives before the floud, which were abbreviated after, and in half this space contracted into hundreds and threescores. Notwithstanding to equalize accounts, we will allow three hundred years, and so long a time as we can manifest from the Scripture, There were four men at least that begat children, Adam, Cain, Seth and Enos; so shall we fairly and favourably proceed if we affirm the world to have been as populous in sixteen hundred and fifty years before the floud, as it was in thirteen hundred after. Now how populous and largely inhabited it was within this period of time, we shall declare from probabilities, and severall testimonies of Scripture and humane Authors.

And first, To manifest the same near those parts of the earth where the Ark is presumed to have rested, we have the relation of holy Scripture accounting the genealogy of Japhet, Cham and Sem, and in this last, four descents unto the division of the earth in the daies of Peleg, which time although it were not upon common compute much above an hundred years, yet were they at this time mightily encreased. Nor can we well conceive it otherwise, if we consider they began already to wander from their first habitation, and were able to attempt so mighty a work as the building of a City and a Tower, whose top should reach unto the heavens. Whereunto there was required no slender number of persons, if we consider the magnitude thereof, expressed by some, and conceived to be *Turris Beli* in Herodotus; and the multitudes of people recorded at the erecting of the like or inferiour structures: for at the building of Solomons Temple there were threescore and ten thousand that carried burdens, and fourscore thousand hewers in the mountains, beside the chief of his officers three thousand and three hundred;

and

and at the erecting of the Pyramids in the reign of King Cheops, as Herodotus reports there were *decem myriades*, that is an hundred thousand men. And though it be said of the Ægyptians, *Porrum & cepe nefas violare & frangere morsu*; yet did the summes expended in Garlick and Onyons amount unto no lesse then one thousand six hundred Talents. *Iuvenal.*

The first Monarchy or Kingdome of Babylon is mentioned in Scripture under the foundation of Nimrod, which is also recorded in humane history; as beside Berosus, in Diodorus and Justine, for Nimrod of the Scriptures is Belus of the Gentiles, and Assur the same with Ninus his successour. There is also mention of divers Cities, particularly of Ninivy and Resen expressed emphatically in the Text to be a great City. Who Nimrod and Assur were.

That other Countries round about were also peopled, appears by the Wars of the Monarchs of Assyria with the Bactrians, Indians, Scythians, Æthiopians, Armenians, Hyrcanians, Parthians, Persians, Susians; they vanquishing (as Diodorus relateth) Ægypt, Syria, and all Asia minor, even from Bosphorus unto Tanais. And it is said, that Semiramis in her expedition against the Indians, brought along with her the King of Arabia. About the same time of the Assyrian Monarchy, doe Authors place that of the Sycionians in Greece, and soon after that of the Argives, and not very long after, that of the Athenians under Cecrops; and within our period assumed are historified many memorable actions of the Greeks, as the expedition of the Argonautes, with the most famous Wars of Thebes and Troy.

That Canaan also and Ægypt were well people farre within this period, besides their plantation by Canaan and Misraim, appeareth from the history of Abraham, who in lesse then 400 years after the Floud, journeyed from Mesopotamia unto Canaan and Ægypt; both which he found well peopled and policied into Kingdoms; wherein also in 430 years, from threescore and ten persons which came with Jacob into Ægypt, he became a mighty Nation: for it is said, at their departure, there journeyed from Rhamesis to Succoth about six hundred thousand on foot, that were men, besides children. Now how populous the land from whence they came was, may be collected not only from their ability in commanding so mighty subjections, but from the severall accounts of that Kingdom delivered by Herodotus. And how soon it was peopled is evidenced from the pillar of their King Osyris, with this inscription in Diodorus; *Mihi pater est Saturnus deorum junior, sum vero Osyris rex qui totum peragravi orbem usq; ad Indorum fines, ad eos quoq; fum profectus qui septentrioni subjacent usq; ad Istri fontes, & alias partes usq; ad Oceanum.* Now according unto the best determinations Osyris was Mizraim, and Saturnus Ægyptius the same with Cham; after whose name Ægypt is not only called in Scripture the land of Ham, but thus much is also testified by Plutarch; for in his Treatise *de Osyride*, he delivereth that Ægypt was called *Chamia a Chamo Noe filio*, that is, from Cham the sonne of Noah. And if according to the consent of ancient Fathers, Adam was buried in the same place, where Christ was crucified, that is, Mount Calvary, the first man ranged farre before the Floud, and laid his bones many miles from that place, where its presumed he received them. And this migration was the greater, if as the text expresseth, he was cast out of the East-side of Paradise to till the ground; and as the Position of the Cherubins implieth, who were placed at the east end of the garden, to keep him from the tree of life. Who Osyris and Saturnus Ægyptius were.

That the extreme and remote parts of the earth were in this time inhabited, is also inducible from the like testimonies; for (omitting the numeration of Josephus, and the genealogies of the sonnes of Noah) that Italy was inhabited appeareth from the Records of Livie, and Dionysius Halicarnasseus,

the ſtory of Æneas, Evander, and Janus, whom Annius of Viterbo, and the Chorographers of Italy, do make to be the ſame with Noah. That Sicily was alſo peopled, is made out from the frequent mention thereof in Homer; the Records of Diodorus and others; but eſpecially from a remarkable paſſage touched by Aretius and Ranzanus Biſhop of Lucerium, but fully explained by Thomas Fazelli in his accurate hiſtory of Sicily; that is, from an ancient inſcription in a ſtone at Panormo, expreſſed by him in its proper characters, and by a Syrian thus tranſlated: *Non eſt alius Deus præter unum Deum, non eſt alius potens præter eundem Deum, neque eſt alius victor præter eundem quem colimus Deum: Hujus turris præfectus eſt Sapha filius Eliphar, filij Eſau, fratris Jacob, filij Iſaac, filij Abraham; & turri quidem ipſi nomen eſt Bayeh, ſed turri huic proximæ nomen eſt Pharath.* The antiquity of the inhabitation of Spain is alſo confirmable, not only from Beroſus in the plantation of Tuball and a City continuing yet in his name, but the ſtory of Gerion, the travels of Hercules and his pillars; and eſpecially a paſſage in Strabo, which advanceth unto the time of Ninus, thus delivered in his fourth book. The Spaniards (ſaith he) affirm that they have had Laws and letters above ſix thouſand years. Now the Spaniards or Iberians obſerving (as Xenophon hath delivered) *Annum quadrimeſtrem*, four moneths unto a year, this compute will make up 2000 Solary years, which is about the ſpace of time from Strabo who lived in the daies of Auguſtus, unto the reign of Minus.

That Mauritania and the coaſt of Africa were peopled very ſoon, is the conjecture of many wiſe men, and that by the Phænicians; who left their Countrey upon the invaſion of Canaan by the Iſraelites. For beſide the conformity of the Punick or Carthaginean language with that of Phænicia, there is a pregnant and very remarkable teſtimony hereof in Procopius, who in his ſecond *de bello Vandalico*, recordeth, that in a Town of Mauritania Tingitana, there was to be ſeen upon two white Columns in the Phænician language theſe enſuing words; *Nos Maurici ſumus qui fugimus à facie Jehoſchuæ filij Nunis prædatoris.* The fortunate Iſlands or Canaries were not unknown; for ſo doth Strabo interpret that ſpeech in Homer of Proteus unto Menelaus,

Sed te qua terræ poſtremus terminus extat,
Elyſium in Campum cœleſtia numina ducunt.

The like might we affirm from credible hiſtories both of France and Germany, and probably alſo out of our own Countrey; for omitting the fabulous and Trojan originall delivered by Jeofrey of Monmouth, and the expreſſe text of Scripture, that the race of Japhet did people the Iſles of the Gentiles; (in which number this of ours hath been ſpecially accounted) their originall was ſo obſcure in Cæſars time, that he affirmeth the Inland inhabitants were Aborigines, that is, ſuch as reported, that they had their beginning in the Iſland. That Ireland our neighbour Iſland was not long time without Inhabitants, may be made probable by ſundry accounts, although we abate the Tradition of Bartholanus the Scythian, who arrived there three hundred years after the Flood, or the relation of Giraldus, that Cæſaria the daughter of Noah dwelt there before.

Bochart Geog. Sacr. part. 2.

Now ſhould we call in the learned account of Bochartus, deducing the ancient names of Countries from Phænicians, who by their plantations, diſcoveries, and ſea negotiations, have left unto very many Countries, Phænician denominations; the enquiry would be much ſhorter. And if Spain in the Phænician originall, be but the region of Conies, Luſitania or Portugall the countrey of Almonds, if Britanica were at firſt Baratanaca, or the land of Tinne, and Ibernia or Ireland, were but Ibernæ, or the fartheſt habitation, and theſe names impoſed and diſperſed by Phænician Colonies in their ſeverall navigations;

navigations; the Antiquity of habitations might be more cleerly advanced.

Thus though we have declared how largely the world was inhabited within the ſpace of 1300 years, yet muſt it be conceived more populous then can be evinced; for a greater part of the Earth hath ever been peopled, then hath been known or deſcribed by Geographers, as will appear by the diſcoveries of all ages; for neither in Herodotus or Thucydides do we finde any mention of Rome, nor in Ptolomy of many parts of Europe, Aſia, or Africa. And becauſe many places we have declared of long plantation, of whoſe populoſity notwithſtanding or memorable actions we have no ancient ſtory, if we may conjecture of theſe by what we finde related of others, we ſhall not need many words, nor aſſume the half of 1300 years. And this we might illuſtrate from the mighty acts of the Aſſyrians performed not long after the Floud; recorded by Juſtine and Diodorus, who makes relation of expeditions by Armies more numerous then have been ever ſince. For Ninus King of Aſſyria brought againſt the Bactrians 700000 foot, 200000 horſe, 10600 Chariots; Semiramis his ſucceſſor led againſt the Indians 1300000 foot, 500000 horſe, 100000 Chariots. and as many upon Camels: And it is ſaid, Staurobates the Indian King met her with greater forces then ſhe brought againſt him; all which was performed within leſſe then four hundred years after the Floud.

Now if any imagine the unity of their language did hinder their diſperſion before the Floud, we confeſſe it ſome hindrance at firſt, but not much afterward: for though it might reſtrain their diſperſion, it could not their populoſity; which neceſſarily requireth tranſmigration and emiſſion of Colonies, as we reade of Romans, Greeks, Phænicians in ages paſt, and have beheld examples thereof in our daies. We may alſo obſerve that after the Floud before the confuſion of tongues, men began to diſperſe; for it is ſaid, they journeyed towards the Eaſt, and the Scripure it ſelf expreſſeth a neceſſity conceived of their diſperſion, for the intent of erecting the Tower is ſo delivered in the text, leſt we be ſcattered abroad upon the face of the earth.

Again, If any imagine the plantation of the earth more eaſie in regard of Navigation and ſhipping diſcovered ſince the Floud, whereby the Iſlands and divided parts of the earth are now inhabited; he muſt conſider that whether there were Ilands or no before the Floud, is not yet determined, and is with probability denied by very learned Authours. Whether any Iſlands before the Floud.

Laſtly, If we ſhall fall into apprehenſion that it was leſſe inhabited, becauſe it is ſaid in the ſixt of Geneſis about a 120 years before the Floud, and it came to paſſe that when men began to multiply upon the face of the earth. Beſide that this may be only meant of the race of Cain, it will not import they were not multiplied before, but that they were at that time plentifully encreaſed; for ſo is the ſame word uſed in other parts of Scripture. And ſo is it afterward in the 9 Chapter ſaid that Noah began to be an husbandman, that is, he was ſo, or earneſtly performed the Acts thereof: ſo it is ſaid ſaid of our Saviour, that he began to caſt them out that bought and ſold in the Temple, that is, he actually caſt them out, or with alacrity effected it.

Thus have I declared my private and probable conceptions in the enquiry of this truth; but the certainty hereof let the Arithmetick of the laſt day determine; and therefore expect no further belief then probability and reaſon induce. Only deſire men would not ſwallow dubioſities for certainties, and receive as principles points mainly controvertible; for we are to adhere unto things doubtfull in a dubious and opinative way; it being reaſonable for

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this alſo diſturb the Cardinall accounts, nor will it with propriety admit that appellation. For that ſurely cannot be accounted East which hath the South on both ſidees; which notwithſtanding this poſition muſt have; for if unto ſuch as live under the pole, that be only North which is above them, that muſt be Southerly which is below them; which is all the other portion of the Globe beſide that part poſſeſſed by them. And thus theſe points of East and Weſt being not abſolute in any, reſpective in ſome, and not at all relating unto others; we cannot hereon eſtabliſh ſo generall conſiderations, nor reaſonably erect ſuch immutable aſſertions, upon ſo unſtable foundations.

Now the ground that begat or promoted this conceit, was firſt a miſtake in the apprehenſion of East and Weſt, conſidering thereof as of the North and South, and computing by theſe as invariably as by the other; but herein, upon ſecond thoughts there is a great diſparity. For the North and Southern pole, are the invariable termes of that Axis whereon the heavens doe move; and are therefore incommunicable and fixed points, whereof the one is not apprehenſible in the other. But with the East and Weſt it is quite otherwiſe; for the revolution of the Orbes being made upon the poles of North and South, all other points about the Axis are mutable; and whereſoever therein the East point be determined; by ſucceſſion of parts in one revolution every point becometh East. And ſo if where the Sunne ariſeth, that part be termed East, every habitation differing in longitude, will have this point alſo different, in as much as the Sunne ſucceſſively ariſeth unto every one.

What the Northern and Southern poles be.

The ſecond ground, although it depend upon the former, approacheth nearer the effect; and that is the efficacie of the Sunne, ſet out and divided according to priority of aſſent, whereby his influence is conceived more favourable unto one Countrey then another, and to felicitate India more then any after. But hereby we cannot avoid abſurdities and ſuch as inferre effects controulable by our ſenſes: For firſt, by the ſame reaſon that we affirm the Indian richer then the American, the American will alſo be more plentifull then the Indian, and England or Spain more fruitfull then Hiſpaniola or golden Caſtile; in as much as the Sunne ariſeth unto the one ſooner then the other, and ſo accountably unto any Nation ſubjected unto the ſame parallell, or with a conſiderable diverſity of longitude from each other.

Secondly, An unſufferable abſurdity will enſue; for thereby a Country may be more fruitfull then it ſelf: For India is more fertile then Spain, becauſe more East, and that the Sunne ariſeth firſt unto it; Spain likewiſe by the ſame reaſon more fruitfull then America, and America then India; ſo that Spain is leſſe fruitfull then that Country, which a leſſe fertile Country then it ſelf, excelleth.

Laſtly, If we conceive the Sunne hath any advantage by priority of aſcent, or makes thereby one Country more happy then another, we introduce injuſtifiable determinations, and impoſe a naturall partiality on that luminary; which being equidiſtant from the earth, and equally removed in the East as in the Weſt, his power and efficacy in both places muſt be equall; as Boetius hath taken notice in his firſt *de Gemmis*, and Scaliger hath graphically declared in his Exercitations. Some have therefore forſaken this refuge of the Sunne, and to ſalve the effect have recurred unto the influence of the ſtarres, making their activities Nationall, and appropriating their powers unto particular regions. So Cardan conceiveth the taile of Urſa major peculiarly reſpecteth Europe; whereas indeed once in 24 hours it alſo abſolveth its courſe

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is open towards the East, and admitteth the raies of the rising Sunne, thereby is implied no more particular efficacy then in the West; But that site is commended, in regard the damps and vaporous exhalations ingendered in the absence of the Sunne, are by his returning raies the sooner dispelled; and men thereby more early enjoy a clear and healthy habitation. Upon the like considerations it is, that *Marcus Varro de re Rustica*, commendeth the same situation, and exposeth his farme unto the equinoxiall ascent of the Sunne. That Palladius adviseth the front of his edifice should so respect the South, that in the first angle it receive the rising raies of the winter Sunne, and decline a little from the winter setting thereof. And concordant hereunto is the instruction of Columella in his Chapter *De positione villæ*; which he contriveth into Summer and Winter habitations; ordering that the Winter lodgeings regard the Winter ascent of the Sunne, that is, South-east; and the rooms of repast at supper, the Æquinoxiall setting thereof, that is, the West; that the Summer lodgings regard the Æquinoxiall Meridian; but the rooms of canation in the Summer, he obverts unto the Winter ascent, that is, South-East; and the Balnearies or bathing places, that they may remain under the Sunne untill evening, he exposeth unto the Summer setting, that is, North-West; in all which, although the Cardinall points be introduced, yet is the consideration Solary, and only determined unto the aspect or visible reception of the Sunne.

Mahometans and Jews in these and our neighbour parts are observed to use some gestures towards the East, as at their benediction, and the killing of their meat. And though many ignorant spectators, and not a few of the actors conceive some Magick or mystery therein, yet is the Ceremony only Topicall, and in a memoriall relation unto a place they honour. So the Jews doe carry a respect and cast an eye upon Jerusalem; for which practice they are not without the example of their forefathers, and the encouragement of their wise King; For so it is said that Daniel went into his house, and his windows being opened towards Jerusalem, he kneeled upon his knees three times a day, and praied. So is it expressed in the praier of Solomon, What praier or supplication soever be made by any man, which shall spread forth his hands towards this house, if thy people go out to battell, and shall pray unto the Lord towards the City which thou hast chosen, and toward the house which I have chosen to build for thy Name, then hear thou in heaven their praier, and their supplication, and maintain their cause. Now the observation hereof, unto the Jews that are dispersed Westward, and such as most converse with us, directeth their regard unto the East; But the words of Solomon are appliable unto all quarters of heaven; and by the Jews of the East and South must be regarded in a contrary position. So Daniel in Babylon looking toward Jerusalem had his face toward the West; So the Jews in their own Land looked upon it from all quarters. For the Tribe of Judah beheld it to the North; Manasses, Zabulon, and Napthali unto the South; Reuben and Gad unto the West; only the Tribe of Dan regarded it directly or to the due East. So when it is said, Luke 12. when you see a cloud rise out of the West, you say there cometh a showre, and so it is; the observation was respective unto Judea; nor is this a reasonable illation in all other Nations whatsoever; For the Sea lay West unto that Countrey, and the windes brought rain from that quarter; But this consideration cannot be transferred unto India or China, which have a vast Sea Eastward, and a vaster Continent toward the West. So likewise when it is said by Job, in the vulgar Translation, Gold cometh out of the North; is this a reasonable inducement unto us and many other Countries, from some particular mines

Dan. 6.

septentrionall

ſeptentrionall unto his ſituation, to ſearch after that metall in cold and Northern regions, which we moſt plentifully diſcover in hot and Southern habitations?

For the Mahometans, as they partake with all Religions in ſomething, ſo they imitate the Jew in this. For in their obſerved geſtures, they hold a regard unto Mecha and Medina Talnabi, two Cities in *Arabia felix*; where their Prophet was born and buried; whither they perform their pilgrimages; and from whence they expect he ſhould return again. And therefore they direct their faces unto theſe parts, which unto the Mahometans of Barbary and Ægypt lye Eaſt, and are in ſome point thereof, unto many other parts of Turkey. Wherein notwithſtanding there is no Orientall reſpect; for with the ſame devotion on the other ſide they regard theſe parts toward the Weſt; and ſo with variety whereſoever they are ſeated, conforming unto the ground of their conception.

Fourthly, Whereas in the ordering of the Camp of Iſrael, the Eaſt quarter is appointed unto the nobleſt Tribe, that is the Tribe of Judah, according to the command of God, Numb. 2. In the Eaſt-ſide toward the riſing of the Sunne, ſhall the Standard of the Tribe of Judah pitch; it doth not peculiarly extoll that point. For herein the Eaſt is not to be taken ſtrictly, but as it ſignifieth or implieth the formoſt place; for Judah had the Van, and many Countries through which they paſſed were ſeated Eaſterly unto them. Thus much is implied by the Origiuall, and expreſſed by Tranſlations which ſtrictly conform thereto: So Tremellius and Junius, *Caſtra habentium ab anteriore parte Orientem verſus, vexillum eſto caſtrorum Jude*; ſo hath R. Solomon Jarchi expounded it, the foremoſt or before, is the Eaſt quarter, and the Weſt is called behinde. And upon this Interpretation may all be ſalved that is alleageable againſt it. For if the tribe of Judah were to pitch before the Tabernacle at the Eaſt, and yet to march firſt, as is commanded, Numb. 10. there muſt enſue a diſorder in the Camp, nor could they conveniently obſerve the execution thereof: For when they ſet out from Mount Sinah where the Command was delivered, they made Northward unto Rithmah; from Riſſah unto Eziongaber about fourteen ſtations they marched South: From Almon Diblathaim through the mountains of Yabarim and plains of Moab towards Jordan the face of their march was Weſt: So that if Judah were ſtrictly to pitch in the Eaſt of the Tabernacle, every night he encamped in the Rear: And if (as ſome conceive) the whole Camp could not be leſſe then twelve miles long, it had been prepoſterous for him to have marched foremoſt; or ſet out firſt, who was moſt remote from the place to be approached.

Where the Ark reſted, as ſome think.

Fiftly, That Learning, Civility and Arts, had their beginning in the Eaſt, it is not imputable either to the action of the Sunne, or its Orientality, but the firſt plantation of Man in thoſe parts; which unto Europe doe carry the reſpect of Eaſt. For on the mountains of Ararat, that is part of the hill Taurus, between the Eaſt-Indies and Scythia, as Sr W. Ralegh accounts it, the Ark of Noah reſted; from the Eaſt they travelled that built the Tower of Babell; from thence they were diſperſed and ſucceſſively enlarged, and Learning, good Arts and all Civility communicated. The progreſſion whereof was very ſenſible; and if we conſider the diſtance of time between the confuſion of Babell, and the Civility of many parts now eminent therein, it travelled late and ſlowly into our quarters. For notwithſtanding the learning of Bardes and Druides of elder times, he that ſhall peruſe that work of Tacitus *de moribus Germanorum*, may eaſily diſcern how little Civility two thouſand years had wrought upon that Nation; the like he may obſerve concerning our ſelves,

ſelves, from the ſame Author in the life of Agricola, and more directly from Strabo; who to the diſhonour of our Predeceſſours, and the diſparagement of thoſe that glory in the Antiquity of their Anceſtors, affirmeth, the Britans were ſo ſimple, that though they abounded in Milk, they had not the Artifice of Cheeſe.

Laſtly, That the Globe it ſelf is by Coſmographers divided into Eaſt and Weſt, accounting from the firſt Meridian, it doth not eſtabliſh this conceit. For that diviſion is not naturally founded, but artificially ſet down, and by agreement; as the apteſt terms to define or commenſurate the longitude of places. Thus the ancient Coſmographers doe place the diviſion of the Eaſt and Weſtern Hemiſphere, that is the firſt term of longitude in the Canary or fortunate Iſlands; conceiving theſe parts the extreameſt habitations Weſtward: But the Moderns have altered that term, and tranſlated it unto the Azores or Iſlands of S^t^ Michael; and that upon a plauſible conceit of the ſmall or inſenſible variation of the compaſſe in thoſe parts; wherein nevertheleſſe, and though upon ſecond invention, they proceed upon a common and no appropriate foundation; for even in that Meridian farther North or South the compaſſe obſervably varieth; and there are alſo other places wherein it varieth not, as Alphonſo and Rodoriges *de Lago* will have it about *Capo de las Agullas* in Africa; as Maurolycus affirmeth in the ſhore of Peloponeſus in Europe; and as Gilbertus averreth, in the middeſt of great regions, in moſt parts of the earth.

Chap. VIII.

Of the River Nilus.

HEreof uncontroulably and under generall conſent many opinions are paſſant; which notwithſtanding upon due examination, doe admit of doubt or reſtriction. It is generally eſteemed, and by moſt unto our daies received, that the River of Nilus hath ſeven oſtiaries; that is, by ſeven Chanels diſburdeneth it ſelf into the Sea. Wherein notwithſtanding, beſide that we finde no concurrent determination of ages paſt, and a poſitive and undeniable refute of theſe preſent; the affirmative is mutable, and muſt not be received without all limitation.

For ſome, from whom we receive the greateſt illuſtrations of Antiquity, have made no mention hereof: So Homer hath given no number of its Chanels, nor ſo much as the name thereof in uſe with all Hiſtorians. Eratoſthenes in his deſcription of Ægypt hath likewiſe paſſed them over. Ariſtotle is ſo indiſtinct in their names and numbers, that in the firſt of Meteors, he plainly affirmeth the Region of Ægypt (which we eſteem the ancienteſt Nation in the world) was a meer gained ground; and that, by the ſetling of mud and limous matter brought down by the River Nilus, that which was at firſt a continued Sea, was raiſed at laſt into a firm and habitable Countrey. The like opinion he held of Mæotis Palus, that by the flouds of Tanais and earth brought down thereby, it grew obſervably ſhallower in his daies, and would in proceſſe of time become a firm land. And though his conjecture be not as yet fulfilled, yet is the like obſervable in the River Gihon, a branch of Euphrates and River of Paradiſe; which having in former Ages diſcharged it ſelf into the Perſian Sea, doth at preſent fall ſhort, being loſt in the lakes of Chaldea, and hath left between the Sea, a large and conſiderable part of dry land.

How Ægypt firſt became firm land.

Others expreſly treating hereof have diverſly delivered themſelves; Herodotus in his Euterpe makes mention of ſeven; but careleſly of two thereof; that is, *Bolbitinum*, and *Bucolicum*; for theſe, ſaith he, were not the naturall currents, but made by Art for ſome occaſionall convenience. Strabo in his Geography naming but two, *Peluſiacum* and *Canopicum*, plainly affirmeth there were many more then ſeven; *Inter hæc alia quinq;*, &c. There are (ſaith he) many remarkable towns within the currents of Nile, eſpecially ſuch which have given the names unto the oſtiaries thereof; not unto all, for they are eleven, and four beſides, but unto ſeven and moſt conſiderable; that is, *Canopicum*, *Bulbitinum*, *Seleuneticum*, *Sebenneticum*, *Pharniticum*, *Mendeſium*, *Taniticum* and *Peluſium*; wherein to make up the number, one of the artificicall chanels of Herodotus is accounted. Ptolomy an Ægyptian, and born at the Peluſian mouth of Nile, in his Geography maketh nine; and in the third Map of Africa, hath unto their mouths prefixed their ſeverall names; *Heracleoticum*, *Bolbitinum*, *Sebenneticum*, *Pineptum*, *Diolcos*, *Pathmeticum*, *Mendeſium*, *Taniticum*, *Peleuſiacum*; wherein notwithſtanding there are no leſſe then three different names from thoſe delivered by Pliny. All which conſidered, we may eaſily diſcern that Authors accord not either in name or number; and muſt needs confirm the Judgement of Maginus, *de Oſtiorum Nili numero & nominibus, valdè antiqui ſcriptores diſcordant.*

Modern Geographers and travellers do much abate of this number; for as Maginus and others obſerve, there are now but three or four mouths thereof; as Gulielmus Tyrius long ago, and Bellonius ſince, both ocular enquirers, with others have atteſted. For below Cairo, the River divides it ſelf into four branches, whereof two make the chief and navigable ſtreams, the one running to Peluſium of the Ancients, and now *Damiata*; the other unto *Canopium* and now *Roſcetta*; the other two, ſaith M^r *Sandys*, doe runne between theſe; but poor in water. Of thoſe ſeven mentioned by Herodotus, and thoſe nine by Ptolomy, theſe are all I could either ſee or hear of. Which much confirmeth the teſtimony of the Biſhop of Tyre, a diligent and ocular enquirer; who in his holy war doth thus deliver himſelf. We wonder much at the Ancients, who aſſigned ſeven mouths unto Nilus: which we can no otherwiſe ſalve, then that by proceſſe of time, the face of places is altered, and the river hath loſt its channels; or that our forefathers did never obtain a true account thereof.

Sand. Relation.

Iſa.11.15,16.

And therefore when it is ſaid in holy Scripture, The Lord ſhall utterly deſtroy the tongue of the Ægyptian Sea, and with his mighty winde he ſhall ſhake his hand over the river, and ſhall ſmite it in the ſeven ſtreams, and make men go over dry-ſhod. If this expreſſion concerneth the river Nilus, it muſt only reſpect the ſeven principall ſtreams; but the place is very obſcure, and whether thereby be not meant the river Euphrates, is not without good controverſie, as is collectible from the ſubſequent words; And there ſhall be an high way for the remnant of his people, that ſhall be left from Aſſyria, from the bare name River, emphatically ſignifying Euphrates, and thereby the diviſion of the Aſſyrian Empire into many fractions, which might facilitate their return: as Grotius hath obſerved; and is more plainly made out, if the Apocrypha of Eſdras, and that of the Apocalyps have any relation hereto.

Gr. Not in Iſaiam. Eſdr.2.13.43, 47. Apoc.16.12.

Laſtly, Whatever was or is their number, the contrivers of Cards and Maps, afford us no aſſurance or conſtant deſcription therein. For whereas Ptolomy hath ſet forth nine, Hondius in his Map of Africa, makes but eight, and in that of Europe ten. Ortelius in his *Theatrum Botanicum*, in the Map of the Turkiſh Empire, ſetteth down eight, in that of Ægypt eleven; and Maginus

ginus in his Map of that Countrey hath observed the same number. And if we enquire farther, we shall finde the same diversity and discord in divers others.

And thus may we perceive that this account was differently related by the Ancients, that it is undeniably rejected by the Moderns, and must be warily received by any. For if we receive them all into account, they were more then seven, if only the naturall sluces, they were fewer; and however we receive them, there is no agreeable and constant description thereof. And therefore how reasonable it is to draw continuall and durable deductions from alterable and uncertain foundations, let them consider who make the gates of Thebes, and the mouths of this River a constant and continued periphrasis for this number; and in their Poeticall expressions do give the River that Epithite unto this day.

The same River is also accounted the greatest of the earth, called therefore *Fluviorum pater*, and *totius Orbis maximus*, by Ortelius; with the verity hereof, I confesse I could be well contented, nor do I wish the ruine of this assertion, nevertheless if this be true, many Maps must be corrected, or the relations of divers good Authours renounced.

For first, In the deliniations of many Maps of Africa, the River Niger exceedeth it about ten degrees in length, that is, no lesse then six hundred miles. For, arising beyond the Æquator it maketh Northward almost 15 degrees, and deflecting after Westward, without meanders, continueth a strait course about 40 degrees; and with many great currents disburdeneth it self into the Occidentall Ocean. Again, if we credit the descriptions of good Authours, other Rivers excell it in length or breadth, or both. Arrianus in his history of Alexander, assigneth the first place unto the River Ganges; which truly according unto later relations, if not in length, yet in breadth and depth may be granted to excell it: For the magnitude of Nilus consisteth in the dimension of Longitude, and is inconsiderable in the other; what stream it maintaineth beyond Syene or Asna, and so forward unto its originall, relations are very imperfect; but below these places and farther removed from the head, the current is but narrow; and we reade in the history of the Turks, the Tartar horsemen of Selimus, swam over the Nile from Cairo, to meet the forces of Tonombeius. Baptista Scortia expresly treating hereof, preferreth the River of Plate in America; for that as Maffeus hath delivered, falleth into the Ocean in the latitude of fourty Leagues; and with that source and plenty that men at Sea do taste fresh water, before they approach so near as to discover the land. So is it exceeded by that which by Cardan is termed the greatest in the world, that is the River Oregliana in the same continent; which as Maginus delivereth, hath been navigated 6000 miles; and opens in a Chanell of ninety leagues broad; so that, as Acosta an ocular witnesse recordeth, they that sail in the middle, can make no land of either side.

De natura & incremento Nili.

Now the ground of this assertion was surely the magnifying esteem of the Ancients, arising from the indiscovery of its head For as things unknown seem greater then they are, and are usually received with amplifications above their nature; So might it also be with this River, whose head being unknown and drawn to a proverbiall obscurity, the opinion thereof became without bounds; and men must needs conceit a large extent of that to which the discovery of no man had set a period. And this an usuall way to give the superlative unto things of eminency in any kinde; and when a thing is very great, presently to define it to be the greatest of all. Whereas indeed Superlatives are difficult; whereof there being but one in every kinde, their

The greatest Cities of the world.

The highest Hils.

determinations are dangerous, and must not be made without great circumspection. So the City of Rome is magnified by the Latines to be the greatest of the earth; but time and Geography inform us, that Cairo is bigger, and Quinsay in China farre exceedeth both. So is Olympus extolled by the Greeks, as an hill attaining unto heaven; but the enlarged Geography of after times, makes slight account hereof, when they discourse of Andes in Peru, or Teneriffa in the Canaries. So have all ages conceived, and most are still ready to swear, the Wren is the least of birds; yet the discoveries of America, and even of our own Plantations have shewed us one farre lesse; that is, the Humbird, not much exceeding a Beetle. And truly, for the least and greatest, the highest and the lowest of every kinde, as it is very difficult to define them in visible things; so is it to understand in things invisible. Thus is it no easie lesson to comprehend the first matter, and the affections of that which is next neighbour unto nothing; and impossible truly to comprehend God, who indeed is all things. And so things as they arise unto perfection, and approach unto God, or descend to imperfection, and draw neerer unto nothing, fall both imperfectly into our apprehensions; the one being too weak for our conception, our conception too weak for the other.

Thirdly, Divers conceptions there are concerning its increment or inundation. The first unwarily opinions, that this encrease or annuall overflowing is proper unto Nile, and not agreeable unto any other River; which notwithstanding is common unto many currents of Africa. For about the same time the River Niger, and Zaire do overflow; and so do the Rivers beyond the mountains of the Moon, as Suama, and Spirito Santo. And not only these in Africa, but some also in Europe and Asia; for so it is reported of Menan in India, and so doth Botero report of Duina in Livonia; and the same is also observable in the River Jordan in Judea; for so is it delivered Joshua 3. that Jordan overfloweth all his banks in the time of harvest.

The cause of the overflowing of Nilus.

The effect indeed is wonderfull in all, and the causes surely best resolvable from observations made in the Countries themselves, the parts through which they passe, or whence they take their originall. That of Nilus hath been attempted by many, and by some to that despair of resolution, that they have only referred it unto the providence of God, and the secret manuduction of all things unto their ends. But divers have attained the truth, and the cause alledged by Diodorus, Seneca, Strabo and others, is allowable; that the inundation of Nilus in Ægypt proceeded from the rains in Æthiopia, and the mighty source of waters falling towards the fountains thereof. For this inundation unto the Ægyptians happeneth when it is winter unto the Æthiopians; which habitations, although they have no cold winter (the Sunne being no farther removed from them in Cancer, then unto us in Taurus) yet is the fervour of the ayre so well remitted, as it admits a sufficient generation of vapours, and plenty of showres ensuing thereupon. This theory of the Ancients is since confirmed by experience of the Moderns; by Franciscus Alvarez who lived long in those parts, and left a description of Æthiopia; affirming that from the middle of June unto September, there fell in his time continuall rains. As also Antonius Ferdinandus, who in an Epistle written from thence, and noted by Codignus, affirmeth, that during the winter, in those Countries there passed no day without rain.

Now this is also usuall to translate a remarkable quality into a propriety, and where we admire an effect in one, to opinion there is not the like in any other. With these conceits do common apprehensions entertain the antidotall and wondrous condition of Ireland; conceiving only in that Land an immunity from venemous creatures; but unto him that shall further enquire, the same

same will be affirmed of Creta, memorable in ancient stories, even unto fabulous causes, and benediction from the birth of Jupiter: The same is also found in Ebusus or Evisa, an Island near Majorca upon the coast of Spain. With these opinions do the eyes of neighbour spectators behold Ætna, the flaming mountain in Sicilia; but Navigators tell us there is a burning mountain in Island; a more remarkable one in Teneriffa of the Canaries, and many vulcano's or fiery hils elsewhere. Thus Crocodiles were thought to be peculiar unto Nile, and the opinion so possessed Alexander, that when he had discovered some in Ganges, he fell upon conceit he had found the head of Nilus; but later discoveries affirm they are not only in Asia and Africa, but very frequent in some Rivers of America.

Another opinion confineth its inundation, and positively affirmeth, it constantly encreaseth the seventeenth day of June; wherein perhaps a larger form of speech were safer, then that which punctually prefixeth a constant day thereto. For this expression is different from that of the Ancients, as Herodotus, Diodorus, Seneca, &c. delivering only that it happeneth about the entrance of the Sunne into Cancer; wherein they warily deliver themselves, and reserve a reasonable latitude. So when Hippocrates saith, *Sub Cane & ante Canem difficiles sunt purgationes*; there is a latitude of daies comprised therein; for under the Dog-Starre he containeth not only the day of its ascent, but many following, and some ten daies preceding. So Aristotle delivers the affections of animals, with the wary termes of *Circa, & magna ex parte*: and when Theodorus translateth that part of his, *Coeunt Thunni & Scombri mense Februario post Idus, pariunt Junio ante Nonas*: Scaliger for *ante Nonas* renders it *Junij initio*; because that exposition affordeth the latitude of divers daies: For affirming it happeneth before the Nones; he alloweth but one day, that is the Calends; for in the Roman account, the second day is the fourth of the Nones of June.

Again, Were the day definitive it had prevented the delusion of the devil, nor could he have gained applause by its prediction; who notwithstanding (as Athanasius in the life of Anthony relateth) to magnifie his knowledge in things to come, when he perceived the rains to fall in Æthiopia, would presage unto the Ægyptians the day of its inundation. And this would also make useless that naturall experiment observed in earth or sand about the River; by the weight whereof (as good Authors report) they have unto this day a knowledge of its encrease.

Lastly, It is not reasonable from variable and unstable causes, to derive a fixed and constant effect, and such are the causes of this inundation; which cannot indeed be regular, and therefore their effects not prognosticable like Eclipses, for depending upon the clouds and descent of showres in Æthiopia, which have their generation from vaporous exhalations, they must submit their existence unto contingencies, and endure anticipation and recession from the moveable condition of their causes. And therefore some years there hath been no encrease at all, as Seneca and divers relate of the eleventh year of Cleopatra; nor nine years together, as is testified by Calisthenes. Some years it hath also retarded, and came farre later then usually it was expected, as according to Sozomen and Nicephorus it happened in the daies of Theodosius; whereat the people were ready to mutiny, because they might not sacrifice unto the River, according to the custome of their predecessors.

Now this is also an usuall way of mistake, and many are deceived who too strictly construe the temporall considerations of things. Thus books will tell us, and we are made to beleeve that the fourteenth year males are seminificall and pubescent; but he that shall enquire into the generality, will rather adhere

unto the cautelous assertion of Aristotle, that is, *bis septem annis exactis*, and then but *magna ex parte*. That Whelps are blinde nine daies, and then begin to see, is generally beleeved; but as we have elsewhere declared, it is exceeding rare, nor doe their eye-lids usually open untill the twelfth, and sometimes not before the fourteenth day. And to speak strictly an hazardable determination it is unto fluctuating and indifferent effects, to affix a positive type or period. For in effects of farre more regular causalities difficulties doe often arise; and even in time it self which measureth all things, we use allowance in its commensuration. Thus while we conceive we have the account of a year in 365 daies, exact enquirers and computists will tell us, that we escape 6 hours, that is a quarter of a day. And so in a day which every one accounts 24 houres, or one revolution of the Sunne; in strict account we must allow the addition of such a part as the Sunne doth make in his proper motion, from West to East, whereby in one day he describeth not a perfect circle.

Fourthly, It is affirmed by many, and received by most, that it never raineth in Ægypt, the River supplying that defect, and bountifully requiting it in its inundation: but this must also be received in a qualified sense, that is, that it rains but seldome at any time in the Summer, and very rarely in the Winter. But that great showres doe sometimes fall upon that Region, beside the assertion of many Writers, we can confirm from honourable and ocular testimony, and that not many years past, it rained in Grand Cairo divers daies together.

That Ægypt hath rain, Sir William Paston.

The same is also attested concerning other parts of Ægypt, by Prosper Alpinus, who lived long in that Countrey, and hath left an accurate treaty of the medicall practice thereof. *Cayri raro decidunt pluviæ, Alexandriæ, Peluſiiq́, & in omnibus locis mari adjacentibus, pluit largiſſimè & ſæpè*; that is, it raineth seldome at Cairo, but at Alexandria, Damiata, and places near the Sea, it raineth plentifully, and often. Whereto we might adde the later testimony of Learned Mr Greaves, in his accurate description of the Pyramids.

Beside, Men hereby forget the relation of holy Scripture, Exod. 9. Behold I will cause it to rain a very great haile, such as hath not been in Ægypt since the foundation thereof, even untill now. Wherein God threatning such a rain as had not happened, it must be presumed they had been acquainted with some before, and were not ignorant of the substance, the menace being made in the circumstance. The same concerning haile is inferrible from Prosper Alpinus. *Rariſſime nix, grando*, it seldome snoweth or haileth. Whereby we must concede that snow and haile doe sometimes fall, because they happen seldome.

Now this mistake ariseth from a misapplication of the bounds or limits of time, and an undue transition from one unto another; which to avoid we must observe the punctuall differences of time, and so distinguish thereof, as not to confound or lose the one in the other. For things may come to passe, *Semper, Plerumq́, Sæpè aut Nunquam, Aliquando, Raro*; that is, Alwaies or Never, For the most part or Sometimes, Oft times or Seldome. Now the deception is usuall which is made by the misapplication of these; men presently concluding that to happen often, which happeneth but sometimes; that never, which happeneth but seldome; and that alway which happeneth for the most part. So is it said, the Sunne shines every day in Rhodes, because for the most part it faileth not: So we say and beleeve that a Camelion never eateth, but liveth only upon ayre, whereas indeed it is seen to eat very seldome; but many there are who have beheld it to feed on Flyes. And so it is said, that children born in the eight moneth live not, that is, for the most part,

part, but not to be concluded alwaies; nor it seems in former ages in all places; for it is otherwise recorded by Aristotle concerning the births of Ægypt.

Lastly, It is commonly conceived that divers Princes have attempted to cut the Isthmus or tract of land which parteth the Arabian and Mediterranean Sea; but wherein upon enquiry I finde some difficulty concerning the place attempted; many with good authority affirming, that the intent was not immediatly to unite these Seas, but to make a navigable chanell between the Red Sea and the Nile, the marks whereof are extant to this day; it was first attempted by Sersostris, after by Darius, and in a fear to drown the Countrey deserted by them both; but was long after re-attempted, and in some manner effected by Philadelphus. And so the grand Signior who is Lord of the Countrey, conveyeth his Galleys into the Red Sea by the Nile; for he bringeth them down to Grand Cairo where they are taken in pieces, carried upon Camels backs, and rejoyned together at Sues, his port and Navall station for that Sea; whereby in effect he acts the design of Cleopatra, who after the battel of Actium, in a different way would have conveyed her Galleys into the Red Sea.

Lingua maris Ægyptij. Isa. 11. 15.

And therefore that proverb to cut an Isthmus, that is, to take great pains, and effect nothing, alludeth not unto this attempt; but is by Erasmus applyed unto severall other, as that undertaking of Cnidians to cut their Isthmus, but especially that of Corinth so unsuccessefully attempted by many Emperours. The Cnidians were deterred by the peremptory disswasion of Apollo, plainly commanding them to desist; for if God had thought it fit, he would have made that Countrey an Island at first. But this perhaps will not be thought a reasonable discouragement unto the activity of those spirits which endeavour to advantage nature by Art, and upon good grounds to promote any part of the universe; nor will the ill succesſe of some be made a sufficient determent unto others; who know that many learned men affirm, that Islands were not from the beginning; that many have been made since by Art, that some Isthmes have been eat through by the Sea, and others cut by the spade: And if policy would permit, that of Panama in America were most worthy the attempt; it being but few miles over, and would open a shorter cut unto the East Indies and China.

Isthmum perfodere.

Chap. IX.

Of the Red Sea.

Contrary apprehensions are made of the Erythræan or Red Sea; most apprehending a materiall redness therein, from whence they derive its common denomination; and some so lightly conceiving hereof, as if it had no redness at all, are fain to recurre unto other originals of its appellation. Wherein to deliver a distinct account, we first observe that without consideration of colour it is named the Arabian Gulph: The Hebrews who had best reason to remember it, do call it Zuph, or the weedy Sea, because it was full of sedge, or they found it so in their passage; the Mahometans who are now Lords thereof do know it by no other name then the Gulph of Mecha a City of Arabia.

What the Red Sea is.

The stream of Antiquity deriveth its name from King Erythrus; so slieghtly conceiving of the nominall deduction from Redness, that they plainly deny

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Persian shoare, as Pliny hath described it, *Mare rubrum in duos dividitur sinus, is qui ab Oriente est Persicus appellatur*; or as Solinus expresseth it, *Qui ab Oriente est Persicus appellatur, ex adverso unde Arabia est, Arabicus*; whereto assenteth Suidas, Ortelius, and many more. And therefore there is no absurdity in Strabo when he delivereth that Tigris and Euphrates do fall into the Red Sea, and Fernandius *de Cordova*, justly defendeth his Countreyman Seneca in that expression;

Et qui renatum prorsus excipiens diem
Tepidum Rubenti Tigrin immiscet freto.

Nor hath only the Persian Sea received the same name with the Arabian, but, what is strange, and much confounds the distinction, the name thereof is also derived from King Erythrus; who was conceived to be buried in an Island of this Sea, as Dionysius Afer, Curtius, and Suidas do deliver. Which were of no lesse probability then the other, if (as with the same Authors Strabo affirmeth) he was buried near Caramania bordering upon the Persian Gulph. And if his tomb was seen by Nearchus, it was not so likely to be in the Arabian Gulph; for we read that from the River Indus he came unto Alexander at Babylon, some few daies before his death. Now Babylon was seated upon the River Euphrates, which runnes into the Persian Gulph. And therefore however the Latine expresseth it in Strabo, that Nearchus suffered much in the Arabian Sinus, yet is the originall κόλπος περσικὸς, that is, the Gulph of Persia.

That therefore the Red Sea or Arabian Gulph received its name from personall derivation, though probable is but uncertain; that both the Seas of one name should have one common denominator, lesse probable; that there is a grosse and materiall rednesse in either, not to be affirmed; that there is an emphaticall or appearing rednesse in one, not well to be denied. And this is sufficient to make good the Allegory of the Christians; and in this distinction may we justifie the name of the Black Sea, given unto Pontus Euxinus; the name of Xanthus, or the Yellow river of Phrygia; and the name of Mar Vermeio, or the Red Sea in America.

Chap. X.

Of the Blackness of Negroes.

IT is evident not only in the generall frame of Nature, that things most manifest unto sense, have proved obscure unto the understanding: But even in proper and appropriate objects, wherein we affirm the sense cannot erre, the faculties of reason most often fail us. Thus of colours in generall, under whose glosse and vernish all things are seen, no man hath yet beheld the true nature; or positively set down their incontroulable causes. Which while some ascribe unto the mixture of the Elements, others to the graduality of opacity and light; they have left our endeavours to grope them out by twilight, and by darkness almost to discover that whose existence is evidenced by light. The Chymists have attempted laudably, reducing their causes unto Sal, Sulphur, and Mercury; and had they made it out so well in this, as in the objects of smell and taste, their endeavours had been more acceptable: For whereas they refer Sapor unto Salt, and Odor unto Sulphur, they vary much concerning colour; some reducing it unto Mercury, some to Sulphur, others unto Salt. Wherein indeed the last conceit doth not oppresse the former;

The principles of Colour according to the Chymists.

and though Sulphur seem to carry the master stroak, yet Salt may have a strong cooperation. For beside the fixed and terrestrious Salt, there is in naturall bodies a *Sal niter* referring unto Sulphur; there is also a volatile or Armoniac Salt, retaining unto Mercury; by which Salts the colours of bodies are sensibly qualified, and receive degrees of lustre or obscurity, superficiality or profundity, fixation or volatility.

Their generall or first natures being thus obscure, there will be greater difficulties in their particular discoveries; for being farther removed from their simplicities they fall into more complexed considerations; and so require a subtiler act of reason to distinguish and call forth their natures. Thus although a man understood the generall nature of colours, yet were it no easie probleme to resolve, Why Grasse is green? Why Garlick, Molyes, and Porrets have white roots, deep green leaves, and black seeds? Why severall docks, and sorts of Rhubarb with yellow roots, send forth purple flowers? Why also from Lactary or milky plants which have a white and lacteous juice dispersed through every part, there arise flowers blue and yellow? Moreover beside the specificall and first digressions ordained from the Creation, which might be urged to salve the variety in every species; Why shall the Marvaile of Peru produce its flowers of different colours, and that not once, or constantly, but every day and variously? Why Tulips of one colour produce some of another, and running through almost all, should still escape a blue? And lastly, Why some men, yea and they a mighty and considerable part of mankinde, should first acquire and still retain the glosse and tincture of blackness? which whoever strictly enquires, shall finde no lesse of darkness in the cause, then blackness in the effect it self; there arising unto examination no such satisfactory and unquarrellable reasons, as may confirm the causes generally received; which are but two in number. The heat and scorch of the Sunne; or the curse of God on Cham and his posterity.

The first was generally received by the Ancients, who in obscurities had no higher recourse then unto Nature, as may appear by a Discourse concerning this point in Strabo. By Aristotle it seems to be implied, in those Problems which enquire why the Sunne makes men black, and not the fire? why it whitens wax, yet blacks the skin? By the word Æthiops it self, applied to the memorablest Nations of Negroes, that is of a burnt and torrid countenance. The fancie of the fable infers also the Antiquity of the opinion; which deriveth the complexion from the deviation of the Sunne, and the conflagration of all things under Phaeton. But this opinion though generally embraced, was I perceive rejected by Aristobulus a very ancient Geographer; as is discovered by Strabo. It hath been doubted by severall modern Writers, particularly by Ortelius; but amply and satisfactorily discussed as we know by no man. We shall therefore endeavour a full delivery hereof, declaring the grounds of doubt, and reasons of deniall; which rightly understood, may if not overthrow, yet shrewdly shake the security of this assertion.

And first, Many which countenance the opinion in this reason, do tacitly and upon consequence overthrow it in another. For whilst they make the River Senaga to divide and bound the Moors, so that on the South-side they are black, on the other only tawny; they imply a secret causality herein from the ayre, place or River; and seem not to derive it from the Sun. The effects of whose activity are not precipitously abrupted, but gradually proceed to their cessations.

Secondly, If we affirm that this effect proceeded, or as we will not be backward to concede, it may be advanced and fomented from the fervor of the Sunne; yet doe we not hereby discover a principle sufficient to decide the

queſtion concerning other animals; nor doth he that affirmeth the heat makes man black, afford a reaſon why other animals in the ſame habitations maintain a conſtant and agreeable hue unto thoſe in other parts, as Lions, Elephants, Camels, Swans, Tigers, Eſtriges. Which though in Æthiopia, in the diſadvantage of two Summers, and perpendicular rayes of the Sunne, doe yet make good the complexion of their ſpecies, and hold a colourable correſpondence unto thoſe in milder regions. Now did this complexion proceed from heat in man, the ſame would be communicated unto other animals which equally participate the Influence of the common Agent. For thus it is in the effects of cold, in Regions farre removed from the Sunne; for therein men are not only of fair complexions, gray eyed, and of light hair; but many creatures expoſed to the ayre, deflect in extremity from their naturall colours; from brown, ruſſet and black, receiving the complexion of Winter, and turning perfect white. Thus Olaus Magnus relates, that after the Autumnall Æquinox, Foxes begin to grow white; thus Michovius reporteth, and we want not ocular confirmation, that Hares and Partridges turn white in the Winter; and thus a white Crow, a Proverbiall rarity with us, is none unto them; but that inſeparable accident of Porphyrie is ſeparated in many hundreds.

Thirdly, If the fervor of the Sunne, or intemperate heat of clime did ſolely occaſion this complexion, ſurely a migration or change thereof might cauſe a ſenſible, if not a totall mutation; which notwithſtanding experience will not admit. For Negroes tranſplanted although into cold and flegmatick habitations, continue their hue both in themſelves, and alſo their generations; except they mix with different complexions; whereby notwithſtanding there only ſucceeds a remiſſion of their tinctures; there remaining unto many deſcents a full ſhadow of their originals; and if they preſerve their copulations entire they ſtill maintain their complexions; as is very remarkable in the dominions of the Grand Signior, and moſt obſervable in the Moores in Braſilia, which tranſplanted about an hundred years paſt, continue the tinctures of their fathers unto this day. And ſo likewiſe fair or white people tranſlated into hotter Countries receive not impreſſions amounting to this complexion, as hath been obſerved in many Europeans who have lived in the land of Negroes: and as Edvardus Lopes teſtifieth of the Spaniſh plantations, that they retained their native complexions unto his daies.

Fourthly, If the fervor of the Sunne were the ſole cauſe hereof in Æthiopia or any land of Negroes; it were alſo reaſonable that inhabitants of the ſame latitude, ſubjected unto the ſame vicinity of the Sunne, the ſame diurnall arch, and direction of its rayes, ſhould alſo partake of the ſame hue and complexion; which notwithſtanding they doe not. For the Inhabitants of the ſame latitude in Aſia are of a different complexion, as are the Inhabitants of Cambogia and Java, inſomuch that ſome conceive the Negroe is properly a native of Africa, and that thoſe places in Aſia inhabited now by Moores, are but the intruſions of Negroes ariving firſt from Africa, as we generally conceive of Madagaſcar, and the adjoining Iſlands, who retain the ſame complexion unto this day. But this defect is more remarkable in America; which although ſubjected unto both the Tropicks, yet are not the Inhabitants black between, or neer, or under either; neither to the Southward in Braſilia, Chili, or Peru; nor yet to the Northward in Hiſpaniola, Caſtilia, del Oro, or Nicaragua. And although in many parts thereof there be at preſent ſwarmes of Negroes ſerving under the Spaniard, yet were they all tranſported from Africa, ſince the diſcovery of Columbus; and are not indigenous or proper natives of America.

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vellers (as Leo reports) are fain to carry water on their Camels; whereof they finde not a drop sometime in 6 or 7 daies. Yet is this countrey accounted by Geographers no part of *terra Nigritarum*, and Ptolomy placeth herein the *Leuco Æthiopes* or pale and Tawny Moors.

Now the ground of this opinion might be the visible quality of Blackness observably produced by heat, fire and smoak; but especially with the Ancients the violent esteem they held of the heat of the Sunne, in the hot or torrid Zone; conceiving that part unhabitable, and therefore that people in the vicinities or frontiers thereof, could not escape without this change of their complexions. But how farre they were mistaken in this apprehension, modern Geography hath discovered; And as we have declared, there are many within this Zone whose complexions descend not so low as unto blackness. And if we should strictly insist hereon, the possibility might fall into question; that is, whether the heat of the Sunne, whose fervour may swart a living part, and even black a dead or dissolving flesh; can yet in animals whose parts are successive and in continnall flux, produce this deep and perfect glosse of Blackness.

Thus having evinced, at least made dubious, the Sunne is not the Authour of this blackness; how, and when this tincture first began is yet a riddle, and positively to determine it surpasseth my presumption. Seeing therefore we cannot discover what did effect it, it may afford some piece of satisfaction to know what might procure it. It may be therefore considered, whether the inward use of certain waters or fountains of peculiar operations, might not at first produce the effect in question. For, of the like we have records in Aristotle, Strabo and Pliny, who hath made a collection hereof; as of two fountains in Bœotia, the one making Sheep white, the other black, of the water of Siberis which made Oxen black, and the like effect it had also upon men, dying not only the skin, but making their hairs black and curled. This was the conceit of Aristobulus; who received so little satisfaction from the other, or that it might be caused by heat, or any kinde of fire, that he conceived it as reasonable to impute the effect unto water.

The particular causes of the Negroes blackness, probably.

Secondly, It may be perpended whether it might not fall out the same way that Jacobs cattell became speckled, spotted and ring-straked, that is, by the power and efficacy of Imagination; which produceth effects in the conception correspondent unto the phancy of the Agents in generation, and sometimes assimilates the Idea of the generator into a reality in the thing ingendred. For, hereof these passe for current many indisputed examples; so in Hippocrates we reade of one, that from the view and intention of a Picture conceived a Negroe; And in the history of Heliodore of a Moorish Queen, who upon aspection of the Picture of Andromeda, conceived and brought forth a fair one. And thus perhaps might some say it was the beginning of this complexion; induced first by Imagination, which having once impregnated the seed, found afterward concurrent productions; which were continued by Climes, whose constitution advantaged the first impression. Thus Plotinus conceiveth white Peacocks first came in: Thus many opinion that from aspection of the Snow which lyeth long in Northern Regions, and high mountains, Hawks, Kites, Bears, and other creatures become white; And by this way Austin conceiveth the devil provided, they never wanted a white spotted Oxe in Ægypt; for such an one they worshipped, and called Apis.

Vide plura apud Tho. Fienum, *de viribus imaginationis.*

Why Bears, &c. white in some places.

Thirdly, It is not indisputable whether it might not proceed from such a cause and the like foundation of Tincture, as doth the black Jaundies, which meeting with congenerous causes might settle durable inclinations; and ad-

vance their generations unto that hue, which were naturally before but a degree or two below it. And this tranſmiſſion we ſhall the eaſier admit in colour, if we remember the like hath been effected in organicall parts and figure; the Symmetry whereof being caſually or purpoſely perverted, their morboſities have vigorouſly deſcended to their poſterities, and that in durable deformities. This was the beginning of Macrocephali or people with long heads, whereof Hippocrates *de Aere, Aquis, & Locis*, hath clearly delivered himſelf: *Cum primum editus eſt Infans, caput ejus tenellum manibus effingunt, & in longitudine adoleſcere cogunt; hoc inſtitutum primum hujuſmodi naturæ dedit vitium, ſucceſſu vero temporis in naturam abiit, ut proinde inſtituto nihil amplius opus eſſet; ſemen enim genitale ex omnibus corporis partibus provenit, ex ſanis quidem ſanum, ex morboſis morboſum. Si igitur ex calvis calvi, ex caciis cacii, & ex diſtortis, ut plurimum, diſtorti giganuntur, eademq́, in cæteris formis valet ratio, quid prohibet cur non ex macrocephalis macrocephali gignantur?* Thus as Ariſtotle obſerveth, the Deers of Arginuſa had their ears divided; occaſioned at firſt by ſlitting the ears of Deer. Thus have the Chineſes little feet, moſt Negroes great lips and flat noſes; and thus many Spaniards, and Mediterranean Inhabitants, which are of the race of Barbary Moors (although after frequent commixture) have not worn out the Camoys noſe unto this day.

Flat noſe.

Laſtly, If we ſtill be urged to particularities, and ſuch as declare how and when the ſeed of Adam did firſt receive this tincture; we may ſay that men became black in the ſame manner that ſome Foxes, Squirrels, Lions, firſt turned of this complection, whereof there are a conſtant ſort in divers Countries; that ſome Chaughes came to have red legges and bils, that Crows became pyed; All which mutations however they began, depend on durable foundations, and ſuch as may continue for ever. And if as yet we muſt farther define the cauſe and manner of this mutation; we muſt confeſſe, in matters of Antiquity, and ſuch as are decided by Hiſtory, if their Originals and firſt beginnings eſcape a due relation, they fall into great obſcurities; and ſuch as future Ages ſeldome reduce unto a reſolution. Thus if you deduct the adminiſtration of Angels, and that they diſperſed the creatures into all parts after the floud, as they had congregated them into Noahs Ark before; it will be no eaſie queſtion to reſolve, how ſeverall ſorts of Animals were firſt diſperſed into Iſlands, and almoſt how any into America: How the venereall contagion began in that part of the earth, ſince hiſtory is ſilent, is not eaſily reſolved by Philoſophy. For, whereas it is imputed unto Anthropophagy, or the eating of mans fleſh; that cauſe hath been common unto many other Countries, and there have been Canibals or men-eaters in the three other parts of the world, if we credit the relations of Ptolomy, Strabo and Pliny. And thus, if the favourable pen of Moſes had not revealed the confuſion of tongues, and poſitively declared their diviſion at Babel; our diſputes concerning their beginning had been without end; and I fear we muſt have left the hopes of that deciſion unto Elias.

How ſundry kindes of Animals come to be found in Iſlands.

Elias cum venerit ſolvet dubium.

And if any will yet inſiſt, and urge the queſtion farther ſtill upon me, I ſhall be enforced unto divers of the like nature, wherein perhaps I ſhall receive no greater ſatisfaction. I ſhall demand how the Camels of Bactria came to have two bunches on their backs, whereas the Camels of Arabia in all relations have but one? How Oxen in ſome Countries began and continue gibbous or bunch-bac'kd? what way thoſe many different ſhapes, colours, hairs, and natures of Dogs came in? how they of ſome Countries became depilous any without any hair at all, whereas ſome ſorts in exceſſe abound therewith? How the Indian Hare came to have a long tayl, whereas that part in others

attains

attains no higher then a ſcut? How the hogs of Illyria which Ariſtotle ſpeaks of, became ſolipedes or whole-hoofed, whereas in all other parts they are biſulcous, and deſcribed cloven-hoofed by God himſelf? All which with many others muſt needs ſeem ſtrange unto thoſe that hold there were but two of the unclean ſort in the Ark; and are forced to reduce theſe varieties to unknown originals ſince.

How the complexion of the Negro's may be propagated.

However therefore this complexion was firſt acquired, it is evidently maintained by generation, and by the tincture of the skin as a ſpermaticall part traduced from father unto ſon; ſo that they which are ſtrangers contract it not, and the Natives which tranſmigrate omit it not without commixture, and that after divers generations. And this affection (if the ſtory were true) might wonderfully be confirmed, by what Maginus and others relate of the Emperour of Æthiopia, or Preſter John, who derived from Solomon is not yet deſcended into the hue of his Countrey, but remains a Mulatto, that is, of a Mongrill complexion unto this day. Now although we conceive this blackneſſe to be ſeminall, yet are we not of Herodotus conceit, that their ſeed is black. An opinion long ago rejected by Ariſtotle, and ſince by ſence and enquiry. His aſſertion againſt the Hiſtorian was probable, that all ſeed was white; that is without great controverſie in viviparous Animals, and ſuch as have Teſticles, or preparing veſſels wherein it receives a manifeſt dealbation. And not only in them, but (for ought I know) in Fiſhes, not abating the ſeed of Plants; whereof though the skin and covering be black, yet is the ſeed and fructifying part not ſo: as may be obſerved in the ſeeds of Onyons, Pyonie, and Baſill. Moſt controvertible it ſeems in the ſpawn of Frogs, and Lobſters, whereof notwithſtanding at the very firſt the ſpawn is white, contracting by degrees a blackneſſe, anſwerable in the one unto the colour of the ſhell, in the other unto the Porwigle or Tadpole; that is, that Animall which firſt proceedeth from it. And thus may it alſo be in the generation and ſperm of Negroes; that being firſt and in its naturals white, but upon ſeparation of parts, accidents before inviſible become apparent; there ariſing a ſhadow or dark efflorescence in the outſide; whereby not only their legitimate and timely births, but their abortions are alſo duskie, before they have felt the ſcorch and fervor of the Sunne.

Chap. XI.

Of the ſame.

A Second opinion there is, that this complexion was firſt a curſe of God derived unto them from Cham, upon whom it was inflicted for diſcovering the nakedneſſe of Noah. Which notwithſtanding is ſooner affirmed then proved, and carrieth with it ſundry improbabilities. For firſt, if we derive the curſe on Cham, or in generall upon his poſterity, we ſhall Benegroe a greater part of the earth then ever was ſo conceived; and not only paint the Æthiopians, and reputed ſonnes of Cuſh, but the people alſo of Ægypt, Arabia, Aſſyria, and Chaldea; for by his race were theſe Countries alſo peopled. And if concordantly unto Beroſus, the fragment of Cato *de Originibus*, ſome things of Halicarnaſſeus, Macrobius, and out of them of Leandro and Annius, we ſhall conceive of the travels of Cameſe or Cham; we may introduce a generation of Negroes as high as Italy; which part was never culpable of deformity, but hath produced the magnified examples of beauty.

The Progenie of Cham how farre extended.

Secondly,

Secondly, The curſe mentioned in Scripture was not denounced upon Cham, but Canaan his youngeſt ſon; and the reaſons thereof are divers. The firſt, from the Jewiſh Tradition, whereby it is conceived, that Canaan made the diſcovery of the nakedneſſe of Noah, and notified it unto Cham. Secondly, to have curſed Cham had been to curſe all his poſterity, whereof but one was guilty of the fact. And laſtly, he ſpared Cham, becauſe he had bleſſed him before, cap. 9. Now if we confine this curſe unto Canaan, and think the ſame fulfilled in his poſterity; then doe we induce this complexion on the Sidonians, then was the promiſed land a tract of Negroes; For from Canaan were deſcended the Canaanites, Jebuſites, Amorites, Gergezites, and Hivites, which were poſſeſſed of that Land.

Thirdly, Although we ſhould place the originall of this curſe upon one of the ſonnes of Cham, yet were it not known from which of them to derive it. For the particularity of their deſcents is imperfectly ſet down by accountants, nor is it diſtinctly determinable from whom thereof the Æthiopians are proceeded. For whereas theſe of Africa are generally eſteemed to be the Iſſue of Chus, the elder ſonne of Cham, it is not ſo eaſily made out. For the land of Chus, which the Septuagint tranſlates Æthiopia, makes no part of Africa; nor is it the habitation of Blackmores, but the Country of Arabia, eſpecially the Happy and Stony; poſſeſſions and Colonies of all the ſonnes of Chus, excepting Nimrod, and Havilah; poſſeſſed and planted wholly by the children of Chus, that is, by Sabtah and Raamah, Sabtacha, and the ſonnes of Raamah, Dedan and Sheba, according unto whoſe names the Nations of thoſe parts have received their denominations, as may be collected from Pliny and Ptolomy; and as we are informed by credible Authors, they hold a fair Analogy in their names, even unto our daies. So the wife of Moſes tranſlated in Scripture an Æthiopian, and ſo confirmed by the fabulous relation of Joſephus, was none of the daughters of Africa, nor any Negroe of Æthiopia, but the daughter of Jethro, Prince and Prieſt of Madian; which was a part of Arabia the ſtony, bordering upon the Red Sea. So the Queen of Sheba came not unto Solomon out of Æthiopia, but from Arabia, and that part thereof which bore the name of the firſt planter, the ſonne of Chus. So whether the Eunuch which Philip the Deacon baptiſed, were ſervant unto Candace Queen of the African Æthiopia (although Damianus à Goes, Codignus and the Æthiopick relations averre) is yet by many, and with ſtrong ſuſpitions doubted. So that Army of a million, which Zerah King of Æthiopia is ſaid to bring againſt Aſa, was drawn out of Arabia, and the plantations of Chus; not out of Æthiopia, and the remote habitations of the Moors. For it is ſaid that Aſa purſuing his victory, took from him the City Gerar, now Gerar was no city in or near Æthiopia, but a place between Cadeſh and Zur, where Abraham formerly ſojourned. Since therefore theſe African Æthiopians are not convinced by the common acception to be the ſons of Chus, whether they be not the poſterity of Phut or Mizraim, or both, it is not aſſuredly determined. For Mizraim, he poſſeſſed Ægypt, and the Eaſt parts of Africa. From Lubym his ſon came the Lybians, and perhaps from them the Æthiopians: Phut poſſeſſed Mauritania, and the Weſtern parts of Africa, and from theſe perhaps deſcended the Moors of the Weſt, of Mandinga, Meleguette and Guinie. But from Canaan, upon whom the curſe was pronounced, none of theſe had their originall, for he was reſtrained unto Canaan and Syria; although in after Ages many Colonies diſperſed, and ſome thereof upon the coaſts of Africa, and prepoſſeſſions of his elder brothers.

Fourthly, To take away all doubt or any probable divarication, the curſe is

is plainly ſpecified in the Text, nor need we diſpute it, like the mark of Cain; *Servus ſervorum erit fratribus ſuis*, Curſed be Canaan, a ſervant of ſervants ſhall he be unto his brethren; which was after fulfilled in the conqueſt of Canaan, ſubdued by the Iſraelites, the poſterity of Sem. Which Prophecy Abraham well underſtanding, took an oath of his ſervant not to take a wife for his ſon Iſaac out of the daughters of the Canaanites; And the like was performed by Iſaac in the behalf of his ſon Jacob. As for Cham and his other ſons, this curſe attained them not; for Nimrod the ſon of Chus ſet up his kingdom in Babylon, and erected the firſt great Empire; Mizraim and his poſterity grew mighty Monarchs in Egypt; and the Empire of the Æthiopians hath been as large as either. Nor did the curſe deſcend in generall upon the poſterity of Canaan: for the Sidonians, Arkites, Hamathites, Sinites, Arvadites, and Zemarites ſeem exempted. But why there being eleven ſonnes, five only were condemned, and ſix eſcaped the malediction, is a ſecret beyond diſcovery.

Laſtly, Whereas men affirm this colour was a Curſe, I cannot make out the propriety of that name, it neither ſeeming ſo to them, nor reaſonably unto us; for they take ſo much content therein, that they eſteem deformity by other colours, deſcribing the Devil, and terrible objects, White. And if we ſeriouſly conſult the definitions of beauty, and exactly perpend what wiſe men determine thereof, we ſhall not apprehend a curſe, or any deformity therein. For firſt, ſome place the eſſence thereof in the proportion of parts; conceiving it to conſiſt in a comely commenſurability of the whole unto the parts, and the parts between themſelves; which is the determination of the beſt and learned Writers. Now hereby the Moors are not excluded from beauty; there being in this deſcription no conſideraton of colours, but an apt connexion and frame of parts and the whole. Others there be, and thoſe moſt in number, which place it not only in proportion of parts, but alſo in grace of colour. But to make Colour eſſentiall unto Beauty, there will ariſe no ſlender difficulty; For Ariſtotle in two definitions of pulchritude, and Galen in one, have made no mention of colour. Neither will it agree unto the Beauty of Animals; wherein notwithſtanding there is an approved pulchritude. Thus horſes are handſome under any colour, and the ſymmetry of parts obſcures the conſideration of complexions. Thus in concolour animals and ſuch as are confined unto one colour, we meaſure not their Beauty thereby; for if a Crow or Black-bird grow white, we generally account it more pretty; And even in monſtroſity deſcend not to opinion of deformity. By this way likewiſe the Moores eſcape the curſe of deformity; there concurring no ſtationary colour, and ſometimes not any unto Beauty.

The Platonick contemplators reject both theſe deſcriptions founded upon parts and colours, or either; as M. Leo the Jew hath excellently diſcourſed in his Genealogy of Love: defining Beauty a formall grace, which delights and moves them to love which comprehend it. This grace ſay they, diſcoverable outwardly, is the reſplendor and Raye of ſome interiour and inviſible Beauty, and proceedeth from the forms of compoſitions amiable. Whoſe faculties if they can aptly contrive their matter, they beget in the ſubject an agreeable and pleaſing beauty; if over-ruled thereby, they evidence not their perfections, but runne into deformity. For ſeeing that out of the ſame materials, Therſites and Paris, Beauty and monſtroſity may be contrived; the forms and operative faculties introduce and determine their perfections. Which in naturall bodies receive exactneſſe in every kinde, according to the firſt Idea of the Creator, and in contrived bodies the phancy of the Artificer. And by this

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Chap. XII.

A digreſſion concerning Blackneſſe.

THere being therefore two opinions repugnant unto each other, it may not be preſumptive or skepticall to doubt of both. And becauſe we remain imperfect in the generall theory of Colours, we ſhall deliver at preſent a ſhort diſcovery of blackneſſe; wherein although perhaps we afford no greater ſatisfaction then others, yet ſhall our attempts exceed any; for we ſhall emperically and ſenſibly diſcourſe hereof, deducing the cauſes of Blackneſſe from ſuch originals in nature, as we do generally obſerve things are denigrated by Art. And herein I hope our progreſſion will not be thought unreaſonable; for Art being the imitation of Nature, or Nature at the ſecond hand; it is but a ſenſible expreſſion of effects dependant on the ſame, though more removed cauſes; and therefore the works of the one may ſerve to diſcover the other.

And firſt, things become black by a ſootie and fuliginous matter proceeding from the ſulphur of bodies torrified; not taking *fuligo* ſtrictly, but in oppoſition unto ἰὸς that is any kinde of vaporous or madefying excretion; and comprehending ἀναθυμίασις that is as Ariſtotle defines it, a ſeparation of moiſt and dry parts made by the action of heat or fire, and colouring bodies objected. Hereof, in his Meteors, from the qualities of the ſubject he raiſeth three kindes; the exhalations from ligneous and lean bodies, as bones, hair, and the like he calleth καπνὸς *fumus*, from fat bodies and ſuch as have not their fatneſſe conſpicuous or ſeparated he termeth λίγνυς *fuligo*, as wax, roſin, pitch, or turpentine; that from unctuous bodies, and ſuch whoſe oylineſſe is evident, he nameth ὀδμὴ or *nidor*. Now every one of theſe do black bodies objected unto them, and are to be conceived in the ſooty and fuliginous matter expreſſed.

I ſay, proceeding from the ſulphur of bodies torrified, that is the oily, fat, and unctuous parts wherein conſiſt the principles of flammability. Not pure and refined ſulphur, as in the ſpirits of wine often rectified; but containing terreſtrious parts, and carrying with it the volatile ſalt of the body, and ſuch as is diſtinguiſhable by taſte in ſoot; nor vulgar and uſuall ſulphur; for that leaves none or very little blackneſſe, except a metalline body receive the exhalation.

I ſay, torrified, ſindged, or ſuffering ſome impreſſion from fire; thus are bodies caſually or artificially denigrated, which in their naturalls are of another complexion; thus are Charcoales made black by an infection of their own ſuffitus; ſo is it true what is affirmed of combuſtible bodies. *Aduſta nigra, perуſta alba*; black at firſt from the fuliginous tincture, which being exhaled they become white, as is perceptible in aſhes. And ſo doth fire cleanſe and purifie bodies, becauſe it conſumes the ſulphureous parts, which before did make them foul; and therefore refines thoſe bodies which will never be mundified by water. Thus Camphire of a white ſubſtance, by its fuligo affordeth a deep black. So is Pitch black, although it proceed from the ſame tree with Rozen, the one diſtilling forth, the other forced by fire. So of the ſuffitus of a torch, do Painters make a velvet black: ſo is lamp-black made; ſo of burnt Harts horn a ſable; ſo is Bacon denigrated in chimneys: ſo in Fevers and hot diſtempers from choler aduſt is cauſed a blackneſſe in our tongues, teeth and excretions: ſo are uſtilago, brant corn and trees black by blaſting;

Why the ſmoake of pure Sulphur blacks not.

ſo parts cauterized, gangrenated, ſiderated and mortified, become black, the radicall moiſture, or vitall ſulphur ſuffering an extinction, and ſmothered in the part affected. So not only actuall but potentiall fire; nor burning fire, but alſo corroding water will induce a blackneſſe. So are Chimneys and Furnaces generally black, except they receive a clear and manifeſt ſulphur; for the ſmoak of ſulphur will not black a paper, and is commonly uſed by Women to whiten Tiffanies; which it performeth by an acide vitriolous, and penetrating ſpirit aſcending from it, by reaſon whereof it is not apt to kindle any thing; nor will it eaſily light a Candle, untill that ſpirit be ſpent, and the flame approacheth the match. And this is that acide and piercing ſpirit which with ſuch activity and compunction invadeth the brains and noſtrils of thoſe that receive it. And thus when Bellonius affirmeth that Charcoals made out of the wood of Oxycedar are white, Dr Jordan in his judicious Diſcourſe of minerall waters yeeldeth the reaſon, becauſe their vapours are rather ſulphureous then of any other combuſtible ſubſtance. So we ſee that Tinby coals will not black linnen being hanged in the ſmoak thereof, but rather whiten it, by reaſon of the drying and penetrating quality of ſulphur, which will make red Roſes white. And therefore to conceive a generall blackneſſe in Hell, and yet therein the materiall flames of ſulphur, is no Philoſophicall conception; nor will it conſiſt with the reall effects of its nature.

Theſe are the advenient and artificiall waies of denigration, anſwerably whereto may be the naturall progreſſe. Theſe are the waies whereby culinary and common fires do operate, and correſpondent hereunto may be the effects of fire elementall. So may Bitumen, coals, Jet, black lead, and divers minerall earths become black; being either fuliginous concretions in the earth, or ſuffering a ſcorch from denigrating principles in their formation. So men and other animals receive different tinctures from conſtitution and complectionall effloreſcencies, and deſcend ſtill lower, as they partake of the fuliginous and denigrating humour. And ſo may the Æthiopians or Negroes become coal-black, from fuliginous effloreſcences and complectionall tinctures ariſing from ſuch probabilities, as we have declared before.

What the common Copperoſe is.

The ſecond way whereby bodies become black, is an Atramentous condition or mixture, that is a vitriolate or copperoſe quality conjoyning with a terreſtrious and aſtringent humidity; for ſo is *Atramentum ſcriptorium*, or writing Inke commonly made, by copperoſe caſt upon a decoction or infuſion of galls. I ſay, a vitriolous or copperous quality; for vitrioll is the active or chief ingredient in Inke, and no other ſalt that I know will ſtrike the colour with galls; neither Alom, Sal-gemme, Nitre, nor Armoniack. Now artificiall copperoſe, and ſuch as we commonly uſe, is a rough and acrimonious kinde of ſalt drawn out of ferreous and eruginous earths, partaking chiefly of Iron and Copper; the blew of Copper, the green moſt of Iron: Nor is it unuſuall to diſſolve fragments of Iron in the liquor thereof, for advantage in the concretion. I ſay, a terreſtrious or aſtringent humidity; for without this there will enſue no tincture; for copperoſe in a decoction of Lettuce or Mallows affords no black, which with an aſtringent mixture it will do, though it be made up with oyl as in printing and painting Inke. But whereas in this compoſition we uſe only Nut-galls, that is an excreſcence from the Oak, therein we follow and beat upon the old receit; for any plant of auſtere and ſtiptick parts will ſuffice, as I have experimented in Briſtorte, Myrobolans, Myrtus Brabantica, Balauſtium and Red-Roſes. And indeed, moſt decoctions of aſtringent plants, of what colour ſoever, do leave in the liquor a deep and Muſcadine red; which by addition of vitrioll deſcend into a black: And ſo Dioſcorides in his receit of Inke, leaves out gall, and with copperoſe makes uſe of ſoot.

Now

Now if we enquire in what part of vitriol this Atramentall and denigrating condition lodgeth, it will ſeem eſpecially to lye in the more fixed ſalt thereof; For the phlegm or aqueous evaporation will not denigrate, nor yet ſpirits of vitriol, which carry with them volatile and nimbler Salt: For if upon a decoction of Copperoſe and gall, be powred the ſpirits or oyl of vitriol, the liquor will relinquiſh his blackneſſe; the gall and parts of the copperoſe precipitate unto the bottom, and the Inke grow clear again; which indeed it will not ſo eaſily do in common Inke, becauſe that gumme is diſſolved therein, which hindereth the ſeparation. But Colcothar or vitriol burnt, though unto a redneſſe containing the fixed ſalt, will make good Inke, and ſo will the Lixivium, or Lye made thereof with warm water; but the Terra or Inſipid earth remaining, affords no black at all, but ſerves in many things for a groſſe and uſefull red. And though ſpirits of vitriol, projected upon a decoction of galls, will not raiſe a black, yet if theſe ſpirits be any way fixed, or return into vitriol again, the ſame will not act their former parts and denigrate as before.

And if we yet make a more exact enquiry, by what this ſalt of vitriol more peculiarly gives this colour, we ſhall finde it to be from a metalline condition, and eſpecially an Iron property or ferreous participation. For blew Copperoſe which deeply partakes of the copper will do it but weakly; Verdigriſe which is made of copper will not do it at all; But the filings of Iron infuſed in vinegar, will with a decoction of galls make good Inke, without any copperoſe at all; and ſo will infuſion of Loadſtone; which is of affinity with Iron. And though more conſpicuouſly in Iron, yet ſuch a Calcanthous or Atramentous quality, we will not wholly reject in other mettals; whereby we often obſerve black tinctures in their ſolutions. Thus a Lemmon, Quince or ſharp Apple cut with a knife becomes immediatly black: And from the like cauſe, Artichokes, ſo ſublimate beat up with whites of Egges, if touched with a knife becomes incontinently black. So *Aqua fortis*, whoſe ingredient is vitriol will make white bodies black. So leather dreſſed with the bark of Oak, is eaſily made black by a bare ſolution of Copperoſe. So divers Minerall waters and ſuch as participate of Iron, upon an infuſion of gals become of a dark colour, and entring upon black. So ſteel infuſed, makes not only the liquor duskie, but in bodies wherein it concurres with proportionable tinctures makes alſo the excretions black. And ſo alſo from this vitriolous quality *Mercurius Dulcis*, and vitriol vomitive occaſion black ejections. But whether this denigrating quality in Copperoſe proceedeth from an Iron participation, or rather in Iron from a vitriolous communication; or whether black tinctures from metallicall bodies be not from vitriolous parts contained in their ſulphur, ſince common ſulphur containeth alſo much vitriol, it may admit conſideration.

Such a condition there is naturally in ſome living creatures. Thus that black humour by Ariſtotle named μέλαν, and commonly tranſlated *Atramentum*, may be occaſioned in the Cuttle. Such a condition there is naturally in ſome Plants, as Black-berries, Walnut-rindes, Black-cherries; whereby they extinguiſh inflammations, corroborate the ſtomack, and are eſteemed ſpecificall in the Epilepſie. Such an Atramentous condition there is to be found ſometime in the bloud, when that which ſome call Acetum, others Vitriolum, concurres with parts prepared for this tincture. And ſo from theſe conditions the Moors might poſſibly become Negroes, receiving Atramentous impreſſions in ſome of thoſe waies, whoſe poſſibilitie is by us declared.

Nor is it ſtrange that we affirm there are vitriolous parts, qualities, and

How a vitriolous quality may be in living bodies,

even at some distance Vitriol it self in living bodies; for there is a sowr, stiptick salt diffused through the earth, which passing a concoction in plants, becometh milder and more agreeable unto the sense; and this is that vegetable vitriol, whereby divers plants contain a gratefull sharpness, as Lemmons, Pomegranates, Cherries; or an austere and inconcocted roughness, as Sloes, Medlars and Quinces. And that not only vitriol is a cause of blackness, but that the salts of naturall bodies do carry a powerfull stroak in the tincture and vernish of all things, we shall not deny, if we contradict not experience, and the visible art of Dyars; who advance and graduate their colours with Salts. For the decoctions of simples which bear the visible colours of bodies decocted, are dead and evanid, without the commixtion of Alum; Argol and the like. And this is also apparent in Chymicall preparations. So Cinaber becomes red by the acide exhalation of sulphur, which otherwise presents a pure and niveous white. So spirits of Salt upon a blew paper make an orient red. So Tartar or vitriol upon an infusion of violets affords a delightfull crimson. Thus it is wonderfull what variety of colours the spirits of Saltpeter, and especially, if they be kept in a glasse while they pierce the sides thereof; I say, what Orient greens they will project: from the like spirits in the earth the plants thereof perhaps acquire their verdure. And from such solary irradiations may those wondrous varieties arise, which are observable in Animals, as Mallards heads, and Peacocks feathers, receiving intention or alteration according as they are presented unto the light. Thus Saltpeter, Ammoniack and Mineral spirits emit delectable and various colours; and common *Aqua fortis* will in some green and narrow mouthed glasses, about the verges thereof, send forth a deep and Gentianella blew.

Whence the colours of Plants, &c. may arise.

Thus have we at last drawn our conjectures unto a period; wherein if our contemplations afford no satisfaction unto others, I hope our attempts will bring no condemnation on our selves; (for besides that adventures in knowledge are laudable, and the assays of weaker heads afford oftentimes improveable hints unto better) although in this long journey we misse the intended end; yet are there many things of truth discloſed by the way; and the collaterall verity, may unto reasonable speculations, requite the capitall indiscovery.

Chap. XIII.

Of Gypsies.

Much wonder it is not we are to seek in the originall of Æthiopians and natural Negroes, being also at a losse concerning the Original of Gypsies and counterfeit Moors, observable in many parts of Europe, Asia, and Africa.

Opinions concerning the original of Gypsies.

Common opsnion deriveth them from Ægypt, and from thence they derive themselves, according to their own account hereof, as Munster discovered in the letters and passe, which they obtained from Sigismund the Emperour, that they first came out of lesser Ægypt, that having defected from the Christian rule, and relapsed unto Pagan rites, some of every family were enjoyned this penance, to wander about the world; or as Aventinus delivereth, they pretend for this vagabond course, a judgement of God upon their forefathers, who refused to entertain the Virgin Mary and Jesus, when she fled into their Countrey.

Which account notwithstanding is of little probability: for the generall stream

ſtream of writers, who enquire into their originall, inſiſt not upon this; and are ſo little ſatisfied in their deſcent from Ægypt, that they deduce them from ſeverall other nations: Polydore Virgil accounting them originally Syrians, Philippus Bergoinas fetcheth them from Chaldæa, Æneas Sylvius from ſome part of Tartarie, Bellonius no further then Walachia and Bulgaria, nor Aventinus then the confines of Hungaria.

Fernand. de Cordna didaſc. cal. multipl.

That they are no Ægyptians Bellonius maketh evident: who met great droves of Gypſies in Ægypt, about Gran Cairo, Matarea, and the villages on the banks of Nilus: who notwithſtanding were accounted ſtrangers unto that Nation, and wanderers from forreign parts, even as they are eſteemed with us.

Obſervat. lib. 2.

That they came not out of Ægypt is alſo probable, becauſe their firſt appearance was in Germany, ſince the year 1400. nor were they obſerved before in other parts of Europe, as is deducible from Munſter, Genebrard, Crantſius and Ortelius.

Gypſies firſt known in Germany.

But that they firſt ſet out not farre from Germany, is alſo probable from their language, which was the Sclavonian tongue; and when they wandered afterward into France, they were commonly called Bohemians, which name is ſtill retained for Gypſies. And therefore when Crantſius delivereth, they firſt appeared about the Baltick Sea, when Bellonius deriveth them from Bulgaria and Walachia, and others from about Hungaria, they ſpeak not repugnantly hereto: for the language of thoſe Nations was Sclavonian, at leaſt ſome dialect thereof.

But of what nation ſoever they were at firſt, they are now almoſt of all, aſſociating unto them ſome of every countrey where they wander; when they will be loſt, or whether at all again, is not without ſome doubt: for unſetled nations have out-laſted others of fixed habitations: and though Gypſes have been baniſhed by moſt Chriſtian Princes, yet have they found ſome countenance from the great Turk, who ſuffereth them to live and maintain publick Stews near the Imperiall city in Pera, of whom he often maketh a politick advantage, imploying them as ſpies into other nations, under which title they were baniſhed by Charles the fift.

Bellon. obſervat. lib. 2. what uſe the Grand Signior maketh of Gypſies,

Chap. XIV.

Of ſome others.

WE commonly accuſe the phancies of elder times in the improper figures of heaven aſſigned unto Conſtellations, which do not ſeem to anſwer them, either in Greek or Barbarick Spheres: yet equall incongruities have been commonly committed by Geographers and Hiſtorians, in the figurall reſemblances of ſeverall regions on earth; while by Livy and Julius Ruſticus the Iſland of Britain is made to reſemble a long diſh or two-edged axe; Italy by Numatianus to be like an Oak-leaf: and Spain an Oxe hide: while the phancy of Strabo makes the habitated earth like a cloak, and Dionyſius Afer will have it like a ſling: with many others obſervable in good writers, yet not made out from the letter or ſignification; acquitting Aſtronomy in their figures of the Zodiack: wherein they are not juſtified unto ſtrict reſemblances, but rather made out from the effects of Sun or Moon, in theſe ſeverall portions of heaven, or from peculiar influences of thoſe conſtellations. which ſome way make good their names.

Tacit. de vita Iul. Agric.

Iunctin in Sph. l. de Sacro boſco, cap. 2.

Which

Which notwithſtanding being now authentick by preſcription, may be retained in their naked acceptions, and names tranſlated from ſubſtances known on earth: And therefore the learned Hevelius in his accurate Selenography, or deſcription of the Moon, hath well tranſlated the known appellations of regions, Seas and Mountains, unto the parts of that Luminary: and rather then uſe invented names or humane denominations, with witty congruity hath placed Mount Sinai, Taurus, Maotis Palus, the Mediterranean Sea, Mauritania, Sicily, and Aſia Minor in the Moon.

The Cabala of the Starres.

Gaffarel out of R. *Chomer.*

More hardly can we finde the Hebrew letters in the heavens, made out of the greater and leſſer Starres, which put together do make up words, wherein Cabaliſticall Speculators conceive they reade the events of future things; and how from the Starres in the head of Meduſa, to make out the word Charab; and thereby deſolation preſignified unto Greece or Javan, numerally characterized in that word, requireth no rigid reader.

Athan. Kir-cher. in pro-em 0.

It is not eaſie to reconcile the different accounts of longitude, while in modern tables the hundred and eighty degree, is more then thirty degrees beyond that part, where Ptolomy placeth an 180. Nor will the wider and more Weſtern term of Longitude, from whence the moderns begin their commenſuration, ſufficiently ſalve the difference. The ancients began the meaſure of Longitude from the fortunate Iſlands or Canaries, the Moderns from the Azores or Iſlands of S^t^ Michael; but ſince the Azores are but fifteen degrees more Weſt, why the Moderns ſhould reckon 180. where Ptolomy accounteth above 220. or though they take in 15 degrees at the Weſt, they ſhould reckon 30 at the Eaſt, beyond the ſame meaſure, is yet to be determined; nor would it be much advantaged, if we ſhould conceive that the compute of Ptolomy were not ſo agreeable unto the Canaries, as the Heſperides or Iſlands of Cabo Verde.

Robertus Hues, de globis.

Whether the compute of moneths from the firſt appearance of the Moon, which divers nations have followed, be not a more perturbed way, then that which accounts from the conjunction, may ſeem of reaſonable doubt; not only from the uncertainty of its appearance in foul and cloudie weather, but unequall time in any, that is ſooner or later, according as the Moon ſhall be in the ſigns of long deſcention, as Piſces, Aries, Taurus, in the Perigeum or ſwifteſt motion, and in the Northern Latitude: whereby ſometimes it may be ſeen the very day of the change, as will obſervably happen 1654. in the moneths of April and May? or whether alſo the compute of the day, be exactly made, from the viſible ariſing or ſetting of the Sunne, becauſe the Sunne is ſometimes naturally ſet, and under the Horizon, when viſibly it is above it; from the cauſes of refraction, and ſuch as make us behold a piece of ſilver in a baſin, when water is put upon it, which we could not diſcover before, as under the verge thereof?

Hevel. Selenog. cap. 9.

When the Moon will be ſeen on the firſt day of the change.

Why the Sunne is ſeen after it is ſet, or naturally under the Horizon.

Whether the globe of the earth be but a point, in reſpect of the Stars and Firmament, or how if the raies thereof do fall upon a point, they are received in ſuch variety of Angles, appearing greater or leſſer from differences of refraction?

Whether if the motion of the Heavens ſhould ceaſe a while, all things would inſtantly periſh? and whether this aſſertion doth not make the frame of ſublunary things, to hold too looſe a dependency upon the firſt and conſerving cauſe? at leaſt impute too much unto the motion of the heavens, whoſe eminent activities are by heat, light and influence, the motion it ſelf being barren, or chiefly ſerving for the due application of celeſtiall virtues unto ſublunary bodies, as Cabeus hath learnedly obſerved?

Whether

Whether Comets or blazing Starres be generally of such terrible effects, as elder times have conceived them: for since 'tis found that many, from whence these predictions are drawn, have been above the Moon, why they may not be qualified from their positions, and aspects which they hold with Starres of favourable natures; or why since they may be conceived to arise from the effluviums of other Starres, they may not retain the benignity of their originals; or since the natures of the fixed Starres, are astrologically differenced by the Planets, and are esteemed Martiall or Joviall, according to the colours whereby they answer these Planets; why although the red Comets do carry the portensions of Mars, the brightly white should not be of the influence of Jupiter or Venus, answerably unto Cor Scorpij and Arcturus, is not absurd to doubt.

THE SEVENTH BOOK:

Concerning many Historicall Tenents generally received, and some deduced from the History of holy Scripture.

Chap. I.

Of the Forbidden Fruit.

Opinions, of what kinde the forbidden fruit was.

THat the Forbidden fruit of Paradise was an Apple, is commonly beleeved, confirmed by Tradition, perpetuated by writings, verses, Pictures; and some have been so bad Prosodians, as from thence to derive the Latine word *Malum*, because that fruit was the first occasion of evil; wherein notwithstanding determinations are presumptuous, and many I perceive are of another belief. For some have conceived it a Vine; in the mystery of whose fruit lay the expiation of the Transgression: Goropius Becanus reviving the conceit of Barcephas, peremptorily concludeth it to be the Indian Fig-tree; and by a witty Allegory labours to confirm the same. Again, some fruits passe under the name of Adams apples, which in common acception admit not that appellation; the one described by Mathiolus under the name of *Pomum Adami*; a very fair fruit, and not unlike a Citron, but somewhat rougher, chopt and cranied, vulgarly conceived the marks of Adams teeth. Another, the fruit of that plant Serapion termeth *Musa*, but the Eastern Christians commonly the Apples of Paradise; not resembling an apple in figure, and in taste a Melon or Cowcumber. Which fruits although they have received appellations suitable unto the Tradition, yet can we not from thence inferre they were this fruit in question: No more then *Arbor vitæ*, so commonly called, to obtain its name from the tree of life in Paradise; or *Arbor Judæ*, to be the same which supplyed the gibbet unto Judas.

Again, There is no determination in the Text; wherein is only particulared that it was the fruit of a tree good for food and pleasant unto the eye, in which regards many excell the Apple; and therefore learned men do wisely conceive it inexplicable; and Philo puts determination unto despair, when he affirmeth the same kinde of fruit was never produced since. Surely, were it not requisite to have been concealed, it had not passed unspecified; nor the tree revealed which concealed their nakedness, and that concealed which revealed

flected to give the easier delivery, and the ribs themselves seem a little flatter, yet are they equall in number. And therefore while Aristotle doubteth the relations made of Nations, which had but seven ribs on a side, and yet delivereth that men have generally no more then eight; as he rejecteth their history, so can we not accept of his Anatomy.

Again, although we concede there wanted one rib in the Sceleton of Adam, yet were it repugnant unto reason and common observation that his posterity should want the same. For we observe that mutilations are not transmitted from father unto son; the blinde begetting such as can see, men with one eye children with two, and cripples mutilate in their own persons do come out perfect in their generations. For, the seed conveigheth with it not only the extract and single Idea of every part, whereby it transmits their perfections or infirmities; but double and over again; whereby sometimes it multipliciously delineates the same, as in Twins in mixed and numerous generations. And to speak more strictly, parts of the seed do seem to contain the Idea and power of the whole; so parents deprived of hands, beget manuall issues; and the defect of those parts is supplied by the Idea of others. So in one grain of corn appearing similary and insufficient for a plurall germination, there lyeth dormant the virtuality of many other; and from thence sometimes proceed an hundred ears. And thus may be made out the cause of multiparous productions; for though the seminall materials disperse and separate in the matrix, the formative operator will not delineate a part, but endeavour the formation of the whole; effecting the same as farre as the matter will permit; and from divided materials attempt entire formations. And therefore, though wondrous strange, it may not be impossible what is confirmed at Lausdun concerning the Countesse of Holland, nor what Albertus reports of the birth of an hundred and fifty. And if we consider the magnalities of Generation in some things, we shall not controvert its possibilities in others; nor easily question that great work, whose wonders are only second unto those of the Creation; aud a close apprehension of the one, might perhaps afford a glimmering light, and crepusculous glance of the other.

That every part of the seed contains the Idea of the whole animate.

CHAP. III.

Of Methuselah.

WHat hath been every where opinion'd, by all men, and in all times, is more then Paradoxicall to dispute; and so that Methuselah was the longest liver of all the posterity of Adam we quietly beleeve: but that he must needs be so, is perhaps below Paralogy to deny. For hereof there is no determination from the Text; wherein it is only particular'd he was the longest liver of all the Patriarchs whose age is there expressed; but that he outlived all others we cannot well conclude. For of those nine whose death is mentioned before the floud, the Text expresseth that Enoch was the shortest liver; who saw but three hundred sixty five years. But to affirm from hence, none of the rest, whose age is not expressed, did die before that time; is surely an illation whereto we cannot assent.

Again, Many persons there were in those daies of longevity, of whose age notwithstanding there is no account in Scripture; as of the race of Cain, the wives of the nine Patriarches, with all the sons and daughters that every one

begat; whereof perhaps ſome perſons might outlive Methuſelah; the Text intending only the maſculine line of Seth, conduceable unto the Genealogy of our Saviour, and the antediluvian Chronology. And therefore we muſt not contract the lives of thoſe which are left in ſilence by Moſes; for neither is the age of Abel expreſſed in the Scripture, yet is he conceived farre elder then commonly opinion'd: and if we allow the concluſion of his Epitaph as made by Adam, and ſo ſet down by Salian, *Poſuit mœrens pater, cui à filio juſtius poſitum foret, Anno ab ortu rerum* 130. *Ab Abele nato* 129. we ſhall not need to doubt. Which notwithſtanding Cajetan and others confirm; nor is it improbable, if we conceive that Abel was born in the ſecond year of Adam, and Seth a year after the death of Abel: for ſo it being ſaid, that Adam was an hundred and thirty years old when he begat Seth, Abel muſt periſh the year before, which was one hundred twenty nine.

And if the account of Cain extend unto the Deluge, it may not be improbable that ſome thereof exceeded any of Seth. Nor is it unlikely in life, riches, power and temporall bleſſings, they might ſurpaſſe them in this world, whoſe lives related unto the next. For ſo when the ſeed of Jacob was under affliction and captivity, that of Iſmael and Eſau flouriſhed and grew mighty, there proceeding from the one twelve Princes, from the other no leſſe then fourteen Dukes and eight Kings. And whereas the age of Cain and his poſterity is not delivered in the Text, ſome do ſalve it from the ſecret method of Scripture, which ſometimes wholly omits, but ſeldome or never delivers the intire duration of wicked and faithleſſe perſons, as is obſervable in the hiſtory of Eſau, and the Kings of Iſrael and Judah. And therefore when mention is made that Iſhmael lived 137 years, ſome conceive he adhered unto the faith of Abraham; for ſo did others who were not deſcended from Jacob; for Job is thought to be an Idumean, and of the ſeed of Eſau.

Job thought by ſome to be of the race of Eſau.

Laſtly (although we rely not thereon) we will not omit that conceit urged by learned men, that Adam was elder then Methuſelah; inaſmuch as he was created in the perfect age of man, which was in thoſe daies fifty or ſixty years; for about that time we reade that they begat children; ſo that if unto 930 we adde 60 years, he will exceed Methuſelah. And therefore if not in length of daies, at leaſt in old age he ſurpaſſed others; he was older then all, who was never ſo young as any. For though he knew old age, he was never acquainted with puberty, youth or Infaney; and ſo in a ſtrict account he begat children at one year old. And if the uſuall compute will hold, that men are of the ſame age which are born within compaſſe of the ſame year; Eve was as old as her husband and parent Adam, and Cain their ſon coetaneous unto both.

Now that conception that no man did ever attain unto a thouſand years, becauſe none ſhould ever be one day old in the ſight of the Lord, unto whom according to that of David, A thouſand years are but one day; doth not advantage Methuſelah. And being deduced from a popular expreſſion, which will not ſtand a Metaphyſicall and ſtrict examination, is not of force to divert a ſerious enquirer. For unto God a thouſand years are no more then one moment, and in his ſight Methuſelah lived no nearer one day then Abel, for all parts of time are alike unto him, unto whom none are referrible; and all things preſent, unto whom nothing is paſt or to come. And therefore, although we be meaſured by the Zone of time, and the flowing and continued inſtants thereof, do weave at laſt a line and circle about the eldeſt; yet can we not thus commenſurate the ſphere of Triſmegiſtus; or ſum up the uuſucceſſive and ſtable duration of God.

Chap.

revealed it; for in the ſame Chapter mention is made of Fig-leaves. And the like particulars although they ſeem uncircumſtantiall are oft ſet down in holy Scripture; ſo is it ſpecified that Elias ſate under a Juniper tree, Abſolom hanged by an Oak, and Zacheus got up into a Sycomore.

And although to condemn ſuch indeterminables, unto him that demanded on what hand Venus was wounded, the Philoſopher thought it a ſufficient reſolution to reinquire upon what leg King Philip halted; and the Jews not undoubtedly reſolved of the Sciatica ſide of Jacob, do cauteloufly in their diet abſtain from the ſinews of both: yet are there many nice particulars which may be authentically determined. That Peter cut off the right ear of Malchus, is beyond all doubt. That our Saviour ate the Paſſeover in an upper room, we may determine from the Text; and ſome we may concede which the Scripture plainly defines not. That the Dyall of Ahaz was placed upon the Weſt ſide of the Temple, we will not deny, or contradict the deſcription of Adricomius. That Abrahams ſervant put his hand under his right thigh, we ſhall not queſtion; and that the Thief on the right hand was ſaved, and the other on the left reprobated, to make good the Method of the laſt judiciall diſmiſſion, we are ready to admit. But ſurely in vain we enquire of what wood was Moſes rod, or the tree that ſweetned the waters. Or though tradition or humane hiſtory might afford ſome light; whether the crown of thorns was made of Paliurus, whether the croſſe of Chriſt were made of thoſe four woods in the Diſtick of Durantes, or only of Oak according unto Lipſius and Goropius, we labour not to determine; for though hereof prudent Symbols and pious Allegories be made by wiſer conceivers; yet common heads will flye unto ſuperſtitious applications, and hardly avoid miraculous or magicall expectations.

Now the ground or reaſon that occaſioned this expreſſion by an Apple, might be the community of this fruit, and which is often taken for any other. So the Goddeſſe of gardens is termed *Pomona*; ſo the Proverb expreſſeth it to give Apples unto Alcinous; ſo the fruit which Paris decided was called an Apple; ſo in the garden of Heſperides (which many conceive a fiction drawn from Paradiſe) we reade of golden Apples guarded by the Dragon; and to ſpeak ſtrictly in this appellation, they placed it more ſafely then any other; for beſide the great variety of Apples, the word in Greek comprehendeth Orenges, Lemmons, Citrons, Quinces; and as Ruellius defineth, ſuch fruits as have no ſtone within, and a ſoft covering without; excepting the Pomegranate, and will extend much farther in the acception of Spigelius; who comprehendeth all round fruits under the name of Apples, not excluding Nuts and Plums.

It hath been promoted in ſome conſtructions from a paſſage in the Canticles, as it runnes in the vulgar Tranſlation, *Sub arbore malo ſuſcitavi te, ibi corrupta eſt mater tua, ibi violata eſt genetrix tua*; which words notwithſtanding parabollically intended, admit no literall inference; and are of little force in our tranſlation, I raiſed thee under an Apple-tree, there thy mother brought thee forth, there ſhe brought thee forth that bare thee. So when from a baſket of Summer fruits or Apples, as the Vulgar rendreth them, God by Amos foretold the deſtruction of his people, we cannot ſay they had any reference unto the fruit of Paradiſe, which was the deſtruction of man; but thereby was declared the propinquity of their deſolation; and that their tranquillity was of no longer duration then thoſe horary or ſoon decaying fruits of Summer. Nor when it is ſaid in the ſame Tranſlation, *Poma deſiderii animæ tuæ diſceſſerunt à te*, the Apples that thy ſoul luſted after are departed from thee, is there any alluſion therein unto the fruit of Paradiſe. But thereby

Iacobs Sciatica, See Gen 32 25, 31, 32.

Per cedrum eſt, truncus cupreſſus, oliva ſupremum, palmæq; tranſverſum Chriſti ſunt in cruce lignum.

Ruel. *de ſtirpium natura. Iſagoge in rem Herbariam.*

Cant. 8.

Fructus hyemales.

thereby is threatned unto Babylon, that the pleasures and delights of their palate should forsake them. And we reade in Pierius, that an Apple was the Hieroglyphick of Love, and that the Statua of Venus was made with one in her hand. So the little Cupids in the figures of Philostratus do play with Apples in a garden, and there want not some who have symbolized the Apple of Paradise unto such constructions.

Philostrat. *figur. 6. De Amoribus.*

Since therefore after this fruit curiosity fruitlessely enquireth, and confidence blindely determineth, we shall surcease our Inquisition; rather troubled that it was tasted, then troubling our selves in its decision; this only we observe, when things are left uncertain men will assure them by determination. Which is not only verified concerning the fruit, but the Serpent that perswaded; many defining the kinde or species thereof. So Bonaventure and Comestor affirm it was a Dragon, Eugubinus a Basilisk, Delrio a viper, and others a common snake. Wherein men still continue the delusion of the Serpent, who having deceived Eve in the main, sets her posterity on work to mistake in the circumstance, and endeavours to propagate errours at any hand And those he surely most desireth which concern either God or himself; for they dishonour God who is absolute truth and goodnesse; but for himself, who is extreamly evill, and the worst we can conceive; by aberration of conceit they extenuate his depravity, and ascribe some goodnesse unto him.

Opinions of what kinde the Serpent was, &c.

Chap. II.

That a Man hath one Rib lesse then a Woman.

That a Man hath one Rib lesse then a Woman, is a common conceit derived from the history of Genesis, wherein it stands delivered, that Eve was framed out of a Rib of Adam; whence 'tis concluded the sex of man still wants that rib our Father lost in Eve. And this is not only passant with the many, but was urged against Columbus in an Anatomy of his at Pisa; where having prepared the Sceleton of a Woman that chanced to have thirteen ribs on one side, there arose a party that cried him down, and even unto oathes affirmed, this was the rib wherein a woman exceeded. Were this true, it would autoptically silence that dispute out of which side Eve was framed; it would determine the opinion of Oleaster, that she was made out of the ribs of both sides; or such as from the expression of the Text maintain there was a plurality required, and might indeed decry the parabolicall exposition of Origen, Cajetan, and such as fearing to concede a monstrosity, or mutilate the integrity of Adam; preventively conceive the creation of thirteen ribs.

Ex ossibus mutis.

But this will not consist with reason or inspection. For if we survey the Sceleton of both sexes, and therein the compage of bones, we shall readily discover that men and women have four and twenty ribs; that is, twelve on each side; seven greater annexed unto the Sternon, and five lesser which come short thereof; wherein if it sometimes happen that either sex exceed, the conformation is irregular, deflecting from the common rate or number, and no more inferrible upon mankinde, then the monstrosity of the son of Rapha, or the vitious excesse in the number of fingers and toes. And although some difference there be in figure, and the female *os inominatum* be somewhat more protuberant, to make a fairer cavity for the Infant; the coccyx sometime more reflected

How many ribs commonly in men and women.

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degrees above the Horizon (which is conceived the largeſt ſemidiameter of any Iris) and ſo in the afternoon when it hath declined unto that altitude again; which height the Sun not attaining in Winter, Rainbows may happen with us at noon or any time. Unto a right poſition of ſphere they may appear three hours after the riſing of the Sun, and three before its ſetting; for the Sun aſcending fifteen degrees an hour, in three attaineth fourty five of altitude. Even unto a parallel ſphere, and ſuch as live under the pole, for half a year ſome ſegments may appear at any time and under any quarter, the Sun not ſetting, but walking round about them.

The naturall ſignification of the Rainbow.

But the propriery of its Election moſt properly appeareth in the naturall ſignification and prognoſtick of it ſelf; as containing a mixt ſignality of rain and fair weather. For being in a roride cloud and ready to drop, it declareth a pluvious diſpoſure in the air; but becauſe when it appears the Sun muſt alſo ſhine, there can be no univerſall ſhowrs, and conſequently no deluge. Thus when the windows of the great deep were open, in vain men lookt for the Rainbow: for at that time it could not be ſeen, which after appeared unto Noah. It was therefore exiſtent before the floud, and had in Nature ſome ground of its addition. Unto that of Nature God ſuperadded an aſſurance of his promiſe, that is, never to hinder its appearance, or ſo to repleniſh the heavens again as that we ſhould behold it no more. And thus, without diſparaging the promiſe, it might rain at the ſame time when God ſhewed it unto Noah; thus was there more therein then the Heathens underſtood, when they called it the *Nuncia* of the gods, and the laugh of weeping heaven; and thus may it be elegantly ſaid, I put my Bow, not my Arrow in the clouds, that is, in the menace of Rain the mercy of fair weather.

Riſu plorantis Olympi.

Iſa. 34. 4.

Cabaliſticall heads, who from that expreſſion in Eſay, do make a book of heaven, and reade therein the great concernments of earth, do literally play on this, and from its ſemicircular figure, reſembling the Hebrew letter כ Caph, whereby is ſignified the uncomfortable number of twenty, at which Joſeph was ſold, which Jacob lived under Laban, and at which men were to go to war; do note a propriety in its ſignification; as thereby declaring the diſmall time of the deluge. And Chriſtian conceits do ſeem to ſtrain as high, while from the irradiation of the Sunne upon a cloud, they apprehend the myſtery of the Sunne of righteouſneſſe in the obſcurity of fleſh, by the colours green and red; the two deſtructions of the world by fire and water; or by the colours of bloud and water, the myſteries of Baptiſme, and the holy Euchariſt.

Laudable therefore is the cuſtome of the Jews, who upon the appearance of the Rainbow, do magnifie the fidelity of God in the memory of his Covenant; according to that of Syracides, Look upon the Rainbow, and praiſe him that made it. And though ſome pious and Chriſtian pens have only ſymboliz'd the ſame from the myſtery of its colours, yet are there other affections which might admit of Theologicall alluſions; nor would he finde a more improper ſubject, that ſhould conſider that the colours are made by refraction of light, and the ſhadows that limit that light; that the Center of the Sun, the Rainbow, and the eye of the beholder muſt be in one right line; that the ſpectator muſt be between the Sunne and the Rainbow; that ſometime three appear, ſometime one reverſed. With many others, conſiderable in Meteorologicall Divinity; which would more ſenſibly make out the Epithite of the Heathens, and the expreſſion of the ſonne of Syrach. Very beautifull is the Rainbow, it compaſſeth the heaven about with a glorious circle, and the hands of the moſt High have bended it.

Thaumantias.

Chap.

CHAP. V.

Of Sem, Ham, and Japhet.

CONcerning the three ſons of Noah, Sem, Ham and Japhet, that the order of their nativity was according to that of numeration, and Japhet the youngeſt ſon, as moſt beleeve, as Auſtin and others account, the ſons of Japhet and Europeans need not grant; nor will it ſo well concord unto the letter of the Text, and its readieſt Interpretations. For ſo is it ſaid in our Tranſlation, Sem the father of all the ſons of Heber, the brother of Japhet the elder; ſo by the Septuagint, and ſo by that of Tremellius. And therefore when the Vulgar reads it, *Fratre Japhet majore*, the miſtake as Junius obſerveth, might be committed by neglect of the Hebrew accent; which occaſioned Jerom ſo to render it, and many after to beleeve it. Nor is that argument contemptible which is deduced from their Chronology; for probable it is that Noah had none of them before, and begat them from that year when it is ſaid he was five hundred years old and begat Sem, Ham and Japhet. Again, it is ſaid he was ſix hundred years old at the floud, and that two years after Sem was but a hundred; therefore Sem muſt be born when Noah was five hundred and two, and ſome other before in the year of five hundred and one.

Now whereas the Scripture affordeth the priority of order unto Sem, we cannot from thence inferre his primogeniture. For in Sem the holy line was continued; and therefore however born, his genealogy was moſt remarkable. So is it not unuſuall in holy Scripture to nominate the younger before the elder; ſo is it ſaid, That Tarah begat Abraham, Nachor and Haram; whereas Haram was the eldeſt. So Rebecca is termed the mother of Jacob and Eſau. Nor is it ſtrange the younger ſhould be firſt in nomination, who have commonly had the priority in the bleſſings of God, and been firſt in his benediction. So Abel was accepted before Cain, Abraham the younger preferred before Iſhmael the elder, Jacob before Eſau, Joſeph was the youngeſt of twelve, and David the eleventh ſonne, and but the caddet of Jeſſe.

Gen. 11. Gen. 28.

In divine benedictions the younger often preferred.

Laſtly, Though Japhet were not elder then Sem, yet muſt we not affirm that he was younger then Cham; for it is plainly delivered, that after Sem and Japhet had covered Noah, he awaked, and knew what his youngeſt ſonne had done unto him, νεώτερος, is the expreſſion of the Septuagint, *Filius minor* of Jerome, and *minimus* of Tremellius. And upon theſe grounds perhaps Joſephus doth vary from the Scripture enumeration, and nameth them Sem, Japhet and Cham; which is alſo obſerved by the Annian Beroſus; *Noah cum tribus filijs, Semo, Japeto, Chem.* And therefore although in the priority of Sem and Japhet, there may be ſome difficulty, though Cyril, Epiphanius and Auſtin have accounted Sem the elder, and Salian the Annaliſt, and Petavius the Chronologiſt contend for the ſame; yet Cham is more plainly and confeſſedly named the youngeſt in the Text.

And this is more conformable unto the Pagan hiſtory and Gentile account hereof, unto whom Noah was Saturn, whoſe ſymbol was a ſhip, as relating unto the Ark, and who is ſaid to have divided the world between his three ſons. Ham is conceived to be Jupiter, who was the youngeſt ſonne worſhipped by the name of Hamon, which was the Ægyptian and African name for Jupiter, who is ſaid to have cut off the genitals of his father, derived

That Noah and Saturn were the ſame perſon.

Gen. 9. 22. Reading *Vidgged & abscidit* for *Vidgged & nunciavit*, Bochartus de de Geographiâ sacrâ.

from the historie of Ham, who beheld the nakednesse of his, and by no hard mistake might be confirmed from the Text, as Bochartus hath well observed.

Chap. VI.

That the Tower of Babel was erected against a second Deluge.

An opinion there is of some generality, that our fathers after the floud attempted the Tower of Babel to secure themselves against a second Deluge. Which however affirmed by Josephus and others, hath seemed improbable unto many who have discoursed hereon. For (beside that they could not be ignorant of the promise of God never to drown the world again, and had the Rainbow before their eyes to put them in minde thereof) it is improbable from the nature of the Deluge; which being not possibly causable from naturall showres above, or watery eruptions below, but requiring a supernaturall hand, and such as all acknowledge irresistible; we must disparage their knowledge and judgement in so successeless attempts.

Again, They must probably hear, and some might know, that the waters of the floud ascended fifteen cubits above the highest mountains. Now, if as some define, the perpendicular altitude of the highest mountains be four miles; or as others but fifteen furlongs; it is not easily conceived how such a structure could be effected. Although we allowed the description of Herodotus concerning the Tower of Belus; whose lowest story was in height and bredth one furlong, and seven more built upon it, abating that of the Annian Berosus, the traditionall relation of Jerome, and fabulous account of the Jews. Probable it is that what they attempted was fesible, otherwise they had been amply fool'd in the fruitlesse successe of their labours; nor needed God to have hindered them, saying, Nothing will be restrained from them, which they begin to doe.

It was improbable from the place, that is a plain in the land of Shinar. And if the situation of Babylon were such at first as it was in the daies of Herodotus; it was rather a seat of amenity and pleasure, then conducing unto this intention. It being in a very great plain, and so improper a place to provide against a generall Deluge by Towers and eminent structures, that they were fain to make provisions against particular and annuall inundations by ditches and trenches, after the manner of Ægypt. And therefore Sir Walter Ralegh accordingly objecteth; If the Nations which followed Nimrod, still doubted the surprise of a second floud, according to the opinions of the ancient Hebrews, it soundeth ill to the ear of Reason, that they would have spent many years in that low and overflown valley of Mesopotamia. And therefore in this situation, they chose a place more likely to have secured them from the worlds destruction by fire, then another Deluge of water; and as Pierius observeth, some have conceived that this was their intention.

History of the world.

Lastly, The reason is delivered in the Text. Let us build us a City and a Tower, whose top may reach unto heaven, and let us make us a name, lest we be scattered abroad upon the whole earth; as we have already began to wander over a part. These were the open ends proposed unto the people; but the secret design of Nimrod, was to settle unto himself a place

of

of dominion, and rule over the reſt of his brethren, as it after ſucceeded, according to the delivery of the Text, The beginning of his kingdome was Babel.

Chap. VII.

Of the Mandrakes of Leah.

WE ſhall not omit the Mandrakes of Leah, according to the Hiſtory of Geneſis. And Reuben went out in the daies of Wheat-harveſt and found Mandrakes in the field, and brought them unto his mother Leah; then Rachel ſaid unto Leah, Give me, I pray thee, of thy ſons Mandrakes: and ſhe ſaid unto her, Is it a ſmall matter that thou haſt taken my husband, and wouldeſt thou take my ſons Mandrakes alſo? and Rachel ſaid, Therefore he ſhall lie with thee this night for thy ſons Mandrakes. From whence hath ariſen a common conceit, that Rachel requeſted theſe plants as a medicine of fecundation, or whereby ſhe might become fruitfull. Which notwithſtanding is very queſtionable, and of Incertain truth.

For firſt from the compariſon of one Text with another, whether the Mandrakes here mentioned, be the ſame plant which holds that name with us, there is ſome cauſe to doubt; the word is uſed in another place of Scripture, when the Church inviting her beloved into the fields; among the delightfull fruits of Grapes and Pomegranates, it is ſaid, The Mandrakes give a ſmell, and at our gates are all manner of pleaſant fruits. Now in ſtead of a ſmell of delight, our Mandrakes afford a papaverous and unpleaſant odour, whether in the leaf or apple, as is diſcoverable in their ſimplicity or mixture. The ſame is alſo dubious from the different interpretations: for though the Septuagint and Joſephus doe render it the Apples of Mandrakes in this Text, yet in the other of the Canticles the Chaldy Paraphraſe termeth it Balſame. R. Solomon, as Druſius obſerveth, conceives it to be that plant the Arabians named Jeſemin. Oleaſter and Georgius Venetus, the Lilly; and that the word *Dudaim*, may comprehend any plant that hath a good ſmell, reſembleth a womans breaſt, and flouriſheth in wheat harveſt. Junius and Tremellius interpret the ſame for any amiable flowers of a pleaſant and delightfull odour: but the Geneva Tranſlators have been more wary then any; for although they retain the word Mandrake in the Text, they in effect retract it in the Margine; wherein is ſet down, The word in the originall is *Dudaim*, which is a kinde of fruit or flower unknown.

Cant. 7.

Nor ſhall we wonder at the diſſent of expoſition, and difficulty of definition concerning this Text, if we perpend how variouſly the vegetables of Scripture are expounded, and how hard it is in many places to make out the ſpecies determined. Thus are we at variance concerning the plant that covered Jonas; which though the Septuagint doth render Colocynthis, the Spaniſh Calabaca, and ours accordingly a Gourd, yet the vulgar tranſlates it Hedera or Ivy; and, as Grotius obſerveth, Jerome thus tranſlated it, not as the ſame plant, but beſt apprehended thereby. The Italian of Diodati and that of Tremellius have named it Ricinus, and ſo hath ours in the Margine; for *palma Chriſti* is the ſame with Ricinus. The Geneva Tranſlators have herein been alſo circumſpect; for they have retained the originall word *Kikaion*, and ours hath alſo affixed the ſame unto the Margine.

The vegetables in H. Scripture how variouſly expounded.

Nor are they indeed alwaies the ſame plants which are delivered under the

ſame name, and appellations commonly received amongſt us. So when it is ſaid of Solomon, that he writ of plants from the Cedar of Lebanus, unto the Hyſop that groweth upon the wall, that is, from the greateſt unto the ſmalleſt, it cannot be well conceived our common Hyſop; for neither is that the leaſt of vegetables, nor obſerved to grow upon wals; but rather as Lemnius well conceiveth ſome kinde of the capillaries, which are very ſmall plants and only grow upon wals and ſtony places. Nor are the four ſpecies in the holy oyntment, Cinnamon, Myrrhe, Calamus and Caſſia, nor the other in the holy perfume, Frankincenſe, Stacte, Onycha and Galbanum, ſo agreeably expounded unto thoſe in uſe with us, as not to leave conſiderable doubts behinde them. Nor muſt that perhaps be taken for a ſimple unguent, which Matthew only termeth a pretious oyntment; but rather a compoſition, as Mark and John imply by piſtick Nard, that is faithfully diſpenſed; and as Mathiolus obſerveth in his Epiſtles, may be that famous compoſition deſcribed by Dioſcorides, made of oyle of Ben, Malabathrum, Juncus Odoratus, Coſtus, Amomum, Myrrhe, Balſam and Nard; which Galen affirmeth to have been in uſe with the delicate Dames of Rome; and that the beſt thereof was made at Laodicea, from whence by Merchants it was conveyed unto other parts. But how to make out that Tranſlation concerning the Tithe of Mint, Aniſe and Cumin, we are ſtill to ſeek; for we finde not a word in the Text that can properly be rendred Aniſe; the Greek being ἄνηθον, which the Latines call *Anethum*, and is properly Engliſhed Dill. Laſtly, What meteor that was, that fed the Iſraelites ſo many years, they muſt riſe again to inform us. Nor doe they make it out, who will have it the ſame with our Manna; nor will any one kinde thereof, or hardly all kindes we reade of, be able to anſwer the qualities thereof, delivered in the Scripture; that is, to fall upon the ground, to breed wormes, to melt with the Sunne, to taſte like freſh oyle, to be grounded in Mils, to be like Coriander ſeed, and of the colour of Bdellium.

V. *Doctiſſimum Chryſoſtom. Magnenum de Manna.*

Again, It is not deducible from the Text or concurrent ſentence of Comments, that Rachel had any ſuch intention, and moſt doe reſt in the determination of Auſtine, that ſhe deſired them for rarity, pulchritude or ſuavity. Nor is it probable ſhe would have reſigned her bed unto Leah, when at the ſame time ſhe had obtained a medicine to fructifie her ſelf; and therefore Druſius who hath expreſſely and favourably treated hereof, is ſo farre from conceding this intention, that he plainly concludeth, *Hoc quo modo illis in mentem venerit conjicere nequeo*; how this conceit fell into mens mindes it cannot fall into mine; for the Scripture delivereth it not, nor can it be clearly deduced from the Text.

Thirdly, If Rachel had any ſuch intention, yet had they no ſuch effect, for ſhe conceived not many years after of Joſeph; whereas in the mean time Leah had three children, Iſachar, Zabulon and Dinah.

Laſtly, Although at that time they failed of this effect, yet is it mainly queſtionable whether they had any ſuch vertue either in the opinions of thoſe times or in their proper nature. That the opinion was popular in the land of Canaan it is improbable, and had Leah underſtood thus much ſhe would not ſurely have parted with fruits of ſuch a faculty; eſpecially unto Rachel who was no friend unto her. As for its proper nature, the Ancients have generally eſteemed it Narcotick or ſtupefactive, and is to be found in the liſt of poyſon ſet down by Dioſcorides, Galen, Ætius, Ægineta, and ſeverall Antidotes delivered by them againſt it. It was I confeſſe from good Antiquity, and in the daies of Theophraſtus accounted a philtre, or plant that conciliates affection; and ſo delivered by Dioſcorides. And this

this intent might seem more probable, had they not been the wives of holy Jacob, had Rachel presented them unto him, and not requested them for her self.

Now what Dioscorides affirmeth in favour of this effect, that the grains of the Apples of Mandrakes mundifie the Matrix, and applied with sulphur stop the fluxes of women, he overthrows by qualities destructive unto conception; affirming also that the juice thereof purgeth upward like Hellebore; and applied in pessaries provokes the menstruous flowes and procures abortion. Petrus Hispanus, or Pope John the twentieth speaks more directly in his *Thesaurus Pauperum*; wherein among the receits of fecundation, he experimentally commendeth the wine of Mandrakes given with *Triphera magna*. But the foul of the medicine may lie in *Triphera magna*; an excellent composition, and for this effect commended by Nicolaus. And whereas Levinus Lemnius that eminent Physitian doth also concede this effect, it is from manifest causes and qualities elementall occasionally producing the same; for he imputeth the same unto the coldnesse of that simple, and is of opinion that in hot climates, and where the uterine parts exceed in heat, by the coldnesse hereof they may be reduced into a conceptive constitution, and Crasis accommodable unto generation; whereby indeed we will not deny the due and frequent use may proceed unto some effect; from whence notwithstanding we cannot inferre a fertiliating condition or property of fecundation. For in this way all vegetables doe make fruitfull according unto the complexion of the Matrix; if that excell in heat, plants exceeding in cold doe rectifie it; if it be cold, simples that are hot reduce it; if dry moist, if moist dry correct it; in which division all plants are comprehended. But to distinguish thus much is a point of Art, and beyond the method of Rachels or feminine Physick. Again, whereas it may be thought that Mandrakes may fecundate since Poppy hath obtained the Epithite of fruitfull, and that fertility was hieroglyphically described by Venus with an head of Poppy in her hand; the reason hereof, was the multitude of seed within it self, and no such multiplying in humane generation. And lastly, whereas they may seem to have this quality, since Opium it self is conceived to extimulate unto venery, and for that intent is sometimes used by Turkes, Persians, and most orientall Nations; although Winclerus doth seem to favour the conceit, yet Amatus Lusitanus, and Rodericus *a Castro* are against it; Garcias *ab Horto* refutes it from experiment; and they speak probably who affirm the intent and effect of eating Opium, is not so much to invigorate themselves in coition, as to prolong the Act, and spin out the motions of carnality.

Opium, of what effect in venery.

CHAP. VIII.

Of the three Kings of Collein.

A Common conceit there is of the three Kings of Collein, conceived to be the wise men that travelled unto our Saviour by the direction of the Starre. Wherein (omitting the large Discourses of Baronius, Pineda and Montacutius) that they might be Kings, beside the ancient Tradition and authority of many Fathers, the Scripture also implieth. The Gentiles shall come to thy light, and Kings to the brightnesse of thy rising. The Kings of Tharsis and the Isles, the Kings of Arabia and Saba shall offer gifts; which

The Magi or wise men (Matth.2) what manner of Kings they were.

places most Christians and many Rabbins interpret of the Messiah. Not that they are to be conceived potent Monarchs, or mighty Kings; but Toparks, Kings of Cities or narrow Territories; such as were the Kings of Sodome and Gomorrah, the Kings of Jericho and Ai, the one and thirty which Joshuah subdued, and such as some conceive the friends of Job to have been.

But although we grant they were Kings, yet can we not be assured they were three. For the Scripture maketh no mention of any number; and the number of their presents, Gold, Myrrh and Frankincense, concludeth not the number of their persons; for these were the commodities of their Country, and such as probably the Queen of Sheba in one person had brought before unto Solomon. So did not the sons of Jacob divide the present unto Joseph, but are conceived to carry one for them all, according to the expression of their father; Take of the best fruits of the land in your vessels, and carry down the man a present. And therefore their number being uncertain, what credit is to be given unto their names, Gaspar, Melchior, Balthazar, what to the charm thereof against the falling sickness, or what unto their habits, complexions, and corporall accidents, we must relie on their uncertain story, and received pourtraits of Collein.

Gaspar fert myrrham, &c.

Lastly, Although we grant them Kings, and three in number, yet could we not conceive that they were Kings of Collein. For though Collein were the chief City of the *Ubii*, then called *Ubiopolis*, and afterwards *Agrippina*, yet will no history inform us there were three Kings thereof. Beside, these being rulers in their Countries, and returning home, would have probably converted their subjects; but according unto Munster, their conversion was not wrought untill seventy years after by Maternus a disciple of Peter. And lastly, it is said that the wise men came from the East; but Collein is seated West-ward from Jerusalem; for Collein hath of longitude thirty four degrees; but Jerusalem seventy two.

And why of Collein.

The ground of all was this. These wise men or Kings, were probably of Arabia, and descended from Abraham by Keturah, who apprehending the mystery of this Starre, either by the Spirit of God, the prophesie of Balaam, the prophesie, which Suetonius mentions, received and constantly beleeved through all the East, that out of Jury one should come that should rule the whole world; or the divulged expectancy of the Jews from the expiring prediction of Daniel; were by the same conducted unto Judea, returned into their Country, and were after baptised by Thomas. From whence about three hundred years after, by Helena the Empresse their bodies were translated to Constantinople, From thence by Eustathius unto Millane, and at last by Renatus the Bishop unto Collein; where they are beleeved at present to remain, their monuments shown unto strangers, and having lost their Arabian titles, are crowned Kings of Collein.

Chap. IX.

Of the food of Iohn Baptist, Locusts and wilde honey.

Concerning the food of John Baptist in the wilderness, Locusts and wilde honey, lest popular opiniatrity should arise, we will deliver the chief opinions. The first conceiveth the Locusts here mentioned to be that fruit the Greeks name κερατιον, mentioned by Luke in the diet of the Prodigall son, the

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man do? Jesus saith unto him, If I will that he tarry until I come, what is that to thee? follow thou me; then went this saying abroad among the brethren that this disciple should not die.

Now the apprehension hereof hath been received either grossely and in the generall, that is, not distinguishing the manner or particular way of this continuation, in which sense probably the grosser and undiscerning party received it. Or more distinctly apprehending the manner of his immortality; that is, that John should never properly die, but be translated into Paradise, there to remain with Enoch and Elias until about the coming of Christ; and should be slain with them under Antichrist, according to that of the Apocalyps. I will give power unto my two witnesses, and they shall prophesie a thousand two hundred and threescore daies dries cloathed in sackcloth, and when they shall have finished their Testimony, the beast that ascendeth out of the bottomelesse pit, shall make war against them, and shall overcome them and kill them. Hereof, as Baronius observeth, within three hundred years after Christ, Hippolytus the Martyr was the first assertor, but hath been maintained by many since; by Metaphrastes, by Freculphus; but especially by Georgius Trapezuntius, who hath expresly treated upon this Text, and although he lived but in the last Century, did still affirm that John was not yet dead.

As for the grosse opinion that he should not die, it is sufficiently refuted by that which first occasioned it, that is the Scripture it self, and no further off, then the very subsequent verse: Yet Jesus said not unto him he should not die, but if I will that he tarry till I come, what is that to thee? and this was written by John himself whom the opinion concerned; and as is conceived many years after when Peter had suffered and fulfilled the prophecy of Christ.

For the particular conceit, the foundation is weak, nor can it be made out from the Text alledged in the Apocalyps: for beside that therein two persons are only named, no mention is made of John a third Actor in this Tragedy. The same is overthrown by History, which recordeth not only the death of John, but assigneth the place of his buriall, that is Ephesus a city in Asia minor; whither after he had been banished into Patmos by Domitian, he returned in the reign of Nerva, there deceased, and was buried in the daies of Trajan. And this is testified by Jerome *de Scriptoribus Ecclesiasticis*, by Tertullian *de Anima*, by Chrysostome, and by Eusebius, in whose daies his Sepulchre was to be seen; and by a more ancient Testimony alledged also by him, that is of Polycrates Bishop of Ephesus, not many successions after John; whose words are these in an Epistle unto Victor Bishop of Rome, *Johannes ille qui supra pectus Domini recumbebat, Doctor optimus, apud Ephesum dormivit*; many of the like nature are noted by Baronius, Jansenius, Estius, Lipellous and others.

The death of St John Evangelist, where and when.

Now the main and primitive ground of this errour, was a grosse mistake in the words of Christ, and a false apprehension of his meaning; understanding that positively which was but conditionally expressed, or receiving that affirmatively which was but concessively delivered. For the words of our Saviour run in a doubtfull strain, rather reprehending then satisfying the curiosity of Peter; as though he should have said, Thou hast thine own doom, why enquirest thou after thy brothers? what relief unto thy affliction will be the society of anothers? why pryest thou into the secrets of Gods judgements? if he stay until I come, what concerneth it thee who shalt be sure to suffer before that time? and such an answer probably he returned because he foreknew John should not suffer a violent death, but go unto his grave in

in peace. Which had Peter assuredly known, it might have cast some water on his flames, and smothered those fires which kindled after unto the honour of his Master.

Now why among all the rest John only escaped the death of a Martyr, the reason is given; because all other fled away or withdrew themselves at his death, and he alone of the Twelve beheld his passion on the Crosse. Wherein notwithstanding, the affliction that he suffered could not amount unto lesse then Martyrdome: for if the naked relation, at least the intentive consideration of that passion, be able still and at this disadvantage of time, to rend the hearts of pious contemplators; surely the near and sensible vision thereof must needs occasion agonies beyond the comprehension of flesh; and the trajections of such an object more sharpely pierce the martyr'd soul of John, then afterward did the nayls the crucifyed body of Peter.

Of all the Apostles S. Iohn only is thought to have suffered a naturall death. And why?

Again, They were mistaken in the Emphaticall apprehension, placing the consideration upon the words, If I will, whereas it properly lay in these, when I come. Which had they apprehended as some have since, that is, not for his ultimate and last return, but his coming in judgement and destruction upon the Jews; or such a coming as it might be said, that that generation should not passe before it was fulfilled: they needed not, much lesse need we suppose such diuturnity. For after the death of Peter, John lived to behold the same fulfilled by Vespasian: nor had he then his *Nunc dimittis*, or went out like unto Simeon; but old in accomplisht obscurities, and having seen the expire of Daniels prediction, as some conceive, he accomplished his Revelation.

But besides this originall and primary foundation, divers others have made impressions according unto different ages and persons by whom they were received. For some established the conceit in the disciples and brethren, which were contemporary unto him, or lived about the same time with him; and this was first the extraordinary affection our Saviour bare unto this disciple, who hath the honour to be called the disciple whom Jesus loved. Now from hence they might be apt to believe their Master would dispense with his death, or suffer him to live to see him return in glory, who was the only Apostle that beheld him to die in dishonour. Another was, the belief and opinion of those times that Christ would suddenly come; for they held not generally the same opinion with their successors, or as descending ages after so many Centuries; but conceived his coming would not be long after his passion, according unto severall expressions of our Saviour grossely understood, and as we finde the same opinion not long after reprehended by S. Paul: and thus conceiving his coming would not be long, they might be induced to believe his favorite should live unto it. Lastly, the long life of John might much advantage this opinion; for he survived the other Twelve, he was aged 22 years when he was called by Christ, and 25 that is the age of Priesthood at his death, and lived 93 years, that is 68 after his Saviour, and died not before the second year of Trajane. Now having outlived all his fellows, the world was confirmed he might live still, and even unto the coming of his Master.

Thess. 2.

S. Iohn how long surviving our B. Saviour.

The grounds which promoted it in succeeding ages, were especially two. The first his escape of martyrdome: for whereas all the rest suffered some kinde of forcible death, we have no history that he suffered any; and men might think he was not capable thereof. For as History hath related, by the command of Domitian he was cast into a Caldron of burning oyl, and came out again unsinged. Now future ages apprehending he suffered no violent death, and

finding alſo the means that tended thereto could take no place, they might be confirmed in their opinion that death had no power over him, and eaſily beleeve he might live alwaies who could not be deſtroied by fire, and reſiſt the fury of that element which nothing ſhall reſiſt. The ſecond was a corruption crept into the Latine Text, reading for *Si, Sic cum manere volo*; whereby the anſwer of our Saviour becometh poſitive, or that he will have it ſo; which way of reading was much received in former ages, and is ſtill retained in the vulgar Tranſlation; but in the Greek and originall, the word is ἐὰν, ſignifying *Si* or if, which is very different from ὅτω, and cannot be tranſlated for it: and anſwerable hereunto is the tranſlation of Junius and Tremellius, and that alſo annexed unto the Greek by the authority of *Sixtus quintus*.

The third confirmed it in ages farther deſcending, and proved a powerfull argument unto all others following; that in his tomb at Epheſus there was no corps or relique thereof to be found; whereupon ariſed divers doubts, and many ſuſpitious conceptions; ſome beleeving he was not buried, ſome that he was buried but riſen again, others that he deſcended alive into his tomb, and from thence departed after, But all theſe proceeded upon unveritable grounds, as Baronius hath obſerved; who alledgeth a letter of Celeſtine Biſhop of Rome, unto the Councel of Epheſus, wherein he declareth the reliques of John were highly honoured by that City; and a paſſage alſo of Chryſoſtome in the Homilies of the Apoſtles, That John being dead did cures in Epheſus, as though he were ſtill alive. And ſo I obſerve that Eſthius diſcuſſing this point concludeth hereupon, *Quod corpus ejus nunquam reperiatur, hoc non dicerent ſi veterum ſcripta diligenter perluſtraſſent.*

Now that the firſt ages after Chriſt, thoſe ſucceeding, or any other ſhould proceed into opinions ſo far divided from reaſon, as to think of immortality after the fall of Adam, or conceit a man in theſe later times ſhould out-live our fathers in the firſt; although it ſeem very ſtrange, yet is it not incredible. For the credulity of men hath been deluded into the like conceits; and as Ireneus and Tertullian mention, one Menander a Samaritan obtained belief in this very point; whoſe doctrine it was that death ſhould have no power on his diſciples, and ſuch as received his baptiſm ſhould receive immortality therewith. 'Twas ſurely an apprehenſion very ſtrange; nor uſually falling either from the abſurdities of Melancholy or vanities of ambition. Some indeed have been ſo affectedly vain as to counterfeit Immortality, and have ſtolen their death in a hope to be eſteemed immortall; and others have conceived themſelves dead: but ſurely few or none have fallen upon ſo bold an errour, as not to think that they could die at all. The reaſon of thoſe mighty ones, whoſe ambition could ſuffer them to be called gods, would never be flattered into immortality; but the proudeſt thereof have by the daily dictates of corruption convinced the impropriety of that appellation. And ſurely, although deluſion may run high, and poſſible it is that for a while a man may forget his nature, yet cannot this be durable; for the inconcealable imperfections of our ſelves, or their daily examples in others, will hourly prompt us our corruption, and loudly tell us we are the ſons of earth.

CHAP.

Chap. XI.

More compendiously of some others.

Many others there are which we resign unto Divinity, and perhaps deserve not controversie. Whether David were punished only for pride of heart in numbring the people, as most doe hold, or whether as Josephus and many maintain, he suffered also for not performing the commandment of God concerning capitation; that when the people were numbred, for every head they should pay unto God a shekell, we shall not here contend. Exod. 30. Surely, if it were not the occasion of this plague, we must acknowledge the omission thereof was threatned with that punishment, according to the words of the Law. When thou takest the summe of the children of Israel, then shall they give every man a ransome for his soul unto the Lord, that there be no plague amongst them. Now, how deeply hereby God was defrauded in the time of David, and opulent State of Israel, will easily appear by the summes of former lustrations. For in the first, the silver of them that Exod. 38. were numbred was an hundred Talents, and a thousand seven hundred threescore and fifteen shekels; a Bekah for every man, that is, half a shekel, after the shekel of the Sanctuary; for every one from twenty years old and upwards, for six hundred thousand, and three thousand and five hundred and fifty men. Answerable whereto we reade in Josephus, Vespasian ordered that every man of the Jews should bring into the Capitoll two dragmes; which amounts unto fifteen pence, or a quarter of an ounce of silver with us; and is equivalent unto a Bekah, or half a shekel of the Sanctuary. For, an Attick dragme is seven pence half-peny, or a quarter of a shekel, and a didrachmum or double dragme, is the word used for Tribute money, or half a shekel; and a stater the money found in the fishes mouth was two Didrachmums, or an whole shekel, and tribute sufficient for our Saviour and for Peter.

What the Attick dragme is. What the didrachmum, and the stater, Matth. 17 27.

We will not question the Metamorphosis of Lots wife, or whether she were transformed into a reall statua of Salt: though some conceive that expression Metaphoricall, and no more thereby then a lasting and durable columne; according to the nature of Salt, which admitteth no corruption; in which sense the Covenant of God is termed a Covenant of Salt; and it is also said, God gave the kingdome unto David for ever, or by a Covenant of Salt.

That Absalom was hanged by the hair of the head, and not caught up by the neck, as Josephus conceiveth, and the common argument against long hair affirmeth, we are not ready to deny. Although I confesse a great and learned party there are of another opinion; although if he had his Morion or Helmet on, I could not well conceive it; although the Translation of Jerome or Tremellius doe not prove it, and our own seems rather to overthrow it.

That Judas hanged himself, much more, that he perished thereby, we shall not raise a doubt. Although Jansenius discoursing the point, produceth the testimony of Theophylact and Euthymius, that he died not by the Gallowes, but under a Cart wheele; and Baronius also delivereth this was the opinion of the Greeks; and derived as high as Papias, one of the Disciples of John; although how hardly the expression of Matthew is reconcilable unto that of Peter, and that he plainly hanged himself, with that that

How Iudas might die.

falling headlong he burſt aſunder in the midſt, with many other, the learned Grotius plainly doth acknowledge. And laſtly, although as he alſo urgeth, the word ἀπήγξατο in Matthew, doth not only ſignifie ſuſpenſion, or pendulous illaqueation, as the common picture deſcribeth it, but alſo ſuffocation, ſtrangulation or interception of breath; which may ariſe from grief, deſpair, and deep dejection of ſpirit, in which ſenſe it is uſed in the hiſtory of Tobit concerning Sara, ἐλυπήθη σφόδρα ὥστε ἀπάγξασθαι. *Ita triſtata eſt ut ſtrangulatione premeretur*, ſaith Junius; and ſo might it happen from the horrour of minde unto Judas. So doe many of the Hebrews affirm, that Achitophel was alſo ſtrangled, that is, not from the rope, but paſſion. For the Hebrew and Arabick word in the Text not only ſignifies ſuſpenſion, but indignation, as Grotius hath alſo obſerved.

Strangulat inclusus dolor.

Many more there are of indifferent truths, whoſe dubious expoſitions worthy Divines and Preachers doe often draw into wholeſome and ſober uſes, whereof we ſhall not ſpeak; with induſtry we decline ſuch paradoxes; and peaceably ſubmit unto their received acceptions.

Chap. XII.

Of the ceſſation of Oracles.

That Oracles ceaſed or grew mute at the coming of Chriſt, is beſt underſtood in a qualified ſenſe and not without all latitude; as though preciſely there were none after, nor any decay before. For (what we muſt confeſſe unto relations of Antiquity) ſome pre-decay is obſervable from that of Cicero urged by Baronius; *Cur iſto modo jam oracula Delphis non eduntur, non modo noſtra ætate, ſed jam diu, ut nihil poſſit eſſe contemptius.* That during his life they were not altogether dumb, is deduceable from Suetonius in the life of Tiberius, who attempting to ſubvert the Oracles adjoining unto Rome, was deterred by the Lots or Chances which were delivered at Preneſte. After his death we meet with many; Suetonius reports, that the Oracle of Autium forewarned Caligula to beware of Caſſius, who was one that conſpired his death. Plutarch enquiring why the Oracles of Greece ceaſed, excepteth that of Lebadia; and in the ſame place Demetrius affirmeth the Oracles of Mopſus and Amphilochus were much frequented in his daies. In brief, hiſtories are frequent in examples, and there want not ſome even to the reign of Julian.

What therefore may conſiſt with hiſtory; by ceſſation of Oracles with Montacutius we may underſtand their interciſion, not abſciſſion or conſummate deſolation; their rare delivery, not totall dereliction: and yet in regard of divers Oracles, we may ſpeak ſtrictly, and ſay there was a proper Ceſſation. Thus may we reconcile the accounts of times, and allow thoſe few and broken Divinations, whereof we reade in ſtory and undeniable Authors. For that they received this blow from Chriſt, and no other cauſes alledged by the Heathens; from oraculous confeſſion they cannot deny; whereof upon record there are ſome very remarkable. The firſt that Oracle of Delphos delivered unto Auguſtus.

Me puer Hebræus Divos Deus ipſe gubernans
Cedere ſede jubet, triſtemq; redire ſub orcum;
Aris ergo dehinc tacitus diſcedito noſtris.

An

An Hebrew childe, a God all gods excelling,
To hell again commands me from this dwelling.
Our Altars leave in silence, and no more
A resolution e're from hence implore.

A second recorded by Plutarch, of a voice that was heard to cry unto Mariners at the Sea, *Great Pan is dead*; which is a relation very remarkable, and may be read in his defect of Oracles. A third reported by Eusebius in the life of his magnified Constantine; that about that time Apollo mourned, declaring his Oracles were false, and that the righteous upon earth did hinder him from speaking truth. And a fourth related by Theodoret, and delivered by Apollo Daphnes unto Julian, upon his Persian Expedition, that he should remove the bodies about him, before he could return an answer, and not long after his Temple was burnt with Lightning.

All which were evident and convincing acknowledgements of that power which shut his lips; and restrained that delusion which had reigned so many Centuries. But as his malice is vigilant, and the sinnes of men doe still continue a toleration of his mischiefs, he resteth not, nor will he ever cease to circumvent the sonnes of the first deceived; and therefore expelled his Oracles and solemn Temples of delusion, he runnes into corners, exercising minor trumperies, and acting his deceits in Witches, Magicians, Diviners, and such inferiour seducers. And yet (what is deplorable) while we apply our selves thereto, and affirming that God hath left to speak by his Prophets, expect in doubtfull matters a resolution from such spirits; while we say the devil is mute, yet confesse that these can speak; while we deny the substance, yet practise the effect; and in the denied solemnity maintain the equivalent efficacy; in vain we cry that Oracles are down; Apollo's altar still doth smoke; nor is the fire of Delphos out unto this day.

The devils retreat when expelled the Oracles.

Impertinent it is unto our intention to speak in generall of Oracles, and many have well performed it. The plainest of others was that recorded by Herodotus and delivered unto Crœsus; who as a triall of his omniscience sent unto distant Oracles; and so contrived with the messengers, that though in severall places, yet at the same time they should demand what Crœsus was then a doing. Among all others the Oracle of Delphos only hit it; returning answer, he was boyling a Lamb with a Tortoyse, in a brazen vessell with a cover of the same metall. The stile is haughty in Greek, though somewhat lower in Latine,

Æquoris est spatium & numerus mihi notus arenæ,
Mutum percipio, fantis nihil audio vocem.
Venit ad hos sensus nidor testudinis acris,
Quæ semel agninâ coquitur cum carne labete,
Ære infra strato & stratum cui desuper æs est.

I know the space of Sea, the number of the sand,
I hear the silent, mute I understand.
A tender Lamb joyned with Tortoise flesh,
Thy Master King of Lydia now doth dresse.
The sent thereof doth in my nostrils hover
From brazen pot closed with brazen cover.

Hereby indeed he acquired much wealth and more honour, and was reputed by Crœsus as a Diety: and yet not long after, by a vulgar fallacy he deceived his favourite and greatest friend of Oracles into an irreparable overthrow by Cyrus. And surely the same successe are likely all to have that rely or

depend upon him; 'twas the first play he practised on mortality, and as time hath rendred him more perfect in the Art, so hath the inveteratenesse of his malice more ready in the execution. 'Tis therefore the sovereign degree of folly, and a crime not only against God, but also our own reasons, to expect a favour from the devil, whose mercies are more cruell then those of Polyphemus; for he devours his favourites first, and the nearer a man approacheth, the sooner he is scorched by Moloch. In brief, his favours are deceitfull and double-headed, he doth apparent good, for reall and convincing evil after it; and exalteth us up to the top of the Temple, but to humble us down from it.

Chap. XIII.

Of the death of Aristotle.

THat Aristotle drowned himself in Euripus as despairing to resolve the cause of its reciprocation, or ebbe and flow seven times a day, with this determination, *Si quidem ego non capio te, tu capies me*, was the assertion of Procopius, Nazianzen, Justine Martyr, and is generally beleeved amongst us. Wherein, becaus we perceive men have but an imperfect knowledge, some conceiving Euripus to be a River, others not knowing where or in what part to place it, we first advertise, it generally signifieth any strait, fret, or channell of the Sea, running between two shoares, as Julius Pollux hath defined it; as we reade of Euripus Hellespontiacus, Pyrrhæus, and this whereof we treat, Euripus Euboicus or Chalcidicus; that is, a narrow passage of Sea dividing Attica and the Island of Eubæa, now called *Golfo de Negroponte*, from the name of the Island and chief City thereof, famous in the warres of Antiochus, and taken from the Venetians by Mahomet the great.

What an Euripus is generally.

Now that in this Euripe or fret of Negropont, and upon the occasion mentioned, Aristotle drowned himself, as many affirm, and almost all beleeve, we have some room to doubt. For without any mention of this, we finde two waies delivered of his death by Diogenes Laertius, who expressely treateth thereof, the one from Eumolus and Phavorinus, that being accused of impiety for composing an Hymne unto Hermias (upon whose Concubine he begat his sonne Nichomachus) he withdrew into Chalcis, where drinking poison he died: the Hymne is extant in Laertius, and the fifteenth book of Athenæus. Another by Apollodorus, that he died at Chalcis of a naturall death and languishment of stomack, in his sixty three, or great Climacterical year; and answerable hereto is the account of Suidas and Censorinus. And if that were cleerly made out, which Rabbi Ben Joseph affirmeth, he found in an Ægyptian book of Abraham Sapiens Perizol; that Aristotle acknowledged all that was written in the Law of Moses and became at last a Proselyte; it would also make improbable this received way of his death.

Touching the death of Aristotle.

Licetus *de quæstis, epist.*

Again, Beside the negative of Authority, it is also deniable by reason; nor will it be easie to obtrude such desperate attempts upon Aristotle, from unsatisfaction of reason, who so often acknowledged the imbecillity thereof. Who in matters of difficulty, and such which were not without abstrusities, conceived it sufficient to deliver conjecturalities. And surely he that could sometimes sit down with high improbabilities, that could content himself,

and

and think to satisfie others, that the variegation of Birds was from their living in the Sunne, or erection made by deliberation of the Testicles; would not have been dejected unto death with this. He that was so well acquained with ἢ ὅτι, and πότερον *utrum*, and *An Quia*, as we observe in the Queries of his Problems; with ἴσως and ὅτι τὸ πολύ, *forte esse* and *plerumq;*, as is observable through all his Works; had certainly rested with probabilities, and glancing conjectures in this: Nor would his resolutions have ever runne into that mortall Antanaclasis, and desperate piece of Rhetorick, to be compriz'd in that he could not comprehend. Nor is it indeed to be made out he ever endeavoured the particular of Euripus, or so much as to resolve the ebbe and flow of the Sea. For, as Vicomercatus and others observe, he hath made no mention hereof in his Works, although the occasion present it self in his Meteors; wherein he disputeth the affections of the Sea: nor yet in his Problemes, although in the twenty third Section, there be no lesse then one and fourty Queries of the Sea. Some mention there is indeed in a Work of the propriety of Elements, ascribed unto Aristotle; which notwithstanding is not reputed genuine, and was perhaps the same whence this was urged by Plutarch, *De placitis Philosophorum.*

Lastly, The thing it self whereon the opinion dependeth, that is, the variety of the flux and reflux of Euripus, or whether the same do ebbe and flow seven times a day, is not incontrovertible; For though Pomponius Mela, and after him Solinus and Pliny have affirmed it, yet I observe Thucydides, who speaketh often of Eubæa, hath omitted it, Pausanias an ancient Writer, who hath left an exact description of Greece, and in as particular a way as Leandro of Italy, or Cambden of great Britain, describing not only the Countrey Towns, and Rivers, but hils, springs, and houses, hath left no mention hereof. Æschines in Ctesiphon only alludeth unto it; and Strabo that accurate Geographer speaks warily of it, that is, ὡς φασι, and as men commonly reported. And so doth also Maginus, *Velocis ac varij fluctus est mare, ubi quater in die, aut septies, ut alij dicunt, reciprocantur æstus.* Botero more plainly, *Il mar cresce e cala con un impeto mirabile quatra volte il di, ben che communimente si dica sette volte,* &c. This sea with wondrous impetuosity ebbeth and floweth four times a day, although it be commonly said seven times, and generally opinion'd, that Aristotle despairing the reason, drowned himself therein. In which description by four times a day, it exceeds not in number the motion of other Seas, taking the words properly, that is, twice ebbing and twice flowing in four and twenty hours. And is no more then what *Thomaso Porrcacchi* affirmeth, in his description of famous Islands, that twice a day it hath such an impetuous floud, as is not without wonder. Livy speaks more particularly, *Haud facile infestior classi statio est & fretum ipsum Euripi, non septies die (sicut fama fert) temporibus certis reciprocat, sed temerè in modum venti, nunc huc nunc illuc verso mari, velut monte præcipiti devolutus torrens rapitur.* There is hardly a worse harbour, the fret or channell of Euripus not certainly ebbing or flowing seven times a day, according to commonreport; but being uncertainly, and in the manner of a winde carried hither and thither, is whirled away as a torrent down a hill. But the experimentall testimony of Gillius is most considerable of any; who having beheld the course thereof, and made enquiry of Millers that dwelt upon its shore, received answer, that it ebbed and flowed four times a day, that is, every six hours, according to the Law of the Ocean; but that indeed sometimes it observed not that certain course. And this irregularity though seldome happening, together with its unruly and tumultuous motion, might afford a beginning unto the common opinion. Thus may the expression in Ctesiphon be made

made out; And by this may Aristotle be interpreted, when in his Problemes he seems to borrow a Metaphor from Euripus: while in the five and twentieth Section he enquireth, why in the upper parts of houses the air doth Euripize, that is, is whirled hither and thither.

Now that which gave life unto the assertion, might be his death at Chalcis, the chief City of Eubæa, and seated upon Euripus, where 'tis confessed by all he ended his daies. That he emaciated and pined away in the too anxious enquiry of its reciprocations, although not drowned therein, as Rhodiginus relateth some conceived, was a half confession thereof not justifiable from Antiquity. Surely the Philosophy of flux and reflux was very imperfect of old among the Greeks and Latines; nor could they hold a sufficient theory thereof, who only observed the Mediterranean, which in some places hath no ebbe, and not much in any part. Nor can we affirm our knowledge is at the height, who have now the Theory of the Ocean and narrow Seas beside. While we referre it unto the Moon, we give some satisfaction for the Ocean, but no generall salve for Creeks, and Seas which know no floud; nor resolve why it flows three or four foot at Venice in the bottome of the Gulf, yet scarce at all at Ancona, Durazzo, or Corcyra, which lie but by the way. And therefore old abstrusities have caused new inventions; and some from the Hypotheses of Copernicus or the Diurnall and annuall motion of the earth, endeavour to salve the flows and motions of these seas, illustrating the same by water in a boal, that rising or falling to either side, according to the motion of the vessell; the conceit is ingenuous, salves some doubts, and is discovered at large by Galilæo in his Systeme of the world.

Reg. Bac. de Artif. Cæcus Met. 2.

But whether the received principle and undeniable action of the Moon may not be still retained, although in some difference of application, is yet to be perpended; that is, not by a simple operation upon the surface or superiour parts, but excitation of the nitro-sulphureous spirits, and parts disposed to intumescency at the bottom; not by attenuation of the upper part of the sea, (whereby ships would draw more water at the flow then at the ebbe) but inturgescencies caused first at the bottome, and carrying the upper part before them: subsiding and falling again, according to the motion of the Moon from the Meridian, and languor of the exciting cause: and therefore Rivers and Lakes who want these fermenting parts at the bottome, are not excited unto æstuations: and therefore some Seas flow higher then others, according to the Plenty of these spirits, in the submarine constitutions; And therefore also the periods of flux and reflux are various, nor their encrease and decrease equall: according to the temper of the terreous parts at the bottome; who as they are more hardly or easily moved, do variously begin, continue or end their intumescencies.

How the Moon may cause the ebbing and flowing of Sea.

Why Rivers and Lakes ebbe and flow not.

Why some Seas flow higher then others, and continue longer.

From the peculiar disposition of the earth at the bottome, wherein quick excitations are made, may arise those Agars and impetuous flows in some æstuaries and Rivers, as is observable about Trent and Humber in England, which may also have some effect in the boisterous tides of Euripus, not only from ebullitions at the bottome, but also from the sides and laterall parts, driving the streams from either side, which arise or fall according to the motion in those parts, and the intent or remisse operation of the first exciting causes, which maintain their activities above and below the Horizon: even as they do in the bodies of plants and animals, and in the commotion of Catarrhes.

Whence the violent flows proceed in some Æstuaries and Rivers.

However therefore Aristotle died, what was his end, or upon what occasion, although it be not altogether assured; yet that his memory and worthy name shall live, no man will deny, nor gratefull scholar doubt: and if according

ding to the Elogie of Solon, a man may be only ſaid to be happy after he is dead, and ceaſeth to be in the viſible capacity of beatitude: or if according unto his own Ethicks, ſenſe is not eſſentiall unto felicity, but a man may be happy without the apprehenſion thereof; ſurely in that ſenſe he is pyramidally happy; nor can he ever periſh but in the Euripe of Ignorance, or till the Torrent of Barbariſm overwhelm all.

A like conceit there paſſeth of Meliſigenes, *alias* Homer, the father Poet, that he pined away upon the Riddle of the fiſhermen. But Herodotus who wrote his life hath cleared this point; delivering that paſſing from Samos unto Athens, he went ſick aſhore upon the Iſland Jos, where he died, and was ſolemnly interred upon the Sea ſide; and ſo decidingly concludeth, *Ex hoc ægritudine extremum diem clauſit Homerus in Jo, non, ut arbitrantur aliqui, Ænigmatis perplexitate enectus, ſed morbo.* Homers death.

CHAP. XIV.

Of the Wiſh of Philoxenus.

THat relation of Ariſtotle and conceit generally received concerning Philoxenus, who wiſhed the neck of a Crane, that thereby he might take more pleaſure in his meat, although it paſſe without exception, upon enquiry I finde not only doubtfull in the ſtory, but abſurd in the deſire or reaſon alledged for it. For though his Wiſh were ſuch as is delivered, yet had it not perhaps that end, to delight his guſt in eating; but rather to obtain advantage thereby in ſinging, as is declared by Mirandula. Ariſtotle (ſaith he) in his Ethicks and Problems, accuſeth Philoxenus of ſenſuality, for the greater pleaſure of guſt deſiring the neck of a Crane; which deſire of his, aſſenting unto Ariſtotle, I have formerly condemned; But ſince I perceive that Ariſtotle for this accuſation hath been accuſed by divers Writers. For Philoxenus was an excellent Muſician, and deſired the neck of a Crane, not for any pleaſure at meat; but fancying thereby an advantage in ſinging or warbling, and dividing the notes in muſick. And indeed, many Writers there are which mention a Muſician of that name, as Plutarch in his book againſt Uſury, and Ariſtotle himſelf in the eighth of his Politicks, ſpeaks of one Philoxenus a Muſician, that went off from the Dorick Dytherambicks unto the Phrygian Harmony.

Again, Be the ſtory true or falſe, rightly applied or not, the intention is not reaſonable, and that perhaps neither one way nor the other. For, if we rightly conſider the organ of taſte, we ſhall finde the length of the neck to conduce but little unto it. For the tongue being the inſtrument of taſte, and the tip thereof the moſt exact diſtinguiſher, it will not advantage the guſt to have the neck extended; wherein the Gullet and conveying parts are only ſeated, which partake not of the nerves of guſtation or appertaining unto ſapor, but receive them only from the ſixth pair; whereas the nerves of taſte deſcend from the third and fourth propagations, and ſo diffuſe themſelves into the tongue. And therefore Cranes, Herns and Swans, have no advantage in taſte beyond Hawks, Kites, and others of ſhorter necks.

Nor, if we conſider it, had Nature reſpect unto the taſte in the different contrivance of necks, but rather unto the parts contained, the compoſure of the reſt of the body, and the manner whereby they feed. Thus animals of

long legs; have generally long necks; that is, for the conveniency of feeding, as having a neceſſity to apply their mouths unto the earth. So have Horſes, Camels, Dromedaries long necks, and all tall animals, except the Elephant, who in defect thereof is furniſhed with a Trunk, without which he could not attain the ground. So have Cranes, Herns, Storks and Shovelards long necks; and ſo even in Man whoſe figure is erect, the length of the neck followeth the proportion of other parts; and ſuch as have round faces, or broad cheſts and ſhoulders, have ſeldome or never long necks. For, the length of the face twice exceedeth that of the neck, and the ſpace betwixt the throat pit and the navell is equall unto the circumference thereof. Again, animals are framed with long necks, according unto the courſe of their life or feeding: ſo many with ſhort legges have long necks, becauſe they feed in the water, as Swans, Geeſe, Pelicans, and other fin-footed animals. But Hawks and birds of prey have ſhort necks and truſſed legges; for that which is long is weak and flexible, and a ſhorter figure is beſt accommodated unto that intention. Laſtly, the necks of animals do vary, according to the parts that are contained in them, which are the weazon and the gullet. Such as have no weazon and breathe not, have ſcarce any neck, as moſt ſorts of fiſhes; and ſome none at all, as all ſorts of pectinals, Soales, Thornback, Flounders; and all cruſtaceous animals, as Creviſes, Crabs and Lobſters.

All which conſidered, the Wiſh of Philoxenus will hardly conſiſt with reaſon. More excuſable had it been to have wiſhed himſelf an Ape, which if common conceit ſpeak true, is exacter in taſte then any. Rather ſome kinde of granivorous bird then a Crane, for in this ſenſe they are ſo exquiſite, that upon the firſt peck of their bill, they can diſtinguiſh the qualities of hard bodies; which the ſenſe of man diſcerns not without maſtication. Rather ſome ruminating animall, that he might have eat his meat twice over; or rather, as Theophilus obſerved in Athenæus, his deſire had been more reaſonable, had he wiſhed himſelf an Elephant, or an Horſe; for in theſe animals the appetite is more vehement, and they receive their viands in large and plenteous manner. And this indeed had been more ſutable, if this were the ſame Philoxenus whereof Plutarch ſpeaketh; who was ſo uncivilly greedy, that to engroſſe the meſſe, he would preventively deliver his noſtrils in the diſh.

As for the muſicall advantage, although it ſeem more reaſonable, yet do we not obſerve that Cranes and birds of long necks have any muſicall, but harſh and clangous throats. But birds that are canorous and whoſe notes we moſt commend, are of little throats and ſhort necks, as Nightingales, Finches, Linnets, Canary birds and Larks. And truly, although the weazon, throtle and tongue be the inſtruments of voice, and by their agitations do chiefly concurre unto theſe delightfull modulations, yet cannot we aſſign the cauſe unto any particular formation; and I perceive the beſt thereof, the Nightingale, hath ſome diſadvantage in the tongue; which is not acuminate and pointed as in the reſt, but ſeemeth as it were cut off; which perhaps might give the hint unto the fable of Philomela, and the cutting off her tongue by Tereus.

Chap. XV.

Of the Lake Asphaltites.

Concerning the Lake Asphaltites, the Lake of Sodome, or the dead Sea, that heavy bodies caſt therein ſink not, but by reaſon of a ſalt and bituminous thickneſſe in the water float and ſwimmo above, narrations already made are of that variety, we can hardly from thence deduce a ſatisfactory determination; and that not only in the ſtory it ſelf, but in the cauſe alledged. As for the ſtory, men deliver it variouſly; ſome I fear too largely, as Pliny, who affirmeth that bricks will ſwimme therein. Mandevill goeth farther, that Iron ſwimmeth, and feathers ſink. Munſter in his Coſmography hath another relation, although perhaps derived from the Poem of Tertullian, that a candle burning ſwimmeth, but if extinguiſhed ſinketh. Some more moderately, as Joſephus, and many other; affirming only that living bodies float, nor peremptorily averring they cannot ſink, but that indeed they doe not eaſily deſcend. Moſt traditionally, as Galen, Pliny, Solinus and Strabo, who ſeems to miſtake the Lake Serbonis for it. Few experimentally, moſt contenting themſelves in the experiment of Veſpaſian, by whoſe command ſome captives bound were caſt therein and found to float as though they could have ſwimmed: divers contradictorily, or contrarily, quite overthrowing the point. Ariſtotle in the ſecond of his Meteors ſpeaks lightly thereof, ὡσεὶ μυθικῶς, and eſteemeth thereof as a fable. Biddulphus divideth the common accounts of Judea into three parts, the one ſaith he are apparent truths, the ſecond apparent falſehoods, the third are dubious or between both; in which forme he ranketh the relation of this Lake. But Andrew Thevet in his Coſmography doth ocularly overthrow it; for he affirmeth, he ſaw an Aſſe with his ſaddle caſt therein and drowned. Now of theſe relations ſo different or contrary unto each other, the ſecond is moſt moderate, and ſafeſt to be embraced, which ſaith, that living bodies ſwim therein, that is, they doe not eaſily ſink: and this, untill exact experiment further determine, may be allowed, as beſt conſiſtent with this quality, and the reaſons alledged for it.

V. Tu doctas licet.

As for the cauſe of this effect, common opinion conceives it to be the ſalt and bituminous thickneſſe of the water. This indeed is probable, and may be admitted as farre as the ſecond opinion concedeth. For, certain it is that ſalt water will ſupport a greater burden then freſh; and we ſee an egge will deſcend in ſalt water, which will ſwimme in brine. But that Iron ſhould float therein, from this cauſe is hardly granted; for heavy bodies will only ſwimme in that liquor, wherein the weight of their bulk exceedeth not the weight of ſo much water as it occupieth or taketh up. But ſurely no water is heavy enough to anſwer the ponderoſity of Iron; and therefore that metall will ſink in any kinde thereof, and it was a perfect miracle which was wrought this way by Eliſha. Thus we perceive that bodies doe ſwim or ſink in different liquors, according unto the tenuity or gravity of thoſe liquors which are to ſupport them. So ſalt water beareth that weight which will ſink in vineger, vineger that which will fall in freſh water, freſh water that which will ſink in ſpirits of Wine, and that will ſwimme in ſpirits of Wine which will ſink in cleer oyle; as we made experiment in globes of wax pierced with light ſticks to ſupport them. So that although it be conceived an hard matter to ſink in oyle, I beleeve a man ſhould finde it very difficult, and next to

Biddulphi itinerarium Anglice.

flying to swimme therein. And thus will Gold swimme in Quicksilver, wherein Iron and other metals sink; for the bulk of Gold is only heavier then that space of Quicksilver which it containeth; and thus also in a solution of one ounce of Quicksilver in two of *Aqua fortis*, the liquor will bear Amber, horn, and the softer kindes of stones, as we have made triall in each.

But a private opinion there is which crosseth the common conceit, maintained by some of late, and alledged of old by Strabo; that the floating of bodies in this Lake proceeds not from the thickneſse of the water, but a bituminous ebullition from the bottome, whereby it wafts up bodies injected, and suffereth them not easily to sink. The verity thereof would be enquired by ocular exploration, for this way is also probable. So we observe, it is hard to wade deep in baths where springs arise; and thus sometime are bals made to play upon a spouting stream.

And therefore, untill judicious and ocular experiment confirm or distinguish the assertion, that bodies doe not sink herein at all we doe not yet beleeve; that they not easily, or with more difficulty descend in this then other water, we shall readily assent. But to conclude an impossibility from a difficulty, or affirm whereas things not easily sink, they doe not drown at all; beside the fallacy, is a frequent addition in humane expression, and an amplification not unusuall as well in opinions as relations; which oftentimes give indistinct accounts of proximities, and without restraint transcend from one unto another. Thus, forasmuch as the torrid Zone was conceived exceeding hot, and of difficult habitation, the opinions of men so advanced its constitution, as to conceive the same unhabitable, and beyond possibility for man to live therein. Thus, because there are no Wolves in England, nor have been observed for divers generations, common people have proceeded into opinions, and some wise men into affirmations, they will not live therein although brought from other Countries. Thus most men affirm, and few here will beleeve the contrary, that there be no Spiders in Ireland; but we have beheld some in that Countrey; and though but few, some cobwebs we behold in Irish wood in England. Thus the Crocodile from an egge growing up to an exceeding magnitude, common conceit, and divers Writers deliver, it hath no period of encrease, but groweth as long as it liveth. And thus in brief, in most apprehensions the conceits of men extend the considerations of things, and dilate their notions beyond the propriety of their natures.

Chap. XVI.

Of divers other relations.

1. The relation of Averroes and now common in every mouth, of the woman that conceived in a bath, by attracting the sperme or seminall effluxion of a man admitted to bath in some vicinity unto her, I have scarce faith to beleeve; and had I been of the Jury, should have hardly thought I had found the father in the person that stood by her. 'Tis a new and unseconded way in History to fornicate at a distance; and much offendeth the rules of Physick, which say, there is no generation without a joynt emission, not only a virtuall but corporall and carnall contaction. And although Aristotle and his adherents doe cut off the one, who conceive

no

no effectuall ejaculation in women, yet in defence of the other they cannot be introduced: For, if as he delivereth, the inordinate longitude of the organ, though in its proper recipient, may be a means to improlificate the ſeed; ſurely the diſtance of place, with the commixture of an aqueous body, muſt prove an effectuall impediment, and utterly prevent the ſucceſſe of a conception. And therefore that conceit concerning the daughters of Lot, that they were impregnated by their ſleeping father, or conceived by ſeminall poſſution received at diſtance from him, will hardly be admitted. And therefore what is related of devils, and the contrived deluſions of ſpirits, that they ſteale the ſeminall emiſſions of man, and tranſmit them into their votaries in coition, is much to be ſuſpected; and altogether to be denied, that there enſue conceptions thereupon, however husbanded by Art, and the wiſeſt menagery of that moſt ſubtile impoſtor. And therefore alſo that our magnified Merlin was thus begotten by the devil, is a groundleſſe conception; and as vain to think from thence to give the reaſon of his propheticall ſpirit. For if a generation could ſucceed, yet ſhould not the iſſue inherit the faculties of the devil; who is but an auxiliary and no univocall Actor; Nor will his nature ſubſtantially concurre to ſuch productions.

Generations by the devil very improbable.

2. The relation of Lucillius, and now become common, concerning Craſſus the grandfather of Marcus the wealthy Roman, that he never laughed but once in all his life, and that was at an Aſſe eating Thiſtles, is ſomething ſtrange. For, if an indifferent and unridiculous object could draw his habituall auſtereneſſe unto a ſmile; it will be hard to beleeve he could with perpetuity reſiſt the proper motives thereof. For the act of laughter which is a ſweet contraction of the muſcles of the face, and a pleaſant agitation of the vocall organs, is not meerly voluntary; or totally within the juriſdiction of our ſelves: but as it may be conſtrained by corporall contaction in any, and hath been enforced in ſome even in their death; ſo the new unuſuall or unexpected jucundities, which preſent themſelves to any man in his life; at ſome time or other will have activity enough to excitate the earthieſt ſoul, and raiſe a ſmile from moſt compoſed tempers. Certainly the times were dull when theſe things happened, and the wits of thoſe Ages ſhort of theſe of ours, when men could maintain ſuch immutable faces, as to remain like ſtatues under the flatteries of wit, and perſiſt unalterable at all effortes of Jocularity. The ſpirits in hell, and Pluto himſelf, whom Lucian makes to laugh at paſſages upon earth, will plainly condemn theſe Saturnines; and make ridiculous the magnified Heraclitus, who wept prepoſterouſly, and made a hell on earth; for rejecting the conſolations of life, he paſſed his daies in tears, and the uncomfortable attendments of hell.

Laughter, what kinde of paſſion it is.

3. The ſame conceit there paſſeth concerning our bleſſed Saviour, and is ſometimes urged as an high example of gravity. And this is opinioned, becauſe in holy Scripture it is recorded he ſometimes wept, but never that he laughed. Which howſoever granted, it will be hard to conceive how he paſſed his younger years and childehood without a ſmile; if as Divinity affirmeth, for the aſſurance of his humanity unto men, and the concealment of his Divinity from the devil, he paſſed this age like other children, and ſo proceeded untill he evidenced the ſame. And ſurely no danger there is to affirm the act or performance of that, whereof we acknowledge the power and eſſentiall property; and whereby indeed he moſt neerly convinced the doubt of his humanity. Nor need we be afraid to aſcribe that unto the incarnate Sonne, which ſometimes is attributed unto the

uncarnate Father; of whom it is ſaid, He that dwelleth in the heavens ſhall laugh the wicked to ſcorn. For, a laugh there is of contempt or indignation, as well as of mirth and Jocoſity; And that our Saviour was not exempted from the ground hereof, that is, the paſſion of anger, regulated and rightly ordered by reaſon, the Schools doe not deny: and beſides the experience of the money-changers, and Dove-ſellers in the Temple, is teſtified by S^t John when he ſaith, the ſpeech of David was fulfilled in our Saviour.

Zelus domus tuæ comedit me.

Now the Alogie of this opinion conſiſteth in the illation; it being not reaſonable to conclude from Scripture negatively in points which are not matters of faith, and pertaining unto ſalvation. And therefore although in the deſcription of the creation there be no mention of fire, Chriſtian Philoſophy did not think it reaſonable preſently to annihilate that Element, or poſitively to decree there was no ſuch thing at all. Thus whereas in the brief narration of Moſes there is no record of wine before the floud, can we ſatisfactorily conclude that Noah was the firſt that ever taſted thereof? And thus becauſe the word Brain is ſcarce mentioned once, but Heart above an hundred times in holy Scripture; will Phyſitians that diſpute the principality of parts be induced from hence to bereave the animall organ of its priority? Wherefore the Scriptures being ſerious, and commonly omitting ſuch Parergies, it will be unreaſonable from hence to condemn all laughter, and from conſiderations inconſiderable to diſcipline a man out of his nature. For this is by a ruſticall ſeverity to baniſh all urbanity; whoſe harmleſſe and confined condition as it ſtands commended by morality; ſo is it conſiſtent with Religion, and doth not offend Divinity.

Only in the vulgar Latine Judg. 9 53.

4. The cuſtome it is of Popes to change their name at their creation; and the Author thereof is commonly ſaid to be *Bocca di Porco*, or Swines face, who therefore aſſumed the ſtile of Sergius the ſecond, as being aſhamed ſo foule a name ſhould diſhonour the chair of Peter; wherein notwithſtanding, from Montacutius and others I finde there may be ſome miſtake. For Maſſonius who writ the lives of Popes, acknowledgeth he was not the firſt that changed his name in that Sea; nor as Platina affirmeth, have all his ſucceſſors preciſely continued that cuſtome; for Adrian the ſixt, and Marcellus the ſecond, did ſtill retain their Baptiſmall denominations. Nor is it proved, or probable that Sergius changed the name of *Bocca di Porco*, for this was his ſirname or gentilitious appellation; nor was it the cuſtome to alter that with the other; but he commuted his Chriſtian name Peter for Sergius, becauſe he would ſeem to decline the name of Peter the ſecond. A ſcruple I confeſſe not thought conſiderable in other Seas, whoſe originalls and firſt Patriarchs have been leſſe diſputed; nor yet perhaps of that reality as to prevaile in points of the ſame nature. For the names of the Apoſtles, Patriarchs and Prophets have been aſſumed even to affectation; the name of Jeſus hath not been appropriate, but ſome in precedent ages have born that name, and many ſince have not refuſed the Chriſtian name of Emanuel. Thus are there few names more frequent then Moſes and Abraham among the Jewes; The Turkes without ſcruple affect the name of Mahomet, and with gladneſſe receive ſo honourable cognomination.

And truly in humane occurrences there ever have been many well directed intentions, whoſe rationalities will never bear a rigid examination; and though in ſome way they doe commend their Authors and ſuch as firſt began them, yet have they proved inſufficient to perpetuate imitation in ſuch as have ſucceeded them. Thus was it a worthy reſolution of Godfrey, and moſt Chriſtians

ſtians have applauded it, That he refuſed to wear a Crown of gold where his Saviour had worn one of thornes. Yet did not his Succeſſors durably inherit that ſcruple, but ſome were anointed, and ſolemnly accepted the Diademe of Regality. Thus Julius, Auguſtus and Tiberius with great humility or popularity refuſed the name of *Imperator*; but their Succeſſors have challenged that title, and retain the ſame even in its titularity. And thus, to come neerer our ſubject, the humility of Gregory the Great, would by no means admit the ſtile of Univerſall Biſhop; but the ambition of Boniface made no ſcruple thereof; nor of more queaſie reſolutions have been their Succeſſors ever ſince.

5. That Tamerlane was a Scythian Shepherd, from M. Knolls and others, from Alhazen a learned Arabian who wrote his life, and was ſpectator of many of his exploits, we have reaſons to deny. Not only for his birth, for he was of the bloud of the Tartarian Emperours, whoſe father Og had for his poſſeſſion the Countrey of Sagathy; which was no ſlender Territory, but comprehended all that tract wherein were contained Bactriana, Sogdiana, Margiana, and the Nation of the Maſſagetes; whoſe Capitall City was Samarcand; a place though now decaied, of great eſteem and trade in former ages. But from his Regall Inauguration, for it is ſaid, that being about the age of fifteen, his old father reſigned the Kingdome, and men of warre unto him. And alſo from his education; for as the ſtory ſpeaks it, he was inſtructed in the Arabian learning, and afterward exerciſed himſed himſelf therein. Now Arabian learning was in a manner all the liberall Sciences, eſpecially the Mathematicks, and naturall Philoſophy; wherein not many ages before him, there flouriſhed Avicenna, Averrhoes, Avenzoar, Geber, Almanzor and Alhazen, cognominall unto him that wrote his hiſtory; whoſe Chronology indeed, although it be obſcure, yet in the opinion of his Commentator, he was contemporary unto Avicenna, and hath left ſixteen books of Opticks, of great eſteem with ages paſt, and textuary unto our daies. Turkiſh Hiſtory.

Now the ground of this miſtake was ſurely that which the Turkiſh hiſtorian declareth. Some, ſaith he, of our hiſtorians will needs have Tamerlane to be ſon of a Shepherd. But this they have ſaid, not knowing at all the cuſtome of their Countrey; wherein the principall revenews of the King and Nobles conſiſteth in cattell; who deſpiſing gold and ſilver, abound in all ſorts thereof. And this was the occaſion that ſome men call them Shepheards, and alſo affirm this Prince deſcended from them. Now, if it be reaſonable, that great men whoſe poſſeſſions are chiefly in cattell, ſhould bear the name of Shepherds, and fall upon ſo low denominations; then may we ſay that Abraham was a Shepherd, although too powerfull for four Kings; that Job was of that condition, who beſide Camels and Oxen had ſeven thouſand Sheep; and yet is ſaid to be the greateſt man in the Eaſt. Thus was Meſha King of Moab a Shepherd, who annually paid unto the Crown of Iſrael, an hundred thouſand lambs and as many Rams. Surely it is no diſhonourable courſe of life which Moſes and Jacob have made exemplary; 'tis a profeſſion ſupported upon the naturall way of acquiſition, and though contemned by the Ægyptians, much countenanced by the Hebrews, whoſe ſacrifices required plenty of Sheep and Lambs. And certainly they were very numerous; for, at the conſecration of the Temple, beſide two and twenty thouſand Oxen, King Solomon ſacrificed an hundred and twenty thouſand Sheep; and the ſame is obſervable from the daily proviſion of his houſe; which was ten fat Oxen, twenty Oxen out of the paſtures, and an hundred Sheep, beſide row Buck, fallow Deer, and fatted Fowls. Wherein notwithſtanding (if a punctuall relation thereof do rightly inform us) the grand Seignior doth exceed;

The daily provision of the Seraglio.

ceed; the daily provision of whose Seraglio in the reign of Achmet, beside Beeves, consumed two hundred Sheep, Lambs and Kids when they were in season one hundred, Calves ten, Geese fifty, Hens two hundred, Chickens one hundred, Pigeons an hundred pair.

And therefore this mistake concerning the noble Tamerlane, was like that concerning Demosthenes, who is said to be the sonne of a Black-smith, according to common conceit and that handsome expression of Juvenal,

Quem pater ardentis massæ fuligine lippus,
A carbone & forcipibus, gladioq; parante
Incude, & luteo Vulcano ad Rhetora misit.

But Plutarch who writ his life hath cleared this conceit, plainly affirming he was most nobly descended, and that this report was raised, because his father had many slaves that wrought Smiths work, and brought the profit unto him.

Chap. XVII.

Of some others.

1. WE are sad when we reade the story of Belisarius that worthy Chieftain of Justinian; who, after the Victories of Vandals, Goths and Persians, and his Trophies in three parts of the World, had at last his eyes put out by the Emperour, and was reduced to that distresse, that he beg'd relief on the high way, in that uncomfortable petition, *Date obolum Belisario.* And this we do not only hear in discourses, Orations and Themes, but finde it also in the leaves of *Petrus Crinitus*, *Volaterranus* and other worthy Writers.

But, what may somewhat consolate all men that honour vertue, we do not discover the latter Scene of his misery in Authours of Antiquity, or such as have expresly delivered the story of those times. For, Suidas is silent herein, Cedrenus and Zonarus, two grave and punctuall Authours, delivering only the confiscation of his goods, omit the history of his mendication. *Paulus Diaconus* goeth farther, not only passing over this act, but affirming his goods and dignities were restored. Agathius who lived at the same time, declareth he suffered much from the envie of the Court: but that he descended thus deep into affliction, is not to be gathered from his pen. The same is also omitted by *Procopius* a contemporary and professed enemy unto Justinian and Belisarius, who hath left an opprobrious book against them both.

'Ανέκδοτα or *Arcana historia*

And in this opinion and hopes we are not single; but Andreas Alciatus the Civilian in his Parerga, and *Franciscus de Cordua* in his *Didascalia*, have both declaratorily confirmed the same, which is also agreeable unto the judgement of Nicolaus Alemannus, in his notes upon that bitter history of Procopius. Certainly sad and Tragicall stories are seldome drawn within the circle of their verities; but as their Relators do either intend the hatred or pity of the persons, so are they set forth with additionall amplifications. Thus have some suspected it hath happened unto the story of Oedipus; and thus do we conceive it hath fared with that of Judas; who having sinned beyond aggravation, and committed one villany which cannot be exasperated by all other; is yet charged with the murther of his reputed brother, parricide of his father, and Incest with his own mother; as Florilegus or Matthew of Westminster hath at large related. And thus hath it perhaps befallen the noble Belisarius,

Beliſarius, who, upon inſtigation of the Empreſſe, having contrived the exile, and very hardly treated Pope Serverius, Latine pens, as a judgement of God upon this fact, have ſet forth his future ſufferings: and omitting nothing of amplification, they have alſo delivered this; which notwithſtanding Johannes the Greek, makes doubtfull, as may appear from his Iambicks in Baronius, and might be a miſtake or miſapplication, tranſlating the affliction of one man upon another, for the ſame befell unto Johannes Cappadox, contemporary unto Beliſarius, and in great favour with Juſtinian; who being afterward baniſhed into Ægypt, was fain to beg relief on the high way.

Procop. bell. Perſic. 1. Ἄρτον ἢ ὀβολὸν αἰτῆσαι.

2. That *fluctus Decumanus*, or the tenth wave is greater and more dangerous then any other, ſome no doubt will be offended if we deny; and hereby we ſhall ſeem to contradict Antiquity; for, anſwerable unto the literall and common acception the ſame is averred by many Writers, and plainly deſcribed by Ovid,

Qui venit hic fluctus, fluctus ſupereminet omnes,
Poſterior nono eſt, undecimoq; prior.

Which notwithſtanding is evidently falſe; nor can it be made out by obſervation either upon the ſhoar or the Ocean, as we have with diligence explored in both. And ſurely in vain we expect a regularity in the waves of the Sea, or in the particular motions thereof, as we may in its generall reciprocations, whoſe cauſes are conſtant, and effects therefore correſpondent. Whereas its fluctuations are but motions ſubſervient; which windes, ſtorms, ſhoars, ſhelves, and every interjacency irregulates. With ſemblable reaſon we might expect a regularity in the windes; whereof though ſome be ſtatary, ſome anniverſary, and the reſt do tend to determinate points of heaven; yet do the blaſts and undulary breaths thereof maintain no certainty in their courſe; nor are they numerally feared by Navigators.

Of affinity hereto is that conceit of *Ovum decumanum*, ſo called, becauſe the tenth egge is bigger then any other, according unto the reaſon alledged by Feſtus, *Decumana ova dicuntur, quia ovum decimum majus naſcitur.* For the honour we bear unto the Clergy, we cannot but wiſh this true; but herein will be found no more of verity then in the other: and ſurely few will aſſent hereto without an implicite credulity, or Pythagoricall ſubmiſſion unto every conception of number.

For, ſurely the conceit is numerall, and though not in the ſenſe apprehended, relateth unto the number of ten, as Franciſcus Sylvius hath moſt probably declared. For, whereas amongſt ſimple numbers or Digits, the number of ten is the greateſt: therefore whatſoever was the greateſt in every kinde, might in ſome ſenſe be named from this number. Now, becauſe alſo that which was the greateſt, was metaphorically by ſome at firſt called *Decumanus*; therefore whatſoever paſſed under this name was literally conceived by others to reſpect and make good this number.

The conceit is alſo Latine; for the Greeks to expreſſe the greateſt wave, do uſe the number of three, that is, the word τριμία, which is a concurrence of three waves in one, whence aroſe the proverb, τριμία κακῶν, or a triſluctuation of evils, which Eraſmus doth render, *Malorum fluctus Decumanus.* And thus, although the terms be very different, yet are they made to ſignifie the ſelf ſame thing; the number of ten to explain the number of three, and the ſingle number of one wave the collective concurrence of more.

3. The poyſon of Paryſatis reported from Cteſias by Plutarch in the life of Artaxerxes, whereby anointing a knife on the one ſide, and therewith di-

viding a bird; with the one half ſhe poyſoned Statira, and ſafely fed her ſelf on the other, was certainly a very ſubtile one, and ſuch as our ignorance is well content it knows not. But ſurely we had diſcovered a poyſon that would not endure Pandoraes box, could we be ſatisfied in that which for its coldneſſe nothing could contain but an Aſſes hoof, and wherewith ſome report that Alexander the great was poyſoned. Had men derived ſo ſtrange an effect from ſome occult or hidden qualities, they might have ſilenced contradiction; but aſcribing it unto the manifeſt and open qualities of cold, they muſt pardon our belief; who perceive the coldeſt and moſt Stygian waters may be included in glaſſes; and by Ariſtotle, who ſaith, that glaſſe is the perfecteſt work of Art, we underſtand they were not then to be invented.

And though it be ſaid that poyſon will break a Venice glaſſe, yet have we not met with any of that nature. Were there a truth herein, it were the beſt preſervative for Princes, and perſons exalted unto ſuch fears: and ſurely farre better then divers now in uſe. And though the beſt of China diſhes, and ſuch as the Emperour doth uſe, be thought by ſome of infallible vertue unto this effect; yet will they not, I fear, be able to elude the miſchief of ſuch intentions. And though alſo it be true, that God made all things double, and that if we look upon the works of the moſt High, there are two and two, one againſt another; that one contrary hath another, and poyſon is not without a poyſon unto its ſelf; yet hath the curſe ſo farre prevailed, or elſe our induſtry defected, that poyſons are better known then their Antidotes, and ſome thereof do ſcarce admit of any. And laſtly, although unto every poyſon men have delivered many Antidotes, and in every one is promiſed an equality unto its adverſary, yet do we often finde they fail in their effects: Moly will not reſiſt a weaker cup then that of Circe; a man may be poyſoned in a Lemnian diſh; without the miracle of John, there is no confidence in the earth of Paul; and if it be meant that no poyſon could work upon him, we doubt the ſtory, and expect no ſuch ſucceſſe from the diet of Mithridates.

In what ſenſe God Almighty hath created all things double.

Terra Melitea.

A ſtory there paſſeth of an Indian King, that ſent unto Alexander a fair women fed with Aconites and other poyſons, with this intent, either by converſe or copulation complexionally to deſtroy him. For my part, although the deſign were true, I ſhould have doubted the ſucceſſe. For, though it be poſſible that poyſons may meet with tempers whereto they may become Aliments, and we obſerve from fowls that feed on fiſhes, and others fed with garlick and onyons, that ſimple aliments are not alwaies concocted beyond their vegetable qualities; and therefore that even after carnall converſion, poyſons may yet retain ſome portion of their natures; yet are they ſo refracted, cicurated and ſubdued, as not to make good their firſt and deſtructive malignities. And therefore the Stork that eateth Snakes, and the Stare that feedeth upon Hemlock, though no commendable aliments, are not deſtructive poyſons. For, animals that can innoxiouſly digeſt theſe poyſons become antidotall unto the poyſon digeſted. And therefore whether their breath be attracted, or their fleſh ingeſted, the poyſonous reliques go ſtill along with their Antidote; whoſe ſociety will not permit their malice to be deſtructive. And therefore alſo animals that are not miſchieved by poyſons which deſtroy us, may be drawn into Antidote againſt them; The bloud or fleſh of Storks againſt the venome of Serpents, the Quail againſt Hellebore, and the diet of Starlings againſt the drought of Socrates. Upon like grounds are ſome parts of Animals Alexipharmacall unto others; and ſome veins of the earth, and alſo whole regions, not only deſtroy the life of venemous creatures,

Hemlock.

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waters, and much condemneth the judgement of Xerxes, that wrought through Mount Athos with Mattocks.

3. That Archimedes burnt the ships of Marcellus, with speculums of parabolicall figures, at three furlongs, or as some will have it at the distance of three miles, sounds hard unto reason, and artificiall experience: and therefore justly questioned by Kircherus, who after long enquiry could finde but one made by Manfredus Septalius that fired at fifteen paces. And therefore more probable it is, that the ships were neerer the shoar, or about some thirty paces: at which distance notwithstanding the effect was very great. But whereas men conceive the ships were more easily set on flame, by reason of the pitch about them, it seemeth no advantage. Since burning glasses will melt pitch or make it boyle, not easily set it on fire. *De lucè & umbrâ.*

4. The story of the Fabii, whereof three hundred and six marching against the Veientes, were all slain, and one childe alone to support the family remained; is surely not to be paralleld, nor easie to be conceived; except we can imagine, that of three hundred and six, but one had children below the service of warre; that the rest were all unmaried; or the wife but of one impregnated.

5. The received story of Milo, who by daily lifting a Calf, attained an ability to carry it being a Bull, is a witty conceit, and handsomely sets forth the efficacy of Assuefaction. But surely the account had been more reasonably placed upon some person not much exceeding in strength, and such a one as without the assistance of custome could never have performed that act; which some may presume that Milo without precedent artifice or any other preparative, had strength enough to perform. For, as relations declare, he was the most pancraticall man of Greece, and as Galen reporteth, and Mercurialis in his Gymnasticks representeth, he was able to persist erect upon an oyled plank, and not to be removed by the force or protrusion of three men. And if that be true which Atheneus reporteth, he was little beholding to custome for this ability. For, in the Olympick games, for the space of a furlong, he carried an Oxe of four years upon his shoulders; and the same day he carried it in his belly; for as it is there delivered he eat it up himself. Surely he had been a proper guest at Grandgousiers feast, and might have matcht his throat that eat six pilgrims for a salad. *In Rabelaù.*

6. It much disadvantageth the Panegyrick of Synesius, and is no small disparagement unto baldnesse, if it be true what is related by Ælian concerning Æschilus, whose balde pate was mistaken for a rock, and so was brained by a Tortoise which an Eagle let fall upou it. Certainly it was a very great mistake in the perspicacity of that Animall, and some men critically disposed, would from hence confute the opinion of Copernicus; never conceiving how the motion of the earth below, should not wave him from a knock perpendicularly directed from a body in the ayre above. Who writ in the praise of baldnesse. An argument or instance against the motion of the earth.

7. It crosseth the proverb, and Rome might well be built in a day; if that were true which is traditionally related by Strabo; that the great Cities Anchiale and Tarsus, were built by Sardanapalus both in one day, according to the inscription of his monument, *Sardanapalus Anacyndaraxis filius, Anchialen & Tarsum unâ die edificavi, Tu autem hospes Ede, Lude, Bibe*, &c. which if strictly taken, that is, for the finishing thereof, and not only for the beginning; for an artificiall or naturall day, and not one of Daniels weeks, that is, seven whole years; surely their hands were very heavy that wasted thirteen years in the private house of Solomon; it may be wondred how fourty years were spent in the erection of the Temple of Jerusalem, and no lesse then an

hundred in that famous one of Ephesus. Certainly it was the greatest Architecture of one day, since that great one of six; an Art quite lost with our Mechanicks; a work not to be made out, but like the wals of Thebes, and such an Artificer as Amphion.

The Syracusia or King Hiero's Galleon of what Bulk.

8. It had been a sight only second unto the Ark, to have beheld the great Syracusia, or mighty Ship of Hiero, described in Atheneus; and some have thought it a very large one, wherein were to be found ten stables for horses, eight Towers, besides fishponds, Gardens, Tricliniums, and many fair rooms paved with Agath, and precious stones. But nothing is impossible unto Archimedes, the learned contriver thereof; nor shall we question his removing the earth, when he findes an immoveable base to place his engine upon it.

A List of some historical errata's in this & the following Sections.

9. The relation of Plutarch of a youth Sparta, that suffered a Fox concealed under his robe to teare out his bowels, before he would either by voice or countenance betray his theft; and the other of the Spartan Lad, that with the same resolution suffered a coal from the Altar to burn his arm; although defended by the Author that writes his life, is I perceive mistrusted by men of judgement, and the Author with an *aiunt*, is made to salve himself. Assuredly it was a noble Nation that could afford an hint to such inventions of patience, and upon whom, if not such verities, at least such verisimilities of fortitude were placed. Were the story true, they would have made the only Disciples for Zeno and the Stoicks, and might perhaps have been perswaded to laugh in Phaleris his Bull.

10. If any man shall content his belief with the speech of Balaams Asse, without a belief of that of Mahomets Camell, or Livies Oxe: if any man make a doubt of Giges ring in Justinus, or conceives he must be a Jew that beleeves the Sabbaticall river in Josephus. If any man will say he doth not apprehend how the tayl of an African weather out-weigheth the body of a good Calf, that is, an hundred pound, according unto Leo Africanus, or desires before belief, to behold such a creature as is the Ruc in *Paulus Venetus*, for my part I shall not be angry with his incredulity.

11. If any one shall receive as stretcht or fabulous accounts what is delivered of Cocles, Scævola and Curtius, the sphere of Archimedes, the story of the Amazons, the taking of the City of Babylon, not known to some therein in three daies after; that the nation was deaf which dwelt at the fall of Nilus, the laughing and weeping humour of Heraclitus and Democritus, with many more, he shall not want some reason and the authority of Lancelotti.

Far'alloni historici.

12. If any man doubt of the strange Antiquities delivered by historians, as of the wonderfull corps of Antæus untombed a thousand years after his death by Sertorius. Whether there were no deceit in those fragments of the Ark so common to be seen in the daies of Berosus; whether the pillar which Josephus beheld long ago, Tertullian long after, and Bartholomeus *de Saligniaco*, and Borchardus long since, be the same with that of Lots wife; whether this were the hand of Paul, or that which is commonly shewn the head of Peter, if any doubt, I shall not much dispute with their suspicions. If any man shall not beleeve the Turpentine betwixt Jerusalem and Bethlem, under which the Virgin suckled our Saviour, as she passed between those Cities; or the figtree of Bethany shewed to this day, whereon Zacheus ascended to behold our Saviour; I cannot tell how to enforce his belief, nor do I think it requisite to attempt it. For, as it is no reasonable proceeding to compell a religion, or think to enforce our own belief upon another, who

To compell Religion somewhat contrary to reason

cannot

without the concurrence of Gods Spirit, have any indubitable evidence of things that are obtruded. So is it also in matters of common belief; whereunto neither can we indubitably assent, without the cooperation of our sense or reason, wherein consist the principles of perswasion. For, as the habit of faith in Divinity is an argument of things unseen, and a stable assent unto things inevident, upon authority of the divine Revealer; So the belief of man which depends upon humane Testimony, is but a staggering assent unto the affirmative, not without some fear of the negative. And as there is required the Word of God, or infused inclination unto the one, so must the actuall sensation of our senses, at least the non-opposition of our reasons procure our assent and acquiescence in the other. So when Eusebius an holy writer affirmeth there grew a strange and unknown plant near the statue of Christ, erected by his hemarroidall patient in the Gospel, which attaining unto the hemme of his vesture, acquired a sudden faculty to cure all diseases. Although he saith he saw the statua in his daies, hath it found in many men so much as humane belief? some believing, others opinioning, a third suspecting it might be otherwise. For indeed, in matters of belief the understanding assenting unto the relation, either for the authority of the person, or the probability of the object; although there may be a confidence of the one, yet if there be not a satisfaction in the other, there will arise suspensions; nor can we properly beleeve until some argument of reason, or of our proper sense convince or determine our dubitations. What Theologicall Faith is.

And thus it is also in matters of certain and experimented truth: for, if unto one that never heard thereof, a man should undertake to perswade the affections of the Loadstone, or that Jet and Amber attracteth straws and light bodies, there would be little Rhetorick in the Authority of Aristotle, Pliny, or any other. Thus, although it be true that the string of a Lute or Violl will stir upon the stroak of an unison or Diapazon in another of the same kinde; that Alcanna being green, will suddenly infect the nails and other parts with a durable red; that a candle out of a Musket will pierce through an Inch board, or an Urinall force a nayl through a plank, yet can few or none beleeve thus much without a visible experiment. Which notwithstanding fals out more happily for knowledge; for these relations leaving unsatisfaction in the hearers, do stir up ingenuous dubiosities unto experiment; and by an exploration of all, prevent delusion in any.

Chap. XIX.

Of some Relations whose truth we fear.

Lastly, As there are many Relations whereto we cannot assent, and make some doubt thereof, so are there divers others whose verities we fear, and heartily wish there were no truth therein.

1. It is an unsufferable affront unto filiall piety, and a deep discouragement unto the expectation of all aged Parents, who shall but reade the story of that barbarous Queen; who after she had beheld her royall Parents ruin, lay yet in the arms of his assassine, and crowsed with him in the skull of her father. For my part, I should have doubted the operation of antimony, where such a potion would not work; 'twas an act me thinks beyond Anthropophagy, and a cup fit to be served up only at the Table of Atreus.

2. While

2. While we laugh at the ſtory of Pygmaleon, and receive as a fable that he fell in love with a ſtatue; we cannot but fear it may be true, what is delivered by Herodotus concerning the Ægyptian Pollinctors, or ſuch as annointed the dead; that ſome thereof were found in the act of carnality with them. From wits that ſay 'tis more then incontinency for Hylas to ſport with Hecuba, and youth to flame in the frozen embraces of age, we require a name for this: wherein Petronius or Martiall cannot relieve us. The tyranny of Mezentius did never equall the vitioſity of this Incubus, that could embrace corruption, and make a Miſtreſſe of the grave; that could not reſiſt the dead provocations of beauty, whoſe quick invitements ſcarce excuſe ſubmiſſion. Surely, if ſuch depravities there be yet alive, deformity need not deſpair; nor will the eldeſt hopes be ever ſuperannuated, ſince death hath ſpurres, and carcaſſes have been courted.

Who tied dead and living bodies together.

3. I am heartily ſorry, and wiſh it were not true, what to the diſhonour of Chriſtianity is affirmed of the Italian; who after he had inveigled his enemy to diſclaim his faith for the redemption of his life, did preſently poyniard him, to prevent repentance, and aſſure his eternall death. The villany of this Chriſtian exceeded the perſecution of Heathens, whoſe malice was never ſo Longimanous as to reach the ſoul of their enemies; or to extend unto the exile of their Elyſiums. And though the blindneſſe of ſome ferities have ſavaged on the bodies of the dead, and been ſo injurious unto worms, as to diſenterre the bodies of the deceaſed; yet had they therein no deſigne upon the ſoul; and have been ſo farre from the deſtruction of that, or deſires of a perpetuall death, that for the ſatisfaction of their revenge they wiſht them many ſouls, and were it in their power would have reduced them unto life again. It is a great depravity in our natures, and ſurely an affection that ſomewhat ſavoureth of hell, to deſire the ſociety, or comfort our ſelves in the fellowſhip of others that ſuffer with us; but to procure the miſeries of others in thoſe extremities, wherein we hold an hope to have no ſociety our ſelves, is me thinks a ſtrain above Lucifer, and a project beyond the primary ſeduction of hell.

Long-handed.

4. I hope it is not true, and ſome indeed have probably denied, what is recorded of the Monke that poiſoned Henry the Emperour, in a draught of the holy Euchariſt. 'Twas a ſcandalous wound unto Chriſtian Religion, and I hope all Pagans will forgive it, when they ſhall reade that a Chriſtian was poiſoned in a cup of Chriſt, and received his bane in a draught of his ſalvation. Had he beleeved Tranſubſtantiation, he would have doubted the effect; and ſurely the ſinne it ſelf received an aggravation in that opinion. It much commendeth the innocency of our forefathers, and the ſimplicity of thoſe times, whoſe Laws could never dream ſo high a crime as parricide: whereas this at the leaſt may ſeem to outreach that fact, and to exceed the regular diſtinctions of murder. I will not ſay what ſinne it was to act it; yet may it ſeem a kinde of martyrdome to ſuffer by it: For, although unknowingly, he died for Chriſt his ſake, and loſt his life in the ordained teſtimony of his death. Certainly, had they known it, ſome noble zeales would ſcarcely have refuſed it; rather adventuring their own death, then refuſing the memoriall of his.

Hujus ſorinæ multa in hiſtoria horribili.

Many other accounts like theſe we meet ſometimes in Hiſtory, ſcandalous unto Chriſtianity, and even unto humanity; whoſe not only verities, but relations honeſt mindes doe deprecate. For of ſinnes heteroclitall, and ſuch as want either name or preſident, there is oft times a ſinne even in their hiſtories. We deſire no records of ſuch enormities; ſinnes ſhould be accounted new, that ſo they may be eſteemed monſtrous. They omit of monſtroſity

monstrosity as they fall from their rarity; for, men count it veniall to erre with their forefathers, and foolishly conceive they divide a sinne in its society. The pens of men may sufficiently expatiate without these singularities of villany; For, as they encrease the hatred of vice in some, so doe they enlarge the theory of wickednesse in all. And this is one thing that may make latter Ages worse then were the former; For, the vicious examples of Ages past, poison the curiosity of these present, affording a hint of sinne unto seduceable spirits, and solliciting those unto the imitation of them, whose heads were never so perversly principled as to invent them. In this kinde we commend the wisedome and goodnesse of Galen, who would not leave unto the world too subtile a Theory of Poisons; unarming thereby the malice of venemous spirits, whose ignorance must be contented with Sublimate and Arsenick. For, surely there are subtiler venenations, such as will invisibly destroy, and like the Basilisks of heaven. In things of this nature silence commendeth history; 'tis the veniable part of things lost; wherein there must never rise a Pancirollus, nor remain any Register but that of hell.

Who writ *De Antiquis deperditis*, or of inventions lost.

And yet, if as some Stoicks opinion, and Seneca himself disputeth, these unruly affections that make us sinne such prodigies, and even sinnes themselves be animals; there is an history of Africa and story of Snakes in these. And if the transanimation of Pythagoras or method thereof were true, that the souls of men transmigrated into species answering their former natures; some men must surely live over many Serpents, and cannot escape that very brood whose sire Satan entered. And though the objections of Plato should take place, that bodies subjected unto corruption, must fail at last before the period of all things, and growing fewer in number, must leave some souls apart unto themselves; the spirits of many long before that time will finde but naked habitations; and meeting no assimilables wherein to react their natures, must certainly anticipate such naturall desolations.

Lactant.

Primus sapientiæ gradus est, falsa intelligere.

FINIS.

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