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Medicina Statica:

BEING THE

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OF

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AS ALSO

MEDICO-PHYSICAL ESSAYS

ON

I. AGUES.
II. FEVERS.
III. An ELASTIC FIBRE
IV. The GOUT.
V. The LEPROSY.
VI. The KING'S EVIL.
VII. The VENEREAL DISEASE.

The FIFTH EDITION.

By JOHN QUINCY, M.D.

Pondere, Menſurâ, & Numero Deus omnia fecit.

LONDON:

Printed for T. LONGMAN, in *Pater-Noſter-Row*, and J. NEWTON, in *Little-Britain*.

M DCC XXXVII.

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THE PREFACE.

I *Perſuade my ſelf that there will be but little need of an Apology for the following Performance, with regard to the Deſign of it. The* Aphoriſms *of* SANCTORIUS *have long been in the beſt Eſteem with all good Judges, who have had the Luck to be acquainted with them; and hereby I have endeavoured only to bring them into a larger Acquaintance, both by rendering them in our own Language, and giving ſuch Explanations of ſome of the moſt difficult, as may make them eaſy and intelligible, almoſt to any Perſon who has given himſelf the Leiſure to reflect at all, upon the Nature of his Conſtitution, and the Changes it is moſt apt to undergo by the Influence of external Cauſes.*

This Collection of APHORISMS *has not only been a particular Favourite with the* Faculty, *but alſo has had a great Share in the good Eſteem of all other Perſons of Underſtanding; than which there cannot be a more convincing Proof of its Worth: Truth never fails of Entertainment when it appears in its natural Dreſs;*

Dreſs; as it may generally be obſerved in any Science whatſoever, that when any thing is advanced and maintained by that natural and peculiar way of Thinking, which the mind is fitted to, it will make its Way with every Man of Senſe, as well as with thoſe who have been trained up in the Myſteries of that Science. Knowledge, indeed, is branched out into ſeveral Channels, all of which have, by the Subtilty of ſome Enquirers, been purſued into ſuch Intricacies, as makes it very difficult to follow them, and by ſome have been ſo much diſguiſed, as to make it even impoſſible to do it; but when an unprejudiced Perſon is reſolved to venture himſelf upon the Strength only of thoſe Capacities his Maker has thought fit to beſtow upon him, and purſues his Enquiries with that Simplicity, and upon ſuch Evidences as the Nature of his Subject will admit of, ſo far as he advances will be attended with Plainneſs and Conviction, and be as eaſily made appear to any other Perſon of tolerable Senſe, as to the common Stagers of that Subject.

To this natural and free Way of Enquiry, it is, that SANCTORIUS *has been able to oblige the World with this excellent Collection of* APHORISMS. *Sometimes, indeed, he is very apt to lay hold of his Syſtematical Helps; but it is very remarkable that he is never more obſcure than at ſuch Times. He lays down his Matters of Fact upon ſuch Evidences as cannot deceive; but when ſometimes he goes farther, and gives Reaſons why it is ſo, he is hardly to be underſtood: As when he tells us,* That Cold ſtrengthens robuſt Conſtitutions, but weakens thoſe who are infirm, *there is no body can doubt of the Truth of it; but when he gives his Reaſon, that Cold drives the natural Heat to the Center in the former, and exhales it in the latter, I believe there are very few e'er the wiſer.*

Theſe

These Aphoriſms *have formerly appear'd in* Engliſh *under the Title of* Rules of Health; *but the Tranſlator has retained ſo many Terms and Latin Phraſes, that the Original I ſhould think as eaſy to an* Engliſhman *as the other, had it no gone off ſo much, that at this Time it is hardly to be met with. Dr* Liſter *has alſo given an Edition in* Latin, *with his Notes upon each* Aphoriſm; *but hardly with any other Advantage to the World, than making* SANCTORIUS, *who was before ſcarce, more common to be met with. Indeed I cannot make any large Acknowledgment for his Aſſiſtance in what I have done, although I hardly omitted conſulting him upon every* Aphoriſm, *for in moſt, I found my Author more intelligible than his Commentator; but in his Notes upon one Place, where he ſpeaks of* Specificks *working by inſenſible Perſpiration, and with the* Bark *mentions the* Ipecacuanha, *as one of the ſame Tribe, he ſeems to have gone into a Miſtake of a very uncommon Nature.*

As to the Aphoriſms, *I have tranſlated them as cloſe as I am able, I mean, as to the Author's Senſe, and taken as much Care as poſſible therein, not to tranſplant any hard Phyſical Terms; and where that could not be avoided, I have been particularly careful to make them intelligible in the* Explanations. The Sixth *Section of* Venery *I had ſome Thoughts of leaving out; but for fear ſome would look upon the Collection maimed thereby, and not be contented without all that* SANCTORIUS *himſelf thought fit to give to the Public, I have inſerted it in its Place, and, I hope, in ſuch Terms as are as chaſte and inoffenſive as our Language will bear.*

We have a common Saying, that a Man at Forty is either a Fool or a Phyſician; from whence may thus much be gather'd, that a wiſe Man, by obſerving what Effects every Thing which turns up in the Courſe of

Life

Life has upon his Conſtitution, may come to a tolerable good Underſtanding of what will promote, or injure, his Health. Where then a Man has, with the utmoſt Pains and Fidelity, gone thorough a Courſe of Obſervations upon ſuch unerring Guides, as with Certainty to determine the Effects of all theſe Things upon his own Perſon, a Communication of them to the World, with ſuch Lights and Aſſiſtance as may render them eaſy and intelligible to an indifferent Capacity, can, I hope, be no unacceptable Preſent. It is already out of Diſpute that SANCTORIUS *has done the former Part, and by this, I have offer'd my beſt Endeavours towards the latter.*

I am not at all unaware how ſevere ſome will be hereupon, in requiring how often they muſt weigh themſelves, and whether they ought to eat and drink by the Ounce? To whom I have only this to ſay, That SANCTORIUS *by the* Balance, *has already done enough to convince any ſerious Perſon of the natural Diſcharges, and their Proportions to one another, the moſt conſiderable of which,* viz. *That by inſenſible Perſpiration was but very little attended to before; from which, and all the Conſequences of thoſe Diſcharges, from the leaſt to their greateſt Quantities poſſible, any Perſon may ſoon be a Judge of the preſent State of his Conſtitution, without going into a Pair of Scales. And for this Reaſon it is, that I have not been nice in ſearching into the Exactneſs of the* SANCTORIAN CALCULATIONS, *the End I propos'd being anſwered, by knowing that there are ſuch Diſcharges, how they are to be influenced, and what will be the Conſequences of their Diſorders. Beſides, were a Perſon to make Experiments with the Balance, it is not at all likely that they ſhould exactly agree with* SANCTORIUS's *Accounts, both our Climate and Way of Living being ſo very different from his. He was Profeſſor at* Padua *in* Italy, *a Country much better than ours,*

ours, and where their Diet is not ſo much upon Fleſh as with us; all which cannot but very much influence all the Evacuations, but eſpecially that made by the cutaneous Paſſages.

To ſupply this Defect, however, we have a Courſe of Experiments and Obſervations made by the ſame Inſtruments and Means, from our Countryman Dr KEIL *of* Northampton, *a very eminent and learned Phyſician, whoſe Aphoriſms I have therefore tranſlated and added hereunto, with ſuch Explanations, and comparative Calculations, as are ſufficient to appriſe every intelligent Perſon of the different Influences of different Climates. That Gentleman indeed went not ſo far in his Experiments, when his* Medicina Statica Britannica *was firſt publiſh'd, as he had Thoughts afterwards to do, but we are now unhappily deprived of any more by his Death, and muſt remain contented with what are hereunto annexed.*

What I have here inſerted by Way of Introduction, *has been a long time the Subject of my Thoughts, and often in my Intentions to make public; but it falling in ſo well with the Contents of the following Sheets, I have therefore contracted it as ſhort as I could, on purpoſe to bind up with them. Mechanical Reaſoning is what is much talk'd of now in Phyſic, and by ſome perhaps more than it is well underſtood; but the greateſt Number of Profeſſors of Medicine are declared Enemies to it, and make nothing of breaking their Jeſts upon* Angles, Cylinders, Cones, Celerity, Percuſſion, Reſiſtance, *and ſuch like Terms, which they ſay have no more to do with Phyſic, or a Human Body, than a Carpenter has to do in making* Venice *Treacle, or curing a Fever. It is therefore for the Information of both theſe, that I have been at the Pains of ſhewing what* Mechanical *Reaſoning is, and proving, that all* Phyſical Certainty *depends upon the ſame Principles.*

I have a great while labour'd under a heavy Complaint of the Bookſeller, for the Confeſſion of ſomewhat to my Diſadvantage in the Cloſe of the Preface *to the laſt Edition, which, he tells me, has been a Prejudice to his Profits: I ſhall therefore for his Sake be ſo careful not to diſgrace myſelf at this Time, even in my Apology to him, as not to mention what that Fault was. I have herein alſo endeavour'd to make him Amends by large Additions, both to the Explanations, and to the End of the Book, of ſome* Essays *never before in public, which the Reader will find ſome Account of thereunto prefixed.*

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Both theſe by the late Dr Quincy.

MEDICINA STATICA.

INTRODUCTION.

Of MECHANICAL KNOWLEDGE, *and the Grounds of Certainty in* PHYSICK.

PHYSICAL Writers of late, have with a great deal of Induſtry and Succeſs, introduced *Geometry* into their Studies, and endeavoured to account for all that concerns the animal Oeconomy upon mechanical Principles: And this they ſeem to have done, not only as the beſt Means to get clear of all Suppoſitions and deluſory Hypotheſes; but alſo as to them, it has appeared to be the only Way by which we are fitted to arrive at any ſatisfactory Knowledge in the Works of Nature. But becauſe ſome herein have gone ſo far, as to give even Occaſion of Offence to ſeveral who happen not to have their Heads well turned this Way, and who, out of ſome Prepoſſeſſions in Favour of occult Quali-

ties, Sympathies and Antipathies, and the like, cannot bear without Indignation and Scorn to ſee thoſe great Myſteries of Phyſick, and that excellent Frame which is its Subject, that beautiful Epitome of the Creation, marked out like a Spot of Earth, or a Piece of Timber, with Rule and Compaſſes: For this Reaſon, I ſay, it is, that by this Introduction is intended an Enquiry into the Means by which we arrive at any Certainty in Phyſick, and to ſhew, that it is not to be dome without ſuch Helps; for I cannot but be perſwaded, that the ſmall Progreſs which has been made in phyſical Knowledge for a long Space of Time, is chiefly owing to the Want of a due Attention to thoſe Powers and Capacities of the Mind, by which only it is enabled to purſue ſuch Enquiries; otherwiſe, certainly, ſo many, who pretend alſo to be no mean Proficients therein, would not take ſo much Diſtaſte at all Pretences of this Kind, as it is common to meet with; and affirm oft-times, that the Beſt talk but learnedly of what they know nothing, and that the whole is meer Gueſs-work. It is for the ſake of ſuch, that I am willing to be at the Pains to convince them that the Fault is not in the Science, by its not affording ſufficient Evidences to build any Certainty upon, but in themſelves, in their Ignorance in the Means by which that Certainty is to be obtained.

And of this I have Hopes in a great Meaſure of ſucceeding, by demonſtrating that thoſe Rules and Laws of Motion, which we are furniſhed with from *Mechanicks*, are the only Guides we can have in diſcovering the Nature and Properties of all material Subſtances whatſoever, and that by theſe Aſſiſtances only, they are knowable with any Certainty. And this I much the rather chooſe to do in this Place, becauſe our Author, although he compoſed thoſe *Aphoriſms*, at a Time when this Way of-

of Reaſoning was but very little made uſe of in Phyſick, and ſeems to have had but very little Regard for it himſelf; yet the Means of Information he hath herein uſed, have ſo ſteadily guided him throughout the whole, that there is but very little advanced, but what is conformable and applicable thereunto, and what may be demonſtrated with the utmoſt Clearneſs and Certainty. And this Succeſs he hath herein met, which is plainly owing to his Diſregard of all Prepoſſeſſions, following Nature in her Simplicity, and grounding his Concluſions only upon ſenſible Evidences and Facts; which in this Eſſay I ſhall endeavour to prove are our only Means of Information in theſe Studies, and that they only furniſh us with all our Materials of Knowledge in Phyſick. If therefore in the Proſecution of this Matter the Reader ſhall think, that ſome Thoughts are drawn out into too great a Length, I hope it may be excuſed, if they are found but at all conducive to the Illuſtration of an Affair of this Importance.

When a Perſon ſets out upon any Enquiry, nothing can be of greater Concern, than to be firſt well acquainted with the Powers and Capacities of his own Mind, and the Means by which only the Matter he has in Purſuit is attainable. For as the Capacities of the Mind are very extenſive, ſo every one but indifferently converſant with himſelf, will alſo by Experience find, that there is a great deal of Difference in the Means by which it is fitted to receive all its Materials of Knowledge; and that the ſame Ways by which it comes by its Notices of one thing, and by which it is carried on to all the ſeveral Degrees of Aſſent, is vaſtly different from the Means by which it receives its Informations about ſome others. If then this neceſſary Reſult of that peculiar Manner by which the Author of our Beings has

thought meet to fit us for Knowledge, be not well enquired into, it muſt needs be a great Chance if ever ſuch a Perſon arrives at any conſiderable Share of it, becauſe he cannot but frequently fall into a Uſe of the wrong Means, whereby he will be either perpetually bewildred with Obſcurity, ſo as at laſt, perhaps, to throw off all farther Enquiry; or fall into ſome imaginary deluſory Schemes, which have no Foundation in Nature, and which will much ſooner make him an Enthuſiaſt, than a Philoſopher. And this is as manifeſt to any one who will give himſelf the Leiſure and Trouble of Reflection, as that our Organs of Senſe are ſo differently framed, that one cannot perform the Office of another; ſo that to ſeek after Knowledge upon different Subjects, by the ſame Means, is not leſs abſurd than to ſuppoſe, becauſe my Noſe informs me that a Roſe is ſweet, that it can without the Help of my Sight or Taſte, teach me that it is alſo red and bitter.

But to ſet this ſtill in a more clear Light, I ſhall ſhew by a few Propoſitions, the different Ways the Mind muſt neceſſarily take to be inſtructed therein, and convinced of their Certainty. As for Inſtance,

1. That *Julius Cæſar* was ſtabbed by *Brutus*, and other Conſpirators, at *Rome*, above Seventeen Hundred Years ago.
2. That there is an eternal immutable Difference between Good and Evil; as that it eternally will be look'd upon by reaſonable Beings, that Gratitude to a Benefactor is juſt and commendable, but Ingratitude, wicked and hateful.
3. That the three Angles of any Triangle are equal to two right ones.

In the firſt Propoſition, as ſoon as a Man is told it, he conſiders the Capacities and Abilities of the Perſon

Perſon that is his immediate Informer, and the Means by which he came by it himſelf: When that is done, then comes to be conſider'd the Credit of his Authors with other unprejudiced Perſons; he takes alſo into Conſideration, their Numbers, the Agreement of their Stories, the Improbability of the preſent and ſucceeding Ages to that Action, being impoſed upon, and the Folly of endeavouring to do it, was it not Truth; until at laſt he comes as fully to be convinced of the Reality of it, as of any thing done but yeſterday, in his own Country.

In the Second, the Mind goes quite another Way to work; for what convinced him of the former, he finds no Aſſiſtance from here, or is it of any manner of Weight with him, what the Perſons are that affirm it, but he is altogether determined by the Notions and Ideas he has in his Mind of Good and Evil, Gratitude and Ingratitude; which he at Length finds to be ſuch neceſſary Oppoſites to one another, that there muſt eternally be a Difference between them; and inſomuch, that it is not in the Power of any Being whatſoever to change them, the Diſtinction it ſelf being ſupported by the Impoſſibility of an Omnipotent perfect Being doing any thing but what is good and agreeable to his own Nature; but to confound Right and Wrong, Good and Evil, ſo as to make what is abſolutely Good to be Evil, and *è contra*, is deſtroying the neceſſary Idea every reaſonable Creature has of a Deity, ſubverting the Foundation of all Obligations, and therefore can it never be done.

But when he comes to the third Propoſition, he again finds a Neceſſity of altering his Meaſures, although, as in the former, the Credit of the Perſon pronouncing it ſignifies not one Jot towards obtaining his Aſſent. The firſt thing then he does, is to get clear Ideas of the Terms of the Propoſition, in which he finds himſelf obliged to his Senſes, and

that in the whole Affair he muſt proceed by their Evidences only: To this Purpoſe therefore, he deſcribes Angles to be view'd by the Eye, and learns how to meaſure and compare them with one another, until at laſt, by the Evidences of his Senſes only, he is beyond all Doubt convinced, that the three Angles of any Triangle whatſoever, are equal to two right Angles. And in any Propoſition of this Nature, although after ſome Time a Perſon comes to be ſo converſant with the Terms uſed therein, that he may frequently be able to apprehend the Reaſon and Truth of it, without picturing of it to his Sight by a Diagram; yet the Mind all the Way imagines it, and keeps the Picture of the Thing ſpoke of, cloſe in View; for no longer than he does ſo, can he diſcern his Evidences; and conſequently without it can never make any certain Concluſion.

But becauſe by this laſt Inſtance, I ſhall endeavour chiefly to illuſtrate what is meant by mechanical Knowledge, or phyſical Certainty, I would herein be as particular and plain as poſſible, and therefore ſhall go through the ſeveral Steps whereby the Mind comes at the Truth of this Propoſition; which although it may be done various Ways, yet they will agree in this, that they keep always cloſe to the ſame Evidences.

1. To know clearly what is meant by a right Angle, let the Perpendicular FG, *Fig.* 1. be let fall upon the right Line XZ, and it makes two right Angles MN.
2. If then the Perpendicular FG be drawn through XZ, as in *Fig.* 2. there will be made four right Angles, MNOP.
3. Farther, If the Perpendicular FG be changed into a Line which cuts the other XZ, obliquely, as in *Fig.* 3, there will be four Angles made thereby;

thereby; which although not equal to one another, yet their Sum, that is, taken altogether, will be equal to four right Angles. For as much as the Angles ON are leſſened, the other oppoſite Angles MP will be enlarged, and therefore their Sum will be as before.

4. If again, as in *Fig.* 4, there be another Line ST drawn Parallel to XZ, then there will be four more Angles, 1, 2, 3, 4, made in all Reſpects equal to the former, MNOP; for M is equal to 1, N is equal to 2, O is equal to 3, and P is equal to 4, as may be demonſtrated at large.

Thus far then being known of Lines, and the Angles they form by theſe Poſitions one to another; let a Triangle be formed, as in *Fig.* 5, and the Side AB be extended as far as E, it is plain by Step 1, 2, 3, that the internal Angle A, and the external Angle D taken together, are equal to two right ones: If therefore it can be proved, that the Angles B and C amount to juſt the ſame as the Angle D, then the Propoſition will be demonſtrated. To this Purpoſe therefore, the beſt Way is to try to divide D into two Angles in ſome ſuch Manner, if poſſible, as to be commenſurable ſeparately to B and C: And how this may be done, appears from Step 4, by drawing a Line through the Vertex, as XZ, which ſhall be parallel to the Baſe BC, as in *Fig.* 6, and will cut the external Angle into K and L. Now by the ſame Reaſon that N is equal to 2, *Fig.* 4, or that there is an exact Equality between the correſpondent Angles made by each Parallel; for the very ſame Reaſon, I ſay, K is equal to B in *Fig.* 6, and L equal to C. If then the Sum of ALK is equal to two right Angles, as before proved, and B added to K is equal to K added to L, then the Sum of

ABC will be equal to ALK; that is, equal to two right Angles, which was to be demonſtrated.

And thus, by theſe three Inſtances, may it eaſily be perceived how differently the Mind is engaged in its Enquiries upon different Subjects; for although all theſe admit of Certainty, yet it is come at by very different Means; with very good Reaſon therefore they have by ſome been diſtinguiſhed into Hiſtorical Certainty, Moral Certainty, and Demonſtration. The firſt depends upon the Credit and Abilities of the Reporter; the ſecond, upon the neceſſary Ideas of a good and perfect Being; and the third upon the Teſtimony of our Senſes, which only is our Guide in all Propoſitions relating to the Natures and Operations of material Subſtances, from the moſt ſimple and incompounded, to the moſt intricate and abſtracted whatſoever. For whatſoever of this Nature is laid down for a Truth, let the Authority of the Perſon be never ſo great who pronounces it, even ſo far as to make me certain that he would not affirm any thing but what he knew to be true, and likewiſe would not by any Means lead me into an Error; yet, until I go ſome ſuch way to work as hath been taken in this laſt Inſtance, and come to ſee the Reaſon and Neceſſity of its being ſo my ſelf from the ſame Evidences, I cannot be ſaid to know it, or ſhall I ever be able to make uſe of it to any Advantage, were it applicable to never ſo many good Purpoſes.

This laſt Way of Inſtruction likewiſe, as it depends upon Demonſtration, that is, upon ſuch Evidences as cannot deceive, ſo there are a great many Ways frequently of proving the ſame Thing, and all with equal Certainty, becauſe they all, in the ſame Manner, keep cloſe in View the ſeveral Steps by which it is made appear; as may be ſhewn in the Propoſition above-mentioned, which will admit of ſeveral Ways

of

of Demonſtration. That which I have taken here indeed is neither ſo ſtrictly demonſtrative as Mathematicians require in all its Steps, or ſo conciſe as might be; becauſe I have contrived it only in ſuch a Manner as to prove to a Perſon that never before heard of it, that the Propoſition is certainly true, and to illuſtrate that particular Procedure, which the Mind neceſſarily takes in all its Enquiries of the like Nature.

Thus far I believe is attended with no Manner of Difficulty, although perhaps ſome are by this Time ready to aſk, What has all this to do with Phyſick? My Buſineſs therefore next ſhall be to ſhew, that all our Knowledge of the Operations and Effects of phyſical Agents, that is, of all the Alterations and Changes that are brought about in the viſible World by the immediate Agency of phyſical Cauſes; to ſhew, I ſay, that all our Knowledge of theſe Matters is taken in by the ſame Means, and depends altogether upon the ſame Evidences. After which I ſhall endeavour to apply it to Medicine, and prove, that all we can know of a Human Body, both with Regard to the Frame and Mechaniſm of its Parts, and to the rectifying of its Diſorders, to be likewiſe upon the ſame Principles.

The firſt of theſe I expect will be anſwered, when it appears that all the eſſential Properties of Matter (ſuch Properties I mean, as are inſeparable from it under what particular Mode or Form ſoever it exiſts) are no other than what our Senſes very clearly and diſtinctly diſcover to us, and that we have no other Way of knowing them but by their Information. And to this Purpoſe it will be very convenient to go over the firſt Notices we have herein by theſe Aſſiſtances; that is, thoſe Properties of Matter or Body, which from the Teſtimony of our Senſes are demonſtrative and ſelf-evident, and which cannot but excite

cite in every one that attends to them, the ſame Ideas; and this Way we come by very clear and diſtinct Ideas of *Solidity*, *Extenſion*, and *Figure*.

In every Body or Parcel of Matter, under whatſoever Mode of Exiſtence, we immediately find in it a Power of Reſiſtance, ſo as not to admit any other Body in its Place, unleſs by any external Force it ſelf be firſt removed out of it. This we find neceſſarily and univerſally to hold good in all Bodies, both fluid and ſolid. For although the conſtituent Parts may be fitted never ſo much to form a yielding fluxile Body; yet when the Mind conſiders it only as it is Matter, or ſomething corporeal, and purſues it to its ſmalleſt conſtituent Parts, it will appear ſtill with the ſame Neceſſity to be endued with this Property, as much as if it was the moſt firm and conſiſtent Compoſition of Matter whatſoever. Thus the Air encloſed in a Bladder, as much reſiſts the Sides of it, being brought to a cloſe Contact, by any external Preſſure, as this book between my Hands prevents their touching one another. And this is the very ſame which ſome pleaſe to call Impenetrability; which is to ſay, that every Body or Parcel of Matter is ſo ſolid, as not by any Means whatſoever to allow of another Body's being thruſt into, and poſſeſſing the ſame Place which that takes up, before it is firſt thruſt out, and thereby makes Room for the other's coming into it.

Extenſion alſo appears with as much Clearneſs and Conviction to be another Property; altho' not as Solidity, which can be applicable to nothing elſe, becauſe, as will farther appear a little below, it is eaſy to conceive of an abſolutely extended Space that is empty of all Body, or which is the ſame thing, a commenſurable Diſtance between two Bodies that are remote from each other, and yet have another Body between them: Although indeed the

Carteſians

Carteſians have puzzled themſelves in this matter, by making the Eſſence of Body, as they call it, to conſiſt in its being extended, and thereby conclude falſely that *Omne extenſum eſt corporeum.* Every Body is circumſcrib'd by ſome Bounds, otherwiſe it would be infinite, which is abſurd to ſuppoſe: Theſe Bounds then are called Superficies or Surfaces, and nothing can be more plain, than that there is a certain commenſurable diſtance between ſuch Superficies, greater or leſſer, in Proportion to the Bulk of each Body: Theſe Superficies moreover not being infinite, their Bounds are called Lines, which likewiſe are diſtant from one another: Theſe Lines alſo muſt have their Bounds, and they are called Points, between which likewiſe there muſt with equal Neceſſity be ſome Interval. Now from all theſe different Diſtances taken together, we become furniſhed with a clear Apprehenſion of what is uſually called the Trine Dimenſion, that is, *Length*, *Breadth*, and *Thickneſs*, which every Body or Parcel of Matter cannot but be endued with, although broke into the moſt conceivable Smallneſs. The Diſtance between its oppoſite, or upper and lower Superficies, is called its *Depth* or *Thickneſs*; between the oppoſite Lines terminating thoſe Superficies, *Breadth*; and between the oppoſite Points bounding thoſe Lines, its *Length*.

With the ſame Evidence likewiſe we become furniſhed with a clear and diſtinct Idea of Figure, and diſcern the Impoſſibility that any Maſs of Matter, how large or ſmall ſoever, ſhould exiſt without it. For if a Body be broke and divided into its *Minima naturalia*, or as far as Thought it ſelf can conceive it poſſible to be done, yet there ſtill will appear the ſame Reaſon and Neceſſity that every the moſt minute Particle muſt ſtill exiſt under ſome determinate Figure or other, as well as the largeſt whatſoever,

ſoever. For Diviſion, although into the moſt inſenſible Parts, can never take away its being figured, and does nothing more than make two or three diſtinct ſeparate Bodies, or Maſſes of Matter, of that which was but one before; all which diſtinct Maſſes looked upon as ſo many diſtinct Bodies, after their Diviſion, become ſeverally exiſting under ſome certain Figures, as well as before their Separation, when they exiſted in one entire Body.

Here farther it will be proper to take Notice of ſomething, concerning which the Mind takes in as clear an Idea as of any thing whatſoever; which although it cannot properly be accounted an Affection, or Property of Body, yet the Idea of Body does ſo readily and naturally inculcate it, that it is impoſſible to reaſon juſtly about the Properties and Affections of material Subſtances, without having it always in View; and that is what commonly is called *Space*, and is underſtood to be deſtitute and empty of all Matter; and to this the Property of Extenſion is as juſtly to be attributed as to Body. It is eaſy to conceive of two Bodies at a Diſtance to be moved towards one another, until they come to touch, without diſplacing any other ſolid Body; as likewiſe to be again ſeparated to the ſame Diſtance from each other as before, without ſuppoſing any other Bodies Interpoſition; whereby we come at a clear Idea of Space, void of all material Subſtance, when we have a full Conception in our Minds of that immediate Void between the two ſeparated Bodies. There is alſo no manner of Difficulty of conceiving the Motion of any one ſimple Body alone, without the Neceſſity of another's entering into its Place; all others at that Time being ſuppoſed to be at reſt; by which Means, the Place the moving Body did take up, before its being put into Motion, muſt be deſerted; and, while others are at

Reſt,

Reſt, remain a Void, and into which any other Body, not exceeding its Dimenſions, may enter without any manner of Protruſion or Reſiſtance.

However any rational Creature came ſo far to impoſe upon himſelf, as to entertain a Diſbelief hereof, I cannot eaſily imagine. But it is certain, that ſuch have been the Prejudices which ſome Perſons have taken up from an unaccountable Bigotry to Syſtematical Learning, and to thoſe Hypotheſes particularly which have had the Maidenhead of their Underſtandings, as to have raiſed Controverſies hereupon. Some with their Heads full of the Tricks of a *ſubtle Matter*, and others, out of a religious Dread of charging ſuch an odious Thing as a *Vacuum* upon Nature, have not made any Difficulty ſometimes of arguing themſelves out of their Senſes. For ſuch as have not quite outgone all Regard to their Teſtimony, cannot but be fully convinced, as well as from Reaſon, by an Abundance of convincing Experiments (for this Purpoſe contrived) of the Truth hereof: Although in this Idea there may indeed be made ſome Diſtinction from thoſe before taken Notice of, *viz.* That it is rather from a privative, than a poſitive Cauſe: But (as the excellent Mr *Locke* hath already made it fully appear) nothing is more certain, than that we have a great many of our poſitive Ideas or Perceptions even very clear and diſtinct from private Cauſes, as of *Reſt*, *Silence*, a *Shadow*, and many others. But for a full Account of the ſophiſtical Reaſonings, by which ſome have endeavoured to impoſe both upon themſelves and others herein, with a full refutation of them, the Reader may conſult *Borelli de Motibus naturalibus à Gravitate Pendentibus*, Prop. 247,—270, *and Mr* John Keil's *Second Lecture*, in his *Introductio ad Veram Phyſicam.*

There is another Idea likewiſe, which we obtain from our Senſes of the Properties of Matter, and

which appears with as much Certainty, and of which we are able to form as clear and diſtinct Notions as of any of thoſe before mentioned, and that is Motion; although indeed it is not in the ſame Reſpect neceſſary and eſſential to it, becauſe we can have a clear Idea of Matter without it. By Motion, I mean a Power of being moved by any external Cauſe from one Place to another. About this likewiſe have been raiſed a great many ſophiſtical Cavils, by ſuch who pretend to too much Cunning to be impoſed upon by ſuch deceitful Informers as their Senſes; but theſe alſo may be ſeen very handſomely expoſed by Mr *Keil*, in the above-mentioned place.

With equal Certainty alſo we find an abſolute Incapacity in Matter to put it ſelf into Motion, or any ways to alter the preſent State of its Exiſtence, unleſs by the Force of ſome external Cauſe. For although we find every Body ſuſceptible of Motion from the Impulſes of external Agents, yet there is no manner of Conſequence from the Idea of Body, to a Power of putting it ſelf into Motion, but quite the contrary. Let any one conſider the next Stone he meets with, firmly compacted and at reſt, and ſee if he can poſſibly conceive in it a Power of ever being otherwiſe, and not be forced to conclude that it muſt neceſſarily for ever remain ſo, unleſs put out of that State by the Means of ſome external Power.

But yet notwithſtanding the Impoſſibility of conceiving a power of Self-motion to be inherent in Matter, according to the moſt ſimple and moſt natural Idea we can have of it; yet we are evidently convinced by our Senſes, that its Omnipotent Creator hath endued it with a Power or Tendency of Motion towards ſome determinate Point or Center, which Power we commonly call Gravity. Although likewiſe as to this Property there does not appear any neceſſary

neceſſary Conſequence from the Idea of Body, that it ſhould be endued with it; yet we find it to hold good in all Bodies or Parcels of Matter whatſoever. If any Body, ſuſpended in a Fluid ſpecifically lighter than it ſelf, be let go, it will tend towards ſome determinate Point; or, as we commonly ſay, fall until it reſts againſt ſome other hard conſiſtent Body, which hinders its farther Progreſs. And this Property, or Affection of Matter, is the ſame alſo as is meant by the Term Attraction; the Laws and Determinations of which, as will preſently further appear, are the only Guides we can have in finding out the Powers of all phyſical Agents. From Motion alſo we come by ſeveral other Ideas, as of Time, Duration, Succeſſion, Place, and Number, which in phyſical Diſquiſitions cannot but frequently be made uſe of.

The laſt general Property of Matter which I ſhall take Notice of (for the Knowledge of which alſo we are beholden altogether to the Information of our Senſes) is its wonderful Diviſibility, or a Power of being broke and divided into Parts of the moſt conceivable Smallneſs. There are a great many Phænomena in Nature, not any ways to be accounted for by a Perſon that is not very well apprized of this Property. As for thoſe Geometrical Demonſtrations which are brought to prove its infinite Diviſibility, I cannot underſtand them to be of any farther Uſe than to ſhew the Penetration of their Inventors; becauſe there are ſuch a Multitude of Inſtances, whereby this Property ſufficiently appears to thoſe as are not at all acquainted with ſuch Methods of Reaſoning. As in the Ductility of Gold; when a Piece of Silver is covered with it, although as thin as poſſible, and that Silver drawn out into the greateſt poſſible Length, exceeding a great many Thouſand Times its former, it will, notwithſtanding, ſtill appear in all its Parts to be covered over as at firſt with Gold;

Gold; which Parts farther being cut as ſmall as poſſible to be viewed by the naked Eye, as every Part has ſome Gold upon it, ſo it cannot but convince the Beholder, to what a prodigious Smallneſs of Parts it may be divided. Monſieur *Robault*, in his *Phyſicks*, *Cap.* ix. *Part* I. has computed with a great deal of Exactneſs, into how many Parts any given Quantity may be divided; as alſo hath Dr *Edm. Halley*, in the *Philoſoph. Tranſact.* No. 194, done the ſame. This wonderful Diviſibility of Matter alſo very much appears in the Effluvia of odoriferous Bodies; ſo ſmall a Quantity as a Grain Weight of ſome of which, will emit ſuch Plenty of Effluvia, and for a conſiderable Time, with ſuch little Waſte of Subſtance, as would be incredible, were it not ſo evidently confirmed by the Teſtimony of our Senſes. For it is on all Hands agreed, that what ſtrikes the Senſes from an oderiferous Body, is actually corporeal, and proceeds from that Body; and whereas there are a great many odorous Subſtances, which in very ſmall Quantities will remarkably affect the Senſe of Smelling at great Diſtances, it is neceſſary, that through all that Space in which it is ſo perceivable, there ſhould actually be diffuſed a great Plenty of Particles exhaling from that Body; and inſomuch, that whereſoever a Perſon is within that Compaſs, thoſe Organs which are ſuited to receive ſuch Impreſſions, ſhall be ſtruck upon and affected by thoſe Particles.

Thus we come by thoſe general Notices of Body, which are the Materials of all phyſical Knowledge, the eſſential Properties of Matter likewiſe may upon this Account be differently conſider'd, that ſome of them are always the ſame in all Reſpects in all the Compoſitions of Matter, but that others will admit of different Modifications. Thus Solidity and Inactivity, or an Incapacity of Self-motion, are in all Reſpects the ſame in all Parcels of Matter; every Particle

Particle of any Fluid is in itſelf as ſolid as the Particles of the moſt hard and conſiſtent Body whatſoever; nor can any one Body be ſaid to be ſolid one way, and another Body another way; for the Cauſe that makes one ſo, makes alſo the other ſo, and exactly in the ſame Manner and Degree. Howſoever likewiſe any particular Parcel of Matter is managed, and although it be broke and ſubtilized into Parts of the moſt conceivable Smallneſs, yet it even then is as far from having in itſelf a Power of Self-motion, as it had in a much groſſer Form. But as to Figure and Extenſion, or Magnitude, although there is no Body whatſoever but muſt neceſſarily be endued with them, and exiſt under ſome Figure or other, and Degree of Extenſion, yet they may be very different in one Body from what they are in another; and from the continual Occurſions and Attractions of moving Bodies, we find them continually ſubject to Changes; the Points of ſome being ſtruck off, whereby they loſe both their former Figure and Bulk, and others by their mutual Gravitations or Attractions towards one another, cohere and form Corpuſcles of new Shapes and Dimenſions.

Thus farther, as Figure and Magnitude are the only eſſential Properties which can be diverſify'd, ſo from their different Modifications, with Motion, reſults all that Variety of Forms and Appearances under which the material World does exiſt: For if the other eſſential Properties will admit of no Variation, then it neceſſarily follows, that what adventitious or accidental Qualities ſoever Bodies appear to be endued with, they are owing altogether to the peculiar Diſpoſitions of the two former, as they happen to be wrought upon and modify'd by any external Cauſe, and as thereby they are empower'd by their peculiar Figures, Bulks, and Motions, either to affect us or other Bodies in any particular manner.

And as no Body whatſoever has in itſelf a Power of Self-motion, and as all the Changes and different Forms are not to be effected without Motion, ſo ſuch Motion, from whatſoever external Cauſe it ariſes will always be likewiſe under the Influences of the Figures and Bulks of the moving Bodies, as well as under the Directions of the impelling Force. To know therefore what will be the Conſequences of the Impulſe of one Body upon another, with Relation to the changing the preſent Form of its Exiſtence, and giving it new Qualities, it is firſt neceſſary to find out the Laws of their Motions, and learn by why Properties in the moving Body thoſe Laws are determinable.

But to give an Inſtance how theſe are influenced by the Figures only of the moving Body, let us imagine two or more Bodies of the ſame Magnitudes and Gravities, but unequal in their Figures; as ſuppoſe one a Globe, another a Cube, and another in the Form an Hemiſphere, to ſet out together from the ſame Place with equal Velocities through the ſame *Medium*, and in Directions horizontal and parallel to one another: Both their Velocities and Directions would quickly be determined very different from what they were at the firſt ſetting out, by the different Oppoſition they would meet with from the *Medium*; their Velocities would ſoon become unequal, by the different Capacities of their Figures to divide it. For to make Room for their Paſſage, ſuppoſe the *Medium* to be Air, but under no Flux or Tendency towards any particular Point, it muſt firſt recede or be moved out of the Way by the Preſſure of the moving Body; according to the Difference of which Preſſure, the moving Body becomes more or leſs retarded in every Point of the *Medium* it paſſes through, ſo that their Velocities will then be as the Breadth of their foremoſt Surfaces, or as the Length

of

of thoſe Diameters that are perpendicular to the Lines of their Directions; wherefore becauſe the Hemiſphere contains (by Suppoſition) as much Matter as the Sphere, and conſequently has ſome ways a greater Breadth, or a larger Diameter, and other ways leſs than the Sphere, when it happens to move with its longeſt Diameter perpendicular to its Direction, it cannot poſſibly move with the ſame Velocity as that of the Sphere, notwithſtanding they are impelled by equal Powers, becauſe it ſtrikes againſt more Points of the *Medium* at the ſame time, and thereby undergoes the greateſt Retardation; and if it happens to move with its ſhorteſt Diameter perpendicular to its Direction, then it would gain ground of the Sphere, by its not meeting with ſo much Oppoſition in its Progreſs. And ſo according to every one's Figures and Poſitions to their Directions, would their Velocities be more or leſs retarded.

In like manner will their Directions ſoon be varied, by the Difference of their Figures; for the Sphere (ſuppoſing the Reſiſtance of the *Medium* to be uniform on all Sides, and likewiſe that the Sphere itſelf had no other Tendency but that way where the impelling Force had directed it) would fly in a right Line until its motive Powers were wholly ſpent; but ſince the Air, through which it is ſuppoſed to move continually, weighs upon it, and preſſes it downward, and likewiſe that it hath in itſelf an Inclination different to the Line of its Direction, *viz.* towards the Earth, by the Influence and Concurrence of theſe two Powers, it muſt neceſſarily deſcribe a Curve Line, continually tending nearer the Earth, as its motive Powers decreaſe upon the Reſiſtance of the *Medium*. But neither of the Bodies in the Figures of a Cube or a Hemiſphere, will be able to deſcribe ſuch a Line, becauſe the Inequality of

their Surfaces will expoſe them to an unequal Preſſure or Reſiſtance. For by the foremoſt Point of the moving Body muſt the *Medium* be divided, which recedes, upon its Impulſe, laterally; but if from that foremoſt Point of the moving Body, its Surface ſtretches out farther on one Side than on another, or comes nearer to a right Angle with the Line of Direction than the other, that is, than the oppoſite Side does; then it meets with a greater Stroke on that Side than on the other, and conſequently is deflected from its firſt Direction that way where it meets with the leaſt Reſiſtance, and thereby receives a new Direction, which likewiſe will again be ſoon chang'd by the ſame Cauſes.

And thus we find a vaſt Diverſity in the Circumſtances of Motion, meerly from the Diverſity of the Figures of moving Bodies; but when we come to conſider what the current Varieties both of Figures and Magnitudes can perform, the Determination and Effects of their Motions will be found almoſt infinitely various, and ſurprize us to think what a Multiplicity of Productions or Effects, are deducible from ſo few Principles. For whatſoever Virtues or Affections we find in any Bodies, after what manner ſoever they affect our Senſes, or ſeem to operate upon one another, it muſt be by the different Modifications of the Figures, Bulks, and Motions of their compotent Parts. And without an Impulſe, either by mediate or immediate Contact, ſufficient to excite a Motion or ſome Change from their former Poſitions, it is very manifeſt, that two Bodies cannot have an Effect or Influence upon one another; but this Motion we likewiſe find is influenced by the Figures and Magnitudes of the moving Bodies; and therefore muſt it neceſſarily follow, that whatever Qualities or Virtues any Bodies are endued with, or whatſoever Appearances they exhibit, they muſt originally

ginally flow from theſe two primary and eſſential Properties of Matter, Figure, and Magnitude; and conſequently whatſoever Notions we form in our Minds concerning the Principles of mixed Bodies, whether we ſuppoſe them altogether ſimple and incompounded Particles of Matter, or little Cluſters generated from the Coalitions of thoſe primary Particles; yet, as to their Capacities and Affections in the Compoſition of Bodies, it is all one, ſeeing they cannot be endowed with any other than what they derive from their proper Magnitudes and Figures

From this it is a very natural Conſequence, that to know the Properties, Virtues, or Qualities of any Body, or Parcel of Matter whatſoever, that is, to know what that Body is able to do upon another, or how far to change it, it is abſolutely neceſſary firſt to be acquainted with the Bulks, Figures, and Motions of its ſeveral Parts; for when this is known, then the Conſequences of their Impulſes upon the other will alſo be with Eaſe determined. Thus, as I am certain that the conſtituent Parts of a fluid Body muſt be ſo far round, and admit of ſuch ſmall Contacts, as eaſily to roll upon one another, without any Reſiſtance of Angles or Coheſion of Parts; ſo I am certain, that if any foreign Matter, or ſuch Parts of any other Body, as will both by their Fitneſs to cohere with the Parts of the Fluid, join with them, and by their Angles prevent their Flux one over another; if any ſuch Matter, I ſay, hath Force enough given it to divide the Parts of the Fluid, and mix with it, it cannot but immediately take away its Fluidity, and render it hard and conſiſtent. And thus it is when there is ſuch a Set of Particles ſupplied from the Air, with Weight and Force enough to divide and mix with the Particles of Water, that they immediately fix it, and from a yielding flowing Body, change it into a brittle conſiſtent one.

Thus alſo it is manifeſt, that when we ſee any Metal flux'd by Fire, it is brought about by mixing a Number of Particles with it, which, by their wonderful Smallneſs and Rapidity of Motion, are able to inſinuate themſelves between all the Parts of the Metal, and divide their Contacts, whereby they will ſlide upon, and roll over one another, as it is common to the conſtituent Parts of any Fluid. But whereas theſe Parts which were ſupplied from the Fire, are ſo much lighter than the Parts of the Metal, they will, whenever they get at the Surface, fly off; and therefore as ſoon as their Supply is removed, the metallick Particles will again join and cohere as before.

Farther likewiſe, when we ſee a Thread or Cord ſhorten'd by thruſting it full of Spikes or Pins, and afterwards that wetting it with Water only will do the ſame, it is without all Diſpute that the conſtituent Parts of the Water act alſo as ſo many little Wedges, which by their Number make up what is wanting in Bulk, and by their prodigious Smallneſs, require but a very weak Motion to carry them in between the compotent *Fibrillæ*, and diſtract them, whereby they become equivalent to any other given Force, and are ſufficient thereby to raiſe as great a Weight, that ſhall be tied to hinder the Cord's Contraction.

And thus by a Multitude of Inſtances may it be demonſtrated, that in all our Knowledge of material Subſtances, we are carried on by the ſame Steps, and that we are obliged all the way, to picture them in or Minds, and keep in View the Figures, Magnitudes, and Conditions of Motion of whatſoever is under our preſent Enquiry; and to find out their Virtues and Properties, with regard to their Operations either upon our Senſes, or upon one another, juſt in the ſame manner as we came to trace out the Truth

Truth of the above-mention'd Propoſition, That *the three Angles of any Triangle are equal to two right ones*. And to this Purpoſe in thoſe greater Bodies or Collections of Matter, which Artificers contrive and put together for the making any particular Machine, in order to know the Powers of that Machine, and what it will do, it is abſolutely neceſſary to learn both the exact Shapes of the ſeveral Parts, and alſo to underſtand the Reaſons of their Poſitions to one another, and the Powers by which, upon that Account, they have of Motion, and of anſwering all the Purpoſes of the Contriver.

Now from theſe Conſiderations, and the Aſſiſtances we have from our Senſes, in meaſuring and computing the Figures, Magnitudes, and Celerities of the ſeveral Inſtruments, it is, that we come by a Set of Rules or Laws, whereby always to determine all the Circumſtances and Conditions of Motion in any Body or Machine whatſoever; ſo that if any of the Conditions are known, the other alſo may be found out; as for Inſtance, the Bulks, that is, the Quantities of Matter (ſuppoſing their Figures the ſame) of two moving Bodies being known, and their Celerities, their *Momenta*, or Percuſſions, may alſo be known by conſidering them as Rectangles under their Bulks and Celerities; alſo if their Bulks are the ſame, their *Momenta* will be as their Velocities; and if their Velocities are equal, their *Momenta* will be as their Bulks; and likewiſe if their Percuſſions are as their Magnitudes, their Velocities muſt be equal. And thus from many of the known Conditions of Motion, with the utmoſt Certainty may the other alſo, before unknown, be demonſtrated; the Rules by which we are enabled to do this being grounded upon the ſame Evidences as our Knowledge even of the Exiſtence of the Inſtruments, when we ſee and handle them.

Wherefore, (as it hath already been obſerved) if Matter, howſoever modified, cannot move it ſelf, and there cannot be any Change brought about in it without Motion, and if that Motion is under the Influences of theſe Cauſes, and determinable only by ſuch Rules; then it is moſt certain, that whenſoever our Enquiries are engaged about the Powers and Virtues of the moſt minute and unheeded Compoſitions of Matter whatſoever; that, I ſay, we are to be guided only by thoſe very Rules, by which we are enabled to determine the Powers of the moſt bulky and conſpicuous Bodies. And it is a cloſe Application and Adherence to theſe Guides, in phyſical Searches, that is called *Mechanical* Reaſoning; and ſo far, as any of the Conditions of Motion can be diſcovered, ſufficient to demonſtrate by thoſe Laws, thoſe that are unknown, is juſtly called *Mechanical Knowledge.* And thus as the Logick of the Schools furniſhes us with Rules, whereby to diſtinguiſh thoſe Ideas we take in by Reflection, and are meerly ſpeculative of incorporeal Beings; and teaches us, by a careful Attention to their Agreement or Diſagreement, to advance and prove ſeveral Propoſitions concerning them; ſo are thoſe Laws of Motion, which we are ſupplied with from *Mechanicks* (if I may ſo term it) a *material Logick*, by which, according to our peculiar Make, and the very Neceſſity of our Beings, we are carried on from our firſt Notices of Matter, to the utmoſt Extent of our Knowledge about corporeal Things; that is, as our firſt Notices of Bodies are from our ſeeing and feeling them; ſo thoſe Laws by which we are conducted in the moſt diſtant Searches about them, are all the way ſupported by the Evidences of thoſe Senſes. And upon this Account it is, that phyſical Knowledge is aſſiſted by picturing and drawing to view the Figures and Dimenſions of thoſe Inſtruments, or Agents, that are under

under Conſideration, whereby their Powers and Efficacies are the better determined and demonſtrated: And this it is that ſometimes occaſions a Neceſſity, or at leaſt makes very uſeful thoſe Diagrams in Phyſical Books, which are apt to move either the Contempt or Laughter of thoſe conceited People, who meerly for want of Acquaintance with themſelves, and the Powers and Capacities of their own Mind, are, juſt as their Blood happens to circulate, either *Enthuſiaſticks* or *Scepticks*.

Having thus endeavoured to inculcate a true Notion of *Mechanical Knowledge*, and to prove it the only Way by which we can know any thing of the Nature and Properties of Bodies; it might be of Service alſo to expoſe the common Prepoſſeſſions about *ſubſtantial Forms*, *Privations*, *occult Qualities*, *Sympathies*, *Antipathies*, *Nature's Abhorrence of a Vacuum*, and ſuch like deluſory and imaginary Exiſtences; which have no manner of Foundation in Nature, and are of no other Uſe than to puzzle an Enquirer into Truth, and to ſhew the Subtilty and Cunning of their Inventors. But this would be of too great a Length: I ſhall therefore take no farther Notice than of what may be underſtood by *Form* and by *Quality*, theſe Terms being made moſt uſe of.

Every Body exiſts under ſome *Form* or other; but then that Form is nothing elſe than a diſtinguiſhing Modification of the common Matter of which that Body is compoſed, ſo as clearly to give it a peculiar Manner of Exiſtence; that is, it is an Aggregate or Convention of as many particular Qualities, as ſerve to denominate a Body of ſuch a Nature, and to give it ſuch a Name, and to diſtinguiſh it from other Bodies. As the Qualities of the greateſt *ſpecifick Weight*, *Ductility*, *Diſſolvability* in *Aqua Regis*, and not in *Aqua Fortis*, and *Yellowneſs* of Colour, make

up

up the Form of that Metal which is called *Gold*. So that it was not any Kind of ſubſtantial Soul, or Subſtance diſtinct from Matter, but only ſuch a proper and agreeable Convention of Accidents, as by common Conſent are reputed ſufficient to make any Portion of Univerſal Matter belong to this or that determinate *Genus* or *Species* of Natural Bodies. They have been much therefore led out of the Way, who have been taught, that the ſeveral *Species* of Bodies are owing to any internal *ſubſtantial Forms*, diſtinct from the peculiar Modifications above-mentioned.

What is to be underſtood by the Word Quality, is ſo admirably well explained by that great Maſter of Reaſon and good Senſe, Mr *Locke*, that what I ſhall here inſert will be chiefly a Tranſcription from him; in which, if any thing ſeems a Repetition of what has been ſaid before, I deſire it to be excuſed, becauſe I am unwilling to cite any thing imperfectly from ſo excellent a Perſon.

Whatſoever the Mind perceives in itſelf, or is the immediate Object of Perception, Thought, or Underſtanding, is called an *Idea*; and the Power to produce an *Idea* in the Mind, is called a Quality in the Subject wherein that Power is. Thus a *Snow-Ball* having the Power to produce in us the *Ideas* of *White*, *Cold*, and *Round*; the Powers to produce thoſe *Ideas* in us, as they are in the *Snow-Ball*, are called *Qualities*; but as they are Senſations or Perceptions in the Underſtandings, they are *Ideas*.

Qualities thus conſidered, are either ſuch as are utterly inſeparable from a Body, under what Mode of Exiſtence ſoever it be; ſuch as it conſtantly keeps through all the Changes and Alterations it goes through from any external Force whatſoever; and ſuch as Senſe conſtantly finds in every Particle of Matter, which has Bulk enough to be perceived, or the

the Mind finds as neceſſarily inſeparable when leſs, than to make itſelf ſingly taken notice of by the Senſes: Of this kind are Solidity, Extenſion, and Figure, which are properly called original or primary Qualities; or elſe ſuch as in truth are nothing themſelves, but have a Power to produce various Senſations in us by Means of the different Diſpoſitions or Modifications of theſe primary Qualities, that is, by the Bulks, Textures, and Motions of the inſenſible Parts of thoſe Bodies that are ſaid to be endowed with them, as Colours, Sounds, Taſtes, and the like; and theſe may be called *ſecondary Qualities*.

It will be further uſeful to conſider, by what Means it is that we come by the Ideas of thoſe Qualities of Bodies in our Minds, which upon Enquiry will be found impoſſible any other way than by ſome Impulſe made upon the Senſes by thoſe Bodies, either immediately or mediately. For a Portion of Matter under whatſoever kind of Modification, cannot any ways affect another, though never ſo near it, but by Contact: If therefore external Objects are not united to our Minds, when they produce Ideas in them, it is evident, that ſome Motion muſt be continu'd by the Nerves and Spirits from that Part firſt affected by the Object, to the Seat of Senſation, there to excite thoſe particular Ideas; and likewiſe, that ſince Bodies do affect, or that the qualities of Bodies are at a Diſtance perceivable by the Senſes, 'tis neceſſary that thoſe Impreſſions be made either by the Mediation of ſome other Bodies which interpoſe, or by the Motion of inſenſible Particles ariſing from the Bodies themſelves, and affecting the ſenſitory Organs. From Sight and Touch we come by the Ideas of the eſſential and primary Qualities of Bodies, Solidity, Extenſion, *&c.* which Qualities, when not perceived or taken notice of by the

Senſes, are as abſolutely and as neceſſarily in thoſe Bodies, as when under ſuch Perceptions: But the Ideas of ſecondary or accidental Qualities, depending upon particular Modifications, and ariſing from the Operation of the inſenſible Particles of Bodies upon the Senſes, whatever may by Miſtake be attributed to them, are in Truth nothing in the Objects themſelves, but entirely depend upon the various Diſpoſitions of the primary and eſſential Properties of Matter, being nothing elſe than Powers in Bodies of producing thoſe Senſations in us; for what is Sweet, Red, or Heat in Idea, is nothing but the Bulks, Figures, and Motions of the inſenſible Parts of thoſe Bodies, which are ſaid to be ſweet, red, or warm.

The great Mr *Locke* further goes on to this Purpoſe, to take notice that Flame is ſaid to be hot and light; Snow, white and cold; and *Manna*, white and ſweet, from the Ideas they produce in us; which Qualities are through Miſtake thought to be the ſame in thoſe Bodies as their Ideas are in us; and yet he that will conſider, that the ſame Fire which at a Diſtance produces the Senſation of Warmth, does, upon a nearer Approach, produce a very different one, which is that of Pain, will ſcarce be brought to affirm that Pain is actually in Fire, becauſe it gave him ſuch a Senſation, altho', perhaps, before he believed Warmth to be in it for the ſame Reaſon. A Perſon will be very ready to affirm, that Whiteneſs and Coldneſs are in Snow, but will not allow Pain to be ſo; and yet Snow will produce all thoſe Ideas in us; and all by the ſame Means, to wit, by the Bulks, Figures, and Motions of its inſenſible, ſolid, and conſiſtent Parts. Now the particular Bulks, Figures, and Motions of Fire or Snow are actually in them, whether the Senſes perceive them, or not; and therefore they very properly may be called eſſen-

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tial and real Qualities, becauſe they really and neceſſarily exiſt in thoſe Bodies; but Light, Heat, Whiteneſs, or Coldneſs, are no more really in them, than Sickneſs or Pain is in *Manna*.

A Piece of *Manna* of ſenſible Bulk, has the Power to produce in us the Idea of a round or a ſquare Figure; and by being moved from one Place to another, the Idea of Motion. This Idea of Motion repreſents it, as it really is, in the moving *Manna*; a Circle, or Square, or any other mathematical Figure, is the ſame whether in Idea or Exiſtence; and thus both Motion and Figure are really in the *Manna*, whether we take Notice of them or not. But beſides theſe Properties, *Manna* has ſometimes a Power to produce the Senſations of Sickneſs and Pain; yet Sickneſs and Pain are not in the *Manna*, but only Effects of its Operations upon us, and are no where when we do not feel them: This every one will readily agree to; and yet it is hard to be brought to think, that Sweetneſs and Whiteneſs are not really in *Manna*, which are but the Effects of its Operations, by the Motion, Size, and Figures of its Particles on the Eyes and Palate; as Pain and Sickneſs are nothing but the Effects of its Operations on the Stomach and Guts, by the ſame means.

That all the Qualities or Virtues of Bodies depend only on the different Modifications of thoſe eſſential and primary Qualities before-mentioned, may be further made appear by a great Number of Inſtances. That a Tincture of red Roſes may only by a few Drops of Spirit of Vitriol, be very much heightened, or by Spirit of Sal Armoniac changed green. That the purging Quality of Rhubarb may, by toaſting at the Fire, be entirely deſtroyed, and the Rhubarb render'd aſtringent; and ſeveral other Alterations of the like Nature are known by common Experience. As likewiſe that an Almond, from a clear white Colour,

may

may be altered into a dirty one, and from a ſweet pleaſant Taſte into an oily one, and all only by the beating of a Peſtle; which cannot but put it beyond doubt, that theſe ſecondary Qualities of Bodies do entirely depend upon the particular Modifications of the former; and that beſides Solidity, Bulk, Figure, Extenſion, Number, and Motion, all the other Affections of Bodies, whereby we range them into ſeveral Species of Kinds, and diſtinguiſh them from one another, are nothing elſe but ſeveral Powers in them, reſulting from and depending upon the various Diſpoſitions and Modifications of thoſe primary and eſſential Qualities; whereby they are fitted, either by immediately operating upon our Bodies, to produce ſeveral different Ideas in us; or elſe by operating on other Bodies, ſo to change their primary Qualities, as to render them capable of producing in us Ideas different from what before they did. As when the Sun melts or blanches Wax, or Fire renders Lead or any other Metal fluid, that was before hard and conſiſtent; the different Appearance, which the Wax ſo melted or blanch'd, and the Metal ſo melted do exhibit, are not from any real Qualities in the Sun or Fire, but only Powers in them, ſo to alter the Textures of thoſe Bodies, as to appear very different from what they did before: and therefore as the different Appearances which the melted or alter'd Bodies do exhibit, as indeed alſo all other Bodies may properly be called ſecondary Qualities immediately perceivable, ſo the Powers one Body has of changing another, that is, by altering the preſent Form in which it exiſts, as the Sun Wax, or the Fire Metal, from a conſiſtent into a fluid State, may be termed not improperly, Qualities *mediately* perceivable.

The Qualities and Virtues of all material Subſtances thus appearing to operate upon us, or upon other Bodies, either by their immediate Contact, or by their

their Impulſes upon interpoſing Bodies; and it being evident from Experience, that ſeveral do affect others at a Diſtance by the Emiſſion of ſubtle *Effluvia*, as odoriferous Bodies; and theſe being corporeal, their Motions and Affections are determinable by the ſame Laws and Conditions, as thoſe of the moſt bulky and ſenſible whatſoever. As ſuppoſe A, *Fig.* 7. to be a Body from whence any Quality exerts itſelf round about (the Air or *Medium* thro' which it paſſes being in no Flux) according to the right Lines A e, A f, A G, *&c.* the Efficacy of the Quality, whether it be Heat, Cold, or Odour, will be at the ſame Diſtances equal, and as the Thickneſs of the Rays or exhaling Particles; but when the Rays of the inward Circle, or ſpherical Superfices, b, c, d, H, come to be farther extended, according to the ſuppoſed Direction, in right Lines, to the other ſpherical Surface, e f G K, they will be much leſs thick than before, that is, the Qualities of the Body A will be much more remitted or abated at the Diſtances e f G, than at b c d; and ſuch Remiſſion or Abatement will be in a duplicate *Ratio* of the Diſtance from the Center of Radiation, or the Qualities Exertion; or they will be remitted in a Proportion reciprocal to the Spaces they take up: That is, if the outer Surface be double the inner, the Rays there will be but half as thick. But ſince ſpherical Surfaces are as the Squares of their *Radii*, therefore the Efficacy of the Quality in the inner Surface will be to that of the outer, as the Square of A e is to the Square of A b; or, which in other Words is the ſame, the Remiſſion of the Efficacy of the Quality in the outer Superfices will be to that of the inner, as the Square of the *Radius* of the outer exceeds the inner. This Mr *John Keil* teaches in his *Introductio ad veram Phyſicam.*

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By the ſame Methods are determinable the Efficacies of all corporeal Qualities, howſoever influenc'd or affected by circumambient Bodies, becauſe, as was ſaid before, the moſt ſubtle *Effluvia* that can poſſibly exhale or be emitted from any material Subſtances, as they ſtill remain ſomething corporeal, their Motions, Occurſions, and all Alterations occaſioned by them, muſt neceſſarily be by ſuch Laws and Conditions, as the moſt bulky Bodies of the Univerſe are governed by. From all which, I ſay, it appears very plain, that the Properties and Virtues of all Bodies whatſoever are knowable only upon Principles, whoſe Evidences ariſe from Senſe; but that their Operations and Affections depend upon, and are to be accounted for, from the Influences of immaterial Agents, called *Forms*, *Qualities*, *Souls*, or any other Name whatſoever, is only a meer Chimæra, a Creature of the Imagination, and without any manner of Foundation in Nature.

Having thus explained what is to be underſtood by mechanical Knowledge, and proved, that by the ſame Guides and Aſſiſtances all that we know of material Subſtances is taken in; it follows next to ſhew, that a human Body alſo muſt be conſidered in the ſame Light. For notwithſtanding the Excellence of its Compoſure, and the wonderful Variety and Fineneſs of its Parts, upon which ſo many extol it, and ſeem to raiſe it to a ſtrange Preheminence above the reſt of the Creation; notwithſtanding all this, I ſay, when it comes to be conſidered with regard to its Structure, and the Mechaniſm by which the Offices of its ſeveral Parts are carried on, in order to find out the beſt Methods, either of continuing thoſe Functions perfect, or of regulating them when diſordered, a Man will find himſelf under a Neceſſity of uſing it no better than any other Part of the mate-

rial World of much viler Account: Becauſe herein he cannot come to any manner of Certainty, without taking it to pieces like any other Machine, and conſidering all the Parts of the Movement as ſo many Springs, Wheels, and the like, which, by Virtue of their particular Figures, Magnitudes, and Contextures, are enabled to carry on their ſeveral Motions.

It has ſomething in it that would move one's Laughter as well as Amazement, to reflect upon the Extravagancies of ſome ſubtle crafty Heads, who, to account for the Operations of a human Body, have abſtracted and ſpiritualized upon it (if it may be ſo termed) ſo far as to aſſign every particular Part ſome ſort of Intelligence or Soul, which rules and manages it in the Performance of its Offices. This wonderful Contrivance, indeed, not only ſhews abundance of Penetration in the Authors of it, but alſo ſaves a great deal of Trouble in the Manner of its Attainment; for by this we come at once to know that the *Stomach* digeſts, that the *Liver* ſanguifies, and that the *Brain* makes Spirits; becauſe theſe Parts have ſuch Faculties preſiding over them, which, as long as they are pleaſed, make one digeſt, another ſanguify, and ſo on, as the Occaſions of the Conſtitution require. And upon this Means likewiſe, there is laid open a direct and pleaſant Road to the Art of Healing, when any one Part happens to be diſtemper'd. For to this there is no more required, than to apply ſuch Remedies, as the indiſpoſed Faculty delights in, and will be comforted and ſtrengthened by. And of this kind we never fail of being plentifully ſtored, by the indefatigable Searches and Diſcoveries of ſuch as have been converſant with the Planets, and are verſed in the occult Sciences. So that every Medicine given to rectify the Diſorders of any particular Part, ſeems only

to be a kind of Sacrifice to the preſiding Deity of that Part.

And this is very like to be the Reaſon how Perſons of warm Imaginations, and great Devotion, ſo very eaſily come to be Phyſicians, becauſe the Merit of the Sacrifice is ſo much enhanſed by the Qualifications of the Perſon who offers it.

But that extraordinary Chymiſt, *Van Helmont*, has carried this Way of Reaſoning ſtill much farther; and to make the Work ſhort, has ſet but one general Deity over the whole, which he calls the *Archæus*; and by this, he has not only ſhewed a commendable Zeal againſt Polytheiſm, and thrown out of the human Body all thoſe *Pagan* Deities, which hath their Riſe only from the Invention of a corrupted Generation; but has alſo laid upon a ſtill much nearer Way to the Art of Healing, if any one could be ſo happy to find out that particular Oblation, which his *Archæus* would vouchſafe to accept of; but this is what I think yet remains undiſcovered, or at leaſt is reſerv'd as a religious Secret amongſt the Adepts of this Philoſophy. But upon this View, *viz.* to find out ſomething for this great Purpoſe, it is that the *Diſpenſatories* are ſtuffed with *Polychreſton's*, *Panpharmacon's*, and *Panacæa's*, and I know not how many univerſal Medicines: For let the Diſtemper be what it will, or ſeated in whatſoever part; yet as it has its Riſe from ſome Diſturbance given to the *Archæus*, ſo, whatſoever can be found to quiet and appeaſe this preſiding power, will alſo bring about a Cure, by reſtoring it to good Temper, and bringing it thereby to govern and carry on all the ſeveral Functions as before.

But to return from theſe abſtruſe Speculations about Intelligences, and I know not what imaginary Beings, into the Road of common thinking, where the groſs Senſes of Seeing and Feeling are our only In-

Informers and Guides: A human Body. I ſay, ſo far as it is a Compoſition of the ſame Matter with that of all other corporeal Beings, its Structure and Operations cannot be enquired into and accounted for, but upon the ſame Method of procedure as we are under a Neceſſity of uſing with all other portions of Matter. For even the *Animal Spirits* themſelves, concerning which there are ſo many fine things ſaid, if by them is meant nothing but what is corporeal, their Natures and Efficacies are to be enquired into upon the very ſame Grounds, and all their Properties are derived only from the ſame Cauſes as thoſe of much groſſer Bodies, which is the particular Modifications of their Figures, Extenſions, and Motions: And upon this Foot the ſeveral parts of a human Body are to be enquired into, and examined, as thoſe of any other Machine; and it is neceſſary to be inform'd of the Figures and Contextures, firſt of the more principal, and then of the more ſubordinate or under parts, and likewiſe of all the Conditions and Requiſites of their Motions: and when thus much is known, it will be a Taſk of no great Difficulty to learn, by what Inſtruments and Means it will be beſt to make uſe of duly to carry on thoſe Motions, or to regulate them when diſordered.

And to this purpoſe, notwithſtanding the wonderful Variety, both in the Number and Structure of its ſeveral parts, yet they are throughout the Whole to be regarded, as ſo many mechanical Inſtruments or Powers, all in Subordination to one another, and ſuited in ſuch a Manner, as to agree in the Support of the whole, and in the due carrying on all the purpoſes of the Oeconomy; and ſeeing their Dependance upon, and Subſerviency to, one another, is ſo ordered, that any one part cannot well ſuffer without bringing a Diſorder likewiſe upon the whole; the Structure and Powers of the moſt minute parts

are, as in any curious Movement, to be known, in order to find out the propereſt Methods of regulating ſuch Diſorders.

But in all this, the firſt Steps ought to be taken from the moſt ſimple and eaſy Notices we have of it, and from them by Degrees to enter into its moſt minute parts, in order to explicate its more remote and unheeded Properties. And to this end, it firſt very naturally comes to be conſidered as a Compoſition of Solids and Fluids; the Solids being vaſcular, it is neceſſary to enquire into their Capacities, Figures, and Poſitions; the Fluids alſo being found of different Kinds, and to move with different Celerities, the Cauſes of it come to be enquired into, and the Inſtruments by which their reſpective Motions are communicated, with all the other Requiſites to ſuch a Contrivance.

Farther it appearing impoſſible, that the immediate Cauſe of the Fluids Circulations ſhould be in themſelves; and finding alſo, that as they paſs out of one Veſſel into another, they undergo conſiderable Changes, it comes then to be known, by what particular Mechaniſm it is in the Solids, that they are enabled to give to the Fluids ſuch Motions, and occaſion ſuch Changes upon them, as they paſs them from one part to another: And herein, ſince we are converſant altogether with corporeal Agents, we ſhall be oblig'd, as in all ſuch Caſes, to go upon ſenſible Evidences; and therefore muſt conſider the Solids as certain mechanical powers ſuited for thoſe Ends, or Inſtruments ſubſerving thereunto; and hence they are divided into, and looked upon, according to the Figure and Uſe of each part; as Wheels, Pullies, Wedges, Levers, Screws, Chords, Canals, Ciſterns, Sieves or Strainers, and the like.

The Conſequences likewiſe of the Motions of the Solids upon the Fluids muſt be conſidered, which

is found continually to make ſome Change upon them, either as they paſs them in part into other Veſſels, in order to ſupply a Juice of a different Nature, for ſome farther Uſe, or elſe by convenient Outlets to expel them quite out of the Body. Upon themſelves alſo they cannot but have this Conſequence of breaking finer, and waſte in that Liquor, with which it is neceſſary that they ſhould continually be moiſtened, as in the Movement of any other Machine. Upon both theſe Accounts then there will continually be ſome Loſs or Waſte of Subſtance, which it will be neceſſary to recruit by freſh Supplies in Proportion to what is ſo waſted; of what Kinds alſo theſe ought to be, muſt be known, and the Means by which they are beſt fitted and prepar'd for the ſeveral Occaſions of the Conſtitution.

Upon this View there appears to be two general Seats of a Diſtemper, either the Solids or the Fluids; when it is found therefore to have its Riſe in a general Diſorder in the Solids, by their being too ſlack, or too ſtrait, or the like, then ſuch Remedies may be applied as are known to be effectual in the Removal of that Diſorder; and when by the ſame Means, it is known how any partial Diſorder is brought about, a Perſon acquainted with their Make and Subordination to one another, will ſoon find out the moſt proper Means of Cure. From any general Diſorders likewiſe of the Fluids, as their being too thin or too viſcid, and the like, and an Underſtanding in the Means by which to oppoſe them, a Perſon gradually enters into all their partial Diſorders, and with equal Certainty, learns how to apply proper Remedies.

Now all theſe Matters coming under our Notices only by the Information of our Senſes, and in all our Knowledge about them, being conducted only by mechanical Rules, or the demonſtrative Laws of

Motion, no farther than they will carry us, can we know any Thing herein; but ſo far as can be proceeded upon thoſe Principles, will it be attended with Certainty, and no other way is it poſſible to arrive to any uſeful ſatisfactory Knowledge hereupon. Thus when it is known by what particular Contrivance and Mechaniſm in the Heart and Arteries it is, that the Blood is thrown forward, and continu'd throughout its whole Circuit, it likewiſe is certainly known, either how to diminiſh or increaſe its Motion, and that a great many ways, and with equal Certainty; for herein cannot any Thing be more fully demonſtrated, than that adding to the contractile Force of the Veſſels, is the ſame, as diminiſhing the Blood's Reſiſtance, either by a Subſtraction of its Quantity, or by any Means increaſing its Fluidity; or alſo, that by weakening the contractile Force, will the ſame enſue, as upon an Augmentation of the Quantity of Blood, or by an Increaſe of its Viſcidity.

Farther alſo, when it is known, that the Diſcharges or Secretions made from the Blood, are altered and determined by the Conditions of the Blood's Motion; ſo may a Perſon by the ſame Means, know what Methods ought to be taken to influence thoſe Secretions, and alſo be certain of their Conſequences.

In the whole then, ſo far as a Perſon can conſider a human Body as a Machine, and by the known Laws of Motion, demonſtrate the Powers and Operations of its ſeveral parts, ſo far may be with Certainty known how to manage it, in order to produce any Change therein; that is, if he has proper Inſtruments, and upon the ſame Principles underſtands their Efficacy and Manner of Application. A great Number indeed of the Inſtruments by which it is either injured or mended, are ſo ſmall, as to ren-

der

der it impoſſible with ſtrict Certainty to determine their Efficacies, becauſe it is not poſſible exactly to aſſign their Bulk, Figures, and Motions; and therefore cannot their manner of working upon the Animal Fluids be poſitively known. The Seat of the Diſorder alſo may ſometimes lie ſo many Stages from the firſt taking in of a Medicine, that if at its firſt Entrance into the Stomach, its Properties were never ſo certainly known, yet by the Actions of the ſeveral parts upon it which it paſſes through, and the different Mixtures and Strainers it meets with by that Time it gets to the Scene of Action, its firſt Properties may be quite deſtroyed, and new ones acquired, the Efficacy of which, after ſo many Changes, can never be determined; and this may be the Reaſon why the *Gout*, and ſome other Chronic Diſtempers remain the *Opprobria Medicina*. But notwithſtanding all this, I ſay, a Perſon that truly enters into the Mechaniſm of the Body, will ſeldom ſtand in need of ſuch Helps, eſpecially in Chronic Caſes; becauſe he will often find a much nearer way to the Seat of the Diſtemper, than by the Stomach and Guts, and be able to do much more by *Exerciſe*, *Bathing*, the *Fleſh-Bruſh*, and *Topics*, than by long Courſes of the moſt celebrated *Alteratives*, or *Sweetners*. And thus when there are Symptoms of a preternatural Acidity in any of the Juices, although I cannot be certain how much *Crabs Eyes* will deſtroy it, or in how long Time, or whether it can ever be done by it or no; yet if the Circumſtances and Condition of the Patient will, upon other Accounts, admit of it, a Perſon may with the utmoſt Certainty depend upon overcoming it by any Means that ſtrengthen and increaſe the Vibrations of the Solids, which Exerciſes or cold Bathing cannot fail to do; for by this the Motions of the Fluids muſt be increaſed, by which ſuch Parti-

cles as were before pointed, and gave that Acidity to them, will have by Degrees their *Spicula* broke, and their Angles ſtruck off, and thereby loſe that Property.

In any other Caſe likewiſe, where there is only a partial Diſorder, ſuppoſe of the *Liver*, or any other of the *Viſcera*, according to the Symptoms and State of the Secretions, it may be certainly known by one who underſtands the Make and Office of that part, whether it be from too lax or ſtrait a Tone in the part itſelf, or from too great, or too ſparing a Supply of Fluids, or from the Diſtemperature of ſome neighbouring part with which it communicates; ſuch Means therefore a Perſon will not fail to find out by which with Certainty to remedy that Diſorder, if it falls not in with ſome Contra-Indication; and then only it is, that a Cure cannot be effected. Thus, if from a preternatural Viſcidity of Blood upon too lax a State of the Solids, ariſes a Difficulty of Breathing, there is nothing more certain, than that a Subſtraction from the Quantity of Blood will relieve this Complaint: But becauſe the Solids are already ſuppoſed to be weak, if at the ſame Time ſome *Stimulus* is not given to them, or by ſome Means or other their Contractions increaſed, the remaining Blood cannot give them ſo much Spirits as a greater Quantity; and therefore will their Contractions grow weaker, conſequently very ſoon after the Blood will grow more viſcid, and the old Complaints return with Aggravation; and therefore, is not its Cure to be attempted by Bleeding alone, becauſe it may ſo prove injurious, and even in Caſes where there is no Poſſibility of doing without it.

But there is ſomething farther, beſides Phyſical Agents, which has to do in a human Body, and which by certain Experience is able to bring about

ſtrange

ſtrange Changes therein, and that is the Mind, or Soul, or Power of Thought, whatſoever it is called. Nothing is more obvious than the Diſorders which have no other manifeſt Cauſe than in the Paſſions of the Mind, and likewiſe how far the Diſpoſitions and Affections of that will go in the Removal of a great many ill Habits. Herein therefore, by not being able to return the Force and Efficacy of ſuch Agents as cannot be brought under the Notices of our Senſes, we are oblig'd to proceed by other Meaſures, and truſt altogether to Obſervation and Experience.

Inſomuch therefore, as a human Body can be conſidered as a Machine, and ſo far as the Properties of all thoſe Things with which it may be influenced, can be known upon the ſame Principles, ſo far it is attended with Certainty; for it is in itſelf altogether impoſſible to know any Thing of the Nature and Properties of it, ſo far as it is a Compoſition only of the ſame Matter of which all other Bodies are made up of, but upon thoſe Grounds as are attended with Demonſtration, as before proved. But as for what concerns it otherwiſe, with Relation to ſuch Cauſes as cannot be brought under ſenſible Evidences, it muſt always remain doubtful, beyond what common Obſervation does aſſiſt us. Yet as moſt that comes under a Phyſician's Regard is of the former Kind, ſo the utmoſt Application ought to be made to thoſe Means by which ſuch Certainty is only attainable; and there ſo very ſeldom turns up any Thing of the latter Kind, that a Perſon uſed to that way of Reaſoning, will rarely meet with Caſes, wherein he will not have ſome Footſteps to trace out by, a ſafe, if not altogether an effectual, Method of Cure; for although one cannot tell the Manner and Procedure by which any Affection of the Mind does bring about any particular Diſorder, yet by the Diſorder

it ſelf, and the State of the Body under it, it may, without much Difficulty, be gueſſed, whether it influences it, by aſtringing or relaxing, or in any other particular Manner modifying the Solids, whereby, upon careful Obſervation, they come at laſt to be conſidered as ſuch phyſical Agents as are known to be attended with the ſame Conſequences, and therefore come to be treated in the ſame Manner, either in forwarding their Advantages, or oppoſing their Diſorders.



THE

THE APHORISMS OF *SANCTORIUS.*

SECT. I.

Of inſenſible PERSPIRATION, *as it appears by Weight.*

APHORISM I.

"IF there daily be an Addition of what "is wanting, and a Subſtraction of "what abounds, in due Quantity and "Quality, loſt Health may be reſtor'd, "and the preſent preſerved.

Explanation.] PErſpiration, both as to the Matter of it and its Quantity, is ſo abſolutely neceſſary to the Well-being of a human Body, that a Diſeaſe can neither be removed, nor Health maintained, without it be rightly performed;

and where it is ſo, there muſt be both a continual Waſte of Subſtance, and a proportionate Supply: The former is occaſioned by the conſtant Circulations of the animal Fluids, and the forcible Contractions and Attritions of the Solids, whereby ſuch Parts are found not ſuitable for the Accretion and Nouriſhment of the Body, at length become broke ſo ſmall, as to fly off through ſuch Paſſages as are by Nature provided for that Purpoſe; and this makes it neceſſary that there be a proportionate Recruit by daily Food. And therefore,

APH. II.

" If a Phyſican, who has the Care of another's
" Health, is acquainted only with the ſenſible Sup-
" plies and Evacuations, and knows nothing of the
" Waſte that is daily made by inſenſible Perſpirati-
" on, he will only deceive his Patient, and never
" cure him.

APH. III.

" He only who knows how much, and when the
" Body does more or leſs inſenſibly perſpire, will be
" able to diſcern, when, and what is to be added or
" taken away, either for the Recovery or Preſer-
" vation of Health.

APH. IV.

" Inſenſible Perſpiration alone, diſcharges much
" more than all the ſervile Evacuations together.

Explanation.] Altho' this *Aphoriſm* may appear at firſt View very ſtrange to ſuch who are not well acquainted with the Make and Oeconomy of a human Body, and particularly with the Diſcharges made

made this way, yet there is hardly any one thing relating thereunto, either of greater Importance, or more eaſily to be demonſtrated. The Quantities of Meat and Drink taken in, in any given Time, being readily computed, as likewiſe the ſenſible Evacuations made in the ſame Time; and theſe compared with the Increaſe and Diminution of Weight the Body has thereby undergone, will make it very eaſy to calculate, and with the niceſt Exactneſs, how much in that Time the Waſte by inſenſible Perſpiration has been, in Proportion to all the ſenſible Evacuations; which will be found to be very large, as we ſhall ſee in the following *Aphoriſms*. It ought therefore to be of the utmoſt Concern to a Phyſican, not only thoroughly to acquaint himſelf with the Nature of this Evacuation, but likewiſe thoroughly to know by what Means it is to be promoted or leſſened, according to the ſeveral Exigencies of his Patient, either for the Preſervation or the Recovery of his Health.

APH. V.

" Inſenſible Perſpiration is either made by the " Pores of the Body, which is all over perſpirable, " and cover'd with a Skin like a Net; or it is per- " formed by Reſpiration through the Mouth, which " uſually, in the Space of one Day, amounts to a- " bout the Quantity of half a Pound, as may plainly " be made appear by breathing upon a Glaſs.

Explanation.] By Pores, are to be underſtood the Excretory Ducts of the cutaneous Glands, both internal, as of the Guts and *Viſcera*, and the common Coverings of all the Muſcles, as well as the external of the outer Skin. And Nature has ſo provided, that if by any external Cauſe this neceſſary Evacuation is hinder'd in any one Part, it is always

increaſed

increaſed in another, or elſe a Diſtemper will enſue; for which Reaſon, when the Coldneſs of the external Air, which more immediately affects the outer Skin, leſſens the inſenſible Perſpiration that way, either the ſenſible Evacuations are increaſed, as commonly the Urine, or greater Quantities are carried off by Reſpiration, from the Lungs and Parts about the Mouth, or perſpired into the Cavities of the Guts; which afterwards are diſcharged by breaking Wind, either upwards or downwards: For as long as the Impulſe within remains the ſame, where-ever there is the leaſt Reſiſtance, there always will be the greateſt Derivation of the perſpirable Matter. And from hence it is, that we ſo frequently find when the Body is more than uſually expos'd to external Cold, Gripings, and great Uneaſineſſes in the Bowels, which is nothing elſe but ſome Part of the perſpirable Matter that ought to have paſſed the outer Skin check'd by the Cold, and by an opener Paſſage within, thrown off that way. To this Purpoſe 'tis likewiſe very obſervable in Dogs, whoſe outer Skin is very little porous, that in hot Seaſons, and upon much Exerciſe, whereby the more than ordinary Motions and Attritions of their circulating Fluids produce larger Quantities of perſpirable Matter, they throw off a vaſt deal from their Lungs in Reſpiration, and the parts about the Mouth, inſomuch that their Breath appears like thick Smoak.

Lewenhoeck pretends by the Help of his Glaſſes to have diſcover'd the Texture of the *Cuticula* to be ſcaly, and that thoſe Scales cover one another in ſeveral Lays, more or leſs, according to the different Thickneſſes of the Scarf-Skin in the ſeveral parts of the Body. In the Compaſs of one cuticular Scale, he reckons there may be five hundred excretory Channels, and that a Grain of Sand will cover

cover one hundred twenty five thouſand Orifices, thro' which we daily perſpire.

APH. VI.

" If eight pounds of Meat and Drink are taken in " one Day, the Quantity that uſually goes off by in- " ſenſible Perſpiration in that Time, is five pounds.

Explanation.] Whence appears the Truth of the fourth Aphoriſm, and that what is waſted by inſenſible Tranſpiration, is to all the ſenſible Evacuations together, as Five to Three. Hence alſo it ceaſes to be a Wonder, that the Body becomes ſo much diſordered by taking Cold, (as it is commonly call'd, which is nothing elſe than a *Perſpiratio Diminuta*) more than by any Obſtruction of the ſenſible Evacuations.

Dr *James Keil*, of *Northampton*, hath, in a Diſſertation annexed to his *Medicina Statica Britannica*, endeavour'd to prove, that the common Notion of a diminiſh'd Perſpiration being the Cauſe of all that is aſcribed to a Cold, by an Increaſe only of the Quantity of Juices, is a Miſtake; and he ſeems to charge moſt of the Changes made from ſuch a Cauſe, upon the Quality of that Matter which is received into the Blood by the cutaneous pores, which he calls frigorifick Particles, of a nitrous Kind, and aſcribes to them a power of chilling, condenſing, and thickening the animal Fluids; but the intelligent Reader will not find this Diſtinction of any Importance, either as to the Theory of the Oeconomy, or any practical Concluſions concerning the Regulation of its Diſorders.

APH. VII.

" The Quantities inſenſibly perſpired, vary ac- " cording to the Differences of Conſtitutions, Ages, " Countries,

" Countries, Seaſons, Diſtempers, Diet, and the reſt
" of the Non-naturaliſts.

Explanation.] So that it is not poſſible exactly to determine the Quantities of the perſpirable Matter, convenient to be diſcharged in all perſons, nor are they in the ſame perſon always alike, becauſe they are influenced and altered according to the ſeveral Cauſes above-mentioned; ſo that Quantity which is beneficial to one, may be more or leſs than what is covenient for another, and likewiſe not always, and at all Times of the Year, convenient for the ſame perſon. All which, a careful Obſerver will ſoon be apprized of, as may be further collected from ſeveral of the following *Aphoriſms*. To which the Reader is therefore referred, as alſo to Dr *Keil*'s Aphoriſms annexed hereunto, with their reſpective Explanations.

APH. VIII.

" If the Body be weighed in the Moning before
" and after ſenſible Evacuation, then it will be eaſy
" to determine the Quantity that is waſted that
" Night by Perſpiration.

APH. IX.

" If the Body increaſes beyond its uſual Weight,
" without eating or drinking more than cuſtoma-
" ry, there muſt either be a Retenſion of ſome of the
" ſenſible Excrement, or an Obſtruction of the per-
" ſpirable Matter.

Explanation.] Theſe two *Aphoriſms* are ſelf-evident.

APH. X

" The Body continues in the ſame State of Health,
" as long as it returns to its wonted Weight without
" any

" any Increaſe of the ſenſible Evacuations: But if " it comes to its Standard by larger Diſcharges, ei- " ther by Stool or Urine, than ordinary, it then " begins to decline from its former Health.

Explanation.] There is ſo great a Difference between the Matter of inſenſible Perſpiration, and that of the ſenſible Diſcharges, that the leſſening one will by no means compenſate for the Superfluities of the other, unleſs it be in very freſh Indiſpoſitions: For it will be very difficult to prevent the Injuries which may ariſe from what ought to paſs through the cutaneous Pores, if by any means it is ſtopp'd in the excretory Ducts, or prevented from getting into them, by enlarging the other Evacuations, becauſe by its Stay in the Blood and other Juices, there will be made ſuch Alterations as cannot eaſily be remedied by ſimple Evacuation. The Body therefore keeping to the ſame ſtandard of weight, by a regular Diſcharge of the perſpirable matter, is a certain Sign of good Health; but when that fails, and Nature endeavours to make amends by an Increaſe of the ſenſible Evacuations, it is a great Chance but ſome Diſtemper enſues; for

APH. XI.

" If by Weight it appears, that Perſpiration is " diminiſh'd; the following Days it muſt either be " increaſed, or ſome ſenſible Evacuation enlarged; " or elſe there will be laid a Foundation for a Ca- " chexy, or a Fever.

Explanation.] The Diminution of Perſpiration cannot but add to the Weight of the Body, in Proportion to the Quantity detained, unleſs ſome other Evacuation be enlarged beyond what it is naturally: And whereſoever there is an increaſed Quantity of Fluids, the Reſiſtances to the contractile

Force of the Arteries muſt be greater, and therefore if they are not ſupplied with a proportionable Increaſe of Spirits to enforce their Contractions, they cannot beat ſo frequently, nor ſo vigorouſly, whereby the circulating Humours will flow ſlower; and as their Fluidities, or Degrees of Conſiſtence, are in Proportion to their Celerities, the ſlower they circulate will they grow the more thick and viſcid, and conſequently obſtruct in the Capillaries, foul the Glands, and bring all ſuch Diſorders as belong to a *Cachexy*, which is a general Term expreſſive of a *Jaundice*, *Dropſy*, *Scurvy*, and all of that Tribe; how likewiſe in ſome inſtances of an increaſed Quantity of Fluid, a Fever may be produced, conſult *Belini* at large in his Book *de Febribus*, who there treats this Subject in a Way truly demonſtrative.

APH. XII.

" A larger Perſpiration, and greater ſenſible E-
" vacuations than uſual, cannot be at the ſame
" Time.

APH. XIII.

" If any one ſenſibly evacuates more than he
" ought, at that Time he perſpires leſs.

Explanation.] Theſe are both true for the ſame Reaſon: for the Increaſe of the ſenſible Evacuations, eſpecially by Stool and Urine, cuts off the Supply of the *Materia Perſpirabilis* in Proportion to ſuch an Increaſe, becauſe what is taken in by the Stomach, and deſigned for Nouriſhment, is thereby carried away before it can mix with the Blood and other Juices, and go thoſe Circuits as are neceſſary to convert it either into nutritious Juice, or break it into Parts ſo ſmall, as will admit of its Exhalations through the Skin.

APH. XIV.

" To evacuate too much by Stool, Urine, or " Sweat, and perſpire leſs than uſual, is bad.

Explanation.] Becauſe a Change in the natural Proportions of the ſeveral Evacuations to one another, although it be ſo that the Increaſe of one juſt anſwers for the Defect of another, in Quantity, cannot but be attended with ſome Inconveniencies.

APH. XV.

" If a Body returns to the ſame Standard every " Day, without any Change in the Quantity of " Perſpiration, there will be conſtantly preſerved a " perfect Health, and no need of critical Evacuati- " ons.

APH. XVI.

" Bad Qualities ariſe when the Body is not one " Day the ſame in Weight as another.

Explanation.] Becauſe ſuch Changes cannot happen, either without ſome Diſorders in the Evacuations, or Irregularities in Eating or Drinking, from any of which the whole Conſtitution cannot but ſuffer.

APH. XVII.

" A Perſon may certainly conclude himſelf in a " State of Health, if upon aſcending a Precipice he " finds himſelf more lightſome than before.

Explanation.] The Action of the Lungs, in Reſpiration, depends ſo much upon a good Conſtitution of the Blood, from whence all the other Juices are made, that it is almoſt impoſſible there ſhould be any conſiderable Fault in the Blood, and the Lungs not ſome way or other affected by it. And likewiſe as the Invigoration of all the Solids, ſo as

to render them ready for their proper Motions, ariſes from the ſame Fluid : It is a certain Argument of a healthful State, when any difficult Exerciſe, as walking up a ſteep Aſcent, can be performed without any Faintneſs or Laſſitude ; and when, on the contrary, thereby the Body ſeems lightſome, and fitter for Motion ; which Senſation a ſound Body perceives, becauſe by the Actions of the preceding Exerciſe, all the animal Fluids are put into briſker Motions, the thinner ſecretions performed in greater Quantities, but eſpecially that in the Brain, by which the Spirits are derived more plentifully into the Muſcles, and the groſſer parts are broke ſmall enough to paſs off by inſenſible Tranſpiration. But of Exerciſe that has this Effect, it is to be underſtood only ſuch as is moderate ; otherwiſe the beſt Conſtitution may be ſtrain'd, the Fluids too much broke and waſted, and the whole Oeconomy thrown into Diſorder.

APH. XVIII.

" From too great Fulneſs ariſe bad Qualities, " but not, *vice versâ*.

Explanation.] That is, good Qualities do not ariſe from Emptineſs. Exceſs on neither Side can be good ; becauſe ſeveral Ways the Body may be injured thereby.

APH. XIX.

" Too great a Weight and Fulneſs may be leſſen'd " by ſenſible or inſenſible Evacuations, either of " digeſted or undigeſted Matter, and it is good ſo " to do ; but although it leſſens the Load, yet it " leaves ill Qualities behind.

Expla-

Explanation.] By Fulneſs may be underſtood, either a *Plethora*, or too great Increaſe of any of the Fluids, by a Diminution of ſome of the neceſſary Evacuations, which cannot but injure the Conſtitution, both by altering the Textures and Coheſions of the Fluids, and by laying at the ſame time too great Weight upon the Solids: But the contrary is not always true, beauſe there may be a Diſtemper when the Secretions are too large, and the Body too much emptied. And in the former Caſe, although a *Plethora* and too great a Fulneſs may be taken away by bleeding, or purgative Medicines, ſo as to reduce the Body to its natural Standard of Weight; yet 'tis a great Chance, but that during ſuch an overcharge, there may be done ſo much Injury as cannot be removed by thoſe Evacuations.

APH. XX.

" There are two Kinds of inſenſible Perſpiration,
" the one is during Sleep, of Humours that are well
" digeſted, and after which there is an Increaſe of
" Strength: The other is when awake, and ariſes
" from indigeſted Humours, and is weakening, more
" or leſs, according to the greater or leſſer Actions
" of the Muſcles during that Time.

Explanation.] This *Aphoriſm* and the following, well underſtood, lays open the whole Buſineſs of *Perſpiration*, both as to the Manner how it is perform'd, and its Conſequences good and bad. The Reaſon why that which goes off in Sleep is moſt beneficial, is, becauſe during that Time, the Solids are in a State of Relaxation, and the Motions of the Fluids thereby ſomething remitted and more regular; by which Means nothing is thrown off by any of the Secretions, eſpecially by the cutaneous Glands, but

what is thoroughly digeſted and fitted to paſs off that way; and likewiſe, becauſe during the relaxed State of the Nerves in Sleep, that Secretion which is made in the Brain, and by which they are ſupply'd with a convenient Juice neceſſary for their Invigoration, is chiefly performed: Whereas, Waking, the Vibrations, or Pulſations of the Solids, upon which the Motions of the Fluids altogether depend, are more diſturb'd and irregular, being ſubject to Alterations from abundance of Cauſes, even from the Thoughts that paſs through the Mind; whereby the Juices are more confuſed, and the Secretions not ſo perfect, becauſe with what is digeſted and ſuited to paſs the Strainers, there will oftentimes go off ſome parts as cannot be yet ſpared without great prejudice: Beſides this Inconvenience likewiſe, the Solids being ſo much upon the ſtretch, and in conſtant Employ, that Juice which is abſolutely neceſſary for their Invigoration, and the Continuance of their Springs, is not derived to them in ſuch Proportions as it is waſted; by which Means there muſt needs be a continual decay of Strength and Spirits, altho' the Buſineſs of *Perſpiration* goes on never ſo well, until freſh Recruits are ſupply'd by Sleep.

APH. XXI.

" That Perſpiration which is beneficial, and moſt " clears the Body of ſuperfluous matter, is not what " goes off with Sweat, but that inſenſible Steam, or " Vapour, which in Winter time exhales to about " the Quantity of fifty Ounces in the Space of one " natural Day.

Explanation.] It is very neceſſary to diſtinguiſh between Perſpiration and Sweat, they differing ſo much from one another, that as one is uſeful and preſerves

preſerves Health, the other is always injurious and deſtructive of it, unleſs when 'tis to give Relief from ſome greater Evil; as a *Fever*, or the like. *Perſpiration* makes the Body lightſome and chearful but *Sweat* faint and diſpirited: And the more a Perſon ſweats, it is certain that ſo much the leſs he perſpires; becauſe the latter depends upon a hardy and vigorous Conſtitution of the Solids, which the former is hurtful to and deſtroys. The Matter of them likewiſe differs, and is very differently ſupply'd; that which inſenſibly perſpires being ſuch, as after a long Courſe of Circulations in all the Shapes of the animal Fluids, is diveſted of all that can be of further Service to any Part of the Body, and broke ſo very ſmall, that it paſſes away without any Injury or Loſs: But the Matter of Sweat being of a thick Conſiſtence, and ſupply'd more immediately from the Blood, not only robs the Body of a great deal of its Nouriſhment, but relaxes and ſupplies the Fibres ſo much, as to deſtroy in a great Meaſure their Elaſticity, which neceſſarily weakens the Conſtitution, and makes it liable to abundance of Diſorders.

APH. XXII.

" Inſenſible Perſpiration becomes viſible, when " there is too great a Supply, or upon Faintings, or " upon violent Motion.

Explanation.] In Faintings the Nerves are very much relaxed, and become ſo ſlack, that the excretory Paſſages are vaſtly enlarged, and, as it were, lie quite open; upon which the ſmall Force the Blood has left, is ſufficient to carry through them a great deal, which otherwiſe would continue its Circulations longer in the Veſſels; and this Matter being

too groſs and heavy to riſe in an inſenſible Steam, lodges and hangs upon the Skin thick and clammy: Violent Exerciſe alſo does much the ſame by an Increaſe of the Blood's Velocity, as the former by enlarging the paſſages, only with this Difference, that what is forced out by an additional Impulſe of the Fluids, altho' it is in Quantity large enough to appear wet upon the Skin, yet it is not by Abundance ſo clammy as the other, or defrauds the Body ſo much of a balſamick nutritious Juice; wherefore we always experience involuntary faint Sweat, to be much more injurious than what happens upon hard Labour, the former ſoon ſinking a perſon into irrecoverable Decays and Waſtings, and the latter continuing even without any apparent prejudice a long Time.

APH. XXIII.

" Inſenſible Perſpiration accompany'd with Sweat
" is bad: Becauſe Sweat diminiſhes the Strength of
" the Fibres. 'Tis ſometimes ſaid to be ſerviceable,
" becauſe it diverts from a greater Evil.

Explanation.] See the *Explanation* to the two preceeding Aphoriſms, where the Reaſons of it will manifeſtly appear; very much likewiſe to this purpoſe is the following.

APH. XXIV.

" By how much the more ſubtle, and without
" apparent Moiſtneſs, Perſpiration is made, it is by
" ſo much the more healthful.

APH. XXV.

" All the thinner Excrements are the heavieſt
" and ſink: The thick ones are lighter and ſwim,
" ſuch

" ſuch as are the hard conſiſtent Stools, the *Saliva*,
" and ſeveral others of the like Kind.

Explanation.] Becauſe they are compounded of Particles, eſpecially heavieſt, *i. e.* ſuch as conſiſt of large Quantities of Matter, in Proportion to their Bulks; whereas the thicker Excrements, that is, ſuch as are conſiſtent and ſolid, are compos'd of Particles large and extended in Surface, which therefore makes them entangle with one another, but are, notwithſtanding, ſpecifically lighter.

APH. XXVI.

" The thin Secretions abate more the Weight of
" the Body in Proportion to their Quantities, than
" the hard and conſiſtent.

Explanation.] 'Tis meant here of what we call *ſpecifick Weight*, which is a Term ſo frequently uſed, and by a great many ſo little underſtood, that I cannot think it improper here to give a ſhort Explanation of it. *Gravity* or *Weight* is taken in a double Senſe, the one is called *abſolute*, and the other *ſpecifick Gravity*: By the firſt is to be underſtood, that univerſal Property which we find in all Bodies whatſoever, by which they are ſaid to *gravitate*, or to have a Tendency towards ſome determinate Point; but by the latter is only to be underſtood the different Energy or Force of this univerſal Property in different Bodies, with Relation to one another. For as Gold and Iron, both of them are endowed abſolutely with this general Property, yet in Relation to one another they are different in Weight, that is, a Sphere of one is heavier than the Sphere of the other of the ſame Bigneſs, and this Difference of Weight, in different compound Bodies, is called their *ſpecifick Weight*. Thus Gold, as before,

fore, is *ſpecifically* heavier than Wood, and Wood *ſpecifically* heavier than Spunge. The ſame Diſtinction is obſerved likewiſe as to Fluids; *Quick-ſilver* is *ſpecifically* heavier than *Aqua-fortis*, *Aqua-fortis* than Water, and Water than Air.

In ſeveral Places of theſe Aphoriſms, Regard muſt be had to this Diſtinction, or they cannot be underſtood, eſpecially in this and the following. Thus what is diſcharg'd in the Form of a Liquor, as the Urine and Sweat, is *ſpecifically* heavier than the hard and ſolid Excrements, and therefore the Body is ſooner freed from too great a Weight by the thinner, than the thicker Evacuations; which plainly points out the moſt certain Methods to diſengage the Body from Plethora's and preternatural Fulneſs, when they are not gone ſo far as to have brought a Lentor and Sizineſs upon the Juices; for then leſſening the Quantities of the Fluids will avail but little, without giving a conſiderable *Stimulus* to the Solids at the ſame Time.

APH. XXVII.

"The moſt liquid Parts of our Food are likewiſe "the moſt heavy, and the ſolid lighter: Bread and "Fleſh are light, Wine and Broths heavy. A Glaſs "of Wine is almoſt three times as heavy as a Piece "of Bread of the ſame Bulk.

Explanation.] This alſo is to be underſtood in the ſame Senſe as the aforegoing, with regard to the Diſtinction between *abſolute* and *ſpecifick* Weight; and then by this *Aphoriſm*, Wine is almoſt three Times *ſpecifically* heavier than Bread.

APH. XXVIII.

"That State of Body which has a Senſe of a "greater Weight when there is none, is much worſe "than

" than when it perceives a greater Weight, and there " really is ſo.

Explanation.] The Reaſon is, Becauſe if a Perſon feels Heavineſs, when there is not in Reality any Increaſe of Weight, 'tis a certain Indication that he is under ſome Waſte of Spirits; for a Diminution of Strength and Vigour will produce the ſame Senſe as an actual Increaſe of Weight: Where therefore there is not any ſuch Increaſe of Weight, and ſuch a Senſe ariſes, 'tis a certain Sign the Body is declining into a diſtemper'd State, and conſequently in a much worſe Condition than when ſenſible of a real Weight; becauſe a due Stock of Spirits and Vigour may find ſome Way or other to diſengage the Body from ſuch an Encumbrance, and reduce it again to its natural Standard; whereas, when a Perſon feels a Burthen upon him only by the Decay of Spirits, it is a Taſk of much more Difficulty (when the Stomach and all the Solids principally concerned in the Offices of Digeſtion, muſt needs be enfeebled and very weak) to repair ſuch a Loſs, and will require a conſiderable Time to bring it about, if the perſcribed Means ſucceed. From theſe Conſiderations alſo it appears further, that,

APH. XXIX.

" Weight, with relation to the Perception of it " in a living Body, is *equivocal*; becauſe it is con- " ſiſtent, that at the ſame time a Body may actually " be heavier, and yet ſeem lighter; and, on the con- " trary, it may be rendered lighter than uſual, and " yet at the ſame time feel heavier.

Explanation.] So that when a Body is ſaid to be heavier or lighther than before, 'tis to be underſtood with regard to the greater, or leſſer Senſe a Perſon has at that time of a Weight upon him. And in this

this Senſe one Perſon may be ſaid to be heavier than another of twice his *abſolute* Weight; and thus People frequently expreſs themſelves upon ſeveral Indiſpoſitions, that they have a Heavineſs upon them, altho' at the ſame time perhaps they are actually lighter, but only through a Decay of Spirits and Strength, are not ſo able as before to ſupport their uſual Bulk, and therefore they have then a Senſe of a greater Weight. This Weight may be called *relative*, and that by which a Perſon is ſaid to weigh ſo many Pounds exactly; without any Regard to the Perception the Perſon has himſelf, may be termed *abſolute* Weight; and Care muſt be taken to obſerve this Diſtinction in ſeveral of theſe *Aphoriſms*, otherwiſe their Senſe will be miſtaken.

APH. XXX.

" Where both theſe concur, that a Perſon per-
" ceives himſelf lighter than uſual, and that at the
" ſame time there is no Increaſe in his *abſolute*
" *Weight*, 'tis a certain Indication of Health.

Explanation.] Becauſe ſuch a Perception can ariſe from nothing elſe than a plentiful Invigoration of the Solids by a good Stock of Spirits, which likewiſe depends upon a perfect Digeſtion and a regular Diſcharge of all the animal Functions, and therefore nothing can be a more certain Sign of Health, unleſs it be in Maniacs and delirious Perſons, who have certainly the ſame Perception as to themſelves, and yet are far from being in a State of Heath.

APH. XXXI.

" That Body which falls into a Standard of
" Weight below that of a State of Health, is in a
" worſe Condition than that which riſes above it.

Expla-

Explanation.] Becauſe it is very difficult upon any Waſte or Decay of the Subſtance of the Body, to reſtore it again by Supplies of a well-digeſted Nouriſhment; the Methods of doing it, at a Time that the Solids are weak and enervated, which they muſt needs be upon ſuch Decays, being both very difficult and uncertain, and what requires alſo a great Length of Time. Whereas to reduce it from too great an Increaſe, there are ſeveral Evacuations which are ſpeedy and effectual, and attended with no great Hazards: To which, if Abſtinence, moderate Exerciſe, and Temperance in the Uſe of all the Non-naturals are added, they cannot eaſily fail of Succeſs.

APH. XXXII.

" When a Body ſinks below its healthful Stan-
" dard, it immediately grows weaker: Which does
" not happen when it becomes lighter, upon Sleep,
" after a good Digeſtion.

Explanation.] The Body cannot fall below its healthful Standard by violent Exerciſe or obſtinate Faſtings, without loſing from the very Subſtance of the Solids more than can be ſuddenly repair'd, and therefore muſt of Conſequence thereby be rendered much weaker. But it is quite otherwiſe when the Body becomes lighter after Sleep, becauſe that is occaſioned only by the Waſte which has been before made of ſuch a Matter, as after divers Circulations is found of no further Service, and broke ſo ſmall as to fly off inſenſibly through the cutaneous Paſſages, and it is a great Benefit to the Conſtitution that it does ſo go away. What is loſt likewiſe by the former Means, is by overſtraining the Springs of the Solids, and wearing the Orifices of the excretory Glands too wide, both by the Groſſneſs and additional

tional Impulſe of the circulating Fluids: Whereas by the latter, what goes away is only a very fine thoroughly digeſted Matter, which riſes through the Skin like a Vapour, or Steam, without any manner of Difficulty or Diſturbance to the Body.

APH. XXXIII.

" If without the Force of Exerciſe the Weight de-
" creaſes, and the Strength decay, it is becauſe there
" is not a Supply of Nouriſhment in Proportion ſuf-
" ficient to recruit what is waſted.

Explanation.] From the neceſſary Actions of the Muſcles in the Performance only of the vital Functions, both the Veſſels will be ſo much wore away themſelves, by the Attritions of their circulating Juices, and ſome Parts of the Juices ſo much broke, as to make it neceſſary that there ſhould be a continual Supply; which, if it be not anſwerable to ſuch a Loſs, there cannot but follow a Defection both in the Weight and Strength of the Body.

APH. XXXIV.

" There are but three Ways only by which a Body
" can grow weaker; the one is, when its Bulk in-
" creaſes without any Decay of Spirits: Another
" when the Spirits ſink, and the Body keeps to its
" uſual Standard; and the other, when both Spirits
" and Bulk decay together.

Explanation.] The Whole of this appears from what has been ſaid before, *Explan. Aphor.* xxviii. The Weight of the Body is always to be taken relatively; and therefore in what State ſoever the Spirits bear leſs Proportion to the preſent Weight than before, the Body is properly ſaid thereby to become heavier: And 'tis to be underſtood, with regard to the ſame Diſtinction, when 'tis ſaid to be weaker.

APH.

APH. XXXV.

" That Weakneſs which is felt when the Body
" decays, both in Strength and Bulk, is the moſt
" dangerous: Becauſe the Bulk is very conducive
" to its Vigour.

Explanation.] The former Part appears from *Aphor.* xxix, xxx, xxxi, above; and the latter is confirmed by the following.

APH. XXXVI.

" The Weight, or Bulk of the Body, adds con-
" ſiderably to its Strength, either in drawing,
" carrying, turning, or ſtriking.

Explanation.] The Truth of this appears from the following Propoſition, demonſtrated by *Borelli*, *de vi Percuſſionis*, *That the Force of any moving Body is in Proportion to its Velocity and the Quantity of Matter it contains*: So that notwithſtanding a Perſon of a ſmall Bulk may, with reſpect to his Stock of Spirit and Vigour, be ſaid to be very ſtrong; yet one of a larger Size, altho' not invigorated with a like Quantity of Spirit, in Proportion to his Bulk, will be *abſolutely* much ſtronger; eſpecially in the Exerciſes above-mentioned, where the Force of *Percuſſion* depends ſo much upon the Bulk of the moving Body: There are many *Præcognita* from Mechanicks, which illuſtrate this Matter; and indeed, without ſuch Acquaintance, there can be no great Degree of Knowledge in theſe Affairs: See *Aphor.* xciii. below, in this Section, and for this Reaſon frequently.

APH. XXXVII.

" The Strength of an old Man is owing more to
" the Bulk of his Body, than his Stock of Spirits:
" An

" An old Perſon of a ſmall Size may live long, but " can never have much Strength.

APH. XXXVIII.

" If the Body returns to its wonted Standard, " upon Sleep, without any Senſe of Uneaſineſs af- " terward, it is good; becauſe it is a Sign of a " perfect Digeſtion; but if otherwiſe, it is bad.

Explanation.] Becauſe what is inſenſibly gone off in Sleep, and by which the Weight of the Body is leſſen'd, is only ſuch a Matter as is thoroughly digeſted, and it is a Relief and Benefit to Nature to get rid of it; and that nothing elſe goes off with it in Sleep, appears, when there is no Uneaſineſs follows it: But when any Part of the nutritious Juices paſſes along with it, notwithſtanding the Body is rendered thereby lighter, yet Inconveniencies will enſue.

APH. XXXIX.

" The Body is not preſently thrown into a Diſ- " eaſe by an external Injury, unleſs ſome of the " *Viſcera* be firſt diſpoſed to receive its Impreſſions, " which Prediſpoſition may be known by a greater, " or leſſer Weight than is cuſtomary, and that " not without ſome conſiderable Uneaſineſs.

Explanation.] Where all the Parts are equally ſound and ſtrong, any ſlight Diſorders from without are eaſily remedied; but where any Part is weaker than the reſt, either from hereditary Cauſes, or the Injuries of former Diſtempers, the leaſt Indiſpoſition affects it, and without timely Care will bring the whole Oeconomy into Diſorder. And when any particular Part is thus indiſpos'd, 'tis impoſſible but the leaſt Irregularity, or Accident, will ſo much diſorder it, as to hinder its right Performance

formance of its proper Office, which, according to its Importance in the *Oeconomy*, ſooner or later affects the whole Body, ſo far as to be diſcernable either by an Increaſe or Diminution of ſome of the Secretions.

APH. XL.

" Whenſoever Nature is diſturbed in the Buſineſs " of Perſpiration, ſhe ſoon begins to be defective in " many more of the animal Functions.

Explanation.] Of ſo great Importance is a right Diſcharge by Perſpiration, both as to its Quantity, and the Matter of it, that the whole Conſtitution immediately ſuffers by the Want of it; which cannot be ſtrange to one who conſiders, what large Quantities go off by it.

APH. XLI.

" When the Head is afflicted with Pain, the Body " ſoon begins to perſpire leſs, and grows heavier.

Explanation.] The Motions of all the Solids depend ſo much upon a due Conſtitution of the *Brain* and its *Appendices*, that 'tis impoſſible one ſhould be affected without the others being brought into Diſorder thereby; and Perſpiration being owing to the juſt and regular Motions of the Fluids, 'tis unavoidable but that when the Head is out of Order, Perſpiration muſt be ſo too; and that when one is in Pain, the other muſt be leſſen'd in its Quantity, and conſequently the whole Body become heavier: The Reaſon of which will further appear under *Aphor.* xlix. in this *Section.*

APH. XLII.

" The firſt Impreſſions of a Diſeaſe are much " more eaſily diſcernable from the Changes of an " unuſual Perſpiration, than from the Diſorders of " any of the other Functions.

Explanation.] Becauſe, as has been already ſaid, ſo much depends upon a right Perſpiration, that it cannot be diſorder'd, but the whole Conſtitution muſt ſuffer; and nothing can more certainly be known, than the Quantities of that may be, by weighing.

APH. XLIII.

" If upon weighing, the perſpirable Matter ap- " pears to have been obſtructed, and there is nei- " ther Increaſe of Sweat or Urine for ſome Days " after, there is a great deal of Danger of a Putre- " faction of the detained Crudities.

Explanation.] The Solids will be ſo much oppreſſed by the ſuperfluous Load, which is laid upon them by the Retenſion of the perſpirable Matter, that unleſs there ſoon be a Diſcharge made of it by ſome of the ſenſible Evacuations, they will not be able to circulate it with ſo much Swiftneſs, as is neceſſary to prevent its falling into preternatural Ferments, there being nothing which more promotes that inteſtine Motion of Liquors that diſpoſes them to Putrefaction, than Stagnation. For then their ſeveral Parts are left at Liberty to ſink or riſe according to their ſeveral Gravities, and obey their reſpective *Attractive Powers*, upon which ſeveral are broke ſmaller, and others run into Corpuſcles of different Kinds and Properties; whereas ſo long as they are kept in a circulary Motion by external Cauſes, they are not at Liberty to obey their *Attractive*

tractive Powers, or their ſeveral Gravities, but move on without any other Alterations, than what they receive from their caſual Occurſions and Attritions againſt one another; the Conſequences of which is only breaking them ſmaller, and rendering the Liquor more fluid. From all which it appears, that *the different Fluidities of the animal Liquors, are in the different Parts of the Body, as their Velocities in each Part.*

APH. XLIV.

" But if upon weighing, it appears that a greater " Quantity of the perſpirable Matter has been car- " ried off than uſual by any violent Cauſe, it may " be concluded, that in the room of ſuch a Waſte, " there ſoon will be ſupply'd an undigeſted Matter, " which will be apt to obſtruct the ſecretory Paſ- " ſages.

Explanation.] The great Quantities which ſometimes fly off by violent Exerciſe, or any other Cauſe, cannot but leave thoſe Fibres they laſt parted from, with too ſmall a Share of Moiſture; by which as ſoon as a Supply is taken in by a freſh Meal, the new Juices preſs forward into thoſe Parts faſter than they can be digeſted, and are thereby apt to ſtick in the ſmall Extremities, and obſtruct the Paſſages of the ſucceeding. Hence may be collected ſeveral good Obſervations with Regard to the Preſervation of Health. As after long Diſtempers which have waſted much the Subſtance of the Body, until that Loſs is throughly repair'd, to live with a great deal of Temperance, feed ſparingly, and of what is eaſy to digeſt: To obſerve the ſame likewiſe after long Faſting, or after any violent Exerciſe, or upon Travelling from hot into cold Climates: Becauſe in all theſe Caſes there is ſuch a great Waſte of perſpirable Matter, and the

Fibres are ſo much robb'd of their proper Moiſtures, that too large a Supply of Food at once, as ſoon as it gets into the Veſſels, for want of its uſual Reſiſtances, would be preſs'd on too faſt, and fill the ſmaller Branches with Crudities.

APH. XLV.

" If what is thus lodged in the ſecretory Paſ-
" ſages, can be rendered fluxile and perſpirable, 'tis
" well; otherwiſe the obſtructed Part will firſt
" grow hard, and by Degrees ſchirrous.

Explanation.] When an Obſtruction of the perſpirable Matter happens to be only in ſome particular Part, if it is not quickly removed, by the continual Acceſſion of ſucceeding Matter to the ſame Part, there muſt neceſſarily be raiſed a Tumour; which, if it ſo happens to be ſituated as to hinder much the Paſſage of the Blood through the ſmall arterial Branches, will increaſe with Pain and Inflammation: And if the Blood is quite ſtopp'd in any of the Veſſels, it will impoſthumate. But if the firſt Collection of perſpirable Matter happens ſo to lodge it ſelf, ſo as not conſiderably to diſturb the Blood's Motion, it may continue a long Time, until the thinner Parts of it are perſpired, and the reſt reduced to a hard knotty Subſtance. The beſt Remedies in ſuch Caſes are at firſt keeping the diſtemper'd Part warm, Abſtinence, or a very ſparing Diet, and of ſuch Food as is eaſily perſpirable, moderate Exerciſe, and a Diverſion by other Evacuations.

APH. XLVI.

" If the obſtructed Matter can neither be removed
" by Nature, nor a feveriſh Heat, there is imme-
" diate Danger of a malignant Fever.

Explanation

Explanation.] In this is to be underſtood not a partial, but univerſal Obſtruction of Perſpiration, which if it is not immediately remov'd, cannot but produce a Fever. By Nature's removing it, can be underſtood no other than the Overcharge occaſioned thereby being thrown off by an Increaſe of ſome of the ſenſible Evacuations, which we very often find to be done, and a Fever thereby prevented; but when it does not happen ſo, a Fever will ariſe for theſe Reaſons: *Firſt*, An Obſtruction of the perſpirable Matter cannot but increaſe the Quantity of the Blood, becauſe it is derived from it, and by its Obſtruction preventing its further Derivation; whilſt any Supply is made either by Eating or Drinking, the Blood muſt increaſe. *Secondly*, The Increaſe of the Blood's Quantity will increaſe its Preſſure againſt the Sides of the Arteries, and conſequently make that Stroke which is felt by the Finger, when apply'd to one of them, ſtronger. *Thirdly*, The increaſed Quantity of Blood will likewiſe occaſion an Increaſe of the Fluid Secretions, in a Proportion greater than the thicker; which ſee demonſtrated by Dr *Cheyne*, in his *new Theory of Fevers*; and Dr *Wainright*, in *Propoſ.* xviii. *of Animal Secretion.* By this, the Secretion of the *Succus Nervoſus* in the Brain will be increaſed, and thereby the Vibrations of the Solids become quicker and ſtronger. *Fourthly*, The quickened Vibrations of the Solids will increaſe the Velocity of the Blood, and breaks its Parts ſmaller, which conſequently makes it take up more room, becauſe the Surfaces of Bodies, upon their Diviſion, do not ſo faſt decreaſe as their Solidities; theſe being in a *triplicate*, but thoſe only in a *duplicate* Proportion to their Diameters; that is, the Surfaces of the divided Parts taken together, are much greater in Proportion to

the Matter contained under them, than the Surfaces of the ſame Quantity of Matter, when not broke into ſo many Parts, ſo that the further the Diviſion of any Body is carried, the more Space will that Body thereby take up: And upon this Account alſo will the Arteries be more diſtracted, and the Pulſe raiſed, which is what every one calls a *Fever*; and after this Manner Things go on, either until the Obſtruction is removed, or the Overcharge carried off by an Increaſe of ſome ſenſible Evacuation, or thrown aſide in an Abſceſs upon ſome particular Part, and thereby the *Equilibrium* between the Contraction of the Solids, and the Reſiſtance of the Fluids again reſtored; or elſe until the Solids are wore out, and have quite loſt their Springs, and, unable longer to continue their Motions, ſubſide, the Fluids ſtagnate, and Death enſues. At the firſt Attack therefore of acute Fevers, the principal Thing to be done, is either to promote immediately that Evacuation which has been obſtructed, or if that cannot be done, ſome other; whereby an Increaſe of the Quantity of Blood, and conſequently an Acceleration of its Motion, may be prevented, and all its threatening Attendants put out of Danger.

APH. XLVII.

"Feveriſh Perſons are as much in Danger, when "Perſpiration is hinder'd by an unſkilful Admini-"ſtration of Medicines, as by their own Errors.

Explanation.] A wiſe Phyſician therefore will be very wary in the Beginning of a Fever, and not too buſy with Medicines, until he finds what Courſe Nature her ſelf takes to throw off the Diſtemper; and then his prudent Aſſiſtance is neceſſary, and may enable

enable the Patient to get over a Diſtemper, which otherwiſe he might ſink under.

APH. XLVIII.

" A moderate Doſe of *Caſſia* does not divert Per-
" ſpiration, nor impair the Strength, but only rids
" the Body of a ſuperfluous Load: But other Purges
" empty too much, and reach the Parts more re-
" mote, and carry off too great a Quantity; for
" the following Food will preſs ſo haſtily into the
" emptied Paſſages, that the Bowels and Bladder
" will be defrauded of their due Moiſtures, whereby
" the Body afterwards frequently grows heavier.

Explanation.] The Conſequences of too ſtrong Catharticks, as to filling the Body with Crudities afterwards, will be the ſame, as from too large a Perſpiration, and for the ſame Reaſon, which ſee in *Explanation to Aphoriſm* xliv. And beſides the Inconveniencies of emptying the Veſſels too much, as all increaſed Evacuations do, ſtrong Purgatives have further this ill Effect, as they ſtimulate the Solids much, they both occaſion thereby a greater Waſte of the nervous Juices, and at the ſame time contract them ſo as to hinder Perſpiration, which makes the Body heavier.

APH. XLIX.

" All Pain, or hard Labour, leſſens the Quantity
" that goes off by Perſpiration.

Explanation.] That true and natural Perſpiration, which is beneficial and neceſſary to the Conſtitution, requires ſuch a peculiar Texture of the cutaneous Paſſages, that if they are too large, a great deal beſides truly digeſted Matter will fly off, and weaken the Body, and if they are too much ſtraightned, there will not be ſufficient Room for that

which ought to paſs: Now every thing which puts any Streſs upon the Nerves, ſtraightens the excretory Pores, which are formed by the manifold Convolutions of their Extremities: For the whole nervous Syſtem is like a Piece of Net-work, where one Thread is ſo weaved with another, that if one Extremity is pulled, the Motion will be continued through the whole. When therefore any one Part of the Body is afflicted with acute Pain, the whole becomes ſo much affected by it, that the Nerves will every where be drawn ſtraighter, and thereby the excretory Paſſages leſſen'd, and conſequently a leſs Diſcharge of the perſpirable Matter made at that Time, than is uſual and needful. Hard Labour likewiſe, or any violent Exerciſe, has the ſame Effect as Pain, and for the ſame Reaſon, with this Difference only, that Exerciſe, by the Actions and Attritions of the Muſcles, as it ſtraightens the Paſſages, ſo it alſo, at the ſame time, breaks the perſpirable Matter ſmaller, and renders it thereby more paſſable; which Pain does not without a Fever.

APH. L.

" Any external Cold, though never ſo ſmall in " the Time of Sleep, hinders Perſpiration.

Explanation.] Sleep is ſo neceſſary for a right Perſpiration (as appears from what has been ſaid under *Aphor.* xx.) that if it be diſturbed at that Time, the ill Effects of it are the more diſcernable; and that eaſy Relaxation the Nerves are under during Sleep, makes them more ſenſible of external Cold, which acting upon them as a *Stimulus*, contracts them, ſtraightens the cutaneous Pores, and ſo hinders Tranſpiration. Indeed the whole Buſineſs of Sleep, as to its Service in the *Animal Oeconomy*, ſeems

ſeems to be nothing elſe but to favour the Admiſſion of freſh Supplies of Spirits to the Nerves, and the letting out what is become uſeleſs by Tranſpiration, neither of which can ſo well be perform'd in a State of Contraction, which they always are in when awake: As ſoon therefore as the old Stock is gone off, and they are ſupply'd with freſh Juices from the Blood, by the Secretion made in the Brain, there ſeems to be no further need of Sleep, nor is it poſſible, almoſt to continue it longer without the Help of Medicines. Hence may be deduc'd the Reaſons, why ſleeping ſoon after a Meal, inclines People to be fat and corpulent; which is, becauſe letting the Nerves into ſuch a relaxed State upon a full Stomach, gives Liberty to a greater Derivation of nutritious Juices into the Habit of the Body, than Nature requires, and that too before the Supply of a former Meal has finiſhed its Circulations, and is broke ſmall enough to paſs off through its proper Outlets, and make room for a new one.

APH. LI.

" One of the moſt common Hindrances of Per-
" ſpiration in Summer Time, is frequent toſſing
" about in Bed.

Explanation.] Becauſe ſuch reſtleſs Motions prevent that Relaxation which quiet Sleep indulges, and is neceſſary for a due Perſpiration.

APH. LII.

" There are three internal Cauſes which hinder
" Perſpiration; Nature's being employ'd another
" way, Diverſion, and a Decay of Spirits.

Explanation.] By Nature's being employ'd another Way muſt be underſtood, either by ſome Streſs laid upon ſome particular Part, as in Pain, or upon

a full Stomach, which contracts the Nerves, and hinders Perſpiration as above mention'd; or by an Increaſe of the ſenſible Diſcharges, which has the ſame Effect, by diverting the Matter another way, and cutting off its Supplies. The Term in it ſelf is very obſcure, although frequently made uſe of. By Diverſion, is the Enlargement of ſome other Evacuation. A Decay of Spirits, from what Cauſe ſoever, cannot but leſſen Perſpiration, becauſe the Invigoration and Force of the Solids, upon which Perſpiration neceſſarily depends, is by that Means deſtroyed: For the Elaſticity of the Fibres ariſes from a due Supply of a convenient Fluid, which we commonly call *Animal Spirits*, of which whenſoever they are defrauded, they become unfit for Motion.

APH. LIII.

" To this Purpoſe it appears upon weighing, that " during the Operation of a Medicine, and after Re- " paſt, for the Space of three Hours together, there " is but very little Perſpiration: For in the Opera- " tion of a Medicine Nature is employ'd in the ſen- " ſible Evacuations; and after Eating in Digeſtion.

Explanation.] In this *Aphoriſm*, again, the Propoſition is true and eaſily demonſtrable; but the Reaſon for it given, none at all. The Word *Nature* here being ſo general and complex, that no diſtinct Idea can be fixed to it, and inſtead of giving any Notion of a *Mechanical Procedure*, which in ſuch Matters always ought to be kept up to, it leaves the Reader altogether in Obſcurity; it has been obſerved before, that the Increaſe of one Evacuation much leſſen another; and the Reaſon is, both becauſe by how much more one abounds, by ſo much the leſs Matter will there be to ſupply the other; and becauſe the ſame Fluid cannot move in different Directions

rections at the ſame time. For all the animal Juices may be look'd upon in this Caſe, as a contiguous Collection of any Fluid in any compreſſible Veſſel, with Outlets of different Diameters in ſeveral Parts of it; wherein 'tis well known that an equal and uniform Preſſure on all Sides, will force out the Fluid through all its Outlets, and that both its Quantity and Velocity will be determined by the Diameter of each Orifice; that if the Diameters of the Orifices are on all Sides ſhortened at once, and the Preſſure remains the ſame, the Quantities forced out will be leſſen'd, and their Velocities increaſed; that if their Diameters are lengthened, *è contrà*, that if one Orifice is only ſtraightened, the Velocities and Quantities paſſing at the other, will be increaſed: And conſequently, that if it be made wider, the Quantities diſcharged by the reſt, decreaſed. When therefore either the Diſcharges by Stool or Urine are larger than uſual, 'tis no Wonder that Perſpiration is leſs: That a full Stomach ſhould alſo hinder it; becauſe during that additional Weight, the Nerves are drawn ſtraighter, and their excretory Paſſages made leſs, and therefore until Digeſtion is perfected in the firſt Paſſages, that is, until the Load is removed out of the Stomach, and more equally diſtributed, ſo as not much to be perceived as a Weight; until all this, I ſay, is done, the perſpirable Matter, for the Reaſon before given, muſt very much be obſtructed. This *Explanation* proves the following.

APH. LIV.

"In a Looſeneſs and Vomiting Perſpiration is "hindered, becauſe the Matter is diverted another "Way.

APH.

APH. LV.

" Too thick Apparel hinders Perſpiration, by " waſting the Spirits.

Explanation.] That is, by ſuppling and relaxing the Fibres too much, they loſe that Firmneſs which is neceſſary to a good Digeſtion. There can hardly therefore be any greater Error committed, than for weak People to load themſelves with Garments, which is very cuſtomary; and to do it, as they ſay, to avoid catching Cold, is the only Way to expoſe themſelves to be diſorder'd thereby. Whatſoever Means are uſed, there can never be obtain'd a firm laſting Health, although in the beſt Conſtitution in the World, as long as this is practiſed; although indeed where any have had the Misfortune to be thus ill adviſed, it is by no Means to be left off at once, but gradually to be brought about: And then in hot Seaſons, when Bathings ſometimes ſhould be uſed in Cold Water, in order to harden the Fibres, and give a Firmneſs to the Body, againſt the Approaches of the following Winter, Moderate Exerciſe is alſo very ſerviceable to this Purpoſe, as it helps to break the perſpirable Matter ſmaller, and thereby render it more capable of paſſing thro' ſtraighter Pores. The many ill Conſequences of keeping the Body too tender, may be met with in ſeveral late Writers, as likewiſe the vaſt Advantages which ariſe from a cold hardy Regimen: See Sir *John Floyer of Cold Bathing*, with Dr *Baynard*'s Letters; Mr *Fuller*'s *Medicina Gymnaſtica*, and *Wainwright of the Non-naturals*.

APH. LVI.

" The Body does not perſpire at all Times alike, " for in the firſt five Hours after eating, there waſts " about

" about a Pound; the next ſeven Hours, about three " Pound; and from the twelfth to the ſixteenth (at " which Time there will be need of a freſh Supply) " hardly half a Pound.

Explanation.] For the Reaſon why the leaſt Quantity goes off by Perſpiration, in the Hours after eating, ſee *Explanation Aph.* liii. above. After Digeſtion is perfected in the Stomach and Guts, which commonly happens in four or five Hours time, Perſpiration is the largeſt, becauſe the Supply of the laſt Meal for the greateſt Part lies then ready for Expulſion, which after a few Hours again decreaſes, and makes it neceſſary to recruit by a freſh Meal.

APH. LVII.

" They who feed or purge in the Hours, when " they ſhould moſt perſpire, which are thoſe in the " Morning, are very much the worſe for it, becauſe " thereby they hinder Perſpiration.

Explanation.] How both feeding and purging hinder Perſpiration, appears from *Explanation* to *Aph.* liii. above. They therefore who conſider of what Conſequence a due Perſpiration is, will be wary how they diſturb it.

APH. LVIII.

" Imperceptible Perſpiration lightens the Body " more than all the ſenſible Evacuations together; " for after Sleep every one may perceive himſelf " lighter, without any of the ſenſible Secretions, " becauſe he really is ſo, by about three Pound.

Explanation.] The Whole of this will appear from *Aph.* iv, v, and vi. above.

APH.

APH. LIX.

" Sixteen Ounces of Urine is generally evacu-
" ated in the Space of one Night ; four Ounces by
" Stool, and forty Ounces and upwards by Perſpi-
" ration.

APH. LX.

" There is as much carried off by inſenſible Per-
" ſpiration in the Space of a natural Day, as by Stool
" in the Courſe of five Days.

Explanation.] It appears from the three preceeding *Aphoriſms*, that the Quantity waſted by inſenſible Perſpiration in the Space of a Day, is double the Quantity of all the other Evacuations together, and ten times as much as goes off by Stool in the ſame Time : Whence may be collected the vaſt Advantages and Diſadvantages that may ariſe from this Diſcharge. In caſe of a *Plethora* and too great a Fulneſs, either by a Debauch, or by taking Cold, where it has gone ſo far as to deſtroy the due Conſtitution of the Fluids, and is to be remedy'd by ſimple Evacuation, nothing can be ſo effectual as to do it this Way, both as to anſwer the End with Certainty, and little Hazard, where it can conveniently be procured. Diſcharge by Urine or Stool cannot be had in any conſiderable Quantities, but by ſuch Means as irritate and diſorder much the Solids, and occaſion ſuch great Derivations of the *Liquidum Nervoſum* into the Bowels and Parts ſtimulated, that the Muſcles are not able to ſuſtain their proper Offices, but grow languid and faint, and to draw away the Blood it ſelf by *Phlebotomy*, the Conſequences are uncertain, all the Secretions, both as to their Quantities and Qualities, being liable to be altered thereby, the remaining Maſs, by having more room, being ſubject to generate new

Coheſions, and coaleſce into Corpuſcles of a new Sort; whether for the better or worſe no Body can tell, but from the Conſequences. The drawing it off likewiſe in any large Quantity at once, ſo much affects and alters the contractive or elaſtick Powers of the Veſſels, as to produce *Syncope*'s, and occaſion very great Diſorders; and for an Account of which at large, ſee *Bellini de Miſſione Sanguinis.* But to evacuate by inſenſible Perſpiration is attended with none of thoſe Difficulties, that being affected only by eaſy and ſteady Contractions of the Solids, and preventing that at the ſame Time there be any Pains or Uneaſineſſes which may ſtraighten the ſecretory Paſſages, or too great a Degree of external Cold: And as the ill Conſequences of a *Plethora* are advanc'd, ſo the Means to increaſe the Contractions of the Solids, and keep open the cutaneous Paſſages, are to be intended or remitted; at ſome Times an Increaſe only of external Warmth by Cloaths are ſufficient, but at others perhaps there may be needful very warm ſtimulating Medicines, ſuch as are commonly call'd *Diaphoreticks*; and of Vomiting likewiſe, if nothing forbids, which wonderfully aſſiſts this Evacuation, by the exerciſe it gives to all the Muſcles, and breaking thereby the Coheſions of the Fluids, and rendering them ſmall enough to get out at the Surface of the Body. But the Advantages of this Evacuation in ſeveral Caſes more particularly appears, when we come to conſider, what great Quantities are drawn off this Way, to what may be done by any of the other Diſcharges; and how it more immediately relieves the diſtended Veſſels; but hence alſo will appear the Danger of doing any thing to promote this Evacuation beyond Meaſure, in any waſting conſumptive Caſes: For if ten times as much goes off this Way as by Stool, then ten times as much diſcharged by Stool than what

what is uſual, will weaken a Perſon no more than by doubling the Quantity perſpired; nay, if we take into Conſideration, that the perſpirable Matter is more immediately deriv'd from the Blood, and never can be much increaſed, but that it will carry off with it a great deal of the nutritious and uſeful Juices; and that what is voided by Stool, is nothing but the uſeleſs Parts of our Food, the Difference will appear much greater, and make the Loſs ſuſtain'd by a doubled Perſpiration, as great as that which is occaſioned by a Diſcharge of near twenty Times as much as is uſual by Stool.

APH. LXI.

" What muſt then be thought of thoſe Phyſicians " who, in all manner of Diſtempers, have Regard " only to what is evacuated by Stool and Urine, " and never take any Notice of the Diſcharges by " Inſenſible Perſpiration.

APH. LXII.

" When Perſpiration is, during the Night, larger " than uſual, but without Sweat and Uneaſineſs, it " is a ſure Sign of perfect Health.

Explanation.] There are none of the Evacuations that the ſame can be ſaid of beſides: For an Increaſe in any of them is always either critical of ſome Diſtemper, or elſe brings one. But this only by a fuller Meal, or drinking more than ordinary, or after watching longer than uſual, in good Conſtitutions is frequently increas'd, and ſo far from being attended with any ill Conſequences, that the Body is much benefited thereby, and receives a greater Stock of Spirits and Vigour. But it is thus only where there is a perfect State of Health.

APH.

APH. LXIII.

" The Body is then moſt free from a Diſtemper, " when it is in the Mean of a healthful Standard, " not by any ſpontaneous or medical Evacuations, " or by Abſtinence, but by the Means only of ſuch " inſenſible Perſpiration as goes off in Sleep, after " a perfect Digeſtion.

Explanation.] It is not to be ſuppos'd, that a Body cannot gain or loſe a little of its Weight without falling into a Diſtemper; therefore all that Latitude of Alteration a Body is capable of undergoing with reſpect to its Weight without being diſtempered, is called by *Sanctorius* here, and in ſeveral Places of his *Aphoriſms*, a *healthful Standard*; the greateſt Weight it is capable of, is its greateſt *healthful Standard*, and its leaſt, the *loweſt Standard*, and between both, the *mean*, or *middle Healthful Standard*; and all theſe are different, at different Ages and Seaſons, as will hereafter further appear.

APH. LXIV.

" How much is neceſſary for every one to per- " ſpire, in order to preſerve a State of perfect Health, " may be thus known. Take Notice, in the Morn- " ing following a plentiful Supper, of the greateſt " Quantity that perſpires in the Space of Twelve " Hours: Suppoſe it be fifty Ounces; ſome other " Morning obſerve the ſame, after eating no Supper, " (provided there was no Exceſs in the former " Day's Dinner) which ſuppoſe to be twenty Ounces: " Then chooſe ſuch a ſettled Quantity of Food, and " keep to ſuch a Uſe of the Non-naturals, as will " bring the Quantity perſpired to a Mean between " fifty and twenty Ounces, which is thirty five " Ounces; and by this Means may a Perſon be

" brought to ſuch a perfect Standard of Health as " will laſt to a Hundred Years.

Explanation.] This I believe will be thought too troubleſome ever to be put in Practice; and if it ſhould, it would be no certain Rule, becauſe ſome Meats go off much more by Perſpiration than others, as we ſhall find hereafter in the *Third Section:* So that to keep rigidly to the ſame Quantity in all Meats, would ſometimes underdo, and at others overcharge the Body; according as they are more or leſs perſpirable, or nouriſhing. And for a Perſon to go through the Experiment, with all the kinds of his Food, to find the ſeveral Quantities neceſſary to keep this Standard, would be a Taſk that very few would care for, as hardly to be rewarded by the largeſt Enjoyments of this Life.

APH. LXV.

" Even thoſe Men who are in a perfect State of " Health, and obſerve the utmoſt Moderation in " Living, once a Month increaſe beyond their uſu- " al Weight, to the Quantity of one or two Pounds; " and at the Mouth's End, return again to their " uſual Standard, in the ſame Manner as Women " do; but then by a critical Diſcharge of Urine, it " being either increas'd in its Quantity, or more " turbid.

APH. LXVI.

" Before the aforeſaid Criſis happens, there is " felt a Heavineſs in the Head, and a Laſſitude all " over the Body, which Symptoms are afterwards " removed.

Explanation.] The Contents of theſe two *Aphoriſms* are of the greateſt Importance to be thoroughly acquainted with, notwithſtanding which they are ſeldom

dom talk'd of, and leſs underſtood. That Women undergo ſuch Changes is taken Notice of by every one: But they only who truly underſtand the Reaſons of it, are alſo appriſed of the like Alterations in Men. The Hiſtories of Diſeaſes frequently take Notice of Diſtempers returning at certain Periods and Ages of the Moon; and ſome of them ſuch as plainly have their immediate Riſe from a *Plethora*, or too great a Fulneſs; the Story of a *periodical Hæmorrhage* a Man had at his *Thumb*, in the *Philoſophical Tranſactions*, is very notorious, and almoſt every one, but indifferently converſant in *Phyſical Practice*, muſt have one Time or other met with Caſes of the like Nature; but nothing is more frequent than *Epileptick Symptoms* and Pains in the Head; of the latter, I now know a very remarkable Inſtance in one between thirty and forty Years of Age, who for ſome Years together has not miſs'd one Month having a very ſharp Fit of the Head-ach, attended with a ſmall Fever; every Paroxyſm is preceded by a Heavineſs in the whole Body, a general Laſſitude, a Decay of Appetite, and ſometimes ſlight Rigors, and goes off by Sweat; if at any Time a *Diarrhœa* has happen'd, eſpecially a little before the Attack, it always prolongs the Intervals between the Fits. Bleeding alſo has done the ſame. All which very plainly proves a periodical Increaſe of the Bulk of the Body, and that the Overcharge is thrown off by thoſe ſhort Fevers. But how ſuch Increaſe is made, cannot be underſtood without knowing how the animal Oeconomy is affected by the external Air and its Changes, and how that too is influenc'd by the Revolutions of the heavenly Bodies; but to enter into a *Rationale* of thoſe Matters here, would be of too great a Length, I ſhall therefore only recommend the Reader, for a full Satisfaction herein, to conſult Dr *Mead*, *De Imperio Solis ac Lunæ in Cor-*

pora humana; and Dr *Friend*'s *Emmenologia*, where theſe Matters are treated in a Way truly mechanical and demonſtrative.

APH. LXVII.

" The external Cauſes which are wont to hinder " Perſpiration, are the cold Air, and that which is " damp and foggy; ſwimming in cold Water; a " too groſs and viſcid Food; an Intermiſſion of " uſual Exerciſe, and Diſuſe of Venery.

Explanation.] Cold Air and ſwimming in cold Water, may be ſo manag'd, as in ſome Circumſtances and Conſtitutions to promote Perſpiration; as 'tis very well known in cold Bathing, and likewiſe, that robuſt athletick Bodies perſpire moſt in a cold clear Air. It is therefore here to be underſtood, by expoſing the Body beyond what is uſual to the Air, and ſtaying too long in cold Water, and going into it at improper Seaſons and without due Perſpiration. A damp foggy Air cannot but be prejudicial to Perſpiration, for a great many Reaſons; its Elaſticity being much weakened, thoſe Particles which mix with the Blood will not be able ſufficiently to elevate and diſtend its Globules, upon which they run into cloſer Contacts with one another, and occaſion ſtronger Coheſions than are agreeable to the Purpoſes that Fluid is deſign'd for, and render it too ſizy to part with a ſufficient Quantity for Perſpiration. It relaxes alſo and ſupplies the Fibres of the Body, and hangs ſo much upon the cutaneous Pores, that the weakened Contractions of the Veſſels are not able to carry on the Fluids with Force enough to break thorough thoſe Obſtructions. Too viſcid a Food has the ſame Effect, by rendering the Juices too thick for Perſpiration; as alſo has an Intermiſſion of uſual Exerciſe, becauſe

becauſe thereby the Blood wants thoſe Motions and Attritions as are neceſſary to break it ſmall enough to exhale thorough the Skin. The Conſequences of an Exceſs or Diſuſe of Venery, we ſhall ſee below in the *Sixth Section.*

APH. LXVIII.

" External Cold hinders Perſpiration in weak " People, becauſe their natural Heat is diſſipated; " but in robuſt, it increaſes it; for thereby the " Heat being drove to the Center, is doubled, and " ſo Nature is ſtrengthened, and by that Means " drives out the Quantity of perſpirable Matter that " was retained, and makes the Body both ſeem, and " really become lighter.

Explanation.] The Propoſition here is very true, but the Reaſon for it hardly intelligible, although, according to the uſual Way of talking in ſuch Caſes; for the Term *Vital Heat* here conveys no determinate or diſtinct Notion of any thing; and it is meerly chimerical and deluſory, to ſay that Cold diſſipates it in a Perſon that is weak, and drives it inward in one that is ſtrong, which then expands it ſelf *quaquaverſum*, with ſuch Force towards the Circumference, as to carry before it all Obſtructions that lie in its Way. And this Miſtake, or Ambiguity at leaſt, is owing to a Want of a right Application to the proper Principles of Knowledge in ſuch Matters, and by not keeping the Mind ſteady to that evident and demonſtrative Procedure by which all phyſical Agents operate. And without knowing the Mechaniſm of the Solids, it is not very likely that a Perſon ſhould ever underſtand much of the Natures and Properties of the Fluids, and amongſt others, the real Cauſes of that Heat, which is more eſpecially ſenſible in the Blood. That

Heat then which is commonly called *Natural*, or *Vital Heat*, is nothing elſe than a due Circulation of a peculiar Fluid; for nothing is more plain than that its Increaſe and Decreaſe are always as the different Velocities of the Blood. If then the Velocity of the Blood is as the Force of the contracting Veſſels, which is eaſy to be proved, then the ſmarter and ſtronger thoſe Veſſels contract themſelves, the greater will always be the *Vital Heat*, and *è contra*. Now why Cold invigorates the Contractions and Vibrations of the Veſſels in thoſe who are ſtrong, and weakens it in ſuch as are tender, is, becauſe it both lays a greater Weight upon them, and acts likewiſe, as has been before mentioned, as a *Stimulus:* For whenever we have a greater Senſe of Cold from the circumambient Air, the *Barometers* will prove the *Atmoſpherical Preſſure* at that Time to be increaſed; and that Water is ſtill heavier, and preſſes more upon the immerſed Body, is not to be diſputed. A greater Preſſure therefore upon the Veſſels *ab extra*, eſpecially when accompany'd with a *Stimulus*, cannot but aſſiſt them in their Contractions, and carry on the faſter the circulating Fluid, and conſequently increaſe that Heat which is a neceſſary Effect of ſuch Motion; but if the Fibres which conſtitute thoſe Veſſels are weak, that is, have ſo much loſt their Springs, as not to be able to return with a Quickneſs and Strength equal to that of their Contractions, then the Veſſels will, by any ſuch Cauſe, be only leſſened in their Capacities, and the Blood, by meeting with greater Reſiſtances, be retarded in its Motion, and conſequently the *Vital Heat* will be decreaſed. Now Perſpiration, that is, the Quantity perſpired, being *cæteris paribus* in Proportion always to the *Vital Heat*, (as here explained) it follows of Conſequence, that whatſoever increaſes or diminiſhes the one, will likewiſe have

have the ſame Effect upon the other. When therefore by any external Cold, whether by the Air, or Bathing, the *Vital Heat* is increaſed, Perſpiration will therefore be promoted; and when the Heat is leſſened, Perſpiration will be ſo too.

APH. LXIX.

" The Health of that Body is much more laſting " and eſtabliſh'd, whoſe Weight in the Courſe of " ſeveral Years neither increaſes nor decreaſes, than " that which is changed every Year.

Explanation.] Frequent Variations of the Standard of Weight cannot be ſo well as keeping to a ſettled one, becauſe ſuch Changes muſts needs in ſome Meaſure diſturb the Animal Functions, and put the Conſtitution into Diſorder, by ſometimes overcharging and ſtraining its Springs, and at others, by defrauding ſome of the Parts of their due Supplies.

APH. LXX.

" To return to the uſual Standard by an Addition " of indigeſted Juices, is bad; but by what is well " digeſted, healthful.

Explanation.] See *Aphoriſms* xliv, and xlv, of this Section.

APH. LXXI.

" For a Perſon to loſe of his Weight with the " ſame Way of Living, is bad: For, in the Room " of that healthful Subſtance which is waſted, there " is made no Supply.

Explanation.] This is an undoubted Truth, as to the firſt Part eſpecially, tho' it be a Caſe that can be ſeldom obſerved to happen: And the latter

Part, where it is ſaid, *there is made no Supply*, ought to be underſtood with Reſtriction, and ſuppoſed that an inſufficient Supply only has been made. The Conſequences and Remedies in this Circumſtance are too obvious to want any particular Directions about them.

APH. LXXII.

" The Excrements of the Guts which are well " digeſted are large in Bulk, but of ſmall Weight, " they ſwim becauſe of the included Air, and what " is ejected at once, ſeldom exceeds the third of a " Pound.

Explanation.] That is, they are *ſpecifically* very light, and of Conſequence very porous, and full of Air, which makes them emerge in Fluids of greater *ſpecifick Gravities*. And their Lightneſs ariſes from the ſtraining all the more weighty Parts into finer Paſſages for further Uſes in the Body, which cannot be done but by a good Digeſtion, thoſe Particles which have more Bulk and leſs Matter, being thrown out by the larger Outlets in Excrement.

APH. LXXIII.

" If through any Error, a Pound of perſpirable " Matter is detained in one Day, Nature is gene- " rally three Days in diſcharging it.

Explanation.] Which is commonly found true by Experience; for upon taking Cold, as it is uſually called, which is nothing elſe but a leſſened Perſpiration, as explained under *Aphoriſm* vi. of this Section, it is ſeldom leſs than three Days before the Inconveniencies ariſing from it are removed; and by that Time the Body either gets quite rid of them, or is ſeized with the uſual Symptoms of an acute Fever, of which, unleſs immediately removed by ſome

ſome Evacuation that carries off the Overcharge, no Body can ſee the Conſequences.

APH. LXXIV.

" A great deal is inſenſibly diſcharged, when " Nature endeavours to get rid of the retained per- " ſpirable Matter, by yawning and ſtretching of " the Limbs.

Explanation.] Theſe a Perſon is moſt inclined to juſt after Sleep, and the Reaſon is, becauſe during Sleep, a greater Quantity going off by the Pores of the Skin, than at other Times, whenſoever a Perſon wakes, the increaſed Contraction that then happens, cloſes a great deal of the perſpirable Matter in the cutaneous Paſſages, which will continually give ſuch little Irritations, as excite Yawning and Stretching; and ſuch Motions, by ſhaking the Membranes of the whole Body, and ſhifting the Contacts of their Fibres and the encloſed Matter, by Degrees throw it off. Hence we ſee the Reaſon why healthful ſtrong People are moſt inclined to ſuch Motions, becauſe they perſpire moſt in Time of Sleep, and therefore have more of the perſpirable Matter to lodge in the Pores, and greater Irritations thereunto.

I cannot eaſily paſs by here, the vaſt Advantages of ſome little Exerciſes juſt after waking in the Morning. At that Time by the Quantity which is gone off during Sleep, the Body is much emptied and leſſened, and all the Fibres invigorated with a freſh Stock of Spirits; that Firmneſs therefore and due Tenſion of the Solids which are ſo neceſſary to a good State of Health, are then moſt eaſy to be obtain'd, becauſe the Fibres at that Time may moſt conveniently be drawn up and hardened, by any ſuch Means as gently contracts them, and at the ſame

ſame Time ſhakes off their groſſeſt and moſt uſeleſs Moiſtures. Now that Exerciſe does contract the Solids, nothing is more manifeſt, and therefore nothing can be of greater Service than to uſe it at theſe Times. But ſuch is the beſt, as gives a gentle Motion to all the Parts, eſpecially the Membranes and cutaneous Fibres; and this can be effected no ſurer Way that I know of, than by the *Fleſh-Bruſh*; which ought to be uſed juſt before riſing and putting on any Cloaths; and if now and then the Perſon would leap about, and ſtretch his Arms on all Sides, with Weights in each Hand, it would wonderfully aſſiſt thoſe good Ends which are to be procured hereby. By this Means all that Matter which is digeſted enough for Perſpiration, would be drawn out, and the Solids have no manner of Weight left upon them but the neceſſary Fluids, by which they would be enabled to perform their Offices with Eaſe and Vigour, and as in a Clock or Watch new cleaned, the ſeveral Motions of the whole Machine would go on with great Regularity. See *Aphoriſm* xxxiv. *Sect.* iv.

APH. LXXV.

" The perſpirable Matter is of two Sorts, a lighter " and a heavier.

APH. LXXVI.

" The heavier Part coaleſces together, in its go- " ing off, in ſuch manner as to produce Animals; " ſuch as Ticks, Lice, and the like.

Explanation.] That the thicker Part may lodge and adhere ſo much upon the Surface of the Body, as to afford ſuch Creatures Nouriſhment, is not very unlikely; but that they are produced from this Matter without Animal Parents, is a Miſtake,

as

as is eaſy to prove. The moſt effectual Way to keep clear of ſuch Inhabitants, is to uſe the Methods preſcribed in *Explanation* to *Aphoriſm* xxxiv.

APH. LXXVII.

" From the groſſer Part proceeds contagious Diſ-
" eaſes amongſt ſuch as lie together; for the lighter
" flies away, and the heavier Part gives the Infec-
" tion.

Explanation.] It is very likely to be thus in the Propogation of cutaneous Diſeaſes, as the *Itch*, which perhaps may be infectious only by Contact and lying together, and may be occaſioned by the heavier Part of the perſpirable Matter lodging upon the Skin: But 'tis likewiſe certain, that the Infection of ſome Diſeaſes may be communicated by ſubtle Particles that fly off, and are efficacious at a very conſiderable Diſtance.

APH. LXXVIII.

" To thoſe who have the perſpirable Matter ob-
" ſtructed in very hot Weather, 'tis very trouble-
" ſome: But to thoſe who freely perſpire their due
" Quantity, the Heat is not uneaſy.

Explanation.] Becauſe the obſtructed Matter not only increaſes the Weight, but alſo at ſuch Seaſons is apt to raiſe preternatural Ferments, and occaſions Putrefactions; or at leaſt, to contract ſuch Qualities during its Stagnation, as may render it irritating and troubleſome; all which Inconveniences are prevented, when the perſpirable Matter, as ſoon as made, flies off.

APH. LXXIX.

" The greateſt healthful Standard the Body is ca-
" pable of, differs from the leaſt, as it more haſtens

old

" old Age: Suppoſe one enjoys perfect Health at
" two hundred, equally with another of five Pounds
" more; the Exceſs of the latter, has been obſerved
" to haſten old Age five Times as faſt.

Explanation.] 'Tis certain, that the greater Fulneſs there is, altho' not ſo great as immediately to bring on a Diſtemper, the ſooner will the Solids loſe their Springs, and wear out, having by that Means more Labour to circulate and digeſt the Fluids, than where by a temperate and ſparing Way of Living, a Perſon always keeps to the loweſt healthful Standard.

APH. LXXX.

" Why does animated Fleſh live, and not putrify
" and die? Becauſe it is daily renewed. Why may
" Children live longer than old Perſons? Becauſe
" they may be oftener renewed, from the loweſt
" Standard of Weight to the greateſt: For they are
" capable of more Weights than are healthful.
" Why do moſt old People of Neceſſity die? Be-
" cauſe they arrive to the only laſt healthful Stan-
" dard that they are capable of. But why to the
" laſt only? Becauſe their Fibres are grown hard,
" and ſuch as poſſibly cannot be renewed; whence
" proceeds Death.

Explanation.] The continual Motions that the animal Fluids have impreſſed upon them by the contractile Veſſels, prevents their falling into ſuch inteſtine Motions of themſelves as tend to Putrefaction; as we find it happens to all circulating Liquors. But as ſoon as this Motion ceaſes, which it muſt needs do, when the Solids no longer continue their Impulſes, as in Death, then, as all heterogeneous Fluids always will do, they will obey their natural Gravities and Attractions, under the Power

of which there is brought about ſuch a Change in the Maſs as is called Putrefaction. What is meant by different healthful Standards and their Changes, has been already explained, *Aph.* lxiii. above. Old Perſons die becauſe their Solids are quite worn out, that is, they have ſo far loſt their Textures, as not to admit any further Supplies of ſuch Juices as are neceſſary to keep them in Motion. As when the principal Wheels of a Clock are worn out, and they are capable no longer either of moving others, or being moved themſelves, 'tis neceſſary that the whole Machine muſt ſtand ſtill.

A P H. LXXXI.

" Why do thoſe who are ſeiz'd with obſtinate Di-
" ſtempers, recover? Becauſe they are capable of
" enjoying Health under ſeveral Weights, ſome
" Perſons have loſt in a Diſtemper thirty Pounds,
" more or leſs, according to the greater or leſſer Re-
" pletion, as before, and as the Diſtemper has been
" more or leſs enflamed or protracted.

Explanation.] The Reaſon here given is but a very obſcure one; That the Body is capable of Increaſe or Waſte is moſt certain, without bringing Death, but it ſounds very odd to ſay, that is the Reaſon why a ſick Perſon does not die. When a Perſon recovers from a Diſtemper, it is becauſe the Cauſe of that Diſtemper is removed before any of the principal Parts are broke, or worn out and ſtand ſtill, but even before that is done, ſometimes in Fevers, particularly by the Acceleration of the Motions of all the Parts, there is ſo much Subſtance worn away, as to lighten the Body by a great many Pounds, and vaſtly diminiſh its apparent Bulk; and ſuch Waſte frequently happens where the Perſon recovers, and is more or leſs, according as the Diſeaſe is raiſed or continued.

A P H.

APHORISMS *added by the* AUTHOR.

APH. LXXXII.

" Old Perſons by frequent ſpitting, protract their " Lives: For if what they ſpit was retain'd, it be- " ing incapable of Digeſtion, would hinder Per- " ſpiration, from whence would enſue Suffocation " and Death.

Explanation.] It would be incapable of Digeſtion by ſuch aged Perſons, becauſe their Solids have very much loſt their Springs and Force of Contraction, upon which Digeſtion depends; and therefore it muſt needs lodge in great Quantities in the Air-veſſels, and Parts about the Lungs; inſomuch as if in Time it is not thrown off, and brought away by Coughing and Spitting, it will entirely deſtroy Reſpiration; whence Death. But if by Accident in young People whoſe Lungs are ſound, there happens to be any Obſtruction of the perſpirable Matter there, we often find that it is brought to Digeſtion, and cleared away; and a due Perſpiration of that Part again reſtored.

Sanctorius reckons the Quantity perſpired by the Lungs and Parts leading from them, as 1 to 10. But Dr *Liſter* a great deal more; if then in old People, and others of weak and bad Digeſtion, ſuch Diſcharge this Way is hindered, 'tis neceſſary that it be brought away by Cough and Spitting, or elſe very great Injuries muſt enſue, if not Death. Hence may be collected the propereſt Methods of treating thoſe who are thus diſeaſed, if there is not a *Malâ Conformatio*, or an abſolute Corruption of ſome of the Subſtance of the Lungs; which is firſt to bring away

away the obſtructed Matter by Pectorals, and ſuch Means as have been found to diſcharge this Way; and then ſo to harden and reſtore the Conſtitution, that the perſpirable Matter may be better digeſted for the future, and carried off without any ſuch Stoppage; but becauſe the latter is not practicable with old People, who are much worn out, they muſt be contented only with the Benefit of the former.

APH. LXXXIII.

" Old Age may truly be reckon'd a Diſtemper,
" but it may be long protracted if the Body perſpires
" well.

APH. LXXXIV.

" Venery deſtroys thoſe who are antient, as alſo
" an actual Coldneſs of the Body, immoderate
" Drinking and Eating like young People, paſſion-
" ate Anger, and too much Exerciſe.

Explanation.] All theſe accelerate the Motions of the ſeveral Parts of the animal Machine, more than the weaken'd and decay'd Springs of old Age can admit of, without conſiderable Damage.

APH. LXXXV.

" Old People fail of reaching to a long decrepit
" old Age, becauſe of the Decay of their excretory
" Organs: Whence they diſcharge not ſo much by
" Urine as they drink, and perſpire leſs than uſual;
" the only Remedy is to adjuſt as near as can be, the
" Evacuations to the Quantities taken in.

Explanation.] In very old People the Muſcles and ſolid Parts at the greateſt Diſtances from the Heart and Brain decay firſt, becauſe thoſe two principal Inſtruments of Motion themſelves grow too weak

and languid to propel the proper Fluids into them, and envigorate them, in order to the Performance of their reſpective Functions; and therefore the proper Diſcharges by them are hindered, before the Stomach loſes its Power of Digeſtion; the only Remedy, or rather Preventive, is a ſparing light Diet, and promoting Evacuation ſometimes by gentle Catharticks.

APH. LXXXVI.

" A total Stoppage of Perſpiration, not only of " the principal Parts, but alſo of the remoteſt, " certainly brings Death. Of the principal Parts, " as the Brain, it produces an Apoplexy; in the " Heart, Palpitation; in the Liver, too much Blood; " in the Womb, Suffocation; and in the lower " Parts, a Gangreene.

Explanation.] The Diſorders herein mentioned, ariſe frequently without any Injury immediately in the Part it ſelf, but from a general Hinderance of Perſpiration, and ſeveral other Cauſes, too long here to enter into. It is very plain, that *Sanctorius* was here in the Dark, in not being acquainted with the Circulations of the animal Fluids, and that Mechaniſm by which any particular Part may be diſtemper'd from a foreign Cauſe.

APH. LXXXVII.

" The Suffocations of Women do not proceed from " a Preſſure of the Womb againſt the Diaphragm, " but from an actual Coldneſs of a corrupted *Semen*.

Explanation.] This is built upon a Miſtake of a *Semen* in Women, which later Diſcoveries in Anatomy have better inform'd us about. The Diſtemper here ſpoke of actually ariſes from ſome Irritations and Diſorders of the Nerves in that Part, which by their Communication and Conſent with others, carry

carry the Malady further, as it happens in all Convulſive Caſes.

APH. LXXXVIII.

" The Humours of gouty People, even the moſt " thick, are carried off only by Perſpiration.

Explanation.] Becauſe when they are got ſo far into the extream Parts, they are not eaſily brought back into any other Emunctory. See *Eſſay on the Gout.*

APH. LXXXIX.

" Vomiting diverts Urine and Perſpiration.

Explanation.] Becauſe it makes a Revulſion of the Humours, and diverts the uſual Supply of thoſe Evacuations. But this is to be underſtood only of ſuch Vomiting as ariſes from a Weakneſs and Diſorder of the Stomach, by which it cannot retain its Food, but throws it up again before Digeſtion: For Vomiting may be ſo ordered in ſeveral Caſes, as to promote Perſpiration, when it has before been obſtructed. The Muſcles and Fibres of the whole Body are concerned in its Operation, and ſhook with ſuch Force, as to conduce very much in diſlodging whatſoever has been retain'd, and fixed in the excretory Paſſages, and this is the Reaſon why it is of ſuch mighty Service in the Beginning of a Fever from taking Cold, for if it be adminiſtred upon the firſt Attack, 'tis a great Chance but it breaks the increaſing *Lentor* of the Juices, and expels their Overcharge by Perſpiration and Sweat. Mr *Fuller* therefore, in his *Medicina Gymnaſtica*, with a great deal of Reaſon, places Vomiting amongſt thoſe Exerciſes of the greateſt Efficacy.

APH. XC.

" Frequent turning in Bed, ſo as to exerciſe all " the Muſcles by it, weakens the Conſtitution, and " leſſens Digeſtion and Perſpiration. The beſt Re- " medy is reſolutely to keep in the ſame Poſture.

Explanation.] Such reſtleſs Motions keep the Nerves too contracted to admit of that due Perſpiration which is beſt performed in Time of Sleep; which muſt of Neceſſity weaken the Body, by the Retenſion of a ſuperfluous Load. But the Remedy mentioned, I am afraid, is hardly practicable.

APH. XCI.

" When the Knees are actually made warm, the " Feet will become ſo too; and ſuch will ſleep well, " perſpire plentifully, but make leſs Urine.

Explanation.] The circulating Blood will carry that Warmth which is occaſioned in any particular Part by external Means, to all other Parts of the Body, as well as the Feet; and likewiſe ſlacken the Fibres, which by what has been ſaid already, appears to be conducive both to Sleep and Perſpiration; but it leſſens the Quantity uſually diſcharged by Urine, becauſe, as was ſaid before, the Increaſe of one Perſpiration neceſſarily leſſens another: See *Aph.* liii, above, and therefore for the ſame Reaſon.

APH. XCII.

" A Looſeneſs may be removed by increaſing the " Quantity which is to be perſpired, as it often " happens in Bathing.

Explanation.] There appears to be a mighty Conſent between the *Inteſtines* and the *outer Skin*, for we always find an increaſed Diſcharge by one, to leſſen

leſſen that of the other; and nothing is more common than a Looſeneſs upon checking Perſpiration by external Cold, and therefore it muſt needs be a very likely Way to remove a Looſeneſs by increaſing Perſpiration, which warm Baths cannot fail to do.

APH. XCIII.

" As a Load-ſtone armed with much Steel, and " as a larger Veſſel of Wine keeps it's Strength beſt; " ſo the moſt weighty Bodies better preſerve themſelves in a vigorous Health, than ſuch as are ſunk " with Abſtinence.

Explanation.] It was taken Notice of before, *Aph.* xxxvi, above, that the larger the Body is in Bulk, *cæteris paribus*, it is the ſtronger; and conſequently better preſerv'd in a perfect Health, becauſe, the better able to reſiſt external Injuries, and rightly to perform the vital Functions.

As to the Strength of a Body, the Author of the *New Theory of Fevers* has demonſtrated in *Lemma* iii. That, *It is in different Animals of the ſame Species, and at different Times in the ſame Animal, in a Triplicate Proportion of the Quantities of Blood.* And it is certain, that the Strength of the ſame Animal at all Times is as the Force of all his Muſcles taken together, which Force is as the Quantity of Blood, and its greater or leſſer Viſcidity: For *Bellini* in his Forty Ninth Propoſition, *De Miſſione Sanguinis*, has proved at large, that in an increaſed Quantity of Blood it may be ſo vitiated, as to impair the Strength: Therefore, in the above-cited Proportion, the Blood is to be taken only in a healthful State; for upon every Diminution of Perſpiration, the Quantity of Blood will be increaſed, but then ſuch Increaſe of Blood is ſo far from adding to the Strength of the

Body, that it leſſens it, as *Sanctorius* frequently takes Notice, and the Difference lies here; an increaſed Quantity of healthful Blood, gives a larger Stock of animal Spirits to the Solids than it did before, (by Dr *Wainwright*'s *Eighteenth* Propoſition of *Animal Secretion*, before taken Notice of) and therefore adds to the Strength of the Body: But an increaſed Quantity joined with an increaſed Viſcidity, will leſſen, in Proportion to that Viſcidity, the ſmall ſeparable Parts of the Blood; and conſequently the Secretion of a thin Fluid to be performed in the Brain for the Invigoration of the Solids, will be thereby leſſened, and the Strength impair'd.

APH. XCIV.

"They who piſs more than they drink, perſpire "little or nothing.

Explanation.] Becauſe the perſpirable Matter is diverted by Urine. And this may give a Caution to ſuch who are fond of the *Mineral Waters*, and ſuch Courſes as work much by Urine: For 'tis certain, that Perſpiration is thereby hinder'd, which upon too long Diſuſe may not be very eaſy to be reſtored to its natural State; for in Time, not only the excretory Paſſages may, for want of their uſual Attritions and Impulſes, ſubdue, but likewiſe be very much obſtructed by too large an Overcharge of a mineral groſs Matter; which may prove very difficult to remedy: And conſidering Perſpiration is the largeſt Diſcharge, and of the moſt Importance of all the Evacuations for the Preſervation of Health, the greateſt Care poſſible ought to be taken, that it be not interrupted without unavoidable Neceſſity.

APH. XCV.

" Why is Perſpiration hinder'd in intermitting " Fevers? Becauſe the peccant Humours are in the " Circumference of the Body.

Explanation.] What Cauſe ſoever diſpoſes the Blood to be more viſcid than natural, will likewiſe hinder Perſpiration, by obſtructing the capillary Veſſels, and the cutaneous Paſſages; 'tis demonſtrated by Dr *Wainwright*, *Propoſ.* xvi. of *Animal Secretion*, that ſuch Glands, whoſe compounding Arteries are moſt complicated, ſeem the moſt viſcid Matter from the Blood. And by Dr *James Keil*, on the ſame Subject, *Prop.* xi, vi, and ix. That Corpuſcles which are the ſloweſt in uniting, have the weakeſt attractive Force, the leaſt Solidity, and the moſt extended Surfaces; but when united, they cohere moſt ſtrongly, compoſe the moſt viſcid Fluids, and therefore make the moſt viſcid Secretions, and are ſeparated at the greateſt Diſtances from the Heart, where the Sum of the Cavities of the Arteries is greateſt, and the *Impetus* of the Blood ſmalleſt; wherefore in all preternatural Viſcidities of the Blood, the extream Parts are moſtly over-charged with it, and there it adheres until it occaſions Rigours, and afterwards Fevers. Now nothing is more plain, than that the peccant Humours in intermitting Fevers is the *Lentor*, or too great Viſcidity of the Blood, its Cauſes ſee in *Explanat.* to *Aphor.* lxvii, above. But how ſuch a Diſpoſition occaſions intermitting Fevers and Agues, would be of too great a Length here to enter into; I ſhall refer the Reader to *Bellini de Febribus*, *Propoſ.* xviii, and xix. Where he will meet with a full and demonſtrative Account of this Matter.

APH. XCVI.

" In Dropſies, the Water in the *Abdomen* does not " paſs away, becauſe it is too groſs and ſizy to per- " ſpire.

Explanation.] Another Reaſon likewiſe may be owing to the ill Conſtitution of the Membranes incloſing it, which at ſuch Times muſt needs be flaccid and pulpy, and thereby leſs porous. Their Elaſticity likewiſe being much loſt, there will be wanting thoſe uſual Vibrations which are abſolutely neceſſary for Perſpiration; the tonick, or vibrating Motions of the Membranes being to the included perſpirable Matter, as the Motion of a Sieve to what is deſigned to be ſhook thro' it: And further, would it not be too tedious here, it might eaſily be prov'd, that the Membranes themſelves without Motion, are not porous enough to admit through them the moſt ſubtle Steams whatſoever, and yet that when moved in ſuch a Manner as in a ſound State of Health, by the continual Shiftings of the Poſitions and Contacts of their conſtituent Fibres, there are Openings alternately made from one Part to another, large enough to let thorough a very groſs Matter: Which may remove all the Difficulties ſome make from Experiments, wherein their ſubtle Fluids will not paſs membranous Bodies, which are known in Life to let through much groſſer; and this alſo cannot but evince the Neceſſity of promoting and maintaining thoſe natural Vibrations of the Solids by proper Exerciſe.

APH. XCVII.

" A Collection of hot Humours in any Part, ought " to be treated with warm Digeſtives, in order to " render it perſpirable.

Explanation.] Therefore Care ought to be taken, that in inflammatory Swellings, there be not too much tampering, as is cuſtomary, with cooling Applications, becauſe ſuch will obſtruct the cutaneous Pores, thicken the collected Matter, hinder the breathing of the Part, and increaſe the Inflamation; unleſs by the Strength of Nature, or purgative Medicines, there be made ſome ſudden Revulſion, which in many Caſes is not very ſafe to try.

APH. XCVIII.

" In high Fevers, Fainting proves ſerviceable, " becauſe it helps Sweat and Perſpiration.

Explanation.] In high burning Fevers, the Fibres are ſo violently contracted, that the Skin is render'd almoſt hard and impervious, like Parchment; at ſuch Times therefore, Fainting does good, if it can be procured without any violent Means, becauſe it ſo much relaxes the Solids, and gives way to the circulating Juices, as to admit a great deal through the Skin, which ought to have been carried off through other Paſſages; and thereby the Body is both cool'd and lightned; and the *Equilibrium* between the contractile Force of the Veſſels, and the Reſiſtance of their circulating Fluids, more eaſily again reſtored. Nothing therefore can be of greater Service in the Beginning of thoſe Diſtempers, than to evacuate by Bleeding, or gentle Purgatives, or both.

APH. XCIX.

" If the Puncture of a Nerve is ſtopped with glu- " tinous Pultus's, or ſuch like Applications, the ob- " ſtructed *Ichor* will contract ſuch a Sharpneſs, as to " bring Convulſions and Death, unleſs the Wound " be again open'd with ſome oily Dreſſings.

Explanation.] The common Practice in Surgery allows of this, and in ſuch Inſtances dreſſes with ſpirituous and warm Applications; for the natural Juices of ſuch Parts bears no Affinity to the groſs Subſtances of Unguents, but will be chang'd by their Obſtruction into a very noxious Acrimony. We muſt therefore underſtand *Oily Dreſſings*, in the Aphoriſm, as put in Oppoſition to *glutinous Poultus*'s, to conſiſt of the more ſubtle and ſpirituous, as of Turpentine, and the like.

APH. C.

" That Breathing, which in Tumours is promoted " by Applications, that are actually and potentially " moiſtening, proves ſerviceable; but otherwiſe " they degenerate into *Schirri*, by having only the " thinner Parts drawn off, and the thick remaining.

Explanation.] This is alſo very material to obſerve in Chirurgical Practice, for moiſtening or humid Applications leave the Part obſtructed ſoft and yielding, whether they remove the Obſtruction or not, whereas thoſe which are hot and dry, if they force away any Part of the Obſtruction by their *Stimulus*, it muſt be the thinneſt, which ſhould dilute the reſt, and leave the Remainder more hard and obſtinate; ſo that ſometimes it ſettles with invincible *Nodes* and *Schirri*.

APH. CI.

" Any Part obſtructed with Blood, or other Juices, " as in Tumours, and even in a Pluriſy, is not to " be cooled, becauſe when the obſtructed Matter is " removed, it will cool of it ſelf.

Explanation.] See *Aph.* xcvii, above, with the *Explanation*.

APH.

APH. CII.

" Hypochondriacal Persons are cured, by pro-
" moting Perspiration by Bathing, and using a
" moist Diet.

Explanation.] There is a vast Difference in hypochondriacal Persons, as to the Constitution of their Solids, and therefore they must be very differently treated in order to their Cure. In some the Fibres are drawn up a great deal too straight and differ not much from *Maniacks*; others have too lax a State of Solids, especially of the cutaneous Fibres, and is generally owing to too tender a *Regimen*, and wearing too thick Apparel, and Flannel next the Skin, than which nothing is more hurtful. With the former, warm Bathing, and a most soft Diet must be serviceable, because they relax the Fibres, and give free Passage for Transpiration; the Matter of which, when retained, not only irritates the Membranes, and occasions sharp Pains, but also so much disturbs the orderly Vibrations of the Solids, as to occasion irregular Motions, and Refluxes of the nervous Fluid towards the Brain, whereby the Representations of external Objects are confused, and Fear, Anger, or the like, frequently excited, when there is no just Occasion for such Passions. But in the latter Sort, relaxing Methods are hurtful, because the nervous Fluids are too much wasted already by the Openness of the Pores, the want of which, spoils very much the Elasticity, of the Solids, occasions Heaviness, Flatulencies, and Indigestion; and frequently Consumptions; and upon any sudden external Cold, Cholick Pains, and Distensions of the *Præcordia*, see further, *Aphor.* XII, *Sect.* III. The Remedy here is to strengthen, and give a Firmness to the Solids, whereby the relaxed Pores may be

be drawn up, that nothing may paſs which ought not to go off that Way, and that the Juices may be digeſted and broke fine enough to perform their ſeveral Offices, and afterwards paſs off by their proper Outlets; and this is beſt obtain'd, by gradually coming into a cold Regimen, a ſolid drying Food with generous Wine, the Uſe of *Subaſtringents*, and moderate Exerciſe.

APH. CIII.

" Perſpiration made by Fomenting, upon a full " Body, draws more than it diſperſes, as appears " by the Caſe of *Simon*.

Explanation.] There will always be the greateſt Derivation of the Fluids, where there is the leaſt Reſiſtance; therefore becauſe bathing or fomenting any particular Part at that Time, relaxes the Solids of that Part, that is, abates their Reſiſtance of the circulating Blood, there muſt neceſſarily crowd into that Part a greater Store of Fluids than before; and if ſuch Increaſe exceeds the Quantity drawn out through the Pores by ſuch Bathing, the Collection of Humours in that Part will be increaſed thereby: To prevent which, the beſt Way is to abate the Force of the circulating Fluids beforehand, by proper and cooling Evacuations; and therefore ſuch Applications are never ſafe upon a full Habit of Body.

APH. CIV.

" Thoſe Bodies which perſpire much inſenſibly, " as Children, are neither to be let Blood or pur- " ged.

Explanation.] Becauſe they neither want any uncommon Evacuations, nor cannot indeed admit of them without diſturbing Tranſpiration, which cannot

not be done without Damage. But upon any Hindrance of Perſpiration, they have the more need of ſuch Evacuations, becauſe they are the ſooner injured by it.

APH. CV.

" Why do Spots ariſe in the Skin? Becauſe the " Perſpiration of a malignant *Ichor* is obſtructed.

Explanation.] Whether it be meant here of ſcorbutick, or Fever Spots, 'tis either Way a Miſtake. For the Spots in both are occaſioned by the Blood itſelf breaking through the Extremities of the Veſſels, either by its Thinneſs and Sharpneſs, or by the Acceleration of its Motion, and ſtagnating under the *Cuticula*. Tho' indeed its long Continuance may change it into an *Ichor*, of ill Quality.

APH. CVI.

" Where there is a good Perſpiration, a Gragrene " will go off, but if it ſuppurates, the Part will " mortify.

Explanation.] By a Gangrene, we are here to underſtand a Humour ſo acrimonious as to deſtroy the Bone of the Part where it lodges; and a good Perſpiration may indeed be a Means to digeſt ſuch a Humour, unleſs it be ſupply'd *De Novo* in ſuch Quantity, as to cauſe an Obſtruction and Collection of Humours, in which Caſe it will endanger the Part very much, by changing all that comes near it into the like Nature, and corroding the Fibres.

APH. CVII.

" The Part affected with a Gangrene periſhes, be- " cauſe the Arteries, through too great a Quantity " of Blood, ſubſide at their Extremities. The Re- " medy is to evacuate ſenſibly and inſenſibly.

Explanation.]

Explanation.] Whenſoever too great a Quantity of Blood, for want of ſufficient Motion grows thick and ſizy, it may be the Cauſe of the Obſtruction of the ſmall arterial Branches; but until it grows ſo ſizy, the greater the Quantity is, the greater Impulſe it will make upon the Veſſels or any thing in the Way of its Direction, and conſequently is leſs liable to ſtagnate in the ſmall Veſſels.

APH. CVIII.

" The moſt groſs Humours in robuſt People, will " paſs through the narroweſt Paſſages, as it appears " in the fat Subſtance that will ſometimes come " away by Urine, and the Injections made in the " Breaſt upon a Wound; which muſt be by inſen- " ſible Pores.

Explanation.] There is ſomething very extraordinary in tonick vibrating Motions of the Membranes: For it is very plain, that in a Carcaſe they are not pervious, but may be blown up, and remain diſtended and hard with the included Air: And yet nothing is more certain, than that in a living Body a great deal is continually ſifted through them, and ſometimes too of a Matter not very fine; which cannot otherwiſe be counted for, but by the continual Shiftings of the Contracts of their conſtituent Fibres, whereby there are Openings alternately made from one Part to another, greater or leſſer in Proportion to the Smartneſs and Length of their Vibrations; and hence it is no Wonder, why in robuſt Perſons, notwithſtanding the Hardneſs of their Membranes, the Matter which they perſpire is much groſſer than what will paſs off from finer Conſtitutions, where the Parts are ſofter and more yielding. See back, *Aphor.* xcvi.

APH. CIX.

" The Matter which goes off by Steam, is both " ſuch as is advantageous to part with, and ſuch as " is hurtful ; and when the Strength increaſes upon " its Waſte after Sleep, 'tis a Sign its Obſtruction " would have been very injurious.

Explanation.] Becauſe what is well digeſted and fit to part with, moſtly flies off during Sleep, as appears by ſeveral of the preceding *Aphoriſms* ; and the more the Strength is recruited thereby, it is the greater Demonſtration that it would have been very prejudicial, if it had been longer detain'd in the Body.

APH. CX.

" That Perſpiration which is inſenſible, is na- " tural, and a Token of Health ; but Sweat is the " contrary.

Explanation.] For the Reaſon, ſee *Aphoriſm* xxi, above.

APH. CXI.

" If any part of the Body in Winter is made very " cold, the Whole will ſo far be affected by it, as " to have thereby both Digeſtion and Perſpiration " diſturbed.

Explanation.] The partial *Stimulus* upon the Place expoſed to the Cold, will immediately, by the Communication of one part with another, be convey'd to the Whole, ſo as to render the Fibres more contracted, and conſequently the Pores more ſtraightned, by which Perſpiration will be hindered, and Digeſtion interrupted: See above, *Explanation* to *Aphoriſm* lxviii.

APH. CXII.

" To ſwim in the Evening is ſafeſt: For in the " Morning the Water is colder, and may obſtruct " the Pores, and endanger a Fever.

Explanation.] The Danger is not from the greater Cold in the Morning (as will further appear in the *Explanation* to the following *Aphoriſm*) but from ſtaying ing in too long, and the Dampneſs of the Air at that Time, which will be apt to hang upon and obſtruct the Pores.

APH. CXIII.

" In Summer-time to be expoſed to the open Air " will hinder Perſpiration; whence Heavineſs of " the Head, and a Diſorder of the whole Body.

Explanation.] A ſmall Increaſe of Cold hinders Perſpiration, and is followed by great Diſorders; whereas in others, a ſudden Senſe of intenſe Cold, ſo it laſts not long; as in cold Bathing, has the contrary Effects; becauſe a ſmall and gradual Increaſe of Cold, by Degrees, draws the Nerves ſtraighter, and almoſt inſenſibly leſſens the excretory Paſſages; but a ſudden intenſe Cold contracts them with ſuch Force and Quickneſs, that by their natural Springs, eſpecially in ſtrong Conſtitutions, they return again with equal Force and Quickneſs, and ſo by repeating ſmarter and more frequent Vibrations, put the Fluids into briſker Motions than before, promote the thinner Secretions, eſpecially that in the Brain, and render the Body more briſk and lightſome.

APH. CXIV.

" If a Body has been increaſing in Weight for five " or ſix Days together, it is not ſuddenly, but by " Degrees

" Degrees to be drawn off again; for obſtinate Faſt-
" ing injures the Stomach, Brain, and Heart, and
" ſometimes the whole Conſtitution.

Explanation.] Although a Body may be increaſed or leſſened in its Bulk very conſiderably, by Degrees, without much Injury; yet a ſudden Change ſo alters the Contractions of the Solids, and deſtroys that *Equilibrium* which is neceſſary to a healthful State, that it is a great Chance if it is not attended with Conſequences not eaſily to be removed. About which, conſult *Bellini de Miſſione Sanguinis*, where this whole Matter is ſet in a clear Light. Where therefore any Quantity is either to be added or taken away, Regard ought to be had to the Time in which ſuch Increaſe or Decreaſe has been made, and the Means uſed to bring it to its ſettled Standard, proportioned accordingly.

APH. CXV.

" In Autumn the Weight of the Body increaſes;
" which, if it be beyond a healthful Standard, will
" produce Tertians and putrid Fevers.

Explanation.] It has frequently been taken Notice before, as well as in the immediate Preceding, that a Body is capable of very different Weights without Prejudice, eſpecially young People, but that in every Conſtitution they have their Bounds, which cannot be exceeded without falling into ſome Diſtemper. In Autumn the Body is rendered heavier by the gradual Increaſe of Cold, leſſening the Quantity perſpired; and this retain'd Matter is very apt to ſtagnate in the capillary Arteries, increaſe the Quantity of Blood, and occaſion Fevers, as in *Aphor.* xlvi, above, with its *Explanation*: But if upon the firſt Attack it can be diſlodg'd, and broke ſmall enough to paſs out by Sweat, it only produces

produces Agues and intermitting Fevers; otherwiſe, by its long Continuance, it will be apt to degenerate into a State nearer to that of Corruption, and produce what are commonly called putrid Fevers. See further, *Aphoriſm* xli, xlviii, and xlix. *Section* ii.

APH. CXVI.

" Extream cold Things in acute Fevers, unleſs " they ſoon grow hot, are fatal, by hindering all " Perſpiration.

Explanation.] A ſudden Chillineſs in ſuch Caſes, occaſioned by too cold Things, unleſs the natural Heat ſoon overcomes it, produces a total Stagnation and Death.

APH. CXVII.

" Nothing is more hurtful to malignant Ulcers, " than thoſe Things which hinder Perſpiration, as " Suet, Oil, and Wax.

Explanation.] The Dreſſings therefore in ſuch Caſes ought to be of vinous Spirits, and warm Detergents, which is now the common Practice in Surgery.

APH. CXVIII.

" A Quotidian only of the intermitting Fevers, " is attended with Danger; becauſe phlegmatick " Humours hinder Perſpiration moſt.

Explanation.] By Phlegm, here is to be underſtood, that viſcous Matter which is produced by the Hindrance of Perſpiration, and lodged in the Extremities of the Veſſels; and this abounds in all intermitting Fevers, but moſt in a Quotidian, as appears by the frequent Return of the Fits; and therefore there is the more Danger of its changing into

into a continued Fever, of which no body can foreſee the Conſequence.

A P H. CXIX.

" A Stoppage of Perſpiration about the Neck,
" occaſions a Numbneſs of the Head; as likewiſe
" does the being expoſed to Wind and Rain.

Explanation.] By occaſioning a Hardneſs upon the Muſcles, and greater Influx of Blood into the Head, which by its thick Covering, it is moſt liable to on any external Preſſure, as in cold and rainy Weather.

A P H. CXX.

" Nothing more prevents a Corruption of the
" Humours, than plentiful *Ventillation*; not only
" by that which is drawn in by the Lungs, but by
" what is drawn in thorough the imperceptible
" Pores.

Explanation.] There is nothing undoubtedly of more Importance to the Conſtitution, than Reſpiration by the Lungs, but as to any Ingreſs and Return of Air, by the cutaneous Pores, in the Manner herein hinted at, I do not underſtand, and conceive the Author to have been in a Miſtake.

A P H. CXXI.

" Refrigeratives in acute Diſtempers bring Death,
" by deſtroying Perſpiration, as in the Caſe of *Her-*
" *mocrates.*

Explanation.] See *Aphoriſm* cxvi, above.

A P H. CXXII.

" After Bathing the cutaneous Paſſages are leſ-
" ſened by anointing with Oil, on Purpoſe that

" there might not be made too great a Waſte of the " alimentary Moiſture. But it is therefore to be " avoided in dangerous Caſes, becauſe it cloſes the " Pores.

Explanation.] It was undoubtedly for this Reaſon, that the Antients accuſtomed themſelves to anointing with Oil after warm Bathing, and certainly with Advantage; But in ſuch Caſes where a large Perſpiration is neceſſary, it is not ſafe to uſe it.

APH. CXXIII.

" A Perſon may happen upon ſuch a Way of " living, even when he takes no Care about it, as " may preſerve him to a good old Age.

Explanation.] Which altho' it may, and does ſometimes happen, yet a wiſe Man that has any Regard to his own Happineſs in this World, or that of his Poſterity after him, will hardly run ſuch a Riſque, but always employ his greateſt Care about that which is ſo conducive to it, as is a good State of Health.

APH. CXXIV.

" The *Midriff* by Contraction enlarges the Capa- " city of the Breaſt, and upon that Dilatation, In- " ſpiration is made; and upon its Relaxation the " Breaſt is ſtraightened, upon which the Air is again " forced out.

Explanation.] This will appear very plain, when we conſider the Structure of this Part. The *Diaphragm* or *Midriff* in its natural Situation is very convex on the upper Side next the Lungs, and concave on the other towards the lower Belly: Therefore to put it in a State of Contraction, that is, ſhorten its conſtituent Fibres, as far as they will admit,

admit, muſt neceſſarily bring it to a *Plane* on both Sides, by which Means the Cavity of the Breaſt will be much enlarged, and thereby the Lungs diſtended with freſh Air, forcing it ſelf into them by its Weight and Elaſticity, which is computed to be equal to a hundred Pound Weight. And again, upon the *Diaphragm*'s relaxing to its natural State, the Breaſt becomes leſs capacious, upon which the Air juſt before received into the Lungs, is forced out again by the Contraction of the Muſcles of the *Thorax* and *Abdomen*. But altho' the *Diaphragm* in Expiration is in a State of Relaxation, yet its being ſo, is only the Effect of a joint Contraction of thoſe Muſcles which are allotted for that Purpoſe; and as *Action* and *Re-action* are always equal, ſo the joint Contractions of thoſe Muſcles, muſt be equal to that Weight by which the Air was forced into the Lungs, *viz.* a Hundred Pound: For a particular Calculation of which, ſee Dr *James Keil* of *Animal Secretions*, p. 24, 25.

APH. CXXV.

" The Sphincter of the Bladder by Contraction " ſhuts it, and keeps in the Urine: But by Relax- " ing, opens it, and lets it out.

Explanation.] This is ſelf-evident, and holds the ſame in all Sphincters.

OF THE

PLAGUE.

APH. CXXVI.

" WHatſoever is infected with the *Plague*, that " Infection will be propagated, as long as " its proximate and remote Cauſes remain; but ei- " ther of them being taken away, the Malignancy " ceaſes, as the Motion of a Clock upon the Loſs of " one of its Wheels.

Explanation.] How many Cauſes may concur to propagate the Infection of a Plague, cannot eaſily be determined; but whatſoever they be, undoubtedly its Violence will ceaſe as ſoon as they are removed.

APH. CXXVII.

" The Plague is communicated not by any imme- " diate Contact, but either by drawing in Infe- " ctious Air, or the Steams of tainted Furniture; " and it is thus. The vital Spirits are firſt infected " by the Air, and from the infected Spirits the " Blood is coagulated, which produces *black Spots*, " *Carbuncles*, and *Buboes*; and, if not ſufficiently diſ- " charged, occaſion Death; but if it be all thrown " out, they eſcape.

Explanation.] Authors abound who have wrote of peſtilential Diſeaſes, and the Manner of their Attacks; but I believe there can no where be found ſo rational an Account, as in Dr *Mead*'s *Fifth Eſſay of venomous Exhalations*, &c. in his *Account of Poiſons*; and indeed throughout that whole Book, the Reader

der may be inſtructed in that mechanical Procedure, by which great Alterations are brought about in the animal Fluids, by very minute and unheeded Cauſes.

APH. CXXVIII.

" If the whole Infection be forced out into *Bu-*
" *boes* and *Carbuncles*, it is well; otherwiſe fatal.

Explanation.] Becauſe by ſuch Excluſion, there is made a perfect *Criſis*, and the whole peccant Humour is diſcharged from the Maſs of Blood, and other animal Fluids, but if the Conſtitution cannot hold out till this is done, the Patient muſt ſink.

APH. CXXIX.

" The Plague is not produced in us, but ariſes
" from external Cauſes; as is manifeſt from ſuch
" who are ſhut up in *Cloiſters*.

Explanation.] It is agreed on all Hands, that ſuch Diſeaſes have their Riſe from, and are propagated by, a Diſtemperature of the Air; and it plainly appears to be ſo, by its affecting, more or leſs, all Kinds, of living Creatures.

APH. CXXX.

" All do not die of the Plague, but about a third
" Part, which may be known by thoſe who view
" the dead Bodies.

Explanation.] It is not eaſy to underſtand what is meant by this Aphoriſm, for of the Perſons who die in a Contagion, there can be hardly any but owe their Death to it, tho' indeed, ſome might in the ſame Courſe of Living have been carried off by other Cauſes about the ſame Age, yet not ſo many as a third by a great deal; in what Symptoms there-

fore *Sanctorius* places the Eſſence of this Diſtemper is uncertain, for this cannot be true without ſome Limitation of that kind.

APH. CXXXI.

" They who think *black Spots* and *Carbuncles* de-
" note an Aduſtion of the Humours, are miſtaken;
" for very often old People, both externally and in-
" ternally cold, and without any Fever, in the
" Space of two Days go off with the ſame Symp-
" toms, from a Stagnation of the Blood.

Explanation.] By *Aduſtion of Humours*, is meant ſuch a Concoction as that which forms the Bile, and is the Conſequence of a hot Conſtitution, according to the Senſe of ſome antient *Inſtitution Writers*; but ſuch a Diſtinction is now out of Uſe. That the Spots in this Diſtemper are from Stagnation, is certain beyond Diſpute, and therefore they are miſtaken, who aſſign them to any other Cauſe.

APH. CXXXII.

" If Part of the Blood by the Infection of the
" vital Spirits coagulates, and be wholly diſcharged
" by *Buboes* and *Carbuncles*, they recover; but
" otherwiſe they die, as in the *black Spots*.

Explanation.] This differs very little from *Aphoriſm* cxxviii, above.

APH. CXXXIII.

" Where the *Buboes* and *Carbuncles* are opened,
" and the tainted Matter wholly diſcharged, they re-
" cover; but otherwiſe they die.

Explanation.] As to the three preceding they are much the ſame. It is plain from what has gone before, that whatever alters the Contractions of the Veſſels,

Veſſels, will likewiſe alter the Textures and Coheſions of the Blood, by giving it a greater or leſſer Degree of Motion than it had before. Where therefore the Spirits are diſtemper'd, that is, when the Solids are not duly ſupply'd with that peculiar Fluid, which is neceſſary to maintain their Elaſticity, their Contractions will be changed, and the Blood conſequently alter'd in ſuch a Manner as may diſpoſe its Parts to more forcible Attractions and Coheſions, by which ſuch Grumes and Stagnations are generated; but if the Conſtitution is ſtrong enough to keep on the Circulation for ſome Time, they will gradually be thrown upon ſome particular part, and collected in a conſiderable Quantity, ſo as to form thoſe Tumours; and in ſuch there is much the greateſt Likelihood of Recovery, becauſe by thoſe Diſcharges, the Blood will the ſooner recover its natural Conſtitution: Whereas, when it is not ſo thrown off, it is a great Chance but it induces a total Stagnation, which is Death.

APH. CXXXIV.

" There are two Ways of checking a Peſtilence;
" one is by removing thoſe who are found to diſtant
" Places; and the other, by giving Room to the
" Infected, to air themſelves: The latter likewiſe is
" to be done two Ways; by not confining the in-
" fected to places diſagreeable to them; and by not
" burning their Houſhold-ſtuff.

Explanation.] We are here again under ſome Obſcurity, in what is meant by *Burning of Houſhold-ſtuff*, for it is not eaſy to conceive how that can propagate a Contagion, unleſs by ſcattering the infectious Particles, but this is not eaſy to conceive in moſt Caſes, and Experience has confirm'd the Advantage of Fire in many Inſtances of this Diſtemper.

APH. CXXXV.

" They are ſooneſt infected who have weak Lungs; " they who have ſound ones the contrary; And it is " a Sign of weak Lungs, when upon drawing in the " Breath with the greateſt Force, the Strength of " the Pulſe abates.

Explanation.] Becauſe it is ſuppoſed, that the Infection is chiefly taken from the Air in Breathing; although, perhaps, ſome noxious *Effluvia* may inſinuate themſelves into the Blood by the cutaneous Pores, as *Bellini* endeavours to prove, *Prop.* xxvii. *De Febribus*; the weaker therefore the Lungs are, the leſs able are they to reſiſt the Mixture of the infectious Particles with the Blood, drawn in from the Air, or break them ſufficiently to alter their Figures, and deſtroy their Efficacy upon it. And the Reaſon why the Pulſe is weaken'd, where the Lungs are weak upon drawing in a large Quantity of Air at once, is, becauſe ſuch an additional Weight, preſſes ſo much upon the Blood-veſſels in the Lungs, that they cannot, thro' the Decay of their Springs, repeat their Pulſations with the uſual Quickneſs and Strength, and conſequently the Pulſe at that Time muſt be much abated.

APH. CXXXVI.

" The Peſtilence is not as a Fire which increaſes " according to its Supply of Fuel: For the *Pabulum* " of the former remaining the ſame, it will decreaſe.

Explanation.] I cannot well underſtand here what is meant by the *Pabulum*, unleſs it be an infectious Air; which if it is, the Propoſition is not true; for while that continues, the Diſeaſe will ſo too.

APH.

APH. CXXXVII.

" Peſtilential Steams are carried away by Cur-
" rents of Wind, but not at all by the lucid Part
" of the Atmoſphere.

Explanation.] It is confirm'd by divers Inſtances of the Removal of the Seat of the Plague by Winds, from one Country to another, according to the Wind's Courſe; which ſeems to conclude, that the Infection is convey'd by the groſſer Part of the Air, becauſe it is liable to be removed by ſuch Motions, but not at all affected by thoſe finer Rays which produce Light.

APH. CXXXVIII.

" They who ſeek for any other Remedy for the
" Plague, than flying from the place infected, are
" either ſuch as are very ignorant, or elſe wait for
" ſome private Advantages.

Explanation.] *Sanctorius* ſeems to have been an utter Enemy to all kinds of Medicine in this Diſtemper, as appears further by the two laſt *Aphoriſms* of this *Section*, but unjuſtly; for by Experience a great many have been found of wonderful Service both by Way of Prevention and Cure, when adminiſtred by a ſkilful Hand.

APH. CXXXIX.

" Very few of the wealthier People are cured by
" Medicines, but a great many of the poorer Sort
" recover without them.

APH. CXL.

" Why does the Plague continue long?
" *Firſt*, Becauſe while it rages, Perſons air their
" tainted Furniture, which being ſtole by Thieves,

" ſpreads the Infection, whereas when the *Plague* " is abated, they would not in themſelves be in- " fectious; otherwiſe the *Plague* would continue for " ever.

" *Secondly*, Becauſe the infected being expelled the " Town, others do not take Care to air themſelves " enough, by which the Infection ſpreads.

" *Thirdly*, Becauſe the People are not forbid to " aſſemble together in the Churches, for at ſuch " Time they ought to perform their Devotions in " the open Air.

" *Fourthly*, Becauſe they chooſe foreign *Surgeons*, " who the greater the *Plague* is, are the better pleas'd.

" *Fifthly*, Becauſe they do not remove the Infected " into other Houſes, ſeparate from thoſe who are " well.

" *Sixthly*, Becauſe they uſe internal Medicines in " the *Plague*, whereas there are none but what are " hurtful.

" *Seventhly*, Becauſe they ſuffer the buying and " ſelling of Poultry, which by being handled by " infected Perſons communicate the Contagion to " thoſe who are well.

Explanation.] All theſe Reaſons together, I believe will fall ſhort of giving full Satisfaction for the long Continuance of ſuch Contagions. Burning Houſhold-ſtuff or any thing elſe at ſuch Times, although belonging to infected Perſons, has been always found of Service, and not to have any Tendency at all to propagate the Diſeaſe. The *Sixth* is owing to his particular Prejudice againſt Medicine in ſuch Diſtempers, as appears above: But it is well known that there are Abundance of Medicines of ſingular Uſe at ſuch Times.

THE

THE APHORISMS OF *SANCTORIUS.*

SECT. II.

Of AIR *and* WATER.

APHORISM I.

" COLD Air and cold Bathing, give " a greater Warmth to ſtrong Conſti- " tutions, and by removing what is " ſuperfluous, render them lighter; " but they cool weak Perſons by over- " coming their natural Heat, and thereby alſo ren- " der them heavier.

Explanation.] A Thorough and clear Underſtanding of the Contents of this *Aphoriſm*, is of very great Concern and Importance to every one who would be acquainted with the true

Cauſes of Diſtempers and their Cures, and what is abſolutely neceſſary thereunto, the *Mechaniſm* of a *human Body*. See the *Explanation* to *Aphor.* lxviii, xcvi, and cxiii, *Section* 1. But for Bathing in particular, it may be here obſerved, that cold Baths have been long baniſhed out of Medicine by the Uſurpations of Chymiſtry, and a Monkiſh Philoſophy: For the Antients had them in the greateſt Eſteem; and ſome Improvements of Reaſoning in Phyſick from Geometry and Mechanicks, have brought them into tolerable good Countenance again: And the preſent Age can furniſh us with abundance of noble Cures perform'd by cold Bathing, which were long attempted in vain by the moſt efficacious Medicines. There are hardly any chronick Diſeaſes but the cold Baths may be made Uſe of to Advantage, if there be nothing peculiar in the Conſtitution to forbid its Uſe; which is Corpulency and unſound *Viſcera*. In very fat Perſons the Fibres are ſo ſtuffed round, that they have not Room to vibrate or contract with the ſudden Squeeze of the Bath; inſtead therefore of enforcing their Springs, and ſhaking off any unneceſſary Incumbrances, they will only be ſtrained to no Purpoſe, and conſequently weakened; for whereſoever an Effort is made to remove any thing by an elaſtick Body, if the firſt Exertion fails, every *Impetus* afterwards languiſhes, and the Spring is ſpoiled. And in unſound *Viſcera*, or where any Part is much weaker than the reſt, ſuch an additional Force will preſs the Fluids upon that Part very much to its Damage, which may be either the burſting of the Veſſels, or promoting the Diſcharge of ſome ill Humours upon that Part, which otherwiſe might drain elſewhere. But where nothing of this Nature forbids the Uſe of the cold Bath, whatſoever is to be effected by bracing the Solids, invigorating their

Vibrations,

Vibrations, and accelerating the Blood's Motion, is with Certainty to be had from hence. All Diſeaſes therefore from a ſizy Blood, and a Lentor upon the animal Juices, if the Elaſticity of the Veſſels is not worn out with Age or Debauches, will find Relief from this Practice. Whatſoever Inconveniencies likewiſe proceed from a bad Tranſpiration, or when Humours are thrown upon the Surface which cannot get thro' the Skin, this Remedy will be of Service in; for upon Immerſion, the whole nervous Syſtem is ſo ſhook, that the very Capillaries feel the Influence, and the minuteſt Paſſages are forced open by an increaſed Velocity of the circulating Fluids, whereby the Skin will be cleared, and inſtead of entertaining groſs acrimonious Humours, tranſmit only the imperceptible Matter of Perſpiration. And this is the Reaſon why People are ſo briſk and chearful after bathing; becauſe ſo much is thus forced away by the Preſſure upon the Veſſels, and forcing out their Contents. A Perſon two Foot under Water, ſuſtains a Weight of Water, added to that of Air (ſuppoſing the *Area* of his Skin to be 15 Foot) = 2280 ℔; for 2, the Number of cubical Feet of Water, preſſing upon a Foot Square of the Skin × 76, the Number of Pounds in a cubical Foot of Water is = 152 × 15: the ſuppoſed Number of ſquare Feet on the Surface of the Body is = 2280 ℔ *Troy*.

Tho' it be a generally received Notion, that *Bath* Water enters into the Body, and ſo mixes itſelf with the Blood, yet few attend to the Manner how it is poſſible. That Water hath a wonderful Power of inſinuating itſelf into the Body, we ſee by a Number of Experiments. Deal-boards will ſwell againſt rainy Weather, the watry Particles floating in the Air by the Preſſure of the Air upon them, are forced into the ſlender Tubes of the Wood, where they meet with no Reſiſtance, the Particles

of

of Air being too large to enter the ſame. It is certain, however true the contrary may appear to be, that the compounding Particles of Water are leſs than thoſe of Air, ſeeing the former will paſs thro' ſeveral Bodies that the other will not. But nothing ſhews its Force greater, than the faſtening a Piece of Whip-cord, or a ſtrong Rope, of what Length you pleaſe, to a Hook or Staple, and at the Bottom of the Cord, hanging any Weight ſhort of what will break it, tho' ever ſo great; for in this Caſe the Weight will riſe by moiſtening the Sides of the Cord by a wet Spunge, whereby a few Particles of Water may overcome any finite Reſiſtance, if the Cord would bear it. Now ſince there is but a little Quantity of Water, and that driven into the Sides of the Cord, with a Force no greater than the Weight of a Cylinder of Air incumbent upon the Water, therefore muſt the Water act by ſome Property whereby its Force is greatly augmented, and that can be no other than that of a *Cuneus:* And the Forces of Wedges are to one another reciprocally proportional to the Angles their Edges make; but in Spheres, the greater or leſſer Degrees of Curvity is to be conſider'd as their Angles, when Spheres are conſidered as Wedges; and the Degrees of Curvity in Spheres are reciprocally as their *Radii.* Now the Particles of Water being ſo infinitely ſmall, leſs by much than thoſe of Air, muſt, when acting as Wedges, have their Powers infinitely increas'd, ſo as to overcome any finite Reſiſtance. Now let the Reſiſtance the Water meets with in entering into our Bodies, be what it will; yet 'tis hard to believe 'tis greater than what is mentioned, which yet a little Quantity of Water will overcome. The Experiments uſually made to know the Force of Water in penetrating into membranous Subſtances, are generally with the Skins of dead Men or Beaſts,

and

and therefore not ſo deciſive as if made upon ſuch as are alive: The only Difference then being, that in the Living, Steams or Vapours are continually raiſed into the Air thro' the Pores of the Skin in inſenſible Perſpiration; which is not ſo in thoſe that are dead: Theſe Vapours, tho' raiſed with a conſiderable Force, are yet unable to withſtand the *Impetus*, with which Water endeavours to inſinuate it ſelf into contiguous Bodies, being ſo great as above explained. And tho' the Quantity of perſpirable Matter is very great in 24 Hours, being $\frac{5}{8}$ of the Meat and Drink a Man takes in a Day; yet if we compute the Quantity that expires from any Part of the Skin, in a given Time, we ſhall find it too little by far to hinder the Entrance of Water into the Body when we go into a Bath. For it hath been demonſtrated, that the Matter of inſenſible Perſpiration in a Minute is the 1200th Part of the Place it comes from, that is, ℈ i. of the Skin perſpires $\frac{1}{1200}$ of a Scruple in a Minute, and conſequently ℥ i. of the Skin perſpires $\frac{1}{1200}$ of a Dram in a Minute. Now ſuppoſe a ſquare Inch of the Skin weigh ℥ i. then a ſquare Inch perſpires $\frac{1}{1200}$ of a Dram in a Minute; but a ſquare Inch of the Skin is preſſed upon when we bathe, more than in the open Air, equal to 96 Drams. For we may conclude that our Bodies, taking one Part with another, are two Foot under Water in Bathing; ſo that every ſquare Inch of the Skin muſt bear the Weight of 24 cubical Inches of Water equal to 96 Drams; for a cubical Inch of Water being ℥ iv. $\frac{384}{1728}$, throwing away the Fraction, 24 cubical Inches muſt be 96 Drams. Now ſince only $\frac{1}{1200}$ ℥ i. of Matter is perſpired through a ſquare Inch of the Skin in a Minute, therefore is the Elevation of the perſpirable Matter reſiſted by a Weight 115200 times greater than itſelf; for 1200 $\times$ 96 = 115200. How great then muſt be the Celerity

lerity with which the perſpirable Matter moves, if we imagine it able to raiſe a Body 115200 times heavier than itſelf? Thus would it be, if the whole Quantity of perſpirable Matter evacuated in a Minute, was to exert its Force at once upon the incumbent Weight of Water; but it is ſo far from doing that, that if the Exhalations of the Steams be not continual, as the Preſſure of the Water is, yet the Intervals betwixt the Times they are propelled from the Body, are very ſhort. Suppoſe 60 of them in a Minute, being about the Number of Pulſes that a healthful Man's Artery beats in the ſame Time; then will the Quantity of Vapour, which exerts its Force at once againſt the incumbent Water, be ſixty times leſs than firſt aſſigned: Which being multiplied by 1200=72000, the Number of Parts into which a Dram of perſpirable Matter is divided, one Part only of which exerts its Force againſt 96 Drams of Water in a Second: So that the perſpirable Matter that riſes, muſt every Second raiſe a Weight of 6912000 times greater Number than it ſelf, if it reſiſt the Entrance of the incumbent Water; for 90, the Number of Drams of Water, incumbent upon an Inch Square of the Skin, multiplied by 72000, the Number of Parts into which a Dram of perſpirable Matter is divided, is=6912000, the Difference between the Quantity of Matter perſpired in a Second, and the Quantity of Water by which its Motion is reſiſted. From the Whole of which, it is beyond Diſpute, that *Bath* Waters enter into, and mix with the animal Juices in Bathing.

APH. II.

" A warm Air and Baths, actually warm, unleſs " undigeſted Humours prevent it, promote Perſpi- " ration, cool the *Viſcera*, and render the Body " lighter.

Explanation.]

Explanation.] Any moderate external Warmth relaxes the Solids, and opens the cutaneous Pores, and gives greater liberty thereby for the perſpirable Matter to paſs off; but if the Humours are crude, and not ſufficiently digeſted, that is, if they are groſs, and not broke ſmall enough; that eaſy Relaxation which otherwiſe would give them the more Room to fly off, will only occaſion a greater Derivation of them towards the Circumference, where, by their Groſſneſs and Indigeſtion, they will be obſtructed in the capillary Veſſels; and ſuch an Obſtruction by a continual Supply from within, will encreaſe, until the Solids are ſtimulated to make larger ſenſible Evacuations, or raiſe a Fever. But where ſuch indigeſted Matter does not hinder, the Cauſes above-mentioned will much increaſe Perſpiration, and of conſequence lighten and cool the Body. As for hot Bathing, the chief in our Contry is that famous one near *Wells* in *Somerſetſhire*; another there is of inferior Note at *Buxton*. We ſhall leave it to Naturaliſts and Philoſophers to account for the Production of thoſe Waters, and be contented with obſerving, that they greatly abound with a mineral Sulphur. From the Matter then with which this Water is impregnated, it may be pronounced a ſoft, healing, ſubaſtringent Balſamick. Subaſtringent is added, becauſe we never meet with Sulphur, even in the ſublimed flowers, which has ſome Portion of a Salt in its Compoſition; which when boiled in Oil, as in making the Balſamick Sulphurs, ſhoot like Needles, or the Branchings of *Sal Armoniack*: So that it is very improbable theſe Waters ſhould take up any Sulphur in their ſubterraneous Current, without bringing alſo ſome of that ſaline Part along with it, which it is never found without, above Ground; and eſpecially when we

conſider how much more it is in the Nature of Water to attract and join with ſuch Particles, than thoſe which are purely ſulphureous. Hence we are naturally directed to thoſe Caſes, wherein theſe Waters and bathing in them, muſt be of Service. They are like a Fomentation, which both ſupples and ſtrengthens the Parts all over the Body at once, and by gentle ſhaking and undulating the Fibres, helps forward thoſe vital Motions, which are almoſt at a Stand. In old Pains and Aches, which have been the Remains of nervous Diſtempers, and where ſome particular Part continues contracted, or has any Humours fixed upon it which it cannot diſlodge, theſe Waters pumped upon it, hot from the Spring, do more towards a Cure, than all the Compoſitions in Pharmacy. Bathing all over in theſe Springs cannot but wonderfully open that almoſt infinite Number of ſecretory Orifices upon the Surface of the Skin, and clear the cutaneous Ducts of Matter, which is apt to ſtick in them; by the Aperture of which *Spiracula*, the Fluids of the whole Body have more Room to move in, and have proper Vents to reak out a great deal, which it is of Service to the Oeconomy to get rid of.

APH. III.

" The external Air which paſſes through the Ar-
" teries into the Body, may render the Body hea-
" vier, or lighter; lighter, if it be ſubtle and warm;
" and heavier, when thick and moiſt.

Explanation.] A warm Air will promote Perſpiration, for the Reaſons given in the preceding *Aphoriſm*, and of Courſe, lighten the Body; and likewiſe will a cold and moſt Air obſtruct the perſpirable Matter, and render it heavier. As for the Effects of Air in general, it may be obſerved, that our Bodies

Bodies are equally preſſed upon by the incumbent Atmoſphere, and the Weight they ſuſtain is equal to a Cylinder of Air, whoſe Baſe is equal to the Superficies of our Bodies. Now a Cylinder of Air of the Height of the Atmoſphere, is equal to a Cylinder of Water of the ſame Baſe, and 35 Foot high, as appears by the Experiment of Pumping; ſo that every Foot ſquare of the Superficies of our Bodies, is preſſed upon by a Weight of Air equal to 35 cubical Feet of Water; and a cubical Foot of Water being found by Experiment to weigh 76 Pound Troy Weight, therefore the Compaſs of a Foot ſquare upon the Superficies of our Bodies, ſuſtains a Quantity of Air equal to 2660 ℔, for $76 \times 35 = 2660$; and ſo many Foot ſquare as is upon the Superficies of a Body, ſo many times 2660 ℔ does that Body bear: So that if the Superficies of a Man's Body was to contain 15 ſquare Feet, which is pretty near the Truth, he would ſuſtain a Weight equal to 39900 ℔, for $2660 \times 15 = 39900$, which is above 13 Tun. The Difference of the Weight of Air which our Bodies ſuſtain at one Time more than at another, is alſo very great. The whole Weight of Air which preſſes upon our Bodies when the Mercury is higheſt in the Barometer, is equal to 39900 ℔. The Difference therefore between the greateſt and the leaſt Preſſure of Air upon our Bodies, may be proved to be equal to 3982 ℔. The Difference of the Air's Weight at different Times, is meaſured by the different Height to which the Mercury is buoyed up in the Barometer; and the greateſt Variation of the Height of the Mercury being 3 Inches, a Column of Air of any aſſignable Baſe equal to the Weight of a Cylinder of Mercury of the ſame Baſe, and the Altitude of three Inches, will be taken off from the Preſſure upon a Body of an equal Baſe, at ſuch Times as the Mercury is three Inches lower

in the Barometer; ſo that every Inch ſquare of the Surface of our Bodies is preſſed upon at one Time more than another, by a Weight of Air equal to the Weight of three cubical Inches of Mercury. Now a cubical Foot of Water being 76 ℔, a cubical Foot of Mercury muſt be 1064 ℔, = 102144 Drams. And as 102144 Drams is to a cubical Foot, or, which is all one, 1728 cubical Inches :: $59\frac{192}{1728}$ Drams to to one cubical Inch. So that a cubical Inch of Mercury (throwing away the Fraction, which is inconſiderable) is = 59 Drams, and there being 144 ſquare Inches in a Foot ſquare, therefore a Maſs of Mercury of a Foot ſquare Baſe = 144 ſquare Inches, and three Inches high muſt contain 432 cubical Inches of Mercury, which × 59, (the Number of Drams; in a cubical Inch of Mercury) makes 25488 Drams; and this Weight, does a Foot ſquare of the Surfaces of our Bodies ſuſtain at one time more than at another. Suppoſe again the Superficies of a human Body = 15 Foot ſquare, then would the Body ſuſtain at one time more than at another, a Weight = $15 \times 25488 = \frac{382330}{8}$ Drams ($= \frac{47790}{12}$ Ounces) = $3982\frac{1}{2}$ ℔ Troy.

Hence it is ſo far from being a Wonder, that we ſometimes ſuffer in our Health by a Change of Weather, that it is the greateſt we don't always ſo; for when we conſider that our Bodies are ſometimes preſſed upon by near a Tun and half Weight more than at another, and that this Variation is often very ſudden: 'Tis ſurpriſing that every ſuch Change ſhould not entirely break the Frame of our Bodies to Pieces. And the Veſſels of our Bodies being ſo much ſtraitned by an increaſed Preſſure, would ſtagnate the Blood up to the very Heart, and the Circulation would quite ceaſe, if Nature had not wiſely contrived, that when the Reſiſtance to the circulating Blood is greateſt, the *Impetus*, by which the Heart

Heart contracts, ſhould be ſo too; for upon Increaſe of the Weight of the Air, the Lungs will be more forcibly expanded, and thereby the Blood more intimately broken and divided, ſo that it becomes fitter for the more fluid Secretions; ſuch as that of the nervous Fluid, by which the Heart will be more ſtrongly contracted. And the Blood's Motion towards the Surface of the Body being obſtructed, it will paſs in greater Quantity to the Brain, where the Preſſure of the Air is taken off by the *Cranium*; upon which Score alſo, more Spirits will be ſeparated, and the Heart on that Account too, more enabled to carry on the Circulation through all paſſable Canals, whilſt ſome others towards the Surface are obſtructed. The moſt conſiderable Alteration made in the Blood upon the Air's greater or leſſer Preſſure on the Surface of our Bodies, is rendering the Blood more or leſs compact, and making it croud into a leſs, or expand into a greater Space in the Veſſels it runs in: For the air contained in the Blood always keeps it ſelf *in Equilibrio* with the external Air that preſſes upon our Bodies; and this it does by a conſtant *Niſus* to unbend it ſelf, which is always proportional to the compreſſing Weight by which it was bent: So that if the Compreſſion, or Weight of the circumambient Air be ever ſo little abated, the Air contained within the Blood unfolds its Spring, and forces the Blood to take up a larger Space than it did before.

APH. IV.

"What the Weight of the Air is, may be collected "from ſeveral Kinds of Salt dried firſt in the warm "Sun, and then expoſed in the Night to the open "Air: *Secondly*, From the greater Increaſe of Cold, "as to our Senſe of it, than what is diſcernable in "the *Weather-glaſs*. For the Meaſure of it its Cold-

" neſs to us is its Moiſture and Weight. *Thirdly*,
" From the greater or leſſer Warpings of thin
" Boards, eſpecially if they be of *Pear-tree*. *Fourth-*
" *ly*, From the Contractions of *Lute-ſtrings*, and
" *Hemp-cord*.

Explanation.] Moſt of the Experiments here, have Reſpect only to the Moiſture and Dryneſs of the Air; the atmoſpherical Preſſure, and its Elaſticity were, if not altogether, yet very much unknown in the Time of *Sanctorius*; and therefore it is no great Wonder to find the Properties of it ſo obſcurely mentioned here; eſpecially when we conſider the vaſt Improvement in Experiments of this Kind, but ſince Mr *Boyle*'s Time, which are ſo manifeſt and convincing, and indeed now ſo common to be met with, that he muſt be a great ſtranger both to Men and Books, who wants any Informations therein. See the *Explanations* under the foregoing *Aphoriſm*.

APH. V.

" The Weight of Water may eaſily be known
" by weighing heavy Bodies in it; for that is the
" lighteſt, and conſequently moſt wholſome, in
" which a Body weighs the heavieſt: But that
" Water in which ſuch a Body weighs leſs, is
" heavier, and not ſo wholſome.

Explanation.] Nothing likewiſe is now more common, than to learn the ſpecifick Weight of any Liquors by weighing heavy Bodies in them; which is well known to all ſuch who try it, to be a moſt certain and infallible Rule. And this is done with Scales, which are commonly ſold for that Purpoſe, by the Name of *hydroſtatical Scales*. That the lighter Water is, it is the more ſuitable to the Conſtitution, the Reaſon is plain; becauſe, as it anſwers all the Purpoſes of diluting, as well as any other, if not

better, it alſo paſſes afterwards the Strainers of the Body better: For the heavier the Water is, it muſt needs be the more charged with greater Quantities of groſs mineral Particles, which will not only render it more unfit to get through the fineſt Veſſels and Orifices of the Glands, but likewiſe be very apt to form ſtony Concretions in the Body, by the Attractions and Adheſions of thoſe mineral Salts with which it is impregnated. It might therefore be of much Service to ſuch who are ſubject to the Gravel and Stone, or any Diſeaſes from obſtructions, to take the utmoſt Care about their Water, and always be ſure to uſe that which is lighteſt. This further affords a very good Hint to ſuch, to uſe as much as poſſible, a ſoft lubricating Diet; for by ſuch Means thoſe Salts would in a great Meaſure be ſheathed, and as the conſtituent Parts of an heterogeneous Fluid, more or leſs obey their attractive Powers, that is, are more or leſs attracted by one another, as they meet with greater or leſſer Reſiſtances from the Fluid they make a Part of, ſo they would be prevented thereby from running into thoſe Contacts and Coheſions, in order to form thoſe little Petrefactions in the Bladder and Kidneys. See Dr *Mead*'s laſt Eſſay in his Book of Poiſons, where this Matter is more fully explained.

APH. VI.

" A heavy Water, and a foggy heavy Air, con-
" vert the perſpirable Matter into an *Ichor*; which
" being obſtructed and not again reſolved, is apt to
" bring the whole Body into an ill Habit.

Explanation.] What will certainly be the Conſequences of an obſtructed perſpirable Matter, none can foretel, it being liable to be altered by ſo many unheeded Cauſes, and afterwards thrown out ſome-

times by one, and ſometimes by other Emunctories, according as the Conſtitution at that time may be diſpoſed to manage it.

APH. VII.

" In a cold wholeſome Air, Perſpiration may be " hindered; but if the Fibres likewiſe thereby ob- " tain a greater Firmneſs and Strength, the Weight " of the retained Matter will not be injurious or " perceivable.

Explanation.] From *Aphoriſm* xxviii, and xxix. *Section* 1. it already appears, that the Weight of the Body, as to the Perception the Perſon has of it, is as the Strength and Vigour of the Solids; where therefore the Fluids are increaſed by any Cauſe whatſoever, and there be at the ſame Time a proportionate Addition to the Strength of the Solids; ſuch an additional Increaſe of the Fluids will not be perceived, or be prejudicial. But,

APH. VIII.

" In a foggy Air Perſpiration is leſſened; the Pores " are obſtructed, and the Fibres weakened and not " rendered more firm, and the Weight of the re- " tained Matter is both perceivable and injurious.

Explanation.] Why a cold wholeſome Air (by which is to be underſtood, that which is cold and clear) ſhould hinder Perſpiration, and yet ſtrengthen the Body, and a foggy cold Air alſo hinder Perſpiration, but weaken the Body; is a Difficulty much like that in the lxviiith *Aphoriſm*, *Section* 1. where it is ſaid, that external Cold hinders Perſpiration in weak People, but increaſes it in the robuſt; and ſolvable only by the ſame Way of Reaſoning. For the Concentration and Diſſipation of the *vital Heat*, ſo much talk'd of, is ſaying nothing, becauſe they

they are Terms which convey no Idea of any mechanical Procedure, by which only all phyſical Agents operate, and their Effects are to be accounted for.

There is one Enquiry which if purſued with Penetration and Judgment, would let in a ſurprizing Light to the true Mechaniſm of the Solids of a human Body, and that is concerning the Compoſition and Texture of a *diſtractile Fibre*; ſo far I mean, as to find out what Order and Texture of Parts will ſerve to make up ſuch a Thread, as is capable of being drawn out to a conſiderable Length without breaking; and that when the Force which ſo extended it, is removed, will reſtore, or contract itſelf again to its former Dimenſions. *Bellini* has furniſhed us with a very good Hint in this Affair, in his *Opuſcula*, *Prop.* 51. *de Villo contractili*; and has gone a little way towards its Application. It is to be wiſhed, that that great Maſter of mechanical Reaſoning would have carried his Theory ſomething further, and been more particular. But from what he has ſaid in the Place above-mentioned, *De Stimulis*, and before upon the ſame Head, in his Propoſitions, *De Miſſione Sanguinis*, any Perſon who is rightly turned to that way of Thinking, with Pains and Induſtry may do it himſelf. To which End, I have added the *Eſſay on the Elaſticity of a diſtractile Fibre*, at the End of this Work, whither the Reader may turn for further Information in this Affair.

APH. IX.

"If in a warm Seaſon a cold Day happens, in the "Space of that Day, ſuppoſing the way of Living "to be the ſame, about a third Part of the perſpi- "rable Matter will be obſtructed; which unleſs it be "diverted by ſome of the ſenſible Evacuations, will

"be

" be diſpoſed to Putrefaction, and diſorder the " whole Conſtitution.

Explanation.] A ſudden Change of Weather from hot to cold, cannot but very much affect and diſorder the Conſtitution, by ſuddenly drawing up and ſtraightening the cutaneous Pores; whereupon the perſpirable Matter will in a great Meaſure be detained, and occaſion Fevers, unleſs by the Strength of the Conſtitution it be ſoon thrown off, by an Increaſe of ſome of the ſenſible Evacuations. And this is the Reaſon why frequently upon Change of Weather, at the ſame time, we meet with a great many together taken with *Diarrhœa*'s, and ſome of them attended with Vomitings, and very ill Symptoms; or elſe for want of ſuch Diſcharges in Time, with Fevers.

APH. X.

" The Obſtruction of the perſpirable Matter which " happens in weak People, upon a ſudden Cold, is " much worſe than that which is made gradually.

Explanation.] All Changes of the Conſtitution whatſoever, are much more eaſily affected by Degres than of a ſudden; becauſe let it be to either Exceſs, Fulneſs or Want, the Solids will ſtretch or draw up inſenſibly by a gradual Procedure; whereas by a ſudden Change into either Exceſs, their Contractions muſt needs be ſo much altered, as cannot ſpeedily be done without ſenſibly diſturbing all the Secretions; and therefore the weaker a Body is, the ſecretory Organs will be leſs able to diſcharge a greater Quantity ſuddenly thrown upon them, than what is by a gradual Increaſe.

APH.

APH. XI.

" Being expoſed to a cold Air after Heat, by leav-
" ing off Garments, a Body may perſpire thereby
" in the Space of a whole Day about two Pounds
" the leſs, and yet receive no Harm from it.

Explanation.] But this can be only in ſtrong Conſtitutions, and the Robuſt, who afterwards will be able to throw off that additional Load without receiving any Damage thereby; their Solids being only invigorated by ſuch an Increaſe of Cold, will vibrate the quicker and ſtronger, and thereby ſoon break the detained Matter, and force it away; but the Experiment therefore is not ſafe to be tried by any other.

APH. XII.

" A delightful and moderately cool Air, does
" more Harm to thoſe who are hot, than exceſſive
" cold Air or Water: For it does not render the
" Body lighter, but obſtruct Perſpiration, and
" weakens it. Whereas the other does obſtruct,
" but at the ſame ſtrengthens it, and thereby ren-
" ders it moſt lightſome.

Explanation.] The Diſtinction herein again made between the Obſtruction of Perſpiration by a moderate and gradual Cold, and that made by what is ſudden and intenſe, as it has before, ſo it can never be too much inculcated, becauſe there is ſo much that turns upon a true Knowledge of its Cauſes: See, as before, *Aphoriſm* cxiii. *Sect.* 1. This alſo will give us a good Reaſon wherewith to encounter the Prejudices of thoſe, who in uſing the cold Bath, are very fearful of going in when they are hot, whereas in ſeveral Caſes it might be proved, to be the moſt ſeaſonable Time.

APH.

APH. XIII.

" Thoſe ill Qualities in the Air and Water, which " diſpoſe to a malignant Putrefaction, are ſuch, that " their Increaſe is ſeldom taken Notice of; as if their " peculiar Natures were ſuch as to render the Solids " ſtronger, as it happens to *Maniacks*.

Explanation.] The firſt Impreſſions of a malignant Diſtemper, are made frequently by ſuch ſmall and imperceptible Agents, that there is no need, as in this *Aphoriſm*, to have Recourſe to any additional Strength in the Solids, to account for their being ſo little taken Notice of for a long time; for very great and fatal Alterations may be made upon the Juices, by Cauſes not ſo much at firſt perceivable by their Bulk, as afterwards by their tragical Conſequences. How, and in what manner very ſmall, and at firſt unheeded Inſtruments may produce ſuch great Changes in the animal Fluids, has been demonſtrated with a great deal of Clearneſs and Strength, by that great Phyſician, *Bellini de Stimulis*, by *Baglivi*, in his Hiſtory of the *Tarantula*, and Dr *Mead* in his much eſteem'd Book of *Poiſons*; as for the Solids of *Maniacks* being rendered ſtronger by any Matter which is the efficient Cauſe of their Diſtemper, as here inſinuated, is a Miſtake; for the Straitneſs and Hardneſs of their Fibres, ſeems much rather the prime Cauſe, than the Effect: Becauſe we find ſuch People bear large Evacuations with Advantage, and are much better by ſuch Means as relax the Solids; for to evacuate, that is, to leſſen the Quantity of the Fluids, is the ſame as to relax, or enlarge the Capacities of the Solids; and on all Hands it is agreed, That their Diſtemper is remitted or enflamed, as their Fibres are more or leſs hardened, or let down, of which *Baglivi* takes Notice in ſeveral Places of his

Specimen

Specimen de Fibra Matrice & Morboſa, and obſerves in the Diſſection of ſome *maniacal* Perſons, the *Dura Mater* to have been hardened to a very great Degree, and to be almoſt dry. And upon this Account it is, that they are no ways affected by the Alterations of the external Air, their Solids being drawn up ſo very ſtraight, as not without great Difficulty to be made ſenſible of ſuch Changes.

APH. XIV.

" Swimming in cold Water after violent Exerciſe
" is very delightful, but fatal; for nothing is more
" deſtructive than Extreams are to one another.

Explanation.] By violent Exerciſe the Fluids will be very much broke, and a great deal of perſpirable Matter made ready for Expulſion; and the Solids alſo ſo very tenſe and ſtrait, that upon ſwimming, immediately afterwards, if the Water is not exceſſively cold, they will yield and relax in Compariſon to that Contraction which the violent Exerciſe had before drawn them up to. And this Relaxation at the ſame time joined with the Chilneſs from the Water, will occaſion ſuch a Stagnation of the Fluids upon a double Account, as without a great deal of Difficulty will hardly be removed, if it does not occaſion immediate Death.

APH. XV.

" There are ſeveral Cauſes which gradually di-
" ſtemper the *Viſcera*, without any ſenſible In-
" creaſe of Weight, or Uneaſineſs.

Explanation.] As in ſome Conſtitutions not fitted for ſuch Ways of Living, the frequent ſipping of *Coffee*, tippling of hot *ſpirituous Liquors*, ſmoaking *Tobacco*, and ſeveral other Things, too long and tedious to enumerate, which are often found by De-

grees to ſteal upon ſome Conſtitutions, and by injuring one particular Part of Secretion, to induce a general Diſorder.

APH. XVI.

" Violent Exerciſe in a pleaſant ſourthen Air, is " often deſtructive: For the Air hinders Perſpira- " tion, and the Exerciſe enflames the Humours.

Explanation.] The Exerciſe by breaking and dividing the Fluids into ſmaller Parts, makes them take up more Room than before, as has been proved in *Explanat.* to *Aph.* xxxiii. *Sect.* 1. Where therefore this is done, and at the ſame Time Perſpiration by any Cauſe whatſoever hindered, there muſt needs be a ſtrange Alteration in the *Equilibrium* between the Force of the contractile Solids, and the Reſiſtances of the circulating Fluids; and ſo far, perhaps, ſometimes, that the Preſſure or Expanſion of the Fluid (which is the ſame, as I ſuppoſe, *Sanctorius* here means by an Inflammation of the Humours) againſt the diſtractile Veſſels will be ſo great, as to hinder their Powers of Contraction, by which their *Tone* muſt ſoon be loſt, and conſequently a Ceſſation of the Motion of the Fluids will follow thereupon. For a total Stagnation may be induced as ſoon by an Overſtretch of the Veſſels, whereby they cannot contract again, as their ſubſiding for want of a due Impulſe of the Fluids to diſtract and raiſe them; and on either Hand it is equally fatal. Where therefore by the Cauſes herein mentioned, a Body is brought into this Hazard, one Step abſolutely neceſſary towards a Remedy, is immediate Evacuation, and relaxing the Solids ſo as, if poſſible, to raiſe a Breathing and a Diſcharge by the ſkin, in effecting which, all *Stimuli* are induſtriouſly to be avoided, as *Bliſters*, unleſs towards the latter End, when

when frequently the Caſe is ſo altered, that the Fluids grow viſcid and ſtagnate thorough the decayed Contractions of the Solids, and may therefore then want a Spur; but at firſt ſuch Means increaſe the Cauſe. And this is chiefly the Caſe of thoſe we call *inflammatory Fevers.*

APH. XVII.

" When too cool an Air is diſcerned after Sup-
" per, the Perſpiration of thoſe Parts which are un-
" covered with Cloaths, will be obſtructed: And
" the next Day at Night, in a great many, will oc-
" caſion a Pain and Heavineſs of the Head.

Explanation.] The Reaſon why taking Cold is frequently attended with Pain and Heavineſs of the Head is, becauſe from the *Meninges*, or Coats of the Brain, the Solids of the whole Body have their Riſe and Invigoration: And as the Hinderance of Perſpiration neceſſarily increaſes the Quantity and Weight of the Fluids, the Senſe and Uneaſineſs occaſioned by ſuch an Increaſe, or Addition, muſt need be firſt felt in the Head, upon the Account of a greater Impulſe of Blood upon thoſe Membranes, as well as by the harder Taſk they have thereupon, to enable all the Solids to carry on and manage ſuch an additional Weight.

APH. XVIII.

" To be carried ſuddenly from a hot into a cold
" Air, is hurtful; becauſe the Body is thereby ren-
" dered heavier than it ought to be: And likewiſe
" the ſame, to be removed from a cold into a hot
" Air; becauſe it is thereby weakened.

Explanation.] The former Part abundantly appears, from what has been ſaid already; and the latter is true, becauſe a ſudden Removal into a hot Air ſlackens

ens the Solids, in whoſe due Contractions and Firmneſs, Strength conſiſts.

APH. XIX.

" Weak Perſons convert the obſtructed perſpira-
" ble Matter into Urine moſt in Winter Time, but
" the ſtrong moſt in Summer.

Explanation.] Becauſe a weak Conſtitution, altho' it is not able to digeſt the obſtructed perſpirable Matter, ſufficient to paſs it off the moſt natural and proper way, by an increaſed Perſpiration; yet in Winter-time, the Solids may be harden'd and invigorated ſo much as to break it ſmall enough to take its Courſe through more open Paſſages, *viz.* The Kidneys and Bladder; whereas in Summer, ſuch Perſons would not have Strength enough to fit it for any Evacuation; and therefore, unleſs it be diverted and brought back by a *Diarrhœa*, they muſt fall into Fevers. But the Solids of even the moſt robuſt in Summer-time, may be ſo far relaxed and weakened by the Heat of the Seaſon, as not to grind the obſtructed Matter ſmall enough for Perſpiration, and therefore be under a Neceſſity of diſpatching it by the next moſt convenient Outlet, which is by Urine; although the great Strength and Vigour of ſuch Perſons in a cold Winter Air, might without any great Difficulty, wear away a conſiderable Quantity of obſtructed Matter by its proper Paſſages, *viz.* the cutaneous Glands.

APH. XX.

" Any Draught of Wind hinders Perſpiration,
" and renders the Body heavier and hotter.

APH.

APH. XXI.

" A cool Wind always hinders Perſpiration, and " is hurtful, but moſt to the Head; becauſe it is " moſt expoſed to it.

Explanation.] That a Draught of Wind upon any particular Part, or a cool Air upon the whole Body, does hinder Perſpiration, and more particularly diſcompoſe the Head, appears already from a great many of the foregoing *Aphoriſms*, as well as from the xviith of this *Section*; and how ſuch Cauſes alſo render the Body hotter, that is, how they raiſe a Fever, may be ſeen explained at large in the *Explanation* to *Aphoriſm* xlvi. *Section* 1.

APH. XXII.

" Of all the Seaſons of the Air, the drieſt are " moſt healthful, becauſe they render Bodies lighter.

Explanation.] This is, in dry Seaſons, there is always a freer Perſpiration than in a wet damp Air, and conſequently more Health. In a dry clear Air, the perſpirable Matter is beſt diſcharged; becauſe the Skin is kept both drier and harder than in wet Seaſons, whereby there is both the freer Paſſage for it, and more Liberty for it to exhale and fly off afterwards; whereas in wet damp Weather, the Skin is moiſtened by the external Air, and the Pores foul and clogged with the groſs Particles hanging upon it, and leſs Liberty left for the perſpirable Matter to get off.

APH. XXIII.

" Temperate Perſons weigh in Summer-time " about three Pounds leſs than in Winter.

Explanation.] It has more than once been before obſerved, that the Body is capable of ſeveral different Standards, and yet continue in a State of Health; the Difference therefore which is made between Winter and Summer, is ſuch as the Body gradually paſſes into, and receives no Injury thereby; for ſuch a Change on a ſudden would endanger its falling into ſome bad Diſtemper. And the Weight of the Body is leſs in Summer than in Winter, becauſe there is continually made a *larger* Perſpiration, that is, there is made a greater Waſte at that Time thorough the Pores of the Skin, in Proportion to the Quantities taken in by Eating and Drinking, than what is made the ſame Way, in Winter, and in cold Weather. A *larger* Perſpiration, I ſay, not a *better*; becauſe it appears already, that the moſt beneficial and ſerviceable Perſpiration is made, when the Nerves are harden'd and firm, as they are in clear cold Seaſons, and the Body then enjoys the moſt perfect State of Health, as will likewiſe appear further from the ſubſequent *Aphoriſms*, and therefore,

APH. XXIV.

" That Laſſitude, or Wearineſs, which is perceiva-
" ble in Summer-time, is not becauſe the Body is
" then heavier, but becauſe it is then rendered
" weaker.

Explanation.] Which is alſo confirmed by the following, and the Reaſon of it very plainly demonſtrated.

APH. XXV.

" The Body becomes weaker in hot Weather, be-
" cauſe, with the perſpirable Matter, a great deal
" flies off which cannot be ſpared, and becauſe the
" natural Heat is not concentrated.

APH.

APH. XXVI.

" In hot Weather ſomething paſſes thorough the
" outer Skin, which carries along with it ſome Part
" of the uſeful Juices.

Explanation.] The three latter *Aphoriſms* are very much the ſame in Subſtance with one another, and expreſs but the very ſame thing in Terms ſomething different.

APH. XXVII.

" In Summer-time, the Body is not uneaſy from
" the Heat of the Air immediately, for every Part
" of the Body is even then hotter than the external
" Air; but becauſe at ſuch Times there is not a ſuf-
" ficient Coldneſs to concentrate the *natural Heat*:
" By which Means it becomes ſo ſcattered, that it
" cannot drive out the perſpirable Matter, (in its
" own Nature hot) by inſenſible Steams; which
" Matter, by being retained, acquires a Sharpneſs,
" and is really the Cauſe of that Uneaſineſs we are
" under from a Senſe of the Summer Heat.

Explanation.] The Terms herein, *natural* or *vital Heat*, and its *Concentration* by extream Cold, are ſuch as *Sanctorius* himſelf ſeems to have had but very obſcure Notions about, and therefore whenever he uſes them, is either very difficult to be underſtood, or elſe is apt to fall into ſome Miſtake. It hath been already ſhew'd, under *Aphoriſm* lxviii. of the *firſt Section*, which ſee, that the *natural* or *vital Heat* is always as the Blood's Motion, and the Blood's Motion as the contractile Force of the Solids; and therefore that at ſuch Times that the contractile Force of the Solids is greateſt, the *natural Heat* will be ſo too. And in this Senſe it may properly be called *abſolute*; but as the Term is

ſometimes uſed comparatively, and with Relation to other Bodies, or the external Air, it may then be called, with more Propriety, *relative Heat*; now with Regard to this Diſtinction, and the Cauſes before aſſigned of the *abſolute Heat* of the Body, nothing is more certain, than that the *abſolute Heat* is greater in Winter than in Summer-time; becauſe in the coldeſt Weather, the contractile Force of the Solids is much ſtrongeſt; although, indeed, in the other Senſe, the Body is then coldeſt, that this, with Relation to the greater Senſe and Perception it has then of cold from the external Air; and alſo of Conſequence, the *abſolute Heat*, contrary to the *Aphoriſm*, is leaſt in the Summer-time, the Solids being then more relaxed, and not ſo able to circulate the Fluids with ſo much Force, altho' it may, indeed, be ſaid to be *relatively hotter*, that is, it does not feel ſo much Cold: And after this Manner, Cuſtom has eſtabliſh'd the uſual Way of Speaking, when a Perſon ſays he is colder or hotter, nothing elſe is to be underſtood, but that he has a greater or leſſer Senſe of Cold at that Time upon him, than before, and that only from the Alterations of the Air; but were he to expreſs himſelf ſtrictly, as to the *abſolute* Increaſe or Decreaſe of his *natural Heat*, as above explained, he muſt ſay quite the contrary, for the Reaſons before given. If it be urged, that in Summer-time, the external Heat of the Air by expanding and rarifying the animal Juices, aſſiſts their natural Heat, and thereby renders them hotter than in Winter; it will not at all help the Matter, becauſe ſuch *adventitious Heat* is ſo far from being called *natural*, or *vital Heat*, that it deſtroys and weakens the Body, and renders it leſs able to withſtand external Injuries.

That an Uneaſineſs, in hot Seaſons, may ariſe from ſome Sharpneſs of Acrimony of the perſpira-

ble

ble Matter, irritating and fretting the Fibres in its Paſſage, is very reaſonable to believe; for the Pulſation of the Solids, by being weaken'd, may admit ſuch a Stop of the perſpirable Matter, as may diſpoſe it to ſuch an Alteration, but that ſuch Obſtructions are occaſioned by the Want of external Cold to concentrate the *vital Heat*, is either ſaying nothing at all, or concealing a plain Truth under a great deal of Obſcurity.

The perſpirable Matter may be ſaid to be *hot* in its own Nature, as it is broke and divided into very ſmall parts, and thereby, when obſtructed and ſtagnant, the more diſpoſed to inteſtine and fermentative Motions; and ſo indeed, may any Parcel of Matter be ſaid to be *hot*, that is capable of being put into ſuch Motions; but then it is to be taken Notice, that ſuch Heat is the Reſult only of that Motion; and that therefore the perſpirable Matter, in itſelf, without fermenting, is no hotter than any other parts of the Body.

APH. XXVIII.

" When Bodies in hot Weather, in Sleep, either " by Day or Night, perſpire or ſweat much, they " become lighter, and are not ſenſible of any Un- " eaſineſs from Heat.

Explanation.] Becauſe ſuch a Diſcharge removes and carries off all that digeſted Matter, which, if retained, would, for the Reaſons given in the preceding *Explanation*, occaſion that Uneaſineſs.

APH. XXIX.

" A ſudden Cold upon hot Weather, will occa- " ſion an Obſtruction of the perſpirable Matter, " about a Pound in one Day.

Explanation.] The Quantity obſtructed will always be greater or leſſer, according to the different Diminution of the excretory Paſſages, by ſuch Changes. See *Aphoriſms* xvii, xviii. of this *Section*.

APH. XXX.

" If it be a mild Summer, the Body is reduced to " a *Standard* ſuitable to the Seaſon by Sweating.

Explanation.] Sweating is inſenſible Tranſpiration made ſenſible, either by a great Increaſe of the Diſcharge of perſpirable Matter, or by the going off along with it, that which is groſs and undigeſted, and not broke ſmall enough to exhale by inſenſible Steams. If therefore Sweat be not immoderate, that is, if it does not carry off with it too much of the uſeful and nutritious Juices, it cannot but be the moſt eaſy and ſafe Way, eſpecially in warm ſeaſons, to clear the Body of any Superfluities, or ill Humours, occaſioned by the Obſtruction of the perſpirable Matter.

APH. XXXI.

" If in the Beginning of the Summer Seaſon it " ſets in violent hot, there will ariſe a great Laſſi- " tude; which, if the Heat continues to increaſe " gradually, will wear off, becauſe thereby the " Quantity of obſtructed perſpirable Matter will be " much diminiſhed.

Explanation.] The Laſſitude, or Wearineſs, upon ſuch ſudden Heat, ariſes from weakening the Elaſticity and Contraction of the Solids by it, as was ſaid before; whereupon the Body loſes of its Strength, and therefore even without any Increaſe of Bulk from Obſtructions, will labour under a Senſe of a greater Weight, that is, will be under a Wearineſs

or

or Laſſitude. But if ſuch Heat continues gradually to increaſe, the cuticular Diſcharges will alſo by Degrees be augmented, by an Enlargement of the Pores, until ſuch a Waſte is made, as will bring the Bulk of the Body the ſame in Proportion to its preſent Strength, as it was before, when both Bulk and Strength were greater; or, which is the ſame, it will be lightened, until that Wearineſs be removed; whereas, was the Heat quickly to abate, or diſcontinue its Increaſe, that ſudden Relaxation and Weakneſs of the Solids would ſo far fall ſhort of being able ſufficiently to digeſt and break the perſpirable Matter, that it would unavoidably be followed by Obſtructions, and, perhaps, Fevers.

APH. XXXII.

" The ſame Strength hath leſſer Trouble with a " leſſer Weight, than with a greater.

Explanation.] By the ſame Strength is to be underſtood, the ſame contractile Force of the Fibres; and by Weight, the Quantity of the Fluids; and then it will need no *Explanation*, further than what may be met with in *Sect.* 1. *Aphor.* xxviii, and xxix.

APH. XXXIII.

" Perſpiration promoted by warm Air or Water " is hurtful, unleſs it be to get rid of ſome greater " Evil.

Explanation.] The ſame likewiſe is true of the Increaſe of any of the ſenſible Evacuations beyond what is natural, both becauſe it puts a greater Streſs upon the excretory Organs, and gradually weakens their Springs, and becauſe ſuch increaſed Evacuations always defraud the Body of ſome Parts, as cannot without Injury be parted with; but the

greateſt Damage is ſuſtained by an increaſed Perſpiration; becauſe in this diſcharge the whole Body is more generally concerned, and therefore all the Solids ſooner injured by it, and a greater Waſte made of the nutritious Juices.

APH. XXXIV.

" In the Summer Seaſons, ſtrong Perſons perſpire " moſt in the Day-time, but in Winter moſt in the " Night.

Explanation.] Where the Strength and Vigour of the Solids is preſerved the ſame, the Fluids will continue to be circulated with their uſual Velocities and Impulſes; and as Perſpiration is a Diſcharge of the moſt digeſted and fineſt parts of the Juices thorough very fine and imperceptible Pores, it follows, that whatſoever moſt favours any Paſſage thoſe Ways, without leſſening the Strength of the Solids, muſt undoubtedly moſt promote Perſpiration. And as it is certain that any Warmth, ſo it be not too great to impair the Strength of the Body, enlarges the cutaneous Pores, and ſuch Warmth in Summer being greater in Day-time, by the near Approach of the Sun, and during Winter, in the Night, by the accuſtomed Coverings of Bed-cloaths; it follows of Conſequence, that in healthful, robuſt, Conſtitutions, where the Strength is not at all ſunk by ſuch external Warmth, there will be made at thoſe Times, the largeſt Diſcharges by inſenſible Tranſpiration.

APH. XXXV.

" An obſtructed Perſpiration, in Summer, diſpo- " ſes to malignant Fevers; whereas, in Winter, it " makes but ſmall Alteration: For Bodies are more " ſubject to an Acrimony or Sharpneſs of the per- " ſpirable

" ſpirable Matter in Summer, than in Winter Sea-
" ſons.

Explanation.] When the Fibres are weak, as in Summer and ſultry Weather, and the perſpirable Matter by any Cauſe whatſoever happens to be obſtructed, the Solids then muſt needs be the much leſs able to circulate it, and break it ſmall enough for Tranſpiration, and the Heat alſo of the external Air will favour its ſooner falling into fermentative and inteſtine Motions, and diſpoſe it thereby to Corruption; from whence will ariſe ſuch as are commonly called malignant and putrid Fevers. But in cold Weather, both the Conſtitution is better able by Degrees to overcome and wear away ſuch an additional Load, and the obſtructed Matter will, beſides, be not ſo apt to Putrefaction, but ſometimes continue a conſiderable While without any great Injury.

APH. XXXVI.

" Sleeping in Summer-time with the Body un-
" covered, or in the open Air, by hindering Per-
" ſpiration, very much diſpoſes the Humours to Pu-
" trefaction.

Explanation.] It already appears from what has been ſaid under *Aphor.* xx, *Section* 1, how eaſily the Buſineſs of Tranſpiration is diſturbed during the Time of Sleep, and that it is more apt to be ſo then, than at other Times. And how the obſtructed perſpirable Matter is moſt diſpoſed to Putrefaction in hot Weather, is plain, from the immediately preceding *Aphoriſm*, with its *Explanation.*

APH. XXXVII.

" An Obſtruction of Perſpiration does not warm
" the Bowels, unleſs the obſtructed Matter contracts
" an

" an Acrimony by its Stagnation, or by external Heat, or violent Motion.

Explanation.] Altho' external Cold often obſtructs Perſpiration, yet by this it is manifeſt, that the Body is not rendered the warmer by the Retenſion of that Matter, until by external Heat, or violent Motion, or Fermentation, it acquires that Quality; which exactly agrees with what was advanc'd under *Aphoriſm* xxvii, above.

APH. XXXVIII.

" There is ſeldom much Injury perceived from a " liberal Uſe of *Venery*, when a ſudden Cold hap- " pens to ſucceed a hot Seaſon; but when the Air " again grows hot, the Body will be ſenſible of " much Hurt.

APH. XXXIX.

" The ſudden Change into a cold Air after *Vene-* " *ry*, makes Amends for the Loſs ſuſtained thereby, " by its Concentration of vital Heat.

Explanation.] It is not at all to be diſputed, but that exceſſive *Venery* much weakens the Strength and Elaſticity of the Solids, by the violent and intenſe Contractions they are under at ſuch Times, inſomuch that a conſiderable Space of Time is required to recruit them with a freſh Stock of Spirits and Vigour; but before ſuch Recruit is made, if the Weather ſuddenly changes from hot to cold, the Fibres thereupon will immediately be ſo much drawn up and hardened, that all the Limbs will be new braced, and the Damage receiv'd hardly at all perceivable. But if ſuch a Conſtitution of the Air does not continue until the Solids are ſupply'd and in-

vigorated with a convenient freſh Stock of Spirits, from proper Food; and the Weather happens again to ſet in hot, the Fibres will again ſlacken in ſuch a manner, as to occaſion the Loſs before received to be conſiderably felt. But by the Advantages ariſing from the Cold's *concentrating* the Spirits, is to be underſtood as before explained, only as the Solids are ſtrengthened by it.

APH. XL.

" In Summer Nights a Body is moſt liable to Fe-
" vers, becauſe of the various Alterations of the
" Air; for in the Beginning it is ſultry; in the Mid-
" dle more temperate; and towards the Morning,
" cool: By which the wonted Perſpiration is check'd
" in Time of Sleep, by throwing off the Cloaths,
" and the Body is thereby made heavier; which does
" not happen in Winter-time.

Explanation.] This is confirmed by all who travel likewiſe into hotter Climates; and the Reaſon is plain, becauſe ſudden Cold after Warmth, makes a greater Alteration upon the Conſtitution, by turning back the tranſpiring Steams, which were riſing in Plenty. Experienced Travellers therefore take great Care, even in the moſt ſultry Climates, to keep warm covered when the Night-dews fall, leſt the Pores ſhould be too ſuddenly cloſed, which never fails of cauſing Fevers of the worſt Kind. And for the ſame Reaſon ſhould the Body be covered in the Summer Nights in any Country, becauſe the rarified State of the Juices in ſuch a Seaſon, and their great Vent by the cutaneous Paſſages, will expoſe to more Injuries from a ſudden Change to a colder Air, than being expoſed to a much colder, when gradually brought on in Winter-time.

APH. XLI.

" From the Autumnal *Æquinox* to the Winter " *Solſtice*, the Quantity every Day perſpired ſcarce " exceeds a Pound; from which Time, even to the " Vernal *Æquinox*, the Body begins to perſpire " more freely.

Explanation.] A Perſon therefore in this part of the Year, is without Doubt much more in Danger of being diſtempered, than in any other, becauſe the Air continually growing colder and moiſter, every Day leſſens the Quantity perſpired, and increaſes the Weight of the Body; and therefore, if the Solids at the ſame Time, by the Increaſe of Cold, do not acquire a proportionate Increaſe of Firmneſs and Strength, there cannot but be loſt that *Equilibrium* between them and the Fluids, without which it is abſolutely impoſſible to maintain a State of Health. And if the Diminution of Perſpiration be ſo large as here mentioned, it is a Wonder that ſo many paſs this Quarter with ſo few Complaints as they do. From hence may be collected a great many uſeful Deductions, with Relation to the Cauſes and Cures of ſeveral Autumnal Diſtempers. But above all, nothing is more certain, than that a particular Regard ought to be had to the cuticular Diſcharge, and that without it, it is not poſſible to arrive, even at any tolerable Management of a Diſeaſe.

APH. XLII.

" The Autumn is unhealthful, both becauſe Per- " ſpiration leſſens upon the ſupervening Cold, and " becauſe that which is obſtructed acquires an Acri- " mony, and corroſive Quality.

Explanation.] The former part appears from what has been ſaid immediately before, in the preceding

Aphoriſm.

Aphoriſm. How the latter is brought about, may be ſeen under *Aphor.* xxxv and xxxvi. of this *Section.*

APH. XLIII.

" They eſcape the autumnal Diſtempers, who can " perſerve their Bodies of the ſame Weight as in " Summer-time.

Explanation.] Exerciſe therefore and Abſtinence, are at this Time very ſerviceable and neceſſary, by taking off, or preventing, a continual increaſing Load, and keeping the Body to a healthful *Standard*; and at this Time likewiſe, if ever, muſt purgative Medicines be of Service, (as we uſually ſay) by way of Prevention. But in the Uſe of ſuch, great Care muſt be taken that they are mild, and not ſuch as by large Diſcharges of Stool, will endanger the Diverſion of what ought to paſs thorough the Skin, the ill Conſequences of which ſufficiently appear already.

APH. XLIV.

" That Weight which has gradually increaſed, " ought alſo by Degrees to be carried off.

Explanation.] Every one cannot but be appriſed of the Reaſonableneſs of this Caution, becauſe large Evacuations at once are known always to be attended with ill Conſequences, and ſometimes ſuch as are very dangerous; not without the greateſt Neceſſity therefore ought they to be ventured upon. Concerning this at large, conſult *Bellini de Miſſione Sanguinis.* See likewiſe *Sect.* 1. *Aphor.* cxiv.

APH. XLV.

" The ſuperfluous Weight of the Body is rather " to be taken away in Autumn, than in the Spring; " becauſe

" becauſe it is moſt hurtful upon a ſupervening " Cold.

Explanation.] When there happens to ariſe too great a Fulneſs in the Spring, from an obſtructed Perſpiration, the increaſing Warmth of the Seaſon will, by rendring the Pores ſtill larger, be very likely to carry off that Load without any other Means, if the Strength of the Solids does not decay too much at the ſame Time (See *Aphor.* xxxi, *Sect.* 2.) But in Autumn, ſuch Fulneſs will rather continue its Increaſe, by the increaſing Cold, rendering the Pores ſtill more ſtraight; and therefore at that Time there muſt needs be much greater Occaſion for medicinal Evacuations, in which Number Phlebotomy may be reckon'd not the leaſt conſiderable, if it be ordered according to the Directions of an underſtanding Perſon, who is well acquainted with the extraordinary Changes that may be brought about by that Means in the Animal Oeconomy.

APH. XLVI.

" There is no Danger of the Autumnal Diſtem-
" pers, if the Body be well guarded againſt the in-
" creaſing Cold by warm Garments, and by the
" Uſe of *Diureticks*, it is preſerved of the ſame
" Weight as before.

Explanation.] See *Explanation* to *Aphoriſm* xliii. *Sect.* 2. And warm Garments likewiſe cannot but very much aſſiſt Perſpiration, becauſe they guard the cutaneous Pores from being immediately affected by the external Cold, and ſtraightned by it; they preſerve alſo a due Warmth thereby throughout the whole Body. But Care muſt be taken not to overdo it this Way neither, for too great a Burthen of Cloaths may be injurious, both as it waſtes the Strength, (See *Aphoriſm* lv. *Sect.* 1.) and brings a Perſon

Perſon to ſuch a tender Habit, as cannot without a great deal of Difficulty be got rid of. To the ſame Purpoſe is the following.

APH. XLVII.

" To be well covered with Cloaths aſſiſts Perſpi-
" ration, and lightens the Body.

APH. XLVIII.

" They who are accuſtomed to Diſtempers in
" Winter that ariſe from a Fulneſs of Humours,
" ought to purge in Autumn, and not in the Spring,
" and then to be brought to that *Standard* which
" they enjoy'd in the Summer.

APH. XLIX.

" But for ſuch Diſeaſes as ariſe from noxious
" Qualities, Purging ought rather to be uſed in the
" Spring than Autumn; becauſe in the hot Weather
" ſuch Qualities grow worſe, more than in the
" Winter.

Explanation.] Theſe two *Aphoriſms* furniſh us with very good Rules, to know in what Caſes Spring Courſes of Medicine will be moſt ſerviceable, and to whom they will be beſt in Autumn. From what has been ſaid before it is manifeſt, that in the latter Seaſon it is much more neceſſary and uſeful to evacuate where there is nothing but a ſuperfluous Weight to be removed, than in Spring: But where the Juices are diſtemper'd much in Quality, and the Secretions thereby not duly made, and to remedy which there is required a Courſe of *Alteratives*; the approaching Cold at that Time might render ſuch Means altogether ineffectual, and perhaps ſometimes very injurious: Whereas, in the Spring, the increaſing Warmth gradually rarifying and opening the Animal

animal Juices, will very much favour and aſſiſt the Operations of a Medicine, and make it much more eaſy to obtain an effectual Cure. Where therefore a Caſe chiefly requires Evacuations and purgative Medicines, it ought much rather to be undertaken in Autumn; but if the Buſineſs muſt be done principally by *Alteratives*, by all Means it ought to be ſet about in the Beginning of the Year, which Seaſon, as it better aſſiſts, by its Warmth, the Operations of ſuch Medicines, ſo likewiſe, by the very ſame Warmth, if Means towards a Cure are neglected, may a Diſtemper which has a long time been in *Embryo*, be drawn out into very troubleſome and ungovernable Symptoms. From all which, and the preceding, appears alſo the Reaſon of the next.

APH. L.

" They who in Spring-time throw off their *Win-*
" *ter* Garments too haſtily, and are too backward
" in putting them on again in the Fall, in the Sum-
" mer-time are ſubject to Fevers, and in the Win-
" ter to Defluxions.

Explanation.] For Obſtructions of the perſpirable Matter in the Spring, which a too haſty leaving off Cloaths may occaſion, if they continue, they will endanger Stagnations, Putrefactions, and Fevers; as has before been explained: But by taking Cold in the Fall, the Solids at that Time rather increaſing than loſing their Springs, will be able to grind and throw off the retained Matter, by an Increaſe of ſome of the ſenſible Evacuations; which Matter, by its ſpecifick Lightneſs, will moſt probably be diſcharged by the Glands about the Head and Breaſt. Therefore,

APH. LI.

" If the obſtructed perſpirable Matter acquires " an Acrimony, it produces Fevers and Inflammati- " ons; but when it offends only in Quantity, it " cauſes Apoſthumations, Diſtillations, and Ca- " chexies.

Explanation.] The Contents of this, and the three preceding *Aphoriſms*, well underſtood, take in a large Compaſs of the moſt uſeful Parts of Practice, and therefore ought to be well conſidered

APH. LII.

" External Cold, by concentrating the *Vital Heat*, " renders Nature ſo much the ſtronger, by how " much the eaſier ſhe can diſpenſe with the addi- " tional Weight of two Pounds.

Explanation.] What is to be underſtood of the *Vital Heat*, and its *Concentration*, has been explained at large already, *Explanation* to *Aphoriſm* lxviii. *Section* 1. All therefore that can be learned from this is, that the ſtronger the Body is naturally, the greater Addition of Vigour will it receive from external Cold, ſo that the Air be clear and dry; thereby it is alſo enabled the better to bear with any additional Weight, which may happen by accidental Obſtructions of the perſpirable Matter.

APH. LIII.

" Bodies in the Beginning of Winter with Eaſe, " but in the Beginning of Summer with Difficulty, " are brought to the Summer *Standard* of Health.

Explanation.] Becauſe by the growing Strength of the Solids, upon the Increaſe of the Cold from the approaching Winter, Perſpiration may more eaſily

be promoted, and the Body lightened; whereas upon the approaching Heat of a Summer Seaſon, they ſlacken and grow weaker, and thereby render it much more difficult to throw off any ſuperfluous Load, and bring the Body to a good *Standard.* See *Aph.* XXXV. *Sect.* 2.

APH. LIV.

" Health may be preſerved entire to an extream " Age, where the Body can be kept to the ſame *Stan-* " *dard*, through the four Seaſons of the Year.

Explanation.] Becauſe where the Body is ſo kept, the Waſte and Supply will be ſo exactly proportionate to one another, that the Solids will be never burthen'd by any unneceſſary Weight, nor the ſecretory Organs over-ſtrain'd ſo as to injure their Textures and Functions; and likewiſe by their being conſtantly and duly furniſhed with a proper Stock of Spirits, will they very ſlowly wear out and decay. But, on the contrary,

APH. LV.

" When the Weight of the Body changes often " in the Courſe of one Year, 'tis dangerous. And " likewiſe,

APH. LVI.

" By how much the greater the Change of Weight " is, whether it be an Increaſe or Diminution of the " Blood only, in ſo much the worſe Condition is " that Body.

Explanation.] This is abundantly confirmed by what is daily obſerved in thoſe who often Bleed; for they ſeldom enjoy long together a perfect Health, but are more ſubject to be affected and diſordered by the ſeveral Changes of Weather, or Ways of living, than

than other People who have not been accuſtomed to ſuch an ill Practice: And the Diſtempers they are moſt incident to, are ſuch as ariſe from too great a Quantity of Blood, as Fevers and Inflammations.

APH. LVII.

" The Increaſe of Weight is in the Beginning of " Autumn, and its Diminution in the Beginning of " Summer.

Explanation.] The Reaſons are plain from ſeveral of the preceding *Aphoriſms*; for the growing Cold in Autumn gradually draws up the Pores and leſſens the cuticular Diſcharges. Whereby the Bulk of the Body is increaſed, until it arrives to its greateſt *healthful Standard*; but in the Spring the approaching Heat ſlackening the Fibres, enlarges the cutaneous Pores, promotes Evacuation that Way, and renders the Body lighter.

APH. LVIII.

" Thoſe Bodies who increaſe in Bulk, are in more " Danger than they which grow leſs.

Explanation.] This is true with Relation only to the Quantities of the Fluids, which while the Solids are good, may ſoon be recruited upon too great a Waſte; but when they abound for any conſiderable Time, a great many bad Qualities will be contracted, as moſt commonly too great a Viſcidity, which cannot ſometimes, without conſiderable Difficulty, be removed. See *Aph.* xviii, xix. *Sect.* 1.

APHORISMS *added by the* AUTHOR.

APH. LIX.

" Thoſe Parts of the Body which are covered, " perſpire the moſt, but if they happen to be laid " bare in Sleep, although it be in a very warm Air, " the Pores will be ſtraightned thereby.

Explanation.] It has hardly been explained how warm Coverings aſſiſt Perſpiration, and likewiſe how eaſily that Buſineſs is diſturbed in Time of Sleep.

APH. LX.

" An Air too cold, moiſt, or windy, hinders " Perſpiration: For which Reaſon, thoſe who are " moſt at Home, as Women, are hardly ever trou- " bled with Coughs, or Catarrhs, or Inflammations " of the Lungs.

Explanation.] For theſe Diſtempers chiefly ariſe from Obſtructions of the perſpirable Matter, and its being thrown upon other Parts. How thoſe Cauſes hinder Perſpiration, hath been often explained above.

APH. LXI.

" A City Air is worſe than that in the Country, " becauſe it is thicker, and prejudicial to the Appe- " tite.

Expla-

Explanation.] Daily Experience teſtifies to the Truth of this *Aphoriſm*, in moſt Inſtances; that is, in all Habits ſubject to abound, either through Intemperance, or for want of ſufficient Exerciſe; for the Spring of the Air is certainly much weakened by Steams and Heat, and therefore does not act upon the Blood in the Lungs to divide it, ſo forcibly in a City as in the Country. But there are particular Conſtitutions that a ſmoaky thick Air beſt agrees with, and a ſharp clear Air is offenſive to; as may be often met with in Practice. Nay, there are even Aſthma's that a City better agrees with than the Country, chiefly thoſe of the Hyſterick Kind, and which is diſtinguiſhed by the *Aſthma ſiccum*. In general, where Faults are from a rigid dry Conſtitution of the Solids, a thick ſmoaky Air will beſt agree, becauſe a ſharp thin Air increaſes ſuch a Tenſity, and ſtraightens the Paſſages.

THE APHORISMS OF *SANCTORIUS.*

SECT. III.

Of MEATS *and* DRINK.

APHORISM I.

IF upon a full Stomach, the firſt Concoction is perfected during Sleep, for the moſt part about forty Ounces will perſpire that Night: But if that Concoction is not made, hardly above eighteen Ounces.

APH. II.

" Upon an empty Stomach, even in the Time of " Sleep, there does not perſpire above eighteen " Ounces.

Explanation.] THE former makes it appear how neceſſary and ſerviceable Sleep is to a due Perſpiration, (ſee *Aph.* xx. *Sect.* 1.) and the latter convinces us by the Waſte that is made, (although

(although Faſting, notwithſtanding it being ſo much leſs than upon a full Stomach) of the daily need we ſtand in of a large Supply from convenient Food.

Dr *Liſter* here takes Occaſion to obſerve, That Inſects and ſuch Creatures which require but very ſmall Nouriſhment, have but a very ſlow Circulation of Blood and Juices: The Reaſon of which is very plain, for the greateſt Motions always occaſion the greateſt Attritions, and the faſter the parts are broke and wore off, the more ſpeedy and large muſt be the Supply: But in Inſects, the Motions of their Fluids are ſo very ſlow, that they wear but little, and conſequently, they need but very little Nouriſhment. This likewiſe gives a very good Caution againſt ſtraining the Conſtitution, and wearing it out faſter than need, by immoderated Quantities of ſpirituous Liquors, or violent Exerciſes; for both theſe, by accelerating the Motions of the Fluids, occaſion greater Waſtes of the Solids than the beſt Food will conſtantly repair.

It may be neceſſary here alſo to obſerve, that by the firſt Concoction is meant all that is done to the Aliments, from their Reception to their Entrance into the Blood, and includes chiefly the Offices of the Stomach and Bowels. The ſecond Concoction is perform'd within the Blood's Circuit, and the third and laſt, in the Juices ſecreted therefrom, particularly the *Succus Nervoſus*. And theſe three Diſtinctions are neceſſary to be taken Notice of in many Explanations of the animal *Oeconomy*; ſee *Eſſay on the Gout* hereunto annexed.

APH. III.

" A full Stomach *without Digeſtion*, perſpires as " much as one that is faſting, or thereabouts.

Explanation.] This exactly agrees with the two former, and is almoſt the very ſame in other Words.

APH. IV.

" Very nouriſhing Meats, excepting *Mutton*, be-
" tween the Time of Supper and Dinner, do not
" perſpire above Eighteen Ounces.

Explanation.] The more nouriſhing Meats are, the leſs of them taken at a Time will ſerve, and their eaſy Aſſimulation with the animal Jucies and ready Entrance into the Subſtance of the Solids, neceſſarily leſſens the Quantity to be perſpired.

APH. V.

" A large Meal of ſmall Nouriſhment in one
" Night, with a great many, will perſpire Forty
" Ounces, or more.

Explanation.] By Meats of ſmall Nouriſhment, are not to be underſtood ſuch as the meaner Sort of People take up with, or ſuch as are diſagreeable or ungrateful to the Stomach, for a great many of this Kind are quite the contrary, eſpecially moſt Sorts of Fruit; but all ſuch as are of a light diſſolvable Texture, which are ſoon broke in the Stomach, and carried through the whole Circuit of the Fluids, in a leſſer Time than harder and more conſiſtent Meats, and by that are rendered ſo very ſmall, as to fly off by inſenſible Perſpiration. Several which follow are much to the ſame Purpoſe.

APH. VI.

" Such Food keeps the Body heavieſt, as is fulleſt
" of Nouriſhment and Crudities.

APH. VII.

" Thoſe Meats which the Body has been moſt ac-
" cuſtomed to, and ſuch as are in their own Na-
" tures exhalable, will keep it lighteſt.

APH.

APH. VIII.

" *Mutton* eaſily digeſts and perſpires; for it will " waſte in a Night the third Part of a Pound more " than other uſual Food.

Explanation.] *Mutton* therefore cannot but be a much more agreeable Diet in *Rheumatiſms*, and all Caſes where the Blood is weak and ſizy, than ſeveral kinds of freſh Fiſh, which are often preſcribed, upon a falſe Notion of their not being ſo feveriſh as Meats: For although a Perſon may ſeem ſomething hotter after a Fleſh Meal, than after Fiſh, yet that Heat, eſpecially if it be after *Mutton* and Meats of an eaſy Digeſtion, is nothing elſe than an increaſed Agitation of the Fluids, proceeding from briſker and ſtronger Pulſations of the Solids upon ſuch freſh Recruit of Spirits; and its Conſequences will only be, the breaking the *Lentor* or Viſcidity of the Juices, and promoting Perſpiration; whereas Fiſh and glutinous Meats, although, indeed, they raiſe no feveriſh Heats, yet at the ſame Time, and for the ſame Reaſon, they alſo afford but a very ſlender Supply of Spirits to the Solids, whereby their Contractions are ſtill kept weak, and the Viſcidity of the Fluids rather increaſed than otherwiſe, and upon the ſame Account in the like Caſes are the following to be choſe.

APH. IX.

" Thoſe Eatables which are made of ferment- " ed Paſte, do not render the Body heavy, for they " perſpire much more eaſily than Roots.

APH. X.

" A healthful Perſon perſpires inſenſibly in the " Space of one Day, as much as by Stool in two " Weeks,

" Weeks, although every Day in that Time he has
" a conſiſtent well-digeſted Stool.

Explanation.] This agrees with the ſixth *Aphoriſm* of the firſt *Section*, where the Diſcharges by *Stool* are computed to amount in the Space of one Day to *four Ounces*, by *Urine* to *ſixteen Ounces*, and by inſenſible *Tranſpiration* to *forty Ounces*, and upwards; and this well conſidered, cannot but ſuggeſt the moſt natural and effectual Means to clear the Body of any Diſorders ariſing from an Obſtruction of any of the Evacuations, but eſpecially that of inſenſible Tranſpiration; and likewiſe furniſh us with a Theory, whereby with Certainty to account for all the Symptoms of ſuch Diſorders. Dr *Pitcairne*, as he applys this in his *Diſſertatio de Curatione Febrium quæ per Evacuationes inſtituitur*, reaſons with ſo much Strength and Clearneſs thereupon, (allowing his Poſtulate, that the morbid Matter may be equally drawn off by any Evacuation) that I cannot perſwade my ſelf here to omit giving a ſhort Abſtract thereof; whereby the Reader may not only be inſtructed in a better Notion of this Matter, but alſo convinced, that *Phyſick*, when in the Hands of ſuch who know the true Ways of applying themſelves thereto, is not meer Gueſs-work; as a great many who would be thought too, no mean Proficients therein, out of their abundant Humility are diſpoſed to own; but with Deſign only to depreciate what they find themſelves not turned to underſtand.

That an Obſtruction of Perſpiration, or any other Evacuation, ſo as to increaſe the Quantity of Blood, will in Proportion to ſuch an Increaſe raiſe a Fever, has been accounted for and demonſtrated under ſeveral of the foregoing *Aphoriſms:* Now whereas Perſpiration is double, if not triple of all the other Evacuations

Evacuations taken together, an Obſtruction of half, or a third part of the perſpirable Matter, will raiſe a Fever as great as a Suppreſſion of all the other Evacuations together. And alſo, whereas cuticular Diſcharge is ten times greater than that by Stool, the Diminution of a tenth Part of it will raiſe a Fever as great as a total Retenſion of the Contents of the Guts. And for the ſame Reaſons the Increaſe of Perſpiration by one half, or a third Part, will go as far towards the Removal of a Fever, as an Increaſe of all the other together; and the Promotion of a tenth Part only, will go as far as the whole Diſcharge by Stool; but an Increaſe of its entire Quantity will do as much as ten times the uſual Quantity by Stool. Further, whereas it appears, that the Matter of one Secretion may be drawn away by the Increaſe of another, and that any one Secretion may be enlarged in any given Proportion; and alſo, that all the Secretions may be ſo enlarged as to keep the ſame Proportion to one another, as in a natural State, therefore a greater Quantity of an Overcharge may be drawn off in any given Time, by Perſpiration, than by any other Diſcharge, in Proportion to the Quantity which cuticular Secretion bears in a natural State, to that of any other Diſcharge alſo in the like State.

From hence it follows, that a Fever, or any other Diſtemper, cannot ſo expeditiouſly be removed by an Increaſe of Diſcharges by Stool, as by the Increaſe of cuticular Tranſpiration; unleſs the Increaſe of the former ſhould be in an *inverted Proportion* to that of the latter, as they are to one another in a natural State; wherefore the Diſcharge by Stool ought to be a hundred times more than natural, to throw off as much in the Space of one Day, as the Increaſe of Perſpiration, only ten times beyond what is natural, would do in the ſame Space of

of Time: That is to ſay, where a Perſon in a healthful State uſed to have one Stool, he muſt then have a hundred: And therefore he who has been accuſtomed to ten Stools a Day, if when ſick he is fond to be cured by that Diſcharge, it is neceſſary that he muſt have a Thouſand in the ſame Time.

From all this it appears, that in a Fever, or indeed, in any other Diſtemper, whoſe Cure is to be effected by Evacuation, that there is ten Times a greater Probability of removing it by Sweat than by Stool, and as a Phyſician ought to fall in with that Method which carries with it the greateſt Hopes of Succeſs, he will very rarely find a juſt Occaſion to deviate from that of curing Fevers by the cuticular Diſcharges. But as this Calculation will not hold in a colder Climate than where *Sanctorius* lived, let it be compared with the Remarks upon *Keil*'s *Medicina Statica Britannica* hereunto annexed.

APH. XI.

" A full or an empty Stomach leſſens Perſpira-
" tion; for a full one diverts it by a Corruption of
" the Aliment, and an empty one draws it back
" that it may be filled.

Explanation.] This is very obſcurely expreſſed, for by the full Stomach cannot be underſtood any other than one overcharged with a Meal, which it is not able to digeſt, but nauſeates, if it does not throw it up again by Vomiting, and this muſt undoubtedly hinder Perſpiration; for if its Contents paſs into the Bowels, they will be ſo crude or groſs, as very little to paſs thorough the *Lacteals*, and therefore will moſtly be thrown off by Stool, which conſequently cuts off a Supply of the perſpirable Matter. This is likewiſe the Reaſon why an empty Stomach has the ſame Effect in leſſening Per-

ſpiration: The laſt Part, about the Attraction of an empty Stomach, in order to be filled, I do not underſtand.

APH. XII.

" When a full Meal is not perfectly digeſted, it " is to be known by an Increaſe of Weight; for the " Body will not then perſpire well: But an empty " Stomach is filled with Vapours.

Explanation.] Nothing is more plain and certain, than the former Part. The *Flatus*, or Vapour, which he ſays an empty Stomach is filled with, can be nothing elſe than the Matter of internal Perſpiration there collected; for from *Aphoriſm* v. *Sect.* 1. it appears, that all the internal Parts whatſoever do perſpire through their reſpective Membranes, or Coverings; therefore for the moſt Part, that which ariſes from the *Viſcera* of the lower Belly, gets either into the Stomach and Guts, and when collected in any conſiderable Quantity, provokes them to diſcharge it either upwards or downwards.

In ſeveral diſeaſed Perſons, eſpecially thoſe we call Hypochondriacks, this Matter acquires ſo much Acrimony or Sharpneſs, as to irritate and offend the Membranes very much, cauſe ſharp Pains, and ſometimes violent Cholicks; and this is the Reaſon why Riding and any briſk Exerciſes are always found of ſuch mighty Service to theſe People, becauſe it diverts the perſpirable Matter in greater Quantities by the outer Skin, which is not ſo tender and perceptible of thoſe irritating, and ſometimes corroſive Steams. And it is very obſervable, that ſuch Perſons, at thoſe times they are free from inward Complaints, are very ſubject to Raſhes and cutaneous Eruptions; which is nothing elſe than the groſs acid perſpirable Matter, (that at other

other times uſed to get thorough the *Viſcera* into the Cavities of the Belly, and occaſion the forementioned Diſorders) drawn off by the outer Skin, and raiſing up the *Cuticula* in ſeveral Parts, as it paſſes; and ſometimes abrading, and tearing off the Extremities of the Ducts in ſuch a Manner, as occaſions a continual pouring out of a viſible *Serum*. And at this Time, I know a Woman of a thin, tender Conſtitution, who is ſeldom free from Cholick Pains, eſpecially upon taking a little Cold, but whenſoever ſhe eſcapes them two or three Weeks together, there never fails to break out upon her, a troubleſome Itching Humour, which if it continues out long, appears in ſeveral Places like *Tetters*, and ouzes out a ſalt limpid *Serum*; all the Time it keeps out ſhe is eaſy, and whenever it diſappears, the old Pains are ſure to return. Thoſe wandering Pains likewiſe which ſome complain of ſo much about their Limbs, I cannot but think are owing very much to the ſame Cauſes. The Actions of the Muſcles undoubtedly wear off and perſpire a great deal through their reſpective Coats, which if it be digeſted and broke very ſmall, by Degrees, gets thorough the Subſtance of the Parts, and flies off *qua data porta*; but otherwiſe it may be confined and lodged in the Interſticies of the Muſcles, and by its Groſſneſs or Acrimony, occaſion thoſe ſharp and ſevere Pains that are felt in Rheumatiſms, and if it be not by ſome Means or other diſcharged, in a ſhort Time, either by an Increaſe of its Quantity, or by the Derivation of a greater Store of Juices to the irritated Part (according to the *Bellinian Theory*) it raiſes conſiderable Swellings, and at laſt renders the affected Muſcles uncapable of Motion. I cannot but be perſwaded, that from hence likewiſe may be deduced a very good *Rationale* of all the Symptoms and Changes, commonly attending what we uſually call

the

the *Vapours* and *Spleen*, but it will take up too much Room here. And this confirms the following,

APH. XIII.

" A *Flatus* is nothing elſe but a groſs perſpirable " Matter.

APH. XIV.

" Robuſt Perſons diſcharge their Food for the " moſt part by Perſpiration: Thoſe not ſo ſtrong " by Urine, and the Weak, chiefly by an indigeſted " Chyle.

Explanation.] The firſt part is plain from what has gone before, but ſome who are not ſtrong enough to circulate it, and break it fine enough to paſs it off that way, may yet digeſt it far enough to ſeparate it in the Kidneys, and carry it away by Urine, even which thoſe who are weak cannot do, the greateſt part going off by Stool, without ever getting into the *Lacteals*, and this is the Reaſon why the weakeſt Perſons are the moſt laxative, and diſcharge much more by Stool in Proportion to the other Evacuations, than thoſe who are ſtrong.

APH. XV.

" If a Perſon eats no Supper, and continues with " an empty Stomach, it will hinder Perſpiration, " and the obſtructed Matter will acquire a Sharp- " neſs; whence, the Body will be ſubject to diſtem- " per'd Heats.

Explanation.] Perſpiration will be hindered both for want of a Supply of Matter, and through the Weakneſs of the Solids for want of Spirits; both which cannot but be the Conſequence of long Faſting: The Fluids alſo hereby will loſe their due Texture and Conſiſtence, and become thin and

ſharp; by which the Fibres will be too much irritated, and alſo by giving leſſer Reſiſtance to the compreſſive Force of the Veſſels, the Arteries will be contracted oftener, the Motion of the Blood increaſed, and the Pulſe quickened, and ſuch Kinds of Fevers produced which are called *Hectick*: And therefore of Conſequence,

APH. XVI.

" Such Faſting as reduces the Weight of the " Body below its natural Standard, is bad.

APH. XVII.

" Why do any die of Hunger, who have no want " of Blood whilſt living? Becauſe the Blood croud- " ing towards the Stomach, leaves the Heart " empty.

Explanation.] This is another Miſtake owing to the Ignorance of the Blood's Circulation; which has been ſince the Time of *Sanctorius* diſcovered, otherwiſe he would, without Doubt, have given another Account of it. It can be no Wonder why Perſons may die with Hunger, although well ſtock'd with Blood, to thoſe who are at all acquainted with the Waſte that is continually made by the Actions and Attritions of the ſeveral Parts of the Body, and that the Circulation of the Blood it ſelf depends upon the contractile Force of the Heart, and its Appendices the Arteries, and that ſuch Contractions are owing to the Elaſticity, or Springyneſs, of their conſtituent Fibres, which Elaſticity is alſo preſerved and maintained, by the continual Supply of a convenient Juice, ſeparated by, and communicated to them from the Brain; and therefore when ſuch a Supply happens to be cut off, as it muſt needs be by the want of Food, the contractile Force of the Arteries

teries neceſſarily abates, and conſequently the Blood ſtagnates in them, which is Death. Perſons therefore by long Faſting do not die, becauſe the Blood has Recourſe to any particular Part, and ſo leaves the Heart empty (as if the Blood was informed with an intelligent and wiſe Forecaſt, and did not move as all inanimate Bodies do, by the Impulſes only and Directions of external Cauſes) for immediately upon Death the Heart is as full of Blood as at any other Time, altho' thick and ſtagnant.

APH. XVIII.

" It is not only the Quantity of undigeſted Food " that renders the Body heavier, but alſo ſometimes " its Quality, when it is ſuch as hinders Perſpiration.

Explanation.] That is, when it is ſuch, as after it gets into the Blood, cannot be broke enough to paſs out at the cutaneous Pores, but by its Groſſneſs or Viſcidity obſtructs the capillary Veſſels, whereby afterwards it hinders the Paſſage of ſuch as is well digeſted.

APH. XIX.

" When a Perſon ſeems to himſelf lighter than he " really is, it is a very good Sign: Becauſe it ariſes " from a perfect Digeſtion of all the Juices.

Explanation.] See *Aphoriſm* xxviii. *Section* 1. with its *Explanation.*

APH. XX.

" When all the Day, the Body remains lightſome " and active, it is preceded by a perfect Digeſtion " of the *Chyle* and Blood, and a clear Diſcharge of " the Recrements of the third Concoction. Which " is the *Materia Perſpirabilis.*

Explanation.] Here *Sanctorius* plainly intimates the laſt Concoction to be as in the ſecond *Aphoriſm* of this *Section*; and that its Recrement is the *Materia Perſpirabilis*, as the Urine is of the ſecond, and Stools of the firſt Concoction. Where therefore the Offices of the Oeconomy are ſo well diſcharged, that even the laſt Concoction is in right Order, it is no Wonder that the Body ſhould be lightſome and active.

APH. XXI.

" Indigeſted Food, by how much the more Nou-
" riſhment it contains, is ſo much the worſe, be-
" cauſe it occaſions either a greater Increaſe of
" Weight, or degenerates into a greater Corruption.

APH. XXII.

" The Body becomes lighteſt by the Corruption
" of Food, becauſe the more liquid Excrements are
" of all much the heavieſt.

Explanation.] In the former *Aphoriſm*, the Corruption ſpoke of is to be underſtood chiefly that which happens in the Veſſels, after the Food has paſs'd the *Lacteals*; but in the latter, that which is brought about in the Stomach, thorough Indigeſtion, and always goes off with a *Diarrhœa*; by which Means the Blood being defrauded of its due Supply, and the Quantity of the perſpirable Matter leſſen'd by its being diverted another Way, the Body cannot but be render'd lighter.

Meats of great Nouriſhment, are ſuch whoſe conſtituent Parts are large, but their Textures and Combinations ſo weak, that they are ſoon broke in the Stomach ſmall enough to get thorough the *Lacteals* into the Blood; where the compreſſive Force upon them being not ſtrong enough to fit them for Perſpi-

ration,

ration, they remain longer in the Body, and conſequently render it heavier.

It may be neceſſary further alſo to explain what is to be underſtood by the Corruption of any thing within the Body, and this is to be known by conſidering how this Change of a Parcel of Matter, which is called its Corruption, is brought about without it. It has been demonſtrated, firſt by Sir *Iſaac Newton*, and ſince more particularly with regard to the minute component Parts of leſſer Bodies, by Dr *James Keil*, of *Animal Secretion*, and Dr *Friend* of *Oxford*, in his *Prælectiones Chymicæ*, That *all Bodies whatſoever, attract, and are attracted of one another*; by Virtue of which Power in any heterogeneous quieſcent Fluid, there always will be an inteſtine Motion of its conſtituent Parts, whereby ſeveral Corpuſcles will be generated *de Novo*, by the Coheſions of Parts that were before ſeparate, and others by their Attritions and Occurſions one againſt another, will have their Angles ſtruck off, and upon that Account both loſe their former Figures and Properties, and occaſion the Production of a Set of new Particles, ſometimes very different from what before exiſted in that Fluid? And this inteſtine Buſtle will go on until the ſeveral Parts have obtained ſuch Poſitions as perfectly correſpond with their ſpecifick Gravities, and that they equally attract, and are attracted by one another: And the Change a Fluid undergoes hereby, is greater or leſſer, according to the attractive Powers of its component Parts; which are ſometimes ſo great as to raiſe a ſtrong Fermentation, and ſometimes actual Fire (although indeed every inteſtine Motion ariſing from theſe Cauſes, though in never ſo low a Degree, may juſtly be call'd Fermentation) and ſometimes alſo the Properties and *Phaſes* of Bodies are hereby ſo much

much alter'd, and in ſuch a Manner, as when they are ſaid to be putrify'd or corrupted.

Now this inteſtine Motion of a Fluid is prevented, in a great Meaſure, at leaſt, by the continual Agitation of its containing Veſſels, or by its Propulſion, thorough Canals, eſpecially ſuch as are *conical* and *diſtractile*; in the firſt Caſe, the Motion of the containing Veſſel will communicate and impreſs ſuch Motions, upon the ſeveral parts of the Fluid, as are contrary to the Directions of their attractive Powers, and ſo deſtructive of their natural Cohesions, as to cauſe thoſe Particles frequently to recede from one another, which otherwiſe when left to obey their proper Attractions, would run into cloſe Contacts with one another. And in the latter Caſe, although the Fluid be propell'd at its firſt ſetting out, in a Direction parallel to the Axis of the Canal, yet its *conical* Figure will all the Way give ſuch Reſiſtances to ſome of its parts, which muſt neceſſarily ſtrike againſt its Sides, as to deflect them from their firſt Directions, and thereby make ſuch a continual ſhifting and changing of the Poſitions of the ſeveral parts with Relation to one another, as is alſo inconſiſtent with thoſe Coheſions, as in Obedience to their mutual Attractions they otherwiſe would be drawn into.

This being premiſed, it will eaſily appear, That as the conſtituent parts of a Fluid cannot obey their reſpective attractive Powers, when put into Motion by any external Cauſe, as when left at Reſt, ſo likewiſe that ſuch external Force may be ſo proportion'd, as to allow of the Attractions and Coheſions of ſome parts, wherein that Power abounds, at the ſame Time when it is yet conſiderable enough to prevent it in others, where that Power is more languid; and therefore that at the ſame Time, ſome parts of an agitated Fluid may ſo much obey their attractive

attractive Powers, as to induce amongſt them the Changes above-mention'd more or leſs, as the Motions impreſſed upon them *ab extra*, are intended or remitted. That is, in ſhort, That the animal Fluids will more or leſs tend to Corruption or Putrefaction, according to the Degrees of Motion impreſſed upon them by their contractile Veſſels.

To this Purpoſe it appears, That the three ſeveral Kinds of Motion in the Blood, taken Notice of by *Gulielmini*, in his *Exercitatio de Sanguinis Natura & Conſtitutione*, *Sect.* 6. *pag.* 31. is very juſt and rational. His Diſtinctions of the ſeveral Motions are into what he calls circulary, agitative or confuſed, and fermentative: The firſt depends upon the Impulſe it receives from the Contraction of the Heart, by which it is thrown out of its Ventricles into the Arteries, and by their reciprocal Contractions and Dilations, carried through its whole Circuit. The ſecond is occaſion'd by its different Reſiſtances; for in the very ſame *Section* of an Artery, it moves ſwifter about the Axis, than near the Circumference, by the greater Reſiſtance it meets with from the Sides of the Veſſel, being more retarded there than in the Middle. Whereupon it not only moves with unequal Velocities, but has ſome of its parts alſo continually deflected from their firſt Directions, and thereby confuſedly hurried along, ſometimes at the Centre, and ſometimes at the Sides. The third ariſes from the Cauſes before-mention'd, and is therefore greater or leſſer, as the other increaſe or abate.

This Theory will eaſily account, not only for the Contents of the two foregoing *Aphoriſms*, but of a great many more likewiſe of this *Section*. See alſo *Explanat.* to *Aphoriſm* xlviii, below, and hence without any Difficulty are deduceable the Reaſons of that Corruption of the Food which frequently hap-

pens in the Stomach and Bowels, and occaſions Vomitings and *Diarrhœas*, and likewiſe that which is brought about in the Veſſels and ſecretory Glands in ſuch as are called putrid Fevers; with a good *Rationale* alſo of their Symptoms and Cures. Hence too it appears why, according to the xxiſt *Aphor.* Meats of the greateſt Nouriſhment tend moſt to Corruption: Becauſe they conſiſting of Parts groſs, and not eaſily reduced fine enough for Perſpiration, altho' divided from one another; upon which they are retained longer in the Body, and apt to obſtruct the capillary Veſſels, and give ſuch a Weight, and conſequently a Retardation to the circulating Juices, as diſpoſes them more to inteſtine and fermentative Motions, and bring them into a State of Corruption or Putrefaction.

APH. XXIII.

" *Pork* and *Muſhrooms* are bad, both becauſe they " do not perſpire themſelves, and becauſe they hin- " der the Perſpiration of other Things eat along " with them.

APH. XXIV.

" *Pork* and *Muſhrooms*, occaſion the Body to per- " ſpire leſs than uſual a third Part.

Explanation.] Very groſs and ill-fed *Hogs-fleſh*, and *Muſhrooms* ill managed, may have the Conſequences herein mentioned. But common Experience proves, as they are generally ordered, they make very agreeable and wholeſome Food, but the latter eſpecially a good pleaſant Sauce. Young well-fed *Pork* affords excellent Nouriſhment, and with its uſual Sauce, *Muſtard*, even by weak Stomachs, digeſts and perſpires well; where therefore there have been too large Evacuations, or Injuries received by long

long Faſting, 'tis very proper, eſpecially if Care be taken, to eat light Meals, and often: But very ſparingly indeed ought it to be uſed, by thoſe who encline to err on the other Hand by too great a Fulneſs. See *Aphor.* iv, and v. of this *Section*. *Sanctorius* might here alſo err as to us, becauſe in hot Countries it is certainly not ſo wholeſome, and very liable to Corruption in the Humours, as it is here in the hotter Seaſons, but it is both ſafe and excellent Food for ſtrong Habits, in cold Countries.

APH. XXV.

" *Melons* perſpire ſo little, that they leſſen the " Quantity uſually diſcharged by a fourth Part.

APH. XXVI.

" The perſpirable Matter retained by their Means " generally goes off by Urine or Sweat.

Explanation.] If it be underſtood here, that they go off this Way in ſuch as are ſtrong, the Reaſons will appear from *Explanat.* to *Aphor.* xiv. of this *Sect.* For in a ſtrong Perſon, when ſuch Things get into the Blood, which cannot be broke ſmall enough for inſenſible Tranſpiration, they will yet be enough digeſted for Expulſion by ſenſible Tranſpiration, which is Sweat, or by Urine.

APH. XXVII.

" New *Currants* or *Raiſins*, and *Figs*, ſomething " leſſen Perſpiration, both of themſelves and other " Food; but it may be by increaſing the ſenſible " Evacuations.

APH. XXVIII.

" That Sort of Food beſt perſpires, and affords " the moſt ſuitable Nouriſhment, whoſe Weight is " not perceived in the Belly.

Explanation.] Becauſe what is of a ſtrong Contexture, groſs, and hard of Digeſtion, will remain a long Time in the Stomach and Guts, and occaſion a Senſe of Weight and Uneaſineſs.

APH. XXIX.

" A plentiful Meal is more injurious to Perſons of " little Action, than thoſe who exerciſe much: For " in the unactive, the Bowels will be more burthen'd, " whereas by Exerciſe that Weight is removed.

Explanation.] By the Advantages of Exerciſe, not only the preſent Meal will be better digeſted, by its aſſiſting that Agitation and Compreſſion of the Food, upon which Digeſtion depends, but alſo the Muſcles and whole nervous Syſtem, will be thereby harden'd and corroborated, ſo as at all Times to perform the animal Functions with more Eaſe and Regularity, than in thoſe who lead inactive and ſedentary Lives.

APH. XXX.

" The Body beſt perſpires with that Food, whoſe " Fæces, or Recrements, paſs through the Guts hard " and conſiſtent.

Explanation.] Becauſe if Digeſtion is perfected in the firſt Paſſages, that is, in the Stomach and Guts, it ſeldom happens but it goes on well to the laſt, until a due Quantity is prepared for Perſpiration; and whereas when it ſo happens, the thinner part of the Food muſt needs be taken up by the lacteal Veins

and

and convey'd to the Blood; what remains for Expulſion by Stool, cannot but be hard and conſiſtent.

APH. XXXI.

" *Chicken* does not nouriſh even ſo much as *Let-*
" *tice*, if ſuch a Quantity of it be eaten, that it
" turns into thin corrupted Stools.

Explanation.] For whatſoever is put into the Stomach, and a *Diarrhœa* immediately enſues from its Corruption there, it will all paſs off by Stool, and thereby deſtroy the Body of its Nouriſhment; as has largely been explain'd already. It may therefore be ſo circumſtanced, that the moſt nouriſhing Food may ſometimes afford a leſs Supply to the Body, than that which in it ſelf contains the leaſt Nouriſhment.

APH. XXXII.

" By weighing it may be known when Faſting
" will be of Service, and when not: It will be ſer-
" viceable, when all the former Day's Food is not
" thoroughly perſpired; otherwiſe it will be hurt-
" ful.

APH. XXXIII.

" When the Body by Diet is reduced below its
" natural Standard, what Strength is loſt thereby,
" is irreparable.

Explanation.] That there is a greater and leſſer Standard of Weight even in Health, appears already from the lxivth *Aphor.* of the firſt *Section*, and from the xlth of this. This cannot be true, unleſs it be by too ſlender a Diet for a long time, until the Solids are deſtroy'd. For we often ſee Perſons much reduced both by want of Food and Diſtem-

pers,

pers, who recruit again, after great Loſs of Subſtance, and recover their former Strength.

APH. XXXIV.

" If it be known exactly how much Food is con-
" venient for every Day, ſuch a Perſon may eaſily
" preſerve his Health and Strength to a great Age,
" as appears by the ſame *Aphoriſm.*

APH. XXXV.

" The Strength of Nature is much impaired by
" eating at Supper, ſometimes four Pounds, at
" others ſix.

Explanation.] There is nothing more confirm'd by common Experience, than that the Body cannot be put out of its accuſtom'd Way of living, even although ſuch as is deſtructive to another Perſon, without receiving ſome Prejudice, and therefore it is not likely that it ſhould be agreeable frequently to alter the Quantities of Food; but, on the contrary, it muſt be very hurtful, by ſometimes over-loading the Solids, and at others, by not giving them ſufficient Reſiſtances, and thereby diſturbing their wonted Contractions.

APH. XXXVI.

" That Quantity of Food is moſt healthful, when
" after eating, a Perſon is as lightſome and active
" about any Labour, as when faſting.

Explanation.] This is a very good and eaſy Rule for any one to obſerve, who would be careful of their Health.

APH. XXXVII.

" The Body is more burthen'd from eight Pounds
" taken in at one Meal a Day, than with ten Pounds
" in a Day, at three ſeveral Meals.

Ex-

Explanation.] Becauſe the Stomach by too large a Meal is over-ſtretch'd and weaken'd, and therefore cannot diſcharge the ſame Quantity taken in at once, ſo eaſily by much, as it might, if taken in at ſeveral Times in ſuch Quantities as do not over-reach and deſtroy the Springs of its conſtituent Fibres.

APH. XXXVIII.

" That Quantity of Food to every one is moſt " healthful, which without any Uneaſineſs can be " perfectly digeſted: And that it is perfectly digeſt- " ed, may be known by the Sum of the Evacua- " tions anſwering the Quantities taken in; which " will appear by weighing.

APH. XXXIX.

" That Quantity of Food may at all Times be " ventured upon, which Nature is able to concoct, " digeſt, and perſpire.

Explanation.] Concoction and Digeſtion are pretty much the ſame as to their Cauſes, and the Manner by which they are effected, and differ in little elſe than in the Parts of the Body wherein each is brought about. By Concoction *Sanctorius* ſeems always to mean that Alteration which is made upon the Contents of the Stomach, by the Agitations and Attritions of its Coats, and by Digeſtion, that further Change which is made upon it when brought into the Blood, by the continual Contractions of the Arteries. The Recrements of the former are expell'd by Stool, and the latter by Perſpiration.

APH. XL.

" If Nature is able to digeſt a hundred Pound " Weight of Food, and that Quantity is abridged

" ninety

" Ninety nine Pound, the Body in Time will be " much injured by it.

Explanation.] Becauſe there will be a proportionate Decay of the Strength of the Solids, by the want of a full Supply of the *Liquidum Nervoſum* into their conſtituent Fibres, and thereby a Haſtening of Diſeaſes and Death.

APH. XLI.

" Good nutritious Juices promiſe a laſting State " of Health, when the Quantity perſpired is in a " Mean between an Exceſs and a Deficiency: The " Exceſs is when after a good Meal over Night, the " greateſt Quantity perſpired amounts for the moſt " part to forty Ounces, or thereabouts; and in a " Deficiency to fourteen Ounces. Such ought there- " fore to be the Quantity of Food in order to arrive " at a healthful old Age, that will bring the Quan- " tity, which goes off by inſenſible Tranſpiration, " to twenty two Ounces.

Explanation.] Compare this with *Aphor.* lxiv. *Sect.* 1. wherein the Computation of the Quantity perſpired, ſomething differs from what it is here.

APH. XLII.

" The Opinion of *Celſus*, that the Non-naturals " ought ſometimes to be uſed ſparingly, and at others " very liberally, is not ſafe for all Perſons.

Explanation.] Becauſe ſuch a way of living cannot but very much deſtroy that ſettled Standard of Weight, in which *Sanctorius* with a great deal of Reaſon, places a perfect Health. See *Aphoriſm* xxxv. of this *Section*.

APH. XLIII.

" A Body is reduced to its wonted Weight with " much leſs Trouble, by eating four Pounds at a Dinner,

" Dinner, and the ſame Quantity again at Supper,
" than by taking in ſix Pounds at Dinner and two
" at Supper.

Explanation.] See *Aphoriſm* xxxvii. *Section* 3. with its *Explanations.*

APH. XLIV.

" He deſtroys himſelf that eats once a Day be-
" ſides his ordinary Meals, be it more or leſs.

Explanation.] Becauſe ſuch a Practice ſupplies the Body faſter than it is able to digeſt the Food, and fit it for its proper Offices and Evacuations.

APH. XLV.

" The Body will be rendered heavier by four
" Ounces of very nouriſhing Food; as Pork, Eels,
" and all fat Meats, than by ſix Ounces of a ſlender
" Nouriſhment, as Fiſh, Chickens, ſmall Birds,
" and others of the like Kind.

Explanation.] Becauſe that which is very nouriſhing remains longer in the Body, as has been already proved, and is not ſo ſoon fitted for Perſpiration.

APH. XLVI.

" Meats of a ſlender Nouriſhment, if they digeſt
" with Difficulty, it is in the firſt Concoction only;
" but with thoſe which are very nouriſhing it is
" thorough all of them.

Explanation.] Thoſe Things which afford but a ſmall Nouriſhment, if they are not well digeſted in the Stomach, which is called the firſt Concoction, they paſs away by Stool, being too groſs and ſolid to enter the *Lacteals*; but thoſe Meats of a more plentiful Nouriſhment, altho' they are not well digeſted in the Stomach, yet they are yielding and

fine

fine enough, a great Part at leaſt, to get thorough the *Lacteals*, and ſo mix with the Blood; and the Attrition or digeſtive Power being not ſo great there as in the Stomach, they will remain not perfectly digeſted thorough all the Circulations; and therefore in weak People ſuch Food ought to be eat the oftner, and leſs at a Time.

APH. XLVII.

" Food of very ſmall Nouriſhment cools and " leſſens the Bowels, is ſoon digeſted, and aſſiſts " Perſpiration both in Sleep and Waking.

Explanation.] Such Food for the Reaſons before given, carries but a ſmall Quantity into the Blood, and that very fine, and what quickly flies off by Perſpiration; and therefore the greater Part of it remains in the Guts, and cools them by keeping them moiſt, and alſo affords a greater Supply to the Diſcharges by Stool, and muſt be for theſe Reaſons likewiſe moſt ſuitable after long Fevers, or any Diſtempers, where there has been a conſiderable Waſte made of Strength and Subſtance.

APH. XLVIII.

" Food of much Nouriſhment is binding, unleſs " it corrupts; it is difficultly digeſted, and perſpires " but little.

Explanation.] Food of much Nouriſhment is binding, only as it paſſes in greater Quantities into the Blood, and thereby leaves the leſs to be diſcharged by Stool; that is, a Perſon goes leſs to Stool with ſuch Food, than at other Times.

By Corruption is meant ſuch a State of Putrefaction as is acquir'd by Fermentation, as explain'd under *Aphoriſm* xxii. of this *Section*, which ſee. Now thoſe Meats of great Nouriſhment abound with

with very active Particles, that is, with Particles that ſtrongly attract one another, which if they cannot be prevented in their Coheſions, and alter'd by the Juices of the Stomach, will mutually attract and act upon one another as in a fermenting Body, and conſequently tend to Corruption, and the Production of Corpuſcles *de Novo*, of different Figures, Gravities and Diſpoſitions, from what before exiſted therein; and by this Means they may become purgative, both as *Stimuli*, and as by their Quantity (little or none getting through the *Lacteal* Veſſels) they muſt of Neceſſity, by the periſtatick Motion of the Inteſtines, be thrown off by Stool.

APH. XLIX.

" Where there is a Difficulty of Digeſtion, there " Perſpiration is ſlow.

Explanation.] Becauſe the Matter to be perſpired, is broke ſmall enough, and fitted ſo to paſs off by a previous Digeſtion, that is, by the Agitations and Attritions it undergoes in the circulating Veſſels; and therefore it is impoſſible but that the Quantity which is waſted by inſenſible Tranſpiration, ſhould both increaſe and decreaſe, in Proportion to that which is prepared and ſupply'd by previous Digeſtion, unleſs when by ſome Cauſe the cutaneous Paſſages are ſtraighten'd, whereby the perſpirable Matter, altho' otherwiſe digeſted enough to get thorough, has not Room to paſs off.

APH. L.

" That Food ought to paſs firſt, not as it is a " Fluid, but as it contains a leſſer Nouriſhment, " for the *Pylorus* is not, as in a Dog, at the Bottom " of the Stomach.

Explanation.] That is, to paſs out of the *Stomach* into the Guts, which by its Situation and Make in Men, favours the Paſſage of the better Juices firſt, becauſe by its being higher at the further Orifice, which is called the *Pylorus*, than in the Middle, the lighteſt and moſt diſſolvable parts, which are the moſt nouriſhing, are thrown over firſt.

APH. LI.

" There are three Inconveniencies ariſe from a " Variety of Meats; eating too much, digeſting " too little, and not perſpiring enough.

APH. LII.

" The Time of leaſt Perſpiration is, when the " Stomach is full, eſpecially if it be ſo with a Va- " riety of Meats.

Explanation.] If the Contents of the two preceding are true, as there is ſufficient Reaſon from what has been already ſaid, to believe ſo, *viz.* That ſeveral Kinds of Food taken in at one Meal hinder Perſpiration, they are in a much happier Condition, as to their Health, who can be ſatisfy'd with a Meal upon one Joint of Meat, than thoſe who riot in luxurious Varieties.

APH. LIII.

" Whoſoever vomits up his Supper, loſes the Un- " eaſineſs at his Stomach, but the next Morning his " Body will ſeem heavier: For Vomiting diverts " the perſpirable Matter inwards; which if it be " acrimonious, will occaſion Laſſitude and Heats; " but if it offends only in Quantity, a greater " Weight.

Explanation.] Both the Propoſition here, and the Reaſons for it, are not true without conſiderable Reſtriction,

ſtriction. For Vomiting in moſt Caſes promotes Perſpiration, as has already been proved, by the forcible Motions it gives to all the Muſcles, thereby breaking that Viſcidity of the Fluids, which before hinder'd it; therefore whenſoever Vomiting has the Effects here mention'd, of rendering the Body heavier, it muſt either be by its long and frequent Repetitions, or by its throwing up the Supplies of a good Meal, when the Body ſtood much in want of it; for in both theſe Caſes the Spirits will be exhauſted, and the Elaſticity of the Solids depending thereupon very much deſtroy'd; upon which Account the Body will ſeem heavier, but not really be ſo, becauſe there can be no abſolute Increaſe of Weight, but only a Decay of Strength, which produces the ſame Senſe of Weight. See this more largely explained *Aphoriſm* xxvii, xxix. *Sect.* 1. by the livth *Aphoriſm* of the firſt *Sect.* indeed it appears, that Vomiting hinders Perſpiration; but then it is to be underſtood only, as one Evacuation always hinders another, that is, by diverting or drawing off another Way, that Matter which ſhould ſupply it; and therefore by this, although Perſpiration is leſſen'd, yet the Body is not ever the heavier thereby, becauſe in Proportion to the Decreaſe of the Quantity perſpired, ſome other Evacuation is enlarged. When Heat follows upon ſuch Vomiting, it is not by any Acrimony of the perſpirable Matter, but ariſes from theſe Motions and Agitations of the Fluids, which they are neceſſarily put into by ſuch ſtrong Compreſſion and Exerciſe of the Muſcles; that the Heat of the Body ariſes from ſuch Cauſes; ſee *Aphor.* lxviii. *Sect.* 1. That Laſſitude which alſo enſues, is only from cutting off a Supply of Spirits, as is above explained.

APH. LIV.

" He who eats more than he ought, ſuffers in the " neceſſary Quantity of Nouriſhment.

Explanation.] How too large a Meal burthens the Stomach and hinders Digeſtion. See *Aph.* xxxvii. of this *Section.*

APH. LV.

" They who are uſed to immoderate eating when " young, ſtretch the Stomach too much, by which " means afterwards they come to digeſt with great " Difficulty, even a moderate Quantity.

Explanation.] Temperance in eating and drinking is good at all times, but eſpecially while young, becauſe Irregularities and Exceſſes therein, and early Debauches, ſo much deſtroy the natural Conſtitution and Strength of the *Viſcera*, by the weakning of their Springs, that they cannot long be able to diſcharge their proper Functions; and therefore if they do not bring Fevers and immediate Death, they never fail to haſten on a diſeaſed Age.

APH. LVI.

" He who would be ſettled in a ſtated and mode- " rate way of living, muſt uſe Meats of light Nou- " riſhment; by which the Stomach will ſoon be " emptied, and return to its moſt natural and con- " tracted Capacity.

Explanation.] While the Stomach is full, upon eating a large Meal, it is in a State of Diſtenſion much greater than when empty, and all the Fibres of which its Coats are compoſed, are upon a Stretch much greater than what is natural to them; in which State if they be kept too long, like a Bow too long

long and overmuch bent, they will loſe their Springs, and not be able any longer to perform their Offices. Such Meats therefore muſt be moſt likely to preſerve a healthful Conſtitution, which are moſt eaſily digeſted, and paſs out of the Stomach ſooneſt.

APH. LVII.

" It may be known how much is convenient to " eat, by obſerving ſeveral Days together, whether " the Body returns to the ſame Standard after Sleep " without any Uneaſineſs.

Explanation.] Becauſe waking cheerful and lightſome is an infallible Sign, that whatſoever is taken in is well digeſted, and converted to the ſeveral Purpoſes which the Exigencies of the Conſtitution require; whereby the Body is not only kept cleared of any ſuperfluous Load, but alſo every Wheel of the Machine is preſerved fit for Motion.

APH. LVIII.

" If after a plentiful Supper a Body the Day fol- " lowing is lighter than uſual, it becomes ſo either " by a Corruption of the Chyle, or becauſe Nature " has been irritated to expel what is uſeful, which " is very injurious: For there cannot but be ſome " Diſpoſitions towards a Diſtemper, when what is " uſeful is evacuated, and Crudities are detained.

APH. LIX.

" If a Supper of eight Pounds corrupts in the " Stomach, the next Day the Body will be lighter " than after a Supper of three Pound, which does " not do ſo.

Explanation.] By Corruption of the Food in the Stomach and Bowels, and the Conſequences of it, eſpecially in occaſioning *Diarrhœas*, is to be underſtood

ſtood that Change which it undergoes by an inteſtine or fermentative Motion, which ſee largely explained under *Aphoriſms* xxii, xlviii. of this *Section.*

APH. LX.

" Thoſe Meats which are moſt ſuitable for Per-
" ſpiration, do not corrupt, and even upon noctur-
" nal Watchings, will preſerve a Perſon from Hea-
" vineſs and Wearineſs.

Explanation.] Becauſe from a very good digeſted Meal, the Solids will be invigorated by ſuch a plentiful Stock of Spirits, as to be able to continue their reſpective Offices a conſiderable Time without Decay, although Sleep itſelf, which is ſo ſerviceable to that Purpoſe, be for a while wanting.

APH. LXI.

" Food which does not perſpire, occaſions Ob-
" ſtructions, Putrefactions, Laſſitudes, Sadneſs, and
" an Increaſe of Weight.

Explanation.] The Reaſon of all which may eaſily be collected from what has been ſaid before, under *Aphoriſms* xliv, xlv. *Sect.* 1. compar'd with ſeveral others.

APH. LXII.

" The worſt Condition a Perſon can be in, is when
" upon a good Digeſtion, the Body ſeems heavier,
" and in Reality it is lighter than uſual.

Explanation.] This is a Caſe that I think can never happen, for a good Digeſtion is not poſſible to be perfomed without Strength and Vigour in the Solids; and ſuch Strength depends upon a due Supply of convenient Juices to them; and therefore, where

where there is a good Digeſtion, as herein is ſuppoſed, the Body can never be in any bad Condition; unleſs from ſome ſudden Accident from an external Cauſe.

APH. LXIII.

" If any one takes in a Superfluity of Meat or " Drink, and the ſenſible Evacuations increaſe there- " upon, the Body the following Day will be lighter " than uſual.

Explanation.] Becauſe by thoſe Evacuations it is a great Chance if a great Deal more is not carried off than ought to be, by which the Body will not only be render'd lighter, but alſo much weaker, by being defrauded of its neceſſary Recruits.

APH. LXIV.

" The liquid Food is ſpecifically heavier than that " which is ſolid: For it keeps at the Bottom, but " the ſolid ſwims. A Cup of Wine or Broth is " much heavier than Bread.

Explanation.] After the Food is diluted, mixed with the Juices of the Stomach, and converted into Chyle, it matters not much what Form it was in before it came there, and it is not true univerſally, that the liquid Food is ſpecifically heavieſt, for a great many ſolid Meats are heavier than ſome liquids. This *Aphoriſm* is much the ſame as the xxviiith *Section* 1.

APH. LXV.

" If too much Drink makes the Eyes watry after " Sleep, it is a Sign the Body has not ſufficiently " perſpired.

Explanation.] An Overcharge of ſpirituous Liquors does frequently ſo much increaſe the Blood's Mo-

tion and Force, as to carry ſome of the Juices thorough Paſſages not deſign'd for them, and make undue Secretions even when there is no Diminution of Perſpiration: But when Perſpiration is hinder'd, or any other Evacuation, if the Solids preſerve their Strength, the detained Matter Nature never fails to throw off by ſome other Outlets, wherein the Glands about the Eyes may have their Share.

APH. LXVI.

" If after hard Drinking a Perſon ſweats much,
" or makes much Urine, it is a Sign of great Strength,
" or great Weakneſs.

Explanation.] In this Caſe thoſe Evacuations may be owing to either the forcible and frequent Contractions of the Solids in ſtrong Perſons, whereby they throw off the ſuperfluous Load, or to their relaxed State in weak People, by which they yield to its Diſcharge through the ſame Paſſages upon the ſmalleſt Increaſe of Impulſe; but the Conſequences will be very different, for the former will afterwards be lightſome, and receive little or no Injury, provided it be not repeated too often, ſo as to wear out the Elaſticity of the Solids, whereas the latter will be long diſorder'd, the Weakneſs of the Solids retarding their Recovery.

APH. LXVII.

" Water-drinking hinders inſenſible Perſpiration,
" but promotes the ſenſible Evacuations.

Explanation.] Long Courſes therefore of the mineral Waters, eſpecially the *Chalybeate*, cannot but be very injurious in ſeveral Conſtitutions, by diſordering and diverting ſo neceſſary an Evacuation. A few Repetitions of them in ſome Caſes may be of great Service, but in the beſt Conſtitution in the World

World a long Uſe will too much wear thoſe Paſſages by which they are accuſtomed to go off, and render it very difficult to bring thoſe Evacuations afterward to their natural and proper Quantities. Thoſe Diſcharges likewiſe which have been diminiſhed during ſuch Cauſes, will with Difficulty be recovered, the ſecretory Organs by Diſuſe, ſubſiding and loſing their proper Capacities.

A P H. LXVIII.

" The cuſtomary Drinking, even amongſt tem-
" perate Perſons in this Age is ill proportioned, for
" to about twelve Ounces of Meat they drink for-
" ty Ounces or more.

Explanation.] A great many very ſtrange Habits and Appetites are acquired by ill Cuſtom, which Nature was never the Author of, but nothing worſe than frequent tippling. Experience teaches us, that a great many who have been ſo happy as to keep their Appetites undebauch'd, can, and do enjoy a perfect Health, without ever drinking but at Meals, and then too but very ſparingly, and are never at other Times thirſty or deſirous of Drink. Mr *Locke* in his *Thoughts of Education*, very much blames the Cuſtom of giving Children Drink often as a Lullaby when froward, becauſe in Time it brings on an habitual Thirſt; and he ſays, that he once lived in a Houſe where there was a Child that could not talk, that drank more Liquor in the Space of four and twenty Hours than himſelf; and this ill Practice he fears is a dangerous Beginning and Preparation for good Fellowſhip. It is poſſible indeed to err on the other Hand, by not drinking a Sufficiency to dilute the ſolid Food in the Stomach, but there are few of this Number, and the greateſt Danger to the Conſtitution is from the other Extreme; for nothing is

more certain, that by how much the more is taken in, than is ſufficient for the Exigences of Nature, by ſo much the ſooner will the Body be wore out; becauſe by ſuch Means all the ſecretory Organs are more, and faſter, wore away than is needful, and the Elaſticity of all the Solids ſooner decays; juſt as it happens in the Wheels and Springs of any Machine, the greater Streſs is laid upon one, and the faſter the others move, the ſooner it neceſſarily wears out, and loſes all its Power of Motion.

APH. LXIX.

" A temperate Liver generally perſpires in a Night " three Pound: And ſuch a one, if he be of a ſtrong " Conſtitution, after a plentiful Meal may perſpire " five Pound.

Explanation.] This is to be taken in the largeſt Latitude of Perſpiration in hot Countries, but will not hold in our Climate; ſee therefore the Remarks upon *Keil's Medicina Statica Britannica.*

APH. LXX.

" Faſting is beneficial to a heavy full Body, to " a temperate one hurtful, but moſt of all ſo, to " one that is weak.

Explanation.] By a heavy full Body is to be underſtood, ſuch a one as has not for ſome Time evacuated in Proportion to the Quantities taken in; whereupon there has ariſen a *Plethora*, and in ſuch a Caſe nothing can be of greater Service, ſo its Continuance has not been long enough to alter the natural Qualities of the Fluids, than Abſtinence, and a very ſlender Diet; becauſe by ſuch a way of living will ſoon be ſubſtracted the Overcharge, and the Body reduced again to its wonted Standard. But Abſtinence in a Perſon not ſo overcharged, cannot but

but bring the Body below its healthful Standard, and therefore muſt needs be hurtful, but more eſpecially to a weak Conſtitution, becauſe ſuch a one will with the greateſt Difficulty recover its Loſs.

APH. LXXI.

" A plentiful Meal after long Faſting will in-
" creaſe Perſpiration a Pound more than uſual.

Explanation.] But this muſt be in very robuſt Conſtitutions where the Solids are very ſtrong, otherwiſe ſuch a plentiful Feeding would over-reach the Fibres of the Stomach, and diſable them for thoſe neceſſary Contractions upon which Digeſtion depends, and thereby the Body would be leſs nouriſhed than from a light Meal, and therefore a leſſer Supply afforded for the cuticular Diſcharges.

APH. LXXII.

" After immoderate Exerciſe, to feed very plen-
" tifully is not good; becauſe a weary Body per-
" ſpires with Difficulty.

Explanation.] This alſo confirms what is ſaid under the former *Aphoriſm*; ſuch Exerciſe ſtrains and weakens the Solids, inſomuch that they are not able afterwards to repeat their Contractions with that Strength and Quickneſs as is neceſſary to circulate and digeſt a full Meal as it ought to be, to render it ſuitable, either for the Occaſions of the Oeconomy, or Perſpiration, and therefore muſt needs leſſen the Quantity to be diſcharged that Way. By immoderate Exerciſe alſo the Veſſels will be ſo much emptied as to occaſion a quicker Derivation of a freſh Supply, than is conſiſtent with its due Digeſtion, and thereby the *Capillaries* will be fill'd with a viſcid groſs Matter, which will hinder Perſpiration. See under *Aphoriſm* xliv. *Section* 1.

APH. LXXIII.

" When ſober and temperate People go off with " ſudden Sickneſs, it is much wonder'd at by their " Friends, becauſe they have no Notion of Inſenſi- " ble Perſpiration.

Explanation.] I very much queſtion, whether any Diſeaſe ariſing from an Obſtruction of Perſpiration ſuddenly kills, for it is plain that this Diſcharge may be conſiderably diſturbed, without being attended with ſuch fatal Conſequences; and alſo that it never is put out of Order without giving ſufficient Notice by a great many Uneaſineſſes and ill Symptoms. By ſudden Sickneſs, therefore, is not to be underſtood Convulſions and Apoplexies, but acute Fevers, which moſt frequently ariſe from an obſtructed Perſpiration, and ſometimes have their Riſe and Period in a few Days.

APH. LXXIV.

" High Feeding and Drinking for ſome Time " conceals not only the Acrimony of the obſtructed " perſpirable Matter, but even the Diſtempers of " ſome of the leſs conſiderable Parts; which as ſoon " as Perſons come to uſe Purges or Abſtinence, ſud- " denly break out, and diſcover very ill Symptoms.

Explanation.] Such a way of Living keeps up a continual Stock of Sprits, and heats the whole Body in ſuch a Manner, that there is little Room afforded for cool Reflection; and the Mind is either in ſuch a perpetual Hurry, or Stupidity, that it is render'd uncapable of attending to, or being affected by what paſſes in the Body; but as ſoon as the Body is cool'd, either by Evacuations or Abſtinence, and the Mind recover its Capacity of Reflection, thoſe Grievances which were before not at all taken Notice of, will give

give a great deal of Pain and Uneaſineſs. It is not therefore ſo much a Wonder that a Perſon who has been long accuſtomed to ſuch a Way of Living, is ſo difficult to be reformed, becauſe the Repetitions of his Bottles are like ſo many Doſes of *Opium*, and as he ceaſes to be a Sot he grows miſerable.

APH. LXXV.

" That Phyſician who has the Care of the Health " of Princes, and knows not what they daily per- " ſpire, deceives them, and will never be able to " cure them, unleſs by Accident.

Explanation.] This is the ſame as *Aph.* ii. *Sect.* 1.

APH. LXXVI.

" In the four firſt Hours after Eating, a great ma- " ny perſpire a Pound, or near ; and after that to the " ninth, two Pound ; and from the ninth to the ſix- " teenth, ſcarce a Pound.

Explanation.] Compare this with the lvith *Aphor. Sect.* 1.

APH. LXXVII.

" That is the moſt proper Time of Eating, where- " in the Body comes to ſome healthful Standard, as " it enjoyed the Day before, when empty : But that " *Apollo* himſelf cannot find out, without the Bal- " lance.

Explanation.] That is, there is no way of knowing with Certainty when the Body comes exactly to ſuch a Weight, without bringing it to a Trial by the Balance. But I believe it will be thought an Experiment too troubleſome to put in Practice ; and a Perſon ſtudious and obſerving may exactly enough collect when that Time is, which is moſt proper to eat

eat in, by its preſent Plight, without any Trouble of weighing himſelf: And if the Experiment ſhould be once try'd, and the Times of Eating ſettled accordingly, it is a great Chance but ſome Accident or other may make it convenient to alter them by the very next Day.

APH. LXXVIII.

" If a Debauch over Night proves injurious, and " can neither be well digeſted nor thrown off by a " Looſeneſs, the Advice of the following Verſes is " good:

Si nocturna tibi noceat Potatio Vini,
Hoc tu mane bibas iterum, & fuerit Medicina.

If over Night's Debauch does hurtful prove,
A Glaſs next Morning will your Pains remove.

Explanation.] Too large a Quantity of ſpirituous Liquors ſtimulate the Solids ſo much while they remain in the Body, that as ſoon as their Strength is ſpent, the Solids become weaker than before, and ſo much, that very often they will not be able to throw off thoſe groſſer and more viſcid parts of the Liquor, which always remain to the laſt, without the Aſſiſtance next Day of a moderate Quantity of the ſame, whereby the Remains of the former may ſtill be agitated and kept in Motion, until by Degrees it is carried away by ſome of the Evacuations.

APH. LXXIX.

" If the Weight of a healthful Body after Supper, " be two hundred Pounds, and that Body be afterwards weaken'd by too much Venery, its Weight " will then not exceed a hundred and ninety eight " Pound: Becauſe the *Languor* at that Time contracted,

" ed,

" ed, will leſſen the Quantity of Food uſually con-
" verted into Nouriſhment by two Pounds.

Explanation.] This properly belongs to the Sixth *Section*, which ſee.

APH. LXXX.

" Meats that are eaſily perſpirable, more eaſily,
" and with much Difficulty and Trouble recruit the
" decay'd Strength, than ſuch as are hard to per-
" ſpire, and of groſs Nouriſhment.

Explanation.] The Difference between Meats which eaſily perſpire, and ſuch as are very nouriſhing, has in ſeveral Places been taken Notice of already; from which it may be concluded that they commit a great Error, who give to weak and decay'd Perſons thoſe Things which are generally received to be of the moſt ſubſtantial Nouriſhment, as Panadoes much boil'd, Chocolate, Milk, and other thick glutinous Spoon-Meats; for ſuch, although they contain a great deal of Nouriſhment, yet upon that very Account they require much more Strength and Vigour in the Solids to digeſt them, and intimately mix them with the animal Juices, than a great many kinds of Food which in themſelves are not ſo nouriſhing. And from what has been ſaid before of Mutton, and our common Experience about it, it ſeems very probable, to be the moſt ſafe and agreeable Food in any extraordinary Decay and Waſte of Strength, where there is no Danger of raiſing a Fever.

APH. LXXXI.

" Any turbid new Liquor, if it digeſt in the Sto-
" mach, it will not only perſpire well it ſelf, but alſo
" aſſiſt the Perſpiration of other Meats: Of this
" Kind alſo are hot flatulent Liquors.

Explanation

Explanation.] The Reaſon why ſuch Liquors help Perſpiration is, becauſe, if they are well mix'd with the Stomachick Juices and the other Food, they paſs with it thorough the *Lacteals*, and make Part of the animal Fluids, which by their Aptitude to Fermentation, as it is well known all ſuch Liquors have, they very much aſſiſt in their Motions, and continually by their Activity help to divide and break them in ſuch a Manner as is neceſſary to fit them to paſs that Way. It is alſo to the ſame Activity and Diſpoſitions of their conſtituent Parts that the following,

APH. LXXXII.

" *Onions*, *Garlick*, *Mutton*, *Pheaſants*, but above " all *Cyrenaick Juice*, aſſiſt the Perſpiration of ſuch " Meats as in themſelves are not eaſily perſpira- " ble.

Explanation.] I do not underſtand what is *Succus Cyrenaceus* in this *Aphoriſm*.

APHORISMS *added by the* AUTHOR.

APH. LXXXIII.

" A very ſmall Portion of Meat is not perceiva- " ble in the Stomach; and therefore it neither di- " geſts, nor nouriſhes, nor perſpires.

Explanation.] It muſt be underſtood here, after long Faſting, and when the Stomach is thereby very much weaken'd, whereupon a ſmall Quantity taken in at a Time has not Spirit and Warmth ſufficient to

to invigorate its Fibres, but lies uſeleſs and undigeſted.

APH. LXXXIV.

" The Matter of inſenſible Perſpiration is the Ex-
" crement of the third Concoction: And therefore
" if the firſt is not made, the third alſo will be
" wanting.

Explanation.] If the Food paſſes the Stomach without due Digeſtion, which is called the firſt Concoction, ſo much of it as gets into the Blood, by its Groſſneſs and Crudity, will of Courſe hinder the reſt of the Secretions, by preventing the due Attritions and Secretions of ſuch Parts as are neceſſary thereunto, being in themſelves too ſolid and bulky to be broke by the Force of the Arteries.

APH. LXXXV.

" By obſtinate Faſting, the Head will be filled;
" the Temples heated; the Hypochondres diſtend-
" ed, and the Arms and Legs enervated.

Explanation.] To account fully and clearly for all thoſe Symptoms will neceſſarily go into a great Length, becauſe they are not to be underſtood without a conſiderable Acquaintance with the Mechanical Conſtructure and Oeconomy of the Body. It is neceſſary therefore to premiſe, that in the Body there are two chief Springs or principal Inſtruments of Motion, *viz.* The *Dura Mater*, and the *Heart*; they both agree in this, that by alternate Dilatations and Contractions, they take in and throw out again certain Fluids, which by the Veſſels or Pipes annexed to them, are convey'd to all Parts of the Body. One of the Fluids is the Blood, and belongs to the Office of the *Heart*, and its Appendices the Arteries: The other is the *Succus Nervoſus*, or what

is commonly called the Animal Spirits, which has its Motion and the Continuance of it into all the parts, from the alternate Pulsations of the *Dura Mater*, and the *Tonick* Motion of the whole nervous System.

Now the Motions or Powers of these two chief Wheels or Springs of the Machine, have a mutual Dependance and Influence upon each other: That of the Heart upon a due Influx of the nervous Juice, or Animal Spirits, separated from the Blood in the Brain, and brought to it by the contractile Force of the *Dura Mater*, through its annexed Nerves: For without this, and a continual Supply of it, all the Muscles of the Body lose their Springyness, and grow uncapable of Motion. And as the Motion of the Heart thus depends upon a due Influx from the Brain, so that of the *Dura Mater* depends upon a due Circulation of Blood through the Brain, because from it is separated and derived that Juice, or Animal Spirit, upon which both its own, and the Motions of the Solids depend: So that which soever of these Parts is injured, and thereby the Motions of their respective Fluids disturbed, the other of Necessity must also suffer thereby. For a more large Account of this, consult carefully *Baglivi de Fibre Motrice & Morbosa.*

Thus far being once settled, it will then easily appear, that by obstinate Fasting, first the Blood will be lessen'd in Quantity, next the Secretions made from it lessen'd; and lastly, the Solids will lose their Springs and Power of Motion. But whereas the contractile Force of the Solids may continue by the Help of their present Stock of Spirits, some time after the Blood becomes defrauded of its Supply, the Velocity of the Blood will be increased, as long as that Stock remains; for lessening the Resistances of a moving Body is the same as adding to its motive Powers; upon which Account the Blood

will

will be thrown more forcibly into the extream parts, amongſt which the Head for a while will have its Share. Now this Increaſe of the Velocity of the Blood will, while it continues, quicken and raiſe the Pulſe univerſally throughout the Arteries; but as in ſome parts more than others, there is greater Room for their Expanſion, which makes what we call the Pulſe; ſo in the temporal Arteries, they being more ſtraightned by the circumambient parts, there will be a greater Senſe of that Pulſation than any where elſe; as it occaſions a greater Uneaſineſs, and as the ſtroak is chiefly to be felt externally, upon applying the Finger to the Artery. But it not being poſſible for this additional Increaſe of the Blood's Motion to continue long, after the ſupply of the nervous Fluid, and the Invigoration of the ſolids is cut off, as ſoon as the preſent ſtock decays, the whole Conſtitution muſt ſuffer, and not only a greater ſenſe of Weight will be felt in the Head, but all over, and for the ſame Reaſon are the Limbs enervated, and loſe their Strength.

The Diſtenſion of the Parts about the Belly, is occaſioned by the Diverſion of a great deal of the perſpirable Matter, that would otherwiſe have paſſed the outer Skin, by the Way of the *Viſcera*; for that Emptineſs and Defection of Spirits, firſt from within, very much takes off the *Vis à tergo*, by which thoſe Steams were uſually propell'd towards the Circumference, and gives thereby greater Liberty for them to collect themſelves within, by which the Hypochondres are neceſſarily diſtended in an unuſual Manner. Hence may further be obſerv'd the Reaſon why a great Diſtance between the Times of Eating is bad, eſpecially between Supper and Breakfaſt; and that for ſuch who are troubled, as they call it, with Wind, it is much better to eat little and often, than large Meals and ſeldom.

APH. LXXXVI.

" The Loſs which a Body ſuffers for want of " Food, is greater than by a purgative Medicine; " becauſe, this indeed promotes ſenſible Evacua- " tion, but it leſſens inſenſible Perſpiration.

Explanation.] As Perſpiration is the moſt conſiderable Evacuation, ſo whatſoever leſſens it, although at the ſame Time, ſome of the ſenſible Evacuations are thereby increaſed, will keep up at leaſt, if not increaſe the Weight of the Body, ſo long as the proper Quantities are taken in; but where that is united, without any ſenſible Evacuation, the Body cannot but very much fall off both of its Bulk and Strength.

APH. LXXXVII.

" In a cold Conſtitution, where the Stomach is " empty, thorough the Omiſſion of a Supper over " Night, the next Morning drying and over-dreſs'd " Meats are very ſerviceable.

Explanation.] For in ſuch Conſtitutions, at ſuch Times, the Stomach cannot but be nauſeated by the Quantity and Acidity of its own Juices continually draining into it, and frequently alſo inflated with an Overcharge of rancid Steams, ariſing from inward Perſpiration, both which all drying Things, as all over-dreſſed Meats more eſpecially are, very much help to abſorb and diſperſe, and if a plentiful Uſe of Coffee is ever good, it muſt be ſo with theſe kind of Conſtitutions in a Morning.

APH. LXXXVIII.

" If one Meal a Day of about four Pound proves " injurious, the ſame Quantity taken in two or " three

" three Meals, may be of ſervice: For too great a " Fulneſs of the Belly diverts Perſpiration.

Explanation.] See *Aphoriſm* xxxvii, xl, and xliii, of this *Section.*

APH. LXXXIX.

" They need not fear any Diſtemper, who dili- " gently take Care that they be not overcharged " with Crudities.

Explanation.] Any one who ſets a due Value upon his Health, will ſtudy Temperance, and obſerve what is moſt agreeable to his Conſtitution, which will prevent any Crudities or undigeſted Matter from increaſing in his Body; but if by any external unavoidable Cauſe, as the Hindrance of Perſpiration by ſome ill Diſpoſition of the external Air, an Obſtruction ſhould happen, it will diſcover it ſelf early enough to be remedied in Time, and therefore no Danger of a Diſtemper need be feared where ſuch due Care is taken.

APH. XC.

" It is better for antient People to eat three Times " a Day, as *Antiochus* did than but twice, or but " once, becauſe the laſt hinders Perſpiration.

Explanation.] See *Aphoriſm* lxxxviii, above.

APH. XCI.

" Why would not *Antiochus* eat Fiſh at Supper? " Becauſe they hinder'd Perſpiration; for that which " is made in the Time of Sleep is moſt of Service, " and without it the Strength languiſhes.

Explanation.] Concerning the Inconveniences of a Fiſh Diet. See *Explanation*, *Aph.* viii. *Sect.* iii. and for the Reaſon of the latter Part, *Aphoriſm* xx, xxi. *Section* i.

APH. XCII.

" The Juice of Cucumbers by its Coldneſs and " Groſſneſs remains in the Veins: And ſeveral other " impure Juices, although eaſy to digeſt, by hin- " dering Perſpiration, occaſion malignant Fevers.

Explanation.] Common Experience teaches us, that moſt Kinds of Fiſh are prejudicial in all ſuch Diſtempers as have their Riſe chiefly from a Sizyneſs or Viſcidity of the Juices, as in Agues and Rheumatiſms, and are moſt commonly occaſioned by Obſtructions of Perſpiration; and as ſuch Things which hinder Perſpiration, at all Times are bad, ſo they are certainly worſt of all at Supper; becauſe in the Time of Sleep the Body receives the greateſt Benefit by that Diſcharge. Cucumbers and ſeveral other Things abounding with cold viſcid Juices, are alſo hurtful much in the ſame Manner, by thickning and bringing a *Lentor* upon the animal Juices, and thereby obſtructing the perſpirable Matter, which in Time will acquire very noxious Qualities, ſooner or later, as the preſent Conſtitution of the Air, more or leſs favours its Corruption, and occaſion putrid and malignant Fevers.

APH. XCIII.

" Why does a Putrefaction of the Food occaſion " a Laſſitude? Becauſe it hinders Perſpiration: But " how? By cauſing a *Diarrhœa*. How does a *Diar-* " *rhœa* occaſion a Laſſitude? By carrying off with " the Excrements a great deal of the uſeful and " well digeſted Juices.

Explanation.] This contains what has been ſaid, and largely explained under ſeveral of the foregoing *Aphoriſms*, concerning a Putrefaction or Corruption of the Food. See *Aphor.* xxii. *Section* 3.

APH. XCIV.

" He who eats a plentiful Supper upon a Weari-
" neſs, as ſoon as he ſleeps will perceive a Coldneſs
" and Laſſitude: But about twelve Hours after Sup-
" per, all will be well: Becauſe by that time Dige-
" ſtion will be perfected, and Perſpiration ſer-
" viceable.

Explanation.] Nothing is more common than a Chillineſs and Liſtleſſneſs to Action after a large Meal: The Reaſon is, both becauſe the Remains of a former Meal in the *Lacteals* and *Receptaculum Chyli*, is ſuddenly thruſt forward thereby into the Blood; and becauſe by the additional Weight and Preſſure of the Contents of the Stomach upon the Blood Veſſels, there is ſome ſmall Check given to the Motion of the Blood, upon which ariſes a Senſe of Cold; for the Heat of the Body, as was proved before, is always as the Velocities of the circulating Fluids; and therefore whatſoever retards their Motions, makes the Body be ſo much the colder. The Rigours and Shudderings which People are frequently ſenſible of after a plentiful Repaſt, are owing to the more contracted State of the Fibres: For the Capacity of the Stomach being much enlarged, the Nerves of the whole Body, by the Communication of one Part with another, will be drawn thereby ſomething ſtraighter, which, in ſtrong People eſpecially, cannot be done without ſome Reſiſtance, whereby there will be occaſioned thoſe ſhort tremulous Vibrations of the Fibres; and whenſoever a plentiful Meal is eat upon great Emptineſs of the Veſſels, as after long Faſting, or hard Exerciſe, theſe Effects are more perceivable than at other Times, becauſe the new made Chyle, which is always more viſcid than the Blood, ſooner gets into the Arteries: Wherein by a

good Conſtitution, after a few Hours it will be ſufficiently broke, and Digeſtion will be perfected, and Perſpiration made in due Quantity; upon which the Body will be ſoon recruited with a freſh Stock of Spirits and Nouriſhment, and again return to its uſual Standard of Weight.

APH. XCV.

" Food after violent Exerciſe is hurtful, both be-
" cauſe it is not well received in the Stomach,
" and becauſe it hinders Perſpiration.

Explanation.] Becauſe 'till the Solids are recruited by Reſt and ſpirituous Liquors after hard Straining, they will not be able to digeſt a full Meal of ordinary Food; inſomuch, that the Stomach will not often in ſuch Caſes receive it without Nauſeouſneſs, and conſequently muſt the Supplies for Perſpiration be cut off. In ſuch Inſtances then it is much better to recruit, firſt by Cordials and ſpirituous Liquors, and not eat 'till the Strength ſeems to renew, and the Wearineſs wears off.

APH. XCVI.

" He who eats with a troubled Mind digeſts
" much leſs than one who is eaſy and cheerful.

Explanation.] Nothing is more certain, than that the Paſſions of the Mind have a great Influence upon the animal Functions, concerning which ſee further, *Sect.* 7.

APH. XCVII.

" To drink between Dinner and Supper is hurt-
" ful: But if we drink ſo much the leſs for it at Sup-
" per, its Inconveniences will thereby be removed.

Explanation.] See *Aphor.* lxviii. *Sect.* 3.

APH.

APH. XCVIII.

" To vomit after Supper is weakening, becauſe " it defrauds the Body of its Aliments, and alſo be- " cauſe it hinders Perſpiration.

Explanation.] The Hindrance of Perſpiration is a Conſequence of the former, as it is explained under *Aphor.* liii. *Sect.* 3. and therefore unleſs it be Medicinal, and to remove ſome greater Evil, it is always injurious.

APH. XCIX.

" An Exceſs of Eating and Drinking once or twice " a Month, the next Day, without any ſenſible Eva- " cuation, will render the Body lighter than uſual.

APH. C.

" They who uſe a regular Diet, want the Bene- " fit of thoſe who debauch once or twice a Month: " For the Perſpiration occaſioned by the Irritation " of ſuch an Overload is ſo great as not to be be- " lieved without weighing.

Explanation.] Theſe two ſeem to contradict ſeveral of the foregoing, whereby it appears, that a temperate Way of Living is abſolutely neceſſary to a good State of Health, and if Exceſs is ever paſſed over without Damage, it muſt be where the Conſtitution is robuſt, but frequent Repetitions of ſuch Practices will wear out the beſt in the World; and whoſoever pretends to debauch, although but twice a Month for Health's Sake, it is to be feared will find a Time for Repentance: Although indeed in ſome very particular Caſes, where the Conſtitution gradually errs by Increaſe, for want of proportionable Evacuation, ſuch a Strain may poſſibly break away the beginning Load.

APH. CI.

" In cold Conſtitutions Honey is ſerviceable, be-
" cauſe it nouriſhes and perſpires; but in hot it is
" hurtful, becauſe it turns to Bile.

Explanation.] Honey may be reckon'd of the ſame Kind with thoſe of *Aphor.* lxxxi, lxxxii. *Sect.* 3. and produce the Effects mentioned in the former Part of this, for the Reaſons therein given: And that in hot Conſtitutions it prodces Bile, is becauſe that Juice is the Produce of too great an Agitation and Heat of the Blood, whereby its Parts are too much broke; that inſtead of ſupplying the Secretions in the uſual Manner, they run into preternatural Coheſions, and form ſuch Particles as are fitted only for the Secretion of thoſe Organs that are conſtituted for ſuch a Separation.

APH. CII.

" Nothing hinders Perſpiration more than to
" drink during Chylification.

Explanation.] This muſt be underſtood of immoderate Drinking, whereby the Stomach becomes diſtended in ſuch a Manner, as to hinder Perſpiration by the Means above taken Notice of, as every thing which over-fills the Stomach will do; but if it is not in a Quantity to overload it, I cannot ſee how it can have any ſuch Effect.

APH. CIII.

" By cooling the Liver it leſs attracts the Chyle,
" and much leſs promotes Perſpiration.

Explanation.] That the Liver attracts Chyle at all, is a Miſtake, and owing to a want of better Knowledge in Anatomy, eſpecially in the Circula-

tions

tions and Secretions of the Fluids, for the Chyle as ſuch, never comes at the Liver; or is there any ſuch Thing poſſible as heating, or cooling the Liver, but by the Conſent of the whole Body; and therefore the Virtues aſcribed to ſome particular Medicines, as more immediately warming or cooling any particular part, are meerly imaginary.

APH. CIV.

" When in a ſound Body the Belly is looſe, it is " either becauſe Digeſtion is not well made in the " Stomach, or from an Expulſion of the Chyle by " an obſtructed Perſpiration.

Explanation.] An Obſtruction of the perſpirable Matter will ſo over-burthen the Solids, that if they are ſtrong, they will be irritated to throw it off by other Evacuations, which is the Reaſon why the Stoppage of one Evacuation is always the Increaſe of another.

APH. CV.

" A good Conſtitution may ſuffer two Ways; ei- " ther by living entirely without Exerciſe, or by " Eating before the Digeſtion of a former Meal.

Explanation.] The former will further appear in the fifth *Section*, and the latter is very plain from what has been ſaid already.

THE APHORISMS OF *SANCTORIUS.*

SECT. IV.

Of SLEEP *and* WATCHING.

APHORISM I.

SOUND Sleep ſo much promotes Perſpiration, that in about ſeven Hours, ſtrong Conſtitutions will frequently perſpire fifty Ounces.

Explanation.] THIS much exceeds the Proportions in cold Climates; ſee *Keil*'s *Medicina Statica Britannica*, at the latter End hereof.

APH.

APH. II.

" With ſeven Hours Sleep the Body inſenſibly " perſpires, and without any Trouble, twice as " much as when awake.

Explanation.] Whether the Quantity here reckon'd upon will always anſwer upon Trial, and whether the Difference is ſo great between the cuticular Diſcharge in Time of Sleep, and when awake, as here aſſerted, is not very material to inquire into; or is it indeed poſſible, that this Evacuation ſhould be found the ſame in different Countries, different Seaſons, or different Conſtitutions; and therefore Allowances are to be made upon any ſuch Trial; but that Perſpiration goes on more regularly and freely in the Time of Sleep, than when awake, is certain, and for the Reaſons given under *Aph.* xx, xxi. *Sect.* 1.

APH. III.

" That Perſpiration in Sleep, which is attended " with Sweat, does not carry off more than when " it is inſenſible, and without Sweat.

Explanation.] This may be true, but not without Reſtriction; for without Doubt, in thoſe Sweats with which an Ague Fit commonly goes off, there is a much greater Diſcharge made for the Time, than is ever made by the largeſt inſenſible Perſpiration in the ſame Space of Time; and I very much queſtion, whether the Body can any other Way more effectually be prepared for a large Diſcharge by the Pores of the Skin, than it is by an Ague Fit: Becauſe the Concuſſions made by the Yawning and Shivering which precedes it, wonderfully breaks the Viſcidity of the Juices which obſtructs the capillary Veſſels, and thereby are very conducive to promote this Evacuation. But from ſeveral *Aphoriſms* of the foregoing

Sections,

Sections, as well as this, it appears, that Perſpiration which is inſenſible, is the moſt neceſſary and moſt ſerviceable Evacuation, and that generally it carries off a much greater Quantity when rightly perform'd, than Sweat, although this appears moſt ſenſible upon its Expulſion. Where therefore 'tis practicable to draw off any additional Weight of the Body by Perſpiration, it is much better done that way than by any other Diſcharge; becauſe thereby no unneceſſary Strain or Irritation is given to the Conſtitution, whereby it may afterwards ſuffer; and therefore moderate Exerciſe, and a temperate Uſe of the *Non-naturals*, may much more eaſily bring about this good End, than the Virtues of the moſt celebrated Medicines.

APH. IV.

" The Body is lighter after Sleep, both by an In-
" creaſe of Strength, and the Waſte of, at leaſt,
" three Pound of Excrement.

Explanation.] A Waſte of Subſtance alone, without keeping up the ſame Stock of Spirits, that is, without preſerving the ſame Invigoration and Elaſticity of the Solids, will not make the Body ſeem any lighter than before, becauſe although there is a Diminution of its *abſolute Weight*, ſo long as there is alſo a proportionate Decay of Strength, a Perſon will have the ſame Senſe of Weight as before; but as by Sleep, after a good Digeſtion, there is both made a Waſte of Subſtance, by what is thrown off by inſenſible Tranſpiration, and alſo at the ſame Time, a freſh Supply of Spirits given to the Fibres, a Perſon cannot but both really be, and ſeem alſo lighter; ſuch Diſcharges therefore which are of the greateſt Benefit to the Conſtitution, are thoſe by whoſe Expulſion ſuch Matter only is thrown off,

as

as is well digeſted, and of no farther Uſe to be retained in the Body; and when at the ſame Time, ſuch Diſpenſations are made of all the animal Juices, to the ſeveral Parts of the Body, as the due Performance of their reſpective Functions require.

APH. V.

" Interrupted and unquiet Sleep leſſens the Quan-
" tity uſually thrown off by Perſpiration, about a
" third Part.

Explanation.] Becauſe unquiet Sleep preſerves the Fibres in that Degree of Tenſion, as is not ſuitable to forward the Juices to the Extremities, and let go off the Matter of Perſpiration by the Skin, whereas

APH. VI.

" Perſpiration in ſound Sleep is ſometimes great-
" er than what is made by Exerciſe in the ſame
" Compaſs of Time.

Explanation.] This *Aphoriſm* is exactly the ſame with ſeveral of the former, and agrees alſo with many of the following *Sections*; but whether it be true in the greateſt Latitude is very much to be doubted, for the Reaſons given under *Aphor.* iii. of this *Section.*

APH. VII.

" In the Morning Sleep, after the firſt Digeſtion
" is perfected, about a Pound of the perſpirable
" Matter goes off in an Hour; but if that is not
" perfected, not above a Quarter ſo much.

Explanation.] How abſolutely a previous Digeſtion is neceſſary to Perſpiration is abundantly manifeſt from what has gone before; and therefore where that is defective, this Diſcharge cannot but very much

much fall ſhort at whatſoever Time it happens; but more eſpecially in the Morning, when the Body otherwiſe would be much the moſt diſpoſed to it. The greateſt Care alſo at that Time ought therefore to be taken that it be not interrupted; becauſe a Perſon then receives from it the greateſt Benefit.

APH. VIII.

" Whatſoever hinders Sleep, hinders alſo the Per-
" ſpiration of that digeſted Matter which ought to
" exhale.

Explanation.] Becauſe by Sleep, as has been ſaid before, the Solids are relaxed, and the cutaneous Pores laid more open, by which the perſpirable Matter has more Room to fly off. See *Aphor.* v. of this *Section.*

APH. IX.

" Short Sleeps are occaſioned by the Acrimony of
" ſome obſtructed perſpirable Matter; and the per-
" ſpirable Matter is often obſtructed, by Nature's
" being more than uſually employed about ſome of
" the internal Functions.

Explanation.] The former Part is very true, and the Reaſon of it very plain; for the Juices lodged in the Glands and ſecretory Paſſages, oftentimes acquire a Sharpneſs, by which they vellicate the Fibres, contract them, and prevent that true Relaxation of the Solids as is neceſſary to procure a ſound and undiſturbed Sleep. But as to Perſpiration being hindred by Nature's having ſomething elſe to do within, I cannot underſtand any otherwiſe, than as it is explained under *Aphor.* lviii. *Sect.* 1.

APH.

APH. X.

" The Acrimony of the obſtructed perſpirable " Matter moſt commonly affects the Head, diſturbs " Reſt, and hinders the Perſpiration of the upper " Parts.

Explanation.] In what Part ſoever the Nerves are irritated, the Head is generally moſt injured thereby, becauſe from thence they have their Origin, and it is ſooner by that Means drawn into Conſent with the ſtimulated Part than any other; and as it was proved before under *Aph.* xlix. *Sect.* 1. that all Pain in general, in whatſoever Part it hath its Seat, will contract the Nerves, and thereby hinder Perſpiration, ſo of Conſequence where the greateſt Pain is, there will be the greateſt Contraction, and the leaſt Perſpiration.

APH. XI.

" If any one after Sleep finds Pain in his Arms, " or a more than ordinary Wearineſs, it denotes the " Body to be heavier, and ſo much, that Nature " cannot long bear up under it.

Explanation.] Such Pain and Wearineſs after Sleep, when a Body ought to be moſt lightſome and refreſhed, are a certain Sign both of an obſtructed diſtemper'd Matter, and of ſome Defect in that Secretion of the nervous Fluid, by which the Solids are to be invigorated; neither of which Diſorders can continue long, without bringing the Body into ſome ill Diſtemper.

APH. XII.

" Whoſoever ſleeps with his Legs and Hips bare, " will perſpire that Night a Pound leſs than uſual.

Explanation.] Becauſe the Perſpiration of thoſe Parts will be obſtructed by the Coldneſs of the Air, which, if its Effects went no farther than thoſe Parts expoſed to it, would prove, that by this Calculation the Superficies would be about a Fifth of the whole Body, ſuppoſing alſo, all Parts to exhale near the ſame Quantity, when equally covered from the Cold: But as the leaſt Irritation of any particular Part will, more or leſs, according to the greater or leſſer Tenſions and Elaſticity of the Fibres at that Time, draw other Parts likewiſe into a Conſent therewith, no one can foretel what will be the Conſequences of a partial Application of ſuch Means to the Body, or how much Perſpiration will be hindred thereby.

APH. XXX.

" Continual Reſtleſſneſs in Bed agitates the Bo-
" dy more than ſwift running: For in the Motion
" of one running, the Muſcles of the lower Parts
" only are moved, whereas by turning about in Bed
" often, thoſe of the whole Body are concerned.

Explanation.] Such reſtleſs Motions in the Bed, are without Doubt more injurious to a Perſon, than the Exerciſe of ſwift Running, as they keep the Solids in a contracted State, at that Time when Nature requires them to be relaxed, as in ſound Sleep, in order to perform the Buſineſs of Perſpiration; but that a greater Streſs is thereby laid upon the Muſcles, is a Miſtake, or that in every reſpect, the Body is more agitated; for by ſwift Running, not only thoſe of the Legs are exerciſed, but all the Muſcles of the whole Body by Conſent are ſtrained, but eſpecially thoſe of the *Thorax* and lower Belly, in Reſpiration, are put into very briſk Motions; and as for thoſe

thoſe of the Arms, I believe there are but few who run very faſt with their Hands in their Pockets.

APH. XIV.

" Perſpiration is hindred more in the Time of " Sleep, by a cool Southern Air, than when Waking, " by an intenſe Cold.

Explanation.] Becauſe in that relaxed State the leaſt Preſſure and Contraction imaginable is diſcernable and injurious, and the Pores likewiſe at that time lying opener, the exhaling Matter is the more eaſily ſtopped and fixed in its Paſſage: Whereas when awake, although the external Air be intenſely Cold, as long as the Solids are firm and keep their Springs, their Contractions will be ſmarter and more frequent, and the perſpirable Matter thereby ſo much broke, as to be fitted to fly off through much narrower Paſſages.

APH. XV.

" If the Night's Sleep is leſs than uſual, the Exha- " lation of the digeſted perſpirable Matter will be " leſſened; but that of the undigeſted increaſed.

Explanation.] In Time of Sleep, by the Laxneſs of the Fibres and Openneſs of the Pores, there is moſt Room for the perſpirable Matter that is well digeſted, to go off; when therefore it is interrupted, and the Solids drawn up, as they are in Waking, before the due Quantity is gone off, there will a great deal be detained, which, by the Actions of a waking Perſon, will afterwards be expell'd, but not without a Mixture likewiſe of ſome Parts, not yet broke far enough for that Diſcharge, as it is performed during Sleep.

APH. XVI.

" From Meat of eaſy Perſpiration, the Body is " render'd weaker, rather than heavier; but from

" Meats difficult to perſpire, both weaker and hea-
" vier.

Explanation.] This *Aphoriſm* properly belongs to the foregoing *Section* of *Meats and Drink*, in which it appears at large, that Food of eaſy Perſpiration beſt undergoes that Digeſtion which is made in the Blood, and therefore is moſt ſuitable to weak Perſons, and ſuch who have loſt much by any Diſtemper, or long ſlender Diet: But as it alſo contains the leaſt Nouriſhment, that is, does but little enter into the Subſtance of the Body, ſuch is the leſs fit for Perſons in Health, eſpecially thoſe of robuſt Conſtitutions: Becauſe by it, altho' the Body is in the leſs Danger of being overcharged, yet it is very likely at the ſame Time to loſe conſiderably both of its Bulk and Strength; becauſe there is not Nouriſhment enough in it to recruit the continual Waſte of the Solids. But when Meat is of difficult Perſpiration, although it digeſts in the Stomach, and paſſes the *primæ viæ* never ſo well, yet it tends to make the Body both heavier and weaker; for it increaſes the Weight of the Body by not paſſing off in ſufficient Quantities by inſenſible Perſpiration, as hath been before proved of ſuch ſort of Food; it being too groſs and viſcid to get that Way; and it renders it weaker, both by the additional Weight of what is retained, and by it's not being broke or digeſted enough in the Arteries to be converted into that Spirit, or *Animal Oil*, which is neceſſary to enable the Solids to perform their ſeveral Offices.

APH. XVII.

" The perſpirable Matter which goes off during
" Sleep, differs ſpecifically from what paſſes when
" awake; for the former is the Reſult of a good Di-
" geſtion, without Acrimony, and is refreſhing to
" the whole Body; but the latter ariſes from Crudi-
" ties, and is ſharp, violent and laborious. *Ex-*

Explanation.] From *Aphor.* xx, xxi. *Sect.* 1. this Difference has already been explain'd, and may farther be collected, from the Eſſay concerning a *diſtractile Fibre*, where it appears that the Matter of inſenſible Perſpiration is principally the Recrements of the *Succus Nervoſus*, or that *Animal Oil* with which all the Solids are moiſtened, broke too ſmall to be of any further Service, and rendred ſo light, as to fly off whenſoever it gets at the Surface; and that tonick Motion of the Fibres, by which this Matter is prepared from that Juice, being more regular, and the cutaneous Paſſages more open in Time of Sleep than when awake it cannot but be more eaſily and more pentifully prepared and diſcharged at that Time than when awake; but at other Times the Nerves being variouſly agitated by the Impreſſions made upon them by external Objects, this Juice has not that regular Propulſion as before; and therefore what happens to eſcape, are only ſuch Particles as by the Force of the contractile Veſſels are thrown off.

APH. XVIII.

" A Perſon when aſleep, perſpires as much more " as when awake; from whence is the accuſtomed " Saying, that *an Hour's Reſt with Sleep, is as good* " *as two Waking.*

APH. XIX.

" Inſenſible Perſpiration, in the Space of ſeven " Hours during Sleep, has been found in a great ma- " ny, to be about forty Ounces, and in Watching " twenty.

Explanation.] The Calculation here agrees with ſeveral of the foregoing; in the firſt *Aphor.* of this *Sect.* he indeed makes the Quantity perſpired during ſo long Sleep, fifty Ounces, but then it is to be ſuppoſed, in very ſound uninterrupted Sleep: And as

the various Differences of Conſtitutions and ſeveral other Cauſes, may make a Difference in this Evacuation, this will not appear to be at all inconſiſtent.

APH. XX.

" Whoſoever goes to Bed with an empty Sto-
" mach, that Night perſpires about a third Part leſs
" than uſual.

Explanation.] Becauſe the Matter of this Diſcharge is not ſupplied in due Quantity, although it is not at all improbable, but that there may ſometimes be a Concurrence of ſuch Cauſes, as at ſuch a Time to occaſion a very plentiful Diſcharge this Way; but then there cannot but ſome Damage or other enſue, either by too great a Diminution of the Fluids, or by ſtraining too much the Solids, or by both.

APH. XXI.

" Bilious or Cholerick Perſons, who go to Bed
" without Supper, will be troubled with Crudities
" in the Head and Belly; their Temples will beat,
" their Fleſh waſte, and ſtrong Tenſions will ariſe
" in the Arms and Hands, and ſometimes Twitch-
" ings at the Heart, Vertigoes, and Epilepſies, as
" it happen'd to *Diodorus*.

Explanation.] See *Aph.* lxxxv. *Sect.* 3. where this is explain'd at large, why Faſting in bilious Conſtitutions, more particularly than any other, ſhou'd aggravate theſe Symptoms, is becauſe the ſharper and more irritating the Fluids are, the more muſt the Solids be diſorder'd; and ſometimes ſo far as to give Riſe to the above mention'd Diſeaſes: See alſo under *Aph.* ci. *Sect.* 3.

APH.

APH. XXII.

" A plentiful Supper after a larger Perſpiration " than uſual, procures a larger and pleaſanter " Sleep.

Explanation.] Becauſe after ſuch a large Perſpiration, the Nerves will be emptier of their Juices, and ſtand in greater Need of a Supply; therefore upon a good Meal, as ſoon as they are relaxed by Sleep, they will continue ſo, unleſs irritated by any foreign Diſturbance, until the Food taken in by that Meal be well digeſted, and they are thereby recruited with a freſh Stock of Spirits: But,

APH. XXIII.

" A leſs Perſpiration than is needful, is followed " by unquiet Sleep and a reſtleſs Night.

Explanation.] Becauſe beſides the additional Load of the obſtructed perſpirable Matter, a full Meal, at ſuch a Time, will much increaſe the Burthen already laid upon the Solids, and thereby render Digeſtion very difficult, and occaſion more Uneaſineſs than is conſiſtent with ſound Sleep.

APH. XXIV.

" If after a ſhort and reſtleſs Sleep the Fleſh " ſeems cold, and a little Fever ariſes, in weak " Perſons it is a Token of Death, but in the Robuſt, " a Fore-runner of ſome long Diſtemper.

Explanation.] Such a Senſe of Cold after a little Sleep, is a Sign that there is ſome great Diſorder in the Contexture of the Fibres, or the Fluid, which ſhould give them their Elaſticity, whereby as ſoon as Sleep comes on, and they fall into a State of Relaxation, inſtead of performing their Contractions

more regularly at that Time, as they do in healthful Conſtitutions, they either loſe very much their Motions, or have thrown upon them a Fluid very unfit for that Uſe, whereby they come to loſe their due Contractions afterwards, inſomuch as frequently to be followed with very bad Diſtempers, and ſometimes Death, and the firſt Appearance of ſuch Diſorders may often be by a Coldneſs after Sleep, which ends in a Fever; becauſe the firſt Irregularity hereupon in the Œconomy, is a partial Diſtribution of the Fluids, and a Retardation of the Blood's Motions, which will always occaſion a Senſe of Cold, as has already been proved: But at firſt, what will be the Conſequences of ſuch Diſcorders God only knows, becauſe there are often ſo many Ways both of removing the Cauſes, or bringing Death, which the Wiſeſt cannot foreſee in Time, either to bring about the one, or prevent the other: But undoubtedly it will fare much the worſe with the weakeſt Conſtitutions, as not being able perhaps to ſtruggle with it. Where Digeſtion has been bad, and Perſpiration leſſened for ſome Days together, it is moſt likely to be diſcovered at the Time of waking, becauſe as ſoon as the Nerves are relaxed, and Sleep comes on, that Matter which is intended to be diſcharged by the Skin, will by the natural Courſe of the Circulations be crouded that Way; ſo that if the firſt cannot get through, the continual Protuſion *à tergo* of freſh Matter, will at laſt make the Obſtruction ſo great in the Capillary Arteries, and diſtend them in ſuch a Manner, as to occaſion a great deal of Uneaſineſs, and at laſt raiſe a Fever; and for this Reaſon it is, that the firſt Attack of a Fever is moſt commonly felt at theſe Times.

APH.

APH. XXV.

" Changing a Bed occaſions diſturbed Sleep, and " leſſens Perſpiration; for an unaccumſtomed Place, " although better than before, diſturbs both the " Body and Mind.

APH. XXVI.

" They who ſleep in a ſtrange Bed, dream more " than in their own.

Explanation.] Theſe are obvious to every ones Notice, and are undoubtedly occaſioned only by the Change of Objects which are about a Perſon, and take up his Mind with ſome more than uſual Attention, and thereby prevent that eaſy Relaxation which is neceſſary both to a good Perſpiration and ſound Sleep.

APH. XXVII.

" They who ſleep and do not dream, perſpire " well; and, on the contrary, they who dream much " perſpire the leſs.

Explanation.] Dreaming is a State between Sleeping and Waking, wherein although the Mind does not exerciſe ſuch a Power over the Body, as to direct its Motions in the ſame Degree as when awake; yet by its Attention to thoſe confuſed Ideas which paſs through it, the Solids are kept in ſome Degree of Contraction greater than is agreeable with ſound Sleep; and therefore Perſpiration, which depends upon a ſettled Relaxation, cannot ſo well be performed at ſuch Times as when in quiet Sleep.

APH. XXVIII.

" Sleep about four Hours after Eating is moſt ſer- " viceable; becauſe Nature is not ſo buſy at that

" Time about the firſt Concoction, and ſhe then
" better recruits what is loſt, and better carries on
" the Buſineſs of Perſpiration.

Explanation.] From what hath been above ſaid, it appears, that a full Stomach is injurious to Perſpiration, and that Nature's being buſy about ſomething elſe, is no more than that during the Load of a full Stomach, the Nerves are more contracted, and thereby there is the leſs Room for the perſpirable Matter to paſs off. It is abundantly manifeſt from Anatomy, that the Courſe of the *Chyle* only from the Stomach into the Blood, is a conſiderable Length, and that it requires four or five Hours Time to perform that of a whole Meal. By the Weight and Diſtenſion of the Parts about it, a Perſon may perceive the Food to remain in his Stomach an Hour or two at leaſt; which after it had paſſed in a well digeſted *Chyle* into the Inteſtines, its Stay there is near as long, the *lacteal* Veins, although very numerous, being yet ſo exceedingly fine, as not to admit the whole Quantity to paſs them under a conſiderable Time; its frequent Stops in the *meſenterial Glands*, and the *Receptaculum Chyli*, and its ſlow Aſcent up the *Ductus Pecquetanus*, fill up ſuch a Space of Time as is here ſpoke of: As ſoon therefore as it is got in the Blood, ſuch a quiet and relaxed State as Sleep procures, is the moſt conducive to its regular Mixture with the animal Fluids, and its Seceſſion, either into ſuch Parts as the ſeveral Exigences of Nature require for Nouriſhment, and the Uſes of the ſeveral Parts of the Machine; or ſuch as are fitted to go off by paſſages on purpoſe deſigned for thoſe, which are of no farther Uſe; and this is thoroughly confirm'd by the following.

APH.

APH. XXIX.

" If five Hours after Supper a Perſon is ſuddenly " awakened and weighed, he will be found to have " perſpired barely half a Pound; but if eight Hours " after Supper the ſame Experiment be try'd, three " Pounds.

Explanation.] For by this it appears, that from the fifth to the eighth Hour, there goes ſix times as much off by inſenſible Perſpiration, or very near, as from the Time of Supper to the fifth Hour after.

APH. XXX.

" From Sleep ſomething ſhorter than uſual there " will always ſome Part of the perſpirable Matter " be retained, which unleſs it be thrown off by an " increaſed Quantity of Perſpiration the following " Days, will endanger a Fever.

Explanation.] The Matter to be diſcharged by inſenſible Perſpiration going off moſt plentifully in the Time of Sleep, it cannot but happen, that when Sleep is interrupted, or ſhorter than uſual, ſome Part of it muſt thereby be retained in the Body; which if it be not thrown off afterwards by an Increaſe of that Evacuation beyond what is natural, it muſt needs either bring on a Fever, or ſome other Diſtemper, that takes its Riſe from ſuch an Obſtruction.

APH. XXXI.

" By ſome Part of the uſual Perſpiration being " retained, either the next Day after Dinner we " fall aſleep, and perſpire in the Space of an Hour, " about a Pound; or the following Night's Sleep is " ſo much the longer, by which more than uſual is " perſpired: Or elſe we fall into ſome ſenſible Cri- " ſis, or a Diſtemper.

Expla-

Explanation.] This fully confirms the preceding, and is ſo plain as to need no Explanation.

APH. XXXII.

" Yawning and Stretching the Limbs after Sleep, " is a Sign the Body has perſpired very well; as it " is cuſtomary with the Cocks to ſtretch and clap " their Wings before they crow.

APH. XXXIII.

" That Stretching and Yawning after Sleep, is " occaſion'd by a great Plenty of perfectly well di- " geſted perſpirable Matter, which is in Readineſs " to be thrown off.

APH. XXXIV.

" The Body by Yawning and Stretching, in the " Space of half an Hour, perſpires more than in " three Hours at any other Time.

Explanation.] Such Extenſions in general, or of any particular Part, according to the Senſe of the three preceding *Aphoriſms*, are owing to ſome gentle and pleaſing Irritations of the muſcular Fibres; and that ſuch Irritations, or gentle Vellications are occaſioned by a great Quantity of the digeſted perſpirable Matter hanging about the Surface and extream Parts of the Body, and not thoroughly diſcharged, is no difficult Matter to conceive: For, it appearing that in Time of Sleep, there is a continual Courſe and Tendency of a fine thoroughly digeſted Matter towards the Circumference, which is diſcharged through the cutaneous Pores, and that during Sleep likewiſe the Nerves are in a State of Relaxation, it cannot but happen, that when a Perſon awakes, both the Courſe of thoſe Steams will be conſideraby diverted, and the Fibres ſomething more

more contracted; and conſequently the perſpirable Matter juſt paſſing, detained at the Extremities of the excretory Ducts; which, as the Sleep is ſtill ſhaken off, and the Solids are more and more drawn up, will be ſqueezed ſo cloſe, as at laſt give thoſe Vellications to the ſmall Fibres, compoſing thoſe Glandules where they ſtick; and inſomuch, that ſometimes the Muſcles themſelves are drawn into Conſent, and provoked to thoſe Tenſions and Concuſſions, by which they excite the Stretchings and Yawnings, as at that Time we find ourſelves inclined to. And theſe Inclinations continue until all that Matter is thoroughly ſhook off; which by this Means is looſened from its ſmall Entanglement, and diſperſed, as Water is ſhaked off a wet Sheet; and this is the Reaſon why Perſpiration is ſo large at thoſe Times. This alſo makes it appear, of what vaſt Advantage is a little briſk Action juſt upon riſing from Sleep, and I cannot but be perſuaded, that to leap ſuddenly out of Bed in the Morning, and before putting on any Garments, to leap and throw about the Arms with Weights in each Hand, until almoſt out of Breath, would be as likely an Exerciſe to keep the Body in a ſound and perfect Health, and to give a Firmneſs to the Conſtitution, as any one Thing beſides. See *Aph.* lxxiv. *Sect.* 1.

APH. XXXV.

" They who give Syrups and other Medicines to " ſick Perſons, in the chief Hours of Perſpiration, " which are commonly after Sleep, do Harm; but " in the following Hours Good.

Explanation.] Becauſe the Nauſeouſneſs and Uneaſineſs ſuch Things occaſion a Stomach, aſtringes and draws up the Fibres ſo much as to hinder Perſpiration.

APH.

APH. XXXVI.

" Stretching and Yawning in an *Ague* Fit, do not " denote a Concentration of the Vital Heat, but " an Excretion of a retained perſpirable Matter.

Explanation.] This very well agrees with *Bellini*'s Account of thoſe Symptoms in intermitting Fevers: For he then places the immediate Cauſe of an intermitting Fever, or Ague, in an Obſtruction of a viſcid Matter in the capillary Arteries, which by every Paroxyſm is broke away and diſcharged out of the Body, chiefly by Sweat and Perſpiration, upon a plentiful Eruption of which the Fit goes off, and all is well, until the Supply and Removal of the immediate Cauſe brings on another; all which falling in ſo naturally with the Contents of a great many of theſe *Aphoriſms*, I ſhall hereunto ſubjoin an Eſſay on that Subject, to which the Reader may refer.

APH. XXXVII.

" An Hour's Sleep at Noon after Meal, ſometimes " occaſions the Body inſenſibly to perſpire a Pound, " and ſometimes half a Pound; a Pound when any " of the perſpirable Matter of the former Day hath " been retained; when not, but half a Pound.

Explanation.] Dr *Liſter* commends this as a moſt excellent Remedy in weak People for imperfect Digeſtion, and there is a great deal of Reaſon why it ſhould be of Service, becauſe ſuch an additional Help every Day may compenſate for the Deficiences of the laſt Night's Perſpiration; but they muſt not be too free with this practice, who are inclined to grow fat: If likewiſe the Obſtruction of the perſpirable Matter the Night before has been conſiderable, there may be a great deal of Danger; for,

APH.

APH. XXXVIII.

" If any of the former Day's Perſpiration is re-
" tained, and not altogether carried off the next
" Day by Sleep after Dinner, immediately upon
" Waking there is perceived a great Weight of
" the Head, attended with Pain.

Explanation.] Becauſe by ſuch Sleep, if the obſtructed perſpirable Matter does not get clear off, it will hinder likewiſe the Exhalation of that Supply which is made by the laſt Meal, and render the Obſtruction more obſtinate, by admitting ſtill more into the excretory Paſſages before there is Room made for it to get thorough; which cannot but produce all theſe Symptoms which uſually appear upon the firſt Attack of a Fever; as Pain and Heavineſs of the Head, *&c.* whereas was that Sleep omitted until the following Night, by that Time, with a little gentle Exerciſe, might the obſtructed Matter be ſo much farther diſlodged and broke, as to be fitted to get off through its proper Paſſages.

APH. XXXIX.

" If four Hours after falling aſleep the Food cor-
" rupts, immediately afterwards theſe two Inconve-
" niences ariſe, Watchfulneſs and a Hindrance of
" Perſpiration.

Explanation.] Corruption of Food hath been already explained to be ſuch a fermentative Motion of its Parts, as diſpoſes it to Putrefaction; which we find it does frequently fall into, and thereby produce violent *Diarrhœa*'s; and of Courſe alſo other bad Symptoms, but more eſpecially does it diſorder the Buſineſs of Perſpiration, becauſe it cuts off the Supply, during which Time the cutaneous Pores are apt to ſubſide and loſe their proper Capacities,

pacities, whereby that Diſcharge may afterwards be again reſtored to its natural State.

APH. XL.

" Nothing more frequently interrupts Sleep than " a Putrefaction of the Food: Such is the Sympa- " thy between the Stomach and the Brain.

Explanation.] By the Sympathy of any one Part with another, is to be underſtood only that Communication of Nerves, by which when one is affected the other is alſo; thus when any thing affects the Coats of the Stomach with any troubleſome Vellications, the Brain becomes diſturbed thereby, becauſe the nervous Threads are ſo numerouſly diſpenſed from one to another, that when drawn at one End, that Motion will be always communicated to the other; and by this Means the Solids of the whole Body, according to the different Contextures and Communications of their conſtituent Fibres, in the like Manner ſympathize with one another; and all of them ſo much with the Brain, that any conſiderable Uneaſineſs in any other Part, although the moſt remote, cannot but effect it, and hinder Sleep, as much as when the Diſturbance is at the Stomach only.

APH. XLI.

" Sleep in Winter Time is more ſerviceable than " in Summer; not becauſe the Bowels are warmer, " or Sleep longer; but becauſe early in the Morn- " ing the Body is actually warmer, and as ſuch per- " ſpires moſt, but in Summer Time it is really " colder.

Explanation.] See *Explanation* to *Aphoriſm* xxvii. *Sect.* 2.

APH.

APH. XLII.

" Briſkneſs and Activity after Sleep, denote that " the Body hath that Night perſpired near three " Pound, for the moſt Part.

Explanation.] This is the Quantity which *Sanctorius* generally computes to go off by Perſpiration in an healthful Perſon in the Space of one Night; when therefore a Perſon finds himſelf briſk and lightſome, it muſt needs be a good Sign that no part of the perſpirable Matter hath that Night been retained, but that the whole Quantity is exhaled.

APH. XLIII.

" When the Head ſeems light after Sleep at Noon, " it is a Sign that no part of the former Day's Per- " ſpiration hath been obſtructed.

Explanation.] For the ſame Reaſons as in the foregoing.

APH. XLIV.

" Sleep univerſally moiſtens both the inward and " outward parts, becauſe it attenuates the perſpi- " rable Matter, and diſpenſes it when ſo broke tho- " rough all the Members.

Explanation.] What Alterations are effected in the Body by Sleep may be collected from what has gone before in ſeveral places; and it more particularly appearing that thereby all the Solids are in a more relaxed State than when awake, its Effects herein mentioned muſt neceſſarily follow, becauſe ſuch Relaxations admit of an Enlargement of all the ſecretory Paſſages, by which ſuch Juices as are fitted to be ſeparated by them will paſs them at that Time more plentifully, and will thereby be more freely

diſperſed through all the Parts of the Body. The perſpirable Matter alſo then going off from all the Parts internally, makes a kind of Dew, and gives them that ſuitable Moiſture which fits them the next Day the better to perform their reſpective Offices: For as too great a Moiſture injures the Springs of the Fibres, by rendring them too flaccid, ſo too little will keep them dry and criſpy, and therefore a convenient Quantity of Moiſture is not only ſerviceable, but neceſſary.

APH. XLV.

" When a Perſon is awake, a greater Quantity of
" Blood not yet prepared for Perſpiration, is carried
" from the Center to the Circumference, than when
" aſleep.

Explanation.] The Motion of the Blood is certainly greater in the Day-time than when aſleep; becauſe the Heart then, as all the Solids, is more contracted, and conſequently its Syſtole is ſtronger, and propels the Blood through the Arteries with greater Force; all the Parts of the Blood therefore are then more confuſedly carried along, and a groſſer Matter thrown upon the ſmaller Veſſels in the Extremities than in the Night, when by the Remiſſion of its Velocity, the finer Parts only get thorough the ſmalleſt Paſſages.

APH. XLVI.

" By Sleep the Humours are concentrated, and
" the exterior Heat is united with the innate; Thirſt
" is removed, unleſs Choler predominates; the Blood
" is converted into its ſecond Juices, and the Body
" is rendered lighter.

Explanation.] This *Aphoriſm* is expreſſed with a great deal of Obſcurity; by a Concentration of Hu-

mours, and uniting of the exterior with the interior Heat, I cannot find out what is meant, but it may perhaps be my own Fault that I am not yet acquainted with all the Bleſſings that Sleep procures. The Thirſt is abated by that univerſal Moiſture, which has been already proved to ariſe and be univerſally diſtributed in the Time of Sleep; to this purpoſe alſo, may be very conducive that Enlargement of the Secretions, which is made at this time; for by this means likewiſe, thoſe Salts which before hung about the ſecretory Ducts, and by their Irritations excited the Senſe of Thirſt, are waſhed away by the circulating Juices, and more plentifully thrown off at their proper Outles, the Kidneys. Although in bilious Conſtitutions indeed, where the Blood abounds with great Quantities of ſaline ſtimulating Particles, the Moiſture raiſed may not be ſufficient for this purpoſe. By the ſecond Moiſtures (*ſecundas humiditates*) he ſeems to mean the perſpirable Matter, and to think it the moſt conſiderable Secretion that is made from the Blood; but much the greateſt Part of that which perſpires immediately from the Blood paſſes into other Juices, and with them performs a great many Circulations, and undergoes ſeveral Changes before it is fitted to go off that way. How the Body becomes lighter by Sleep, abundantly appears from ſeveral of the foregoing.

APH. XLVII.

" By Sleep, the *Animal*, by Watching, the *Vital*
" and *Natural* Spirits decay.

APH. XLVIII.

" By Watching, the *Animal* Spirits are ſtrengthened, but the *Vital* and *Natural* weakened.

APH. XLIX.

" By Sleep the inward Parts grow warmer and " lighter; by watching the outer Parts.

Explanation.] I muſt confeſs myſelf not Maſter of enough Penetration to enter into the two former of theſe *Aphoriſms*; notwithſtanding, I am ſenſible, that much hath been ſaid, by a great many others as well as *Sanctorius*, concerning this Diſtinction of the Spirits into *animal*, *vital*, and *natural*; yet ſuch is my Unhappineſs, that I never yet could underſtand half the fine Things that have been advanc'd hereupon: Indeed, I find myſelf able to form ſome Idea of a very thin volatile Matter ariſing from a due Motion and Preparation of the Blood, and diſpens'd throughout the Solids of the whole Body, in order for their Invigoration, and the Maintenance of their Springs; and if this be the *natural* or *vital* Spirit here ſpoken of, I think it very reconcileable with the *Aphoriſm*; for it hath already been proved, that this Juice, Fluid, or Spirit, whichſoever it is called, is ſupply'd chiefly in time of Sleep; and that the Actions of the Muſcles, when awake, make a great Waſte of it, and bring on a Neceſſity of frequent Recruits. But what that is which is dignify'd peculiarly with the Name of *Animal Spirits*, in Diſtinction from the other, I cannot gueſs, unleſs by it is meant the Mind or Soul, by which a Perſon is ſaid to think, reaſon, and reflect; but then I can no more conceive, how this is properly ſaid to be weaken'd or ſtrengthen'd by Sleep or Watching, than imagine, how the *Balance* comes to make any Diſcovery about it. It is indeed within every one's Experience, that this Power, or Faculty, is not always alike vivid and clear, and that it is much influenc'd by what paſſes in the Body; but then, contrary to the

the *Aphoriſm*, 'tis moſt commonly able to exert itſelf with moſt Strength after a ſound Sleep; and upon long Watching, again grows dull and confuſed. Later Writers have however reſcued theſe Terms from Confuſion, and taught us to underſtand by the *Animal Spirits*, or Faculty, that which conducts the Operations of the Mind, as Imagination, Memory, *&c.* by *Vital*, that which is leſſer is preſerv'd, and the ordinary Functions of the Body perform'd; and by *Natural*, that by which the Body is nouriſhed and augmented.

The Contents of the XLIXth are true, with this Reſtriction, that the inward Parts are warmer, and lighter by Sleep, comparatively more than the outer, and the outer more by watching than the inward: For in Sleep the Muſcles of the Limbs lie inactive, and the Pulſation of the Heart, and the Motions of all the Parts ſerving to carry on the Circulation, and the Performance of all the vital Functions, then continuing, as well as when awake; the inner parts during Sleep, which are concerned in theſe Motions, cannot but be comparatively warmer, and lighter too by their continual Diſcharge of the perſpirable Matter, than the outer parts which are at reſt. But for the ſame Reaſon when awake, the extream parts will have this Advantage from their greater Exerciſe.

APH. L.

"By too much Sleep, both the inward and "outer Parts grow cold, the Humours are ob- "ſtructed, and render'd imperſpirable, and the "whole Body heavier.

Explanation.] By the very ſame Means by which moderate Sleep does ſervice, too much of it proves injurious; becauſe too much Relaxation overcharges

the Nerves with too thick and too large a Quantity of Juices, which inſtead of making them fitter for Motion, clogs them, and renders them leſs capable of recovering their Springs afterwards; and when once the Solids fail, the Fluids of Courſe ſlacken in their Motions, by which the natural Warmth decays, and the Fleſh grows cooler, and themſelves alſo becoming more ſizy, they ſuffer the leſs to paſs off by inſenſible Tranſpiration, and conſequently make Bodies heavier.

APH. LI.

" Bilious Conſtitutions are very much hurt by " too much Sleep, not becauſe the Recrements of " the third Concoction do not go off by Perſpira- " tion; but becauſe they are very acrimonious, and " thereby affect the Head and Bowels.

Explanation.] Every thing, which by its Acrimony ſtimulates the Nerves, muſt be attended with a great many Conſequences prejudicial to the Conſtitution: and the Choler is known to be a hot ſtimulating Fluid, wherefore they who are overcharged with it, ſuffer moſt by much Sleep; becauſe at that Time it is driven with the other Juices to the Nerves, and in ſuch Quantities as to produce the Effects herein mentioned: and undoubtedly it is ſomething like this, which pricks and irritates the Nerves, and occaſions thoſe Starts ſome people are ſubject to when aſleep.

APH. LII.

" In thoſe who ſleep uncovered, Perſpiration is " more obſtructed, than in ſuch who go naked " when awake; both becauſe in Sleep the Body is " without Motion, and becauſe the Heat of the " external Parts retire inward.

Expla-

Explanation.] The former Reaſon, that the want of Motion occaſions the greateſt Injuries from obſtructed Perſpiration in a ſleeping Perſon, is very manifeſt, for the Actions and Attritions of the Muſcles in the Perſon awake being greater, may in time digeſt and break the obſtructed Matter ſmall enough to paſs it off; whereas, a ſmall Matter retained in Sleep for want of ſuch Action, will be continually increaſing, until it occaſions very great Diſorders. But for the Heat's retiring inwards, I am obliged ſtill to own my Ignorance.

APH. LIII.

" Unuſual Watchings render the Body the firſt " Day heavier and weaker; heavier, becauſe after " the Evacuation of the perſpirable Matter, there " will be left a crude Juice, heavy both in itſelf " and by accident; weaker, becauſe where there " are Crudities, there will be no Aſſimulation, and " conſequently a Decay of Spirits.

Explanation.] Whoever conſiders the Neceſſities and Advantages of Sleep above recited, will ſoon perceive how too much Watching will defraud the Solids of that due Supply of Juices or Spirits, as is abſolutely neceſſary to enable them rightly to perform their ſeveral Offices, and therefore of Conſequence muſt the Body grow heavier, by want of a due Digeſtion, and an obſtructed Perſpiration; and the Limbs alſo weaker for want of Strength and Spirits: (which he means by the Juices being accidentally heavier, that is, beſides their own abſolute Weight, they will alſo be heavy with Relation to the Perception, or Senſe, a Perſon has of them, which always is in Proportion to his Strength) for the ſame Reaſons alſo, a due Aſſimulation of nutritious

Matter with the Subſtance of the Body will be defective.

APH. LIV.

" In ſeven Hours Sleep, after long Watching, " the Quantity that perſpires, will be increaſed " about a Pound.

Explanation.] Perſpiration is then increaſed, becauſe by the long State of Contraction of the Solids, and the continual Attritions whilſt awake; there will be a greater Quantity of the perſpirable Matter ready to paſs off than uſual, and therefore, as ſoon as the Body is relaxed by Sleep, and the Diameters of the excretory Paſſages are lengthen'd, it exhales much more plentifully than at other times, inſomuch, as, according to *Sanctorius's* Balance, to exceed by about one Pound in ſeven Hours.

APH. LV.

" Continued Watchings render a Body lighter, " not by a greater Perſpiration, or any Increaſe of " the ſenſible Evacuations; but becauſe the Recruit " is not porportionable to the Waſte that is made " at ſuch time, of the Subſtance of the Body.

Explanation.] The continued Attritions of the Parts which are much greater, as was ſaid before, when awake than in Sleep, will wear off more of the Subſtance of the Solids, and leſſen their Bulk, than can be recruited without the Help of frequent Relaxations by Sleep.

APH. LVI.

" The Body in a Morning is lighteſt, and per- " ceives itſelf ſo: It is lighter than at any other " Time, becauſe about three Pound of perſpirable " Matter is gone off the preceding Night; and it

" per-

" perceives itſelf ſo, both becauſe it is really lighter,
" and becauſe by a good Digeſtion of eaſily per-
" ſpirable Meats, the Strength is renewed.

Explanation.] The Diſtinction before taken Notice of between *abſolute* and *relative* Weight, is here to be regarded, and then it will need but little Explanation; for we know already, both how the Body becomes to be abſolutely lighteſt in a Morning, by the waſte of ſome Pounds in Perſpiration, and how it perceives itſelf ſo by an increaſe of Strength from a freſh Recruit of Spirits, diſpenſed to the Solids in the preceding Night's Sleep.

APH. LVII.

" The Body, by unuſual Watching, may be
" render'd heavier, if the Food with which it is
" nouriſhed be difficult to perſpire.

APH. LVIII.

" So very large are the Steams which ariſe from
" Perſons in Sleep, that not only the diſtempered
" communicate bad Qualities to thoſe who are well,
" but even the healthful in lying together affect one
" another.

Explanation.] How far, and what, Diſtempers are to be propagated by thoſe Steams, would not only be a Buſineſs of Length, but Difficulty to enter into here; altho' I believe very few are communicated this way, but ſuch as are only cutaneous.

APH. LIX.

" From Eating comes Sleep, from Sleep Dige-
" ſtion, and from Digeſtion a good Perſpiration.

Explanation.] All theſe have frequently been explained above.

APH. LX.

" Marmalade, not immediately after Supper, but " after the firſt Sleep, provokes Sleep, ſo that it be " not drank after.

Explanation.] I cannot conceive how drinking after it ſhould hinder its procuring Sleep, unleſs by diluting the Flavour, and rendering it leſs grateful to the Stomach. But how it provokes Sleep at all, I cannot eaſily imagine, any more, at leaſt than any other thing does, which proves ſerviceable to the Conſtitution, and preſerves a good State of Health, which muſt neceſſarily be ſupported by convenient Returns of Sleep, which is confirmed by the following.

APH. LXI.

" Marmalade with Cinnamon ſtrengthens the " Stomach, by which Sleep is promoted.

APH. LXII.

" A moderate Quantity of Wine and Garlick ex- " cite Sleep and Perſpiration; but if they are uſed " too plentifully, they hinder both: For they turn " Perſpiration into Sweat.

Explanation.] The Difference between Perſpiration and Sweat, has been before taken Notice of in the firſt *Section*, under *Aphoriſm* XXI; and how a moderate Meal excites the former, and an Overcharge hinders it, need not again be repeated. Spirituous Liquors taken in too large Quantities, and any ſuch things as plentifully raiſe themſelves upon Digeſtion into Vapour, may frequently go off in ſuch large Quantities by the cuticular Diſcharges, as to force along with them a great deal that cannot well be ſpared, by which means the Fibres are after-

afterwards left weaker, and not ſo able as before, to carry on the Buſineſs of Digeſtion and Perſpiration.

APH. LXIII.

" He who concocts and digeſts well, will be long " liv'd: Concoction is perform'd during Reſt and " Sleep, and Digeſtion; by Watching, and Exerciſe.

Explanation.] In this, *Sanctorius* diſtinguiſhes between Concoction and Digeſtion; by the former, he ſeems to underſtand only that Alteration which is made in the Fluids, by the mutual Actions and Impulſes of their conſtituent Parts upon one another; but by the latter, that which is made upon them, by the Actions and Attritions of the Parts which contain them; and with this Diſtinction the *Aphoriſm* holds good: For it is certain, that during Sleep, the Fluids are not ſo ſwiftly agitated by the circulating Veſſels, and therefore have more Liberty to obey the Diſpoſitions of their conſtituent Parts, and fall into an inteſtine or fermentative Motion, ſo far as thereby to become altered in their Coheſions and Degrees of Fluidity, and put on ſuch new Forms and Diſpoſitions, as are more ſuitable for thoſe Purpoſes they are further deſign'd for; but while waking, their circulatory Motions are too rapid to allow of their obeying ſuch Diſpoſitions, and their Generation of new Coheſions; yet, notwithſtanding this, they are at ſuch Times broke the finer, by the continual Contractions and Attritions of the Veſſels; and thereby rendered more fit when Sleep comes, to fall into them, and from Fluids of different kinds of Uſes, according as the ſeveral Exigencies of the Œconomy require. A further Account may be had of this Matter, from *Guillelmini's Prælectio, de Circulatione & Natura Sanguinis.* In this Senſe is to be underſtood the following

APH.

APH. LXIV.

" If a Wearineſs remaining after Sleep is remo-
" ved by Exerciſe, the Fault is owing to Digeſtion,
" and not to Concoction.

Explanation.] Becauſe the Wearineſs muſt have been occaſioned by an Obſtruction of ſome indigeſted perſpirable Matter; which Exerciſe the next Day may break ſmall enough to paſs off. This View of the Matter likewiſe furniſhes us with ſome good Rules how to manage ourſelves after Eating, eſpecially in weak Conſtitutions; for ſuch ought not to ſleep after Meals but a very ſhort time, becauſe otherwiſe the Food would paſs the *Lacteals*, and get into the Blood without being broke enough firſt in the Stomach, to be afterwards managed by the much weaker Attritions of the Veſſels which circulate it; whereas a little moderate Action after eating, might perform a thorough Digeſtion of it, before it gets ſo far.

APH. LXV.

" When we riſe with our wonted Weight, but
" with greater Wearineſs, unleſs that Wearineſs
" be removed with uſual Exerciſe, it denotes a Col-
" lection of Crudities, a Corruption of the Food,
" or too great a uſe of Venery.

Explanation.] The two former, *viz.* Crudities, and a corrupted Food, do the ſame by an Additional Weight, both of them hindering Perſpiration, in the manner already explained, as the latter does, by weakening the Strength and Vigour of the Solids; for it hath before been made to appear, that a Diminution of Strength is the ſame as to the Senſe of Perception that ariſes hereupon, as a real increaſe of the *abſolute Weight* of the Body.

APH.

APH. LXVI.

" Immoderate Sleep after Dinner injures all the " Bowels, and obſtructs Perſpiration.

Explanation.] Although a little Sleep at ſuch times, upon a full Stomach may be of Service, by letting out what did not ſufficiently paſs off the Night before; yet if it be continued too long, there will ſuch a Quantity of indigeſted Matter follow, as will be too groſs to paſs; and conſequently plug upon the excretory Ducts, and thereby occaſion very conſiderable Diſorders.

APH. LXVII.

" Wearineſs after Sleep is removed by ſuch " means as promote Perſpiration; of which ſort, " are Abſtinence, Exerciſe, Watching, and Anger.

Explanation.] Becauſe ſuch Wearineſs always proceed from an obſtructed Perſpiration; the firſt of theſe removes the Load, by cutting off its Supply, while the other by the Attritions of the Muſcles, in time break it ſmall enough to go off by the Skin.

APH. LXVIII.

" To Sleep with the Body ſtretch'd, is hurtful; " but with the Limbs drawn up; beneficial: For " the cloſer Poſition of the Bowels aſſiſts Con- " coction, whereas, to be more diſtant, hinders it.

Explanation.] An extended Poſture cannot ſo much favour the Relaxations which is neceſſary in Sleep, as when the limbs are drawn up; and beſides, in the latter Poſition of the Parts of the Body there is not ſo much of the Surface expoſed to the Air, and thereby is the Skin kept warmer, the Pores opener,

and

and consequently the more will by such Means go off by Perspiration.

APH. LXIX.

" Cool Sweat happens to healthful People after " Sleep, it is a Sign that they have perspired too " little; and that if it continues, in Time they will " have the Gout.

Explanation.] By this also, it seems the Gout may in some Part owe its Rise to a Perspiration, not well proportioned to its other Evacuations, and the Quantities taken in: And that this Defect of Perspiration which makes way for this Distemper, is owing to a weak Texture of the Skin, whereby although a sufficient Quantity is prepared for Exhalation, yet in its Passage it is apt to lodge, and occasion a Moisture or Clamminess upon it. See *Dissertation of the Gout.*

APH. LXX.

" By too much Sleep and hard Drinking, the " Strength is suffocated; and by too much Watch- " ing and Exercise it is dissolved; for all these les- " sen Concoction, and a Diminution of that will " also lessen a due Perspiration.

Explanation.] This is but just the same, but only expressed in more obscure Terms, as has often been said before; and that whatsoever hinders Digestion, does also hinder Perspiration, by this Time needs neither Proof nor Explanation.

THE

THE APHORISMS OF *SANCTORIUS.*

SECT. V.

Of EXERCISE *and* REST.

APHORISM I.

" THE Body inſenſibly perſpires leſs in vio-
" lent Exerciſe, than in a Morning nine
" or ten Hours after the Time he ſupped.

Explanation.] VIolent Exerciſe ſo much increaſes that agitative or confuſed Motion of the Blood, taken Notice of under *Aph.* XXII. *Sect.* 3. that none of the Secretions are then ſo regularly made as at other Times, and

conſequently the Evacuations muſt be diſturbed, but more eſpecially that of inſenſible Perſpiration, becauſe the increaſed Velocities of the Fluids, occaſioned by greater and ſtronger Contractions of their Veſſels, will ſo blend the Matter which otherwiſe would inſenſibly go off, with what is not fit for thoſe paſſages, as to retain a great deal of it in the Body; inſomuch, that although by the ſame Cauſe, a great deal which is too groſs for Perſpiration is expelled, yet it is not in Proportion to that Quantity retained as would have paſſed without ſuch Exerciſe, and therefore the Body muſt be injured by it.

APH. II.

" That which paſſes the Skin by violent Exerciſe,
" is the Perſpirable Matter and Sweat together; but
" as it is violent, it raiſes a great deal of undigeſted
" Juices; for it ſeldom happens, that ſo much well
" digeſted perſpirable Matter is at once collected in
" the Body, as is the Quantity by Violence expelled.

Explanation.] This ſeems to carry ſome Contradiction to the former, unleſs it be conſidered that the time there fixed, for the Exceſs of the Quantity perſpired, above what is expelled by Exerciſe is in a Morning after a perfect Digeſtion, at which Time it already abundantly appears, a vaſt deal more goes off that way than any other; that Digeſtion, moſt conducive in the Perparation of it, going on much more regularly in Time of Sleep. See *Aph.* I. II. VI. of the foregoing *Section.*

APH. III.

" Sweat is always from ſome violent Cauſe, and
" as ſuch, (as *Static* Experiments demonſtrate) it
" hinders

" hinders the insensible Exhalation of the digested " Perspirable Matter.

Explanation.] For the Difference between the Matter of Sweat and that of insensible Perspiration. See *Aph.* XX. XXI. *Sect.* 1. And how violent Motion hinders Perspiration already abundantly appears.

APH. IV.

" A Body perspires much more plentifully du- " ring a quiet Rest in Bed, than by frequent tos- " sing about.

Explanation.] See *Aph.* XC. *Sect.* 1.

APH. V.

" Chearful and passionate Persons, are less fati- " gued with long Travelling, than those who are " fearful and melancholy; because the former " perspire much better than the latter.

Explanation.] The Affections and Passions of the Mind, have a very great Power over the Animal Functions, as likewise are they themselves very much to be altered by what passes in the Body: Concerning which we shall see further in the 7th *Section.*

APH. VI.

" They who feed quickly after hard Exercise, " injure themselves thereby; because to be weary, " and filled with Meat at the same Time, will " much hinder Perspiration.

Explanation.] It has been proved, *Aph.* XLIV, XLV. *Sect.* 1. that when a great Waste is made by any violent Cause, the succeeding Meals will be very apt to pass into the Vessels not sufficiently digested, and thereby obstructing their capillary

Branches, hinder Perſpiration, and alſo in *Aph.* XI. *Sect.* 3. that a full Stomach has the ſame Effect; Where therefore all theſe Cauſes concur, *viz.* a Laſſitude, Emptineſs, and a full Stomach, it is no Wonder that the above-mentioned Inconveniency enſues.

APH. VII.

" Exerciſe from the Seventh to the Twelfth Hour " after Eating, waſtes more inſenſibly in the Space " of one Hour, than in three Hours at another Time.

Explanation.] In ſo long a time after Eating, the Food will have got into the Arteries, upon whoſe due Contractions, its further Digeſtion (in order to Perſpiration) altogether depends; whatſoever therefore aſſiſts thoſe Contractions muſt likewiſe promote that Digeſtion and increaſe Perſpiration, and this, due Exerciſe does with the greateſt Advantage; as will further appear by ſeveral of the following. Here therefore the Caſe is vaſtly different from the foregoing, where the Food is taken into the Stomach, at a Time when the Body has been exhauſted of its Spirits, and wearied by a preceding Exerciſe.

APH. VIII.

" That inſenſible Evacuation which is made by " violent Exerciſe, hinders the future Supplies from " amounting to the Quantity waſted; and ſo much, " that if it be long continued, the Body will be " waſted ſo far, as to endanger a Conſumption.

Explanation.] A Continuance of Exerciſe beyond the Strength of the Conſtitution, will not only waſte as much as is daily ſupplied, but alſo wear away a great deal of the Subſtance of the Body, and thereby ſink both its Strength and Bulk. We ſee therefore

therefore Exercise itself, which under the two following *Aphorisms*, will be found of vast Service, both for the procuring and perserving a good Constitution, must be brought under proper Restrictions, and ought not any more than an efficacious Medicine to be used, but with the utmost Prudence and Caution; especially until a Person has acquired such a strength and firmness by it, (which a great many do,) as to bear without Injury almost all the Changes of Life.

APH. IX.

" By Exercise Bodies are rendered lighter; for all " the parts, especially the Ligaments and Muscles, " are cleared of their Excrements by Motion: the " perspirable Matter is fitted for Exhalation, and " the Spirits are rendered finer.

Explanation.] There has been so much said by a great many late Authors, of the Consequences and Advantages of Exercise, and so far may be collected from what has herein been already said, that it is almost needless to enter here into a very particular Account of the Effects of it; but as it is of such mighty Importance and Efficacy, in changing a Constitution either for the better or worse, I cannot easily deny giving a short Essay about the *mechanical Constructure of a distractile Fibre*, without some Knowledge of which, it is impossible to have any clear Notion of it. Which see at the latter End.

APH. X.

" Exercise promotes both the sensible and insen- " sible Evacuations: but Rest only the insensible.

Explanation.] It is here also needful to take Notice, as before *Aphor.* xx, xxi. *Sect.* 1. of the difference

between the Matter of inſenſible Perſpiration, and that of the other Evacuations, as alſo the manner they are both diſcharged by. That of inſenſible Perſpiration is almoſt altogether prepared and made ſo, by the Actions of the conſtituent *Machinulæ* of the Fibres; which continuing always in their Motions, in Sleep and at Reſt, in the Diſcharge of the neceſſary vital Functions, that Matter is prepared and diſcharged more regularly at ſuch Times, than when the Body is in Motion, becauſe then the additional Force of the circulating Fluid, will be ſo great againſt the excretory Organs, as to carry away and diſcharge more than ſometimes can be ſpared without Prejudice; and therefore the ſenſible Evacuations muſt needs be increaſed by Exerciſe; but this alſo frequently makes it of great Service when there is an over Weight, and need of Diſcharges.

APH. XI.

" If a Perſon lies in Bed ten Hours after Supper,
" he will perſpire well; but if he lies longer, there
" will begin to be a Decreaſe both of the ſenſible
" and inſenſible Diſcharges.

Explanation.] Continuing longer in Bed than is requiſite for due Reſt and Perſpiration, cauſes too great a Waſte of the nervous Juice, and ſpoils the Contextures of the Fibres, by keeping them too long in a State of Relaxation; and therefore afterwards they are leſs able to perform their reſpective Offices, and make their proper Diſcharges.

APH. XII.

" Long Reſt renders diſtempered Bodies more
" heavy, both becauſe by Motion, the perſpirable
" Matter is prepared for Expulſion; and becauſe
" during ſuch Reſt, the Meat and Drink, (if they
" are not what the Perſon has been accuſtomed to,

" but

" but ſuch as ſick People are uſually treated with)
" are not digeſted, from which ariſe a great many
" Inconveniencies, and frequently Death.

Explanation.] By means of long Reſt and Inactivity, the nervous Fluids grow ſizy, that inſtead of aſſiſting, it rather obſtructs the Motions of the Fibres; alſo by a long State of Relaxation, it cannot but inſinuate itſelf ſo much between the tranſverſe Surfaces of their component parts, as to deſtroy very much their Powers of Reſtitution; which Inconveniency is remedied or prevented by that Agitation and Comminution, this Fluid acquires by Exerciſe. (See Eſſay of an Animal Fibre.) That unaccuſtomed Meats and variety of them, with which ſome People are alſo uſually treated, are prejudicial to Digeſtion, and conſequently to Perſpiration, has been already proved, *Aph.* vii. and lii. of the *third Section.*

APH. XIII.

" Whoever have a Pain in their Feet after lying
" long in Bed, walking will cure them: but if the
" ſame happens upon travelling, the Remedy is
" Reſt.

Explanation.] The Feet by long Diſuſe of accuſtomed Actions, ſuffer in the ſame Manner as the whole Body by too much Reſt, (ſee *Aph.* preceding) and for the ſame Reaſon. If therefore the obſtructed perſpirable Matter, or the Viſcidity of the nervous Fluid, or any other ill Quality it contracts for want of proper Agitation, occaſions Pain, the beſt Remedy muſt needs be walking, which gives the greateſt Exerciſe to thoſe parts: And I cannot but think their Way of living, who feed high, and over-ſtock their Nerves with vinous Spirits, and uſe very little Exerciſe but riding in a Coach, enters a

great way into the Cauſes of the Gout, and eſpecially of the Feet being moſt commonly the Seat of it; for to this Purpoſe it is very obſervable, that ſuch Perſons that live mean and labour hard, if they ever happen to be honoured with this Diſtemper, it more generally fixes about the Head and Arms. *See Eſſay on the Gout.*

APH. XIV.

" There are two kinds of Exerciſes, one is of the " Mind, and the other of the Body; that of the " Body diſcharges the ſenſible Excrements; but that " of the Mind, rather the inſenſible, and more eſpe- " cially, thoſe of the Heart and Brain where its " Seat is.

Explanation.] To clear this *Aphoriſm*, as alſo the three following, of all its Obſcurity, and fully to explain the whole Contents of it, would take up a great deal of Room. By Exerciſe of the Mind, in this, I cannot gueſs what is meant, unleſs that Power by which vital Functions, eſpecially thoſe of the Heart and Brain, are carried on, which is meerly mechanical, and depends upon the particular Make and Conſtructure of thoſe Parts. But in the following *Aphoriſms*, it is plain he intends thoſe Faculties and Powers which the Soul hath, and can make uſe of in changing the uſual Procedure of the vital Offices. By the Exerciſe of the Mind, therefore here is to be underſtood nothing elſe than that State of Inactivity, wherein no Change is brought about in the Body, but ſuch as is the neceſſary Reſult of the vital Functions; which has before been proved the principle Cauſe of the Digeſtion of the perſpirable Matter, and its moſt regular Diſcharge by inſenſible Evacuation: and as the Heart and Brain are chiefly concerned herein, ſo upon that Account, they

may be ſaid more than any other parts to be cleared of their Excrements, that is, of their ſuperfluous Juices, and not at all becauſe they are any more the Seat of the Mind than other parts of the Body. So that in this Senſe indeed the inſenſible Diſcharges are more promoted than by Exerciſe; for the Reaſon given above under *Aph.* x. of this *Section.*

APH. XV.

" Too much Inactivity of the Mind, checks Per-
" ſpiration, more than that of the Body.

Explanation.] The manner how the Mind or Thought works upon the Body, is a Myſtery, and no Way at leaſt to be brought under a mechanical Way of Reaſoning; becauſe it is not poſſible to repreſent and delineate, as we do corporeal Subſtances, that which never comes under the Notice of our Senſes, but in its Effects; and therefore we cannot have any Notion of the Procedure by which they are brought about, as we can have of all thoſe effected by phyſical Agents. But as it is certain that the Actions of the Mind, that is, the Thoughts that paſs through it, eſpecially when ſudden and intenſe, do influence very much and alter the Conſtitution, ſo far as neceſſarily to bring it under the Phyſician's Care; the wiſeſt muſt herein be contented, to eſtabliſh his Rules upon Obſervation only, and therefore it is no great Wonder to find even *Sanctorius* hereupon very obſcure, and often contradictory to himſelf as in this *Aphoriſm*; what is intended by Reſt or Inactivity of the Mind, is very hard to conceive, unleſs it be ſuch a compoſed indolent State of it, as is not diſturbed and ruffled by any violent Paſſions; for waking it is impoſſible it ſhould be free from Action, that is, from having ſome Thoughts or other paſs through it. So that if its being raiſed

up into Paſſion ſometimes, is meant that Exerciſe which is ſo beneficial and conducive to a good Perſpiration, it much more becomes a rational Creature to forego the Benefit, than enjoy the Advantages of it, as the Pleaſures of a rational Mind, are preferable to ſenſual Enjoyments. That ſuch Engagements of the Mind indeed as fills it with Pleaſure and Gaity, may, with reſpect to the State of Indifference, be called an Exerciſe of it, is not to be objected, and that ſuch a Diſpoſition may ſo far aſſiſt the natural Vibrations of the Nerves, as to render their Juices fitter for their proper Offices, is not to be queſtioned; but then this does not well fall in with the Contents of the following. Both theſe *Aphoriſms* properly belong to the 7th *Section*, as doth alſo the following.

APH. XVI.

" Thoſe Exerciſes of the Mind, which are moſt " conducive to exhale the Spirits, are Anger, ſud- " den Joy, Fear, and Sorrow.

Explanation.] Nor does this agree with a great many *Aphoriſms* of the *Seventh Section*, and the *firſt Aphoriſm* more particularly ſeems to contradict it.

APH. XVII.

" Even thoſe Perſons that are ſubject to vehe- " ment Paſſions, ſhall waſte more by Perſpiration " lying in Bed, than ſuch, who enjoy a ſerene " Mind, by the moſt violent Exerciſes of the Body; " as it appears by thoſe who play at *Tennis*.

Explanation.] Nothing is more obſervable than that violent Motions of the Mind, waſte the Spirits, and bring great Diſorders upon the Conſtitution; and this they ſeem to do, as *Stimuli* univerſally irritating and twitching the Nerves, in ſuch a Manner

ner as disturbs their regular Contractions; but how they should occasion such large Discharges of the perspirable Matter, as violent Exercise, I cannot conceive.

APH. XVIII.

" By too much Exercise, the Excrements of the " first and second Concoctions are for the greatest " part distributed through the whole Habit of the " Body; by which the Belly becomes costive; but " the Body is rendered lighter, because the insensi- " ble Evacuation is much greater than the Quantity " of Excrements expelled by Stool.

Explanation.] As it already abundantly appears that Exercise very much assists Digestion; so if it be too great, but especially if it be too long continued, it will so much enlarge the cuticular Passages, by carrying off a greater Quantity than usual those Ways, that all the other Evacuations, will in proportion to such Increase be lessened, and amongst the rest that by Stool. And therefore notwithstanding the Body by this means grows costive, yet as the cuticular Discharge is much the largest, the Increase of that will so far exceed the Diminution of the other, as to render the Body lighter thereby.

APH. XIX.

" Violent Exercise, both of the Mind and Body, " renders Persons lighter, but it hastens old Age, " and threatens untimely Death; for, according to " the Philosopher, those who are exercised die " sooner than those who are not.

Explanation.] Exercise beyond the natural strength of the Constitution, cannot but by Degrees wear away the Solids, and destroy that peculiar Contexture of the Animal Threads, by which they are main-

tained in their Motions, and the due Diſcharge of their ſeveral Functions; and conſequently it muſt needs bring on old Age or immediate Death.

APH. XX.

" Violent Exerciſe, diſcharges from the Body " overloaded with Meat, or crude Juices, leſs than " uſual of the ſenſible Excrements; and hardly any " thing at all inſenſibly.

Explanation.] In ſuch Caſes therefore, Abſtinence, diluting with very ſmall Liquors, and gentle Motion, are beſt; becauſe Exerciſe that is violent, will then ſo much overſtrain the Fibres, as to deſtroy very much their Powers of Contraction, and thereby ſo much hinder Digeſtion, as to leſſen both the ſenſible and inſenſible Diſcharges.

APH. XXI.

" By Exerciſe the Body perſpires the leſs, but the " more by Sleep, and the Belly is rendered thereby " more looſe.

Explanation.] This is truly only of immoderate Exerciſe, for gentle Motion much aſſiſts Digeſtion and Perſpiration, as fully appears by *Aph.* ix. of this *Section*, and that the Belly is looſened by the Perſpiration which is performed during Sleep, is no otherwiſe, than as all the Solids are thereby ſupplied with a convenient ſhare of Moiſture, and are thereby fitted the better for their ſeveral Offices.

APH. XXII.

" Frictions and Cupping, in Bodies full of Cru- " dities, hinder Perſpiration.

Explanation.] It may be laid down for a certain Rule, that any ſort of Exerciſe, and every Attempt which

which is made by moving the Solids, to break the Viscidity of the Fluids, and thereby make any Discharges, if it does not effectually succeed, the Obstruction will be made much the greater, and the Body brought into a worse Condition than before; because where such means do not answer, the Fibres will by them be strained, and less able afterwards to make the like Attempt, such means ought therefore to be entered upon with the utmost Caution and Prudence. And whereas Frictions and Cupping, are frequently of wonderful Service, yet their answering their Intentions by giving a Spur to the Solids, and promoting the Contractions of the Fibres, if the Over-charge designed to be moved by them, does not give Way, the Fibres will be hurt in their Springs, and thereby afterwards not so able to contract as before; and consequently there will be less digested and perspired, and the Obstructions rendered more obstinate.

APH. XXIII.

" Exercise is then most wholesome, when the " Body after the first and second Concoction, is " reduced twice a Day before eating to its wonted " Standard.

Explanation.] This is without Doubt a very good Rule, but without the Balance cannot exactly be known, and therefore must be judged of by the *Relative Weight*, that is, the Perception a Person has at such times of his own Weight, which if attended to with Care, is sufficient to prevent any one falling into Extreams on either Hand.

APH. XXIV.

" Swimming soon after violent Exercise is bad: " because it very much obstructs Perspiration.

Explanation.]

Explanation.] This is exactly the same as *Aph.* xiv. *Sect.* 2.

APH. XXV.

" Violent Exercise where the Wind blows, is bad.

APH. XXVI.

" From the Wind comes an Obstruction of the " perspirable Matter; and from Motion its Acri- " mony.

Explanation.] See *Aph.* xvi. xxi. *Sect.* 2.

APH. XXVII.

" Riding seems rather to promote the Perspiration " of the parts above the Lions, than below them; " but amongst the riding Paces, the Amble is the " most wholesome, as the Trot is the least so.

Explanation.] The Advantages arising from riding, has been of late so much talk'd of, as to bring this Exercise into good Esteem, and undoubtedly with a great deal of Reason: But its most fond Admirer seems to be *Baglivi*, to whose *Specimen de Fibra Motrice*, the Reader may turn for further Satisfaction. Mr *Fuller* also has said much hereupon in his *Medicina Gymnastica*, and has carried his Reasonings so far, that were his Hints attended to and practised, it would be no uncommon Thing to meet a Man upon the Road, riding full Speed from the Gout or a Rheumatism: For he must certainly be in the right, that during such violent Motion, the Pain of those Distempers will not be perceivable; but the Reason I fear is not from any Removal of the Cause, but a Suspension of the Means by which it is communicated from its Seat to the Brain, or common *Sensorium*; for that Reflux of the nervous Fluid towards the Brain, from the part effected, is

during the Violence of another Motion prevented, and therefore nothing is felt of that part; but as the Cauſe itſelf is not removed, when that Motion ceaſes, the *Succus Nervoſus*, from the wonted Irritation of the Fibres, will be modified, as before; ſo that as ſoon as ſuch a Perſon ſlacks his Pace, the Diſtemper will overtake him. But this Reflection would be inexcuſable, did not that Gentleman ſo far over-do in Fondneſs for Exerciſe, as to uſe for an Argument in its favour, that Pain is not ſo perceptable in Motion, as when at Reſt. That there is a great Difference as to the Paces is very certain, one being more agreeable and advantageous to ſome Caſes and Conſtitutions than the other, which a judicious Perſon will ſeldom fail to foreſee; but that Ambling is moſt wholeſome, and Trotting the worſt, I cannot conceive. Indeed the former does not give ſuch ſtrong Concuſſions to the Fibres as the latter, and therefore may be more proper for weak People, and where the Motion is not required to be great; but the latter for the ſame Reaſon, is by all Means to be preferred, where the Body wants to be ſhook more forceably, and is able to bear it. And in Obſtructions of the *Viſcera* eſpecially, this Exerciſe cannot but be of great Advantage; becauſe, as *Sanctorius* rightly obſerves, it more particularly affects and ſhakes the Head and Trunk of the Body.

APH. XXVIII.

" Carriage in a Litter or a Boat, does not ſo " well promote Perſpiration as walking.

APH. XXIX.

" The Motion of a Litter or a Boat, if it conti- " nues long, it is moſt healthful; and then only, be- " cauſe it wonderfully promotes due Perſpiration.

Explanation.]

Explanation.] That Carriage in this Manner is not ſo ſerviceable as Walking is no Wonder; becauſe Walking gives a conſiderable Exerciſe to moſt of the Muſcles of the Body, and therefore it helps Digeſtion, and prepares the perſpirable Matter for Expulſion; but this is not any further to be looked upon as an Exerciſe, than as by it there is a Change of Place, for even all that Time the Body is as much at Reſt as in Bed, and it gives no manner of Exerciſe to the Muſcles; how therefore it ſhould be ſo advantageous by its long Continuance, I cannot imagine.

APH. XXX.

" To be carried in a Chariot is of all the moſt " violent; for it not only forces out the indigeſt- " ed perſpirable Matter, but it is alſo very inju- " rious to the Solids of the whole Body, more " eſpecially the Kidneys.

Explanation.] The Motion which riding in a Chariot gives a Body, in rough Ways and upon Stones, as it is very conſiderable, and chiefly in ſhort ſtrong Shocks, ſo the *Viſcera* by their continued Repetitions, are frequently overſtrained, and have ſome of their principal Fibres ſo damaged in their natural Contextures, as not afterwards to be able to diſcharge their reſpective Functions; and the Reins more eſpecially by ſuch Shocks, as their Office is to ſecern the moſt heavy ſaline Parts from the Blood, and gradually let it down by the *Ureters* into the Bladder, cannot but be frequently in a great deal of Danger of having their Contents thrown down faſter than they ought to be, and the Capacities of the Paſſages deſigned for that Purpoſe will admit of; whereupon thoſe Paſſages become obſtructed, and that too with ſuch a Matter, as by its

its Weight and multiplicity of Angles, cannot but very much preſs upon, and wound the Membranes, and thereby occaſion very ſharp Pains.

APH. XXXI.

" *Leaping* at firſt contracts the Strength inwards, " then ſtrongly forces it outwards, inſomuch that " it expels with Violence, the indigeſted Matter, " with that which is digeſted.

Explanation.] That *Leaping* is an Exerciſe which puts the Body upon ſo much Violence, as to be attended with the Conſequences herein mentioned, will hardly be queſtioned, but what to make of contracting the Strength inwards, and the propelling it into the extream Parts, I cannot tell.

APH. XXXII.

" The Exerciſe of the *Top*, as it is compound- " ed of that which is moderate and violent, *viz.* " of walking and moving the Arms, it is very " conducive to Perſpiration.

Explanation.] This is an excellent Exerciſe, and may be uſed without any manner of Inconvenience, if Care be taken not to uſe one Arm much more than the other, which moſt are apt to do, by being readier with one Hand than the other; becauſe ſo doing is apt to occaſion a partial Diſtribution of the animal Juices, whereby one Side gets more Nouriſhment and Strength than the other, and the Body grows out of its proper Shape, as it happens hereby to a great many young People. The Motion of the Arms by this, ſo much exerciſes the Muſcles of the *Thorax*, and helps to enlarge and preſerve the Capacity of the Breaſt, that it is very aſſiſting to the proper Office of the Lungs, as well as Perſpiration.

APH. XXXIII.

" Moderate Dancing, without Jumping, comes " the neareſt of any thing to the Advantages of " Walking: for it leiſurely expels the digeſted per- " ſpirable Matter.

Explanation.] This is undoubtedly a moſt healthful Exerciſe, and many conſiderable Advantages may be obtained from it with reſpect to our Health.

APHORISMS *added by the* AUTHOR.

APH. XXXIV.

" When Perſpiration falls ſhort of its proper " Quantity in ſound Perſons, it is to be remedied " by Exerciſe.

Explanation.] This is very true, and is abundantly manifeſt from a great many of the foregoing, and therefore fully juſtifies the Reſtriction made of *Aph.* xxi. of this Section, in its *Explanation.*

APH. XXXV.

" By too much Exerciſe the Fibres become hard; " whence Old-Age, which is an univerſal Hardneſs " of the Fibres; this, by condenſing the Pores, " ſuffocates the vital Heat; but Moiſture, by keeping them open, procures long Life.

Explanation.] Too much Exerciſe will break the nervous Fluid, ſo much as to occaſion a greater Waſte of it than can be ſupplied; and therefore the component *Machinulæ* of the Fibres, for want of this animal Oil, will loſe their Power of Motion and ſtand

ſtand ſtill, which is Death; and the nearer a Perſon is brought by any means whatſoever to this State, the further may ſuch a Perſon be ſaid to be advanced towards Old-Age. But for condenſing the Pores, and ſuffocating thereby the vital Heat, is a Difficulty I cannot get over: although for Moiſtures opening them, and procuring long Life, may without Difficulty be underſtood, in the Senſe laid down concerning an Animal Fibre at the latter End hereof. And then it is no more than ſaying, the Wheels of the Machine will continue their Motion, ſo long as they are ſupplied with the Requiſites thereunto.

APH. XXXVI.

" He who would preſerve a youthful Counte-
" nance, ought to take care not to ſweat: or that
" he does not perſpire too much with Heat.

Explanation.] Becauſe Sweating and promoting the cuticular Diſcharges beyond due meaſure, ſupplies the Skin with too great a Quantity of Moiſture, and makes it the ſooner loſe its beautiful Smoothneſs and run into Wrinkles, as it is very obſervable in the Hands upon dabbling in any Liquor for a conſiderable time together.

THE APHORISMS OF *SANCTORIUS.*

SECT. VI.

Of VENERY.

APHORISM I.

" TOO great an Abſtinence from Venery,
" and an immoderate Uſe of it, obſtructs
" Perſpiration; but an immoderate Uſe of
" it does it moſt.

Explanation.] THE Action of Coition, as Dr *Liſter* obſerves in his *Note* hereupon, is of the Nature of a Convulſion, at that Time therefore the Fibres cannot but be intenſely drawn up, whereby the cutaneous Pores will neceſ-

ſarily

ſarily be ſtraitned, and the Expulſion of the Perſpirable Matter of Conſequence hindered: too frequent a Uſe then of this Exerciſe, cannot but be very prejudicial, by retaining what ought to be diſcharged, and rendering the Body heavier, as well as by overſtraining and deſtroying the Force of the Fibres (as hereafter will be proved). Long Forbearance of it alſo, eſpecially whilſt there are conſiderable Irritations thereunto, may have the ſame Effect, both as the Part irritated will by Degrees draw alſo the Fibres of the whole Body into Conſent; that is, into too great a State of Contraction; and as the Mind will likewiſe thereby be ſo employ'd, as not to admit of thoſe frequent Relaxations as are neceſſary to promote the natural Diſcharges. How too great Exerciſe of the Mind does this, will be explained in the following *Section*.

APH. II.

" Upon immoderate Coition, about a fourth " Part of the Quantity uſually perſpired, in a great " many will be obſtructed.

APH. III.

" The Miſchiefs riſing from immoderate Coition " are *mediately* from an obſtructed Perſpiration; but " *immediately*, they ariſe from the Injuries done to " the concoctive Faculties.

Explanation.] As immoderate Coition may hinder Perſpiration, by keeping the Fibres too ſtrait, and leſſening the Paſſages; and thereby *mediately* give Riſe to all thoſe diſorders which are wont to follow an obſtructed Perſpiration; yet the greateſt Injuries received thereby, are *immediately* from the Hurt which is done to the Force and Elaſticity of the Fibres. For it hath already been proved at large, that a right Diſcharge of all the animal Functions,

depends upon a due Tenſion and Springineſs of the Solids; whatſoever therefore diſorders and weakens this Diſpoſition of the Solids, cannot but very much prejudice the whole Conſtitution; and that any violent Actions, as that of Coition, may perhaps be the moſt violent they are capable of, are deſtructive of the Textures of the Solids, cannot be doubted by any one who conſiders what will be ſaid of an *Animal Fibre* at the latter End. For not only the component *Machinulæ* of theſe Threads, will be much injured in their Contextures, but alſo that animal Oil or Spirit, which is beſtow'd upon them to facilitate their Motions, will be ſo much ſqueezed out, and wore away, as very much to diſable them afterwards in their natural Motions; that is, according to the uſual Way of ſpeaking, an immoderate Uſe of this Exerciſe, will ſo weaken and diſpirit the Body, that the ſeveral Parts afterwards, will not be able but imperfectly to diſcharge their reſpective Offices; whereby Digeſtion, Concoction, and all the natural Evacuations, will be diſordered.

APH. IV.

" It may be known that Coition proves benefi-
" cial if after the following Sleep, no Wearineſs is
" perceived, and no Alteration is found in the
" Body, with reſpect to its Weight.

Explanation.] This is plain from the Reaſons given under the foregoing; for if ſuch as have been proved the Conſequences of its immoderate Uſe, do not enſue, but that on the contrary every thing is well, and in its natural State; nothing can be more certain, than that it hath not been uſed beyond what the Strength of the Conſtitution will admit of without Injury; and that, if after the following Sleep, the Body is briſk and lightſome, it is a good ſign

that by ſuch Exerciſe, juſt ſo much only was thrown off, as was convenient and neceſſary to be parted with; and that in the Room of what was ſo diſcharged during the Time of Sleep, there is a freſh Recruit of that which is much better and fitter for the Purpoſes of the Œconomy.

APH. V.

" The continual Thoughts of venereous Perſons, " render their Bodies ſometimes heavier and ſome- " times lighter; heavier with a full, but lighter " with an empty Stomach.

Explanation.] Earneſt Thoughts upon a full Stomach is very likely to retard Digeſtion, by diſordering and interrupting the natural Tenſion and Vibrations of the Fibres; and as it ſtraitens the Fibres in general ſo when it happens upon a full Meal, it rather cloſes and ſhuts up the Juices in their Paſſages, than promotes and helps forward their Motions; and therefore does, what was then taken in, remain longer in the Body, and render it heavier; But when this is upon an empty Stomach, and the Veſſels are empty, in compariſon to what they are upon a full Meal, ſuch a Contraction of the Solids will occaſion their breaking, and making a greater Waſte of the Juices, than a more relaxed State would do, and thereby, therefore, muſt the body be rendered lighter.

APH. VI.

" After immoderate Coition with a Woman, " whom a Perſon hath been very deſirous before to " enjoy, there will no Wearineſs preſently be felt, " becauſe the Pleaſure at ſuch a time, aſſiſts the " Perſpiration of the Heart, and gives it Vigour:

" from whence it happens, that what is waſted by
" ſuch a one is the ſooner recruited.

Explanation.] Upon this I muſt leave the Reader to make his own Comment; although indeed the Reaſon here given for the Non-perception of the ill Conſquences which follow ſuch Embraces, holds good with Regard to the Diſtinction before made, between the *abſolute* and *relative Weight* of a Perſon; for that Satisfaction and Extaſy which ſuch Enjoyment may give, will, while it remains, be as a freſh Infuſion of Spirit and Strength, and thereby prevent any Senſe of Wearineſs; but as ſoon as that wears off, it is very likely a Perſon will feel the ſame, if not worſe Effects of his Raptures, than is common to a more different Lover. How the Pleaſure aſſiſts the Perſpiration of the Heart, or ſtrengthens it any farther than by ſuſpending a Senſe of Wearineſs, I cannot underſtand, or why at ſuch times a more ſpeedy Recruit ſhould be made than at any other.

APH. VII.

" They who are very eager after Venery, if they
" check their Inclinations, a Lightſomeneſs of the
" Body will immediately follow, becauſe they per-
" ſpire ſo much the better.

Explanation.] If the Mind can be taken off from ſuch Inclinations without Uneaſineſs, it is very likely to have this Effect; becauſe that which is very conducive to excite thoſe ſtrong Deſires, *viz.* a warm vigorous Conſtitution, hardly ever fails to raiſe a great deal by Perſpiration.

APH.

APH. VIII.

" Immoderate Coition will expel that which is " undigeſted by Perſpiration, and afterwards render " the Fleſh colder.

Explanation.] In the ſame manner as by any violent Exerciſe, as the ſtrong Contractions and Succuſſions of the Fibres, the perſpirable Matter will be thruſt forward and expelled faſter that it can be digeſted, and thereby alſo the nervous Fluid will be ſo much broke and waſted, that the Fibres will decay in their Strength, and conſequently afterwards the Motions of the Fluids be retarded, and thence a Decay of Heat.

APH. IX.

" Theſe following are Indications that Coition " hath not been hurtful; Urine equally digeſted as " before a Lightſomeneſs of the Body, an eaſier " Perſpiration, and the ſame Standard of Weight " remaining; ſo that a Diet be obſerved the ſame " both in Quantity and Qualities as before.

Explanation.] This is but the ſame as the 4th *Aph.* above, only more particularly expreſſed.

APH. X.

" The immediate Injury of immoderate Coition " is a Refrigeration of the Stomach; but afterwards, " an obſtructed Perſpiration; from whence eaſily " ariſe Palpitations in the Eyebrows and Joints, " and then in the more nobler Parts.

Explanation.] I cannot conceive how it cools the Stomach more than any other Part, which it does by weakening the Contractions of the Veſſels and the Motions of their Fluids, as hath before been

taken Notice. A Diminution of Perſpiration, *Sanctorius* plainly ſeems to think, is its Conſequence, not as it ſtraitens the cuticular Paſſages, ſo much as by its weakening the Force of the Solids, whereby they become unable to perform their Functions aright, and ſufficiently digeſt the Fluids for their Diſcharges; and that it hath this Effect, is further moſt certain by the *Tremors* of the nervous Parts, and that general Imbecillity it gives to the whole Body.

APH. XI.

" Coition in Summer-time is moſt hurtful, not " becauſe the Body then perſpires more, but be- " cauſe as Concoction is then weaker, what is " waſted is with more Difficulty recruited.

Explanation.] The Reaſon is very plain, and abundantly confirmed from a great many of the foregoing.

APH. XII.

" In the Act of Venery a great deal of Crudity is " thrown off by Perſpiration; and if it be long " protracted, thoſe Crudities which are at the " Centre, will be thrown upon the Circumference, " and there occaſion Obſtructions, and render the " Belly coſtive.

Explanation.] All this is plain from what has before been ſaid about Exerciſe, and brought about in the ſame Manner, by too ſtrong and frequent Contractions of the Solids.

APH. XIII.

" The more a Perſon burns with a Deſire of " Coition, by ſo much the leſs will its immoderate " Uſe prove injurious.

Expla-

Explanation.] Becauſe ſuch a Deſire is a Sign of that Vigour in the Conſtitution, which is able to go through a great deal of Exerciſe without Danger. Beſides, in proportion to the Intenſeneſs of Deſire, is there a Neceſſity of Gratification, elſe the Mind will be kept too long intenſe, and the Fibres too much ſtraitened.

APH. XIV.

" The Injuries ariſing from immoderate Exer-
" ciſe, are chiefly felt after the next Sleep; for
" then by the Balance it will be found, that Per-
" ſpiration hath been obſtructed, and that the Meat
" hath been ill digeſted, as alſo that the Stomach
" hath been much hurt.

Explanation.] The Injuries received, are moſt likely to be diſcovered after the firſt Sleep; becauſe, during that Relaxation, thoſe parts principally concerned in the vital Offices, have it moſt upon them to diſcharge their Duties; what Damage therefore or Strains they have before received in Coition, will occaſion ſome Defect in that Diſcharge, which upon waking will ſoon be found out. Weakening the Stomach, and leſſening Perſpiration are the Conſequences of one another; whatſoever therefore does the firſt, will alſo do the other; for what paſſes not ſufficiently digeſted out of the *Primæ Viæ* into the Blood, will obſtruct the Capillary Veſſels, and prevent a due Diſcharge by the Skin.

APH. XV.

" Coition is wont to hurt the firſt Concoction;
" firſt, by checking the Expulſion of the perſpi-
" rable Matter which is in Readineſs to go off,
" and thereby converting the Food into Crudity.

Explanation.] The firſt is done, by drawing the Fibres too ſtrait; and the latter by weakening the Force of the Stomach, as explained under *Aph.* X. above.

APH. XVI.

" He who in Coition forbears the Emiſſion of " *Semen*, is by it the leſs weakened; nay, if he re- " peats the ſame Exerciſe the Day following, and " then ejects what was the former Day prepared, " will not be ſo much debilitated.

Explanation.] This is beſt known to thoſe who have Command enough of themſelves to try the Experiment, which I believe are very few, unleſs ſuch as are pretty well advanced in Years, or thoſe who have been drained by too frequent Uſe of this Exerciſe.

APH. XVII.

" He who in Coition on purpoſe forbears Emiſ- " ſion, will be apt to have a ſwelling in his Teſti- " cles, becauſe the *Semen* is imperſpirable.

Explanation.] By this therefore it appears, that this Experiment, (if any have Patience to try it) is not without being attended with conſiderable Hazard; and it is very well known by thoſe whoſe Buſineſs leads them to be converſant with Perſons laſciviouſly inclined, that frequent Irritations without Emiſſion, have been attended with Conſequences very near as dangerous and troubleſome, as where by Coition a Venereal Infection hath actually been contracted. As for Dr *Liſter*'s Reaſon, that the greater Danger ariſes from the Obſtruction of an animated Fluid, as the *Semen Maſculinum* is taken to be, the *Animalcula* therein dying, and thereby turning

ing into Putrefaction; I cannot see any thing in it, for there are none of the animal Juices, which will not by Stagnation, in what manner soever they are said to be *animated*, run into new Cohesions, and be changed very much from that State which before they appeared under. The *Semen* also is imperspirable, only as it is a thick tenacious Fluid; and as there is not a sufficient Compression and Attrition of those Parts where it stagnates, to break it small enough, to pass it off through the Substance of its containing Vessels.

APH. XVIII.

" Immoderate Coition next to the Stomach, is " most hurtful to the Eyes.

Explanation.] As the Fibres of the whole Body are hereby overstrained, so those Parts which are most nervous cannot but be most injured; and as the Composition of the Stomach every one knows wholly to consist of them, and that Vision depends upon a due Contexture, and Supply of Spirits to the optick Nerves, nothing can be more plain, than that every thing which overstrains the Nerves must more particularly be prejudicial to these Parts.

APH. XIX.

" Immoderate Coition hurts the Sight, because it " draws from the Eyes a great Quantity of Spirits; " from whence it comes that their Tunicles grow " hard and rough, and also that their Passages are " rendered less pervious.

APH. XX.

" From a Diminution of Perspiration, the Fibres " composing the Tunicles of the Eyes, become more " opake; by which Sight is contracted into narrower " Passages,

" Paſſages, as through a Lattice: Spectacles throw " the Objects into a Point, that they may diſtinctly " be ſeen through one Paſſage only.

Explanation.] The Meaning of the latter I confeſs is very difficult to conceive. But that Coition, or any thing which puts a violent Strain upon the optick Nerves, may defraud them of their Spirits, is very plain, as by ſuch ſtrong Contractions, their natural Moiſtures are preſſed out, upon which they muſt needs grow hard and criſpy, and thereby not ſo fit to be moved by external Objects, and convey thoſe Impreſſions to the common *Senſorium*, as are neceſſary to excite the Ideas of Colours and Figures.

APH. XXI.

" By immoderate Coition the natural Heat is di- " miniſhed; and from a Diminution of natural Heat, " Perſpiration is leſſened; and from a Diminution " of Perſpiration ariſe Flatulencies and Palpitations.

Explanation.] This is a good Summary of the whole Doctrine of Perſpiration, and very well agrees with that Theory upon which the preceding have been explained. Immoderate Coition here may be taken in common with any violent Exerciſe, or whatſoever deſtroys the Contextures and Springineſs of the Fibres; and theſe things have already frequently been proved to leſſen the *vital* or *natural Heat*, by diminiſhing the Velocities of the Fluids; and that by a Diminution of the Velocities, they grow thicker or more viſcid, in proportion to which is always the Quantity diſcharged by inſenſible Tranſpiration, and alſo that the more, *That* by the Surface is obſtructed, the more plentifully will it be collected within, which muſt occaſion Flatulencies and Diſtenſions of its containing Parts. Palpitations ariſe from the Weakneſs of the Fibres, becauſe they are thereby

thereby ſo much injured in their Contextures, as to prevent a regular Flux and Reflux of the nervous Fluid, whereby the Regularity of their Tonick Motions is deſtroy'd; inſomuch, that ſometimes they ſtand ſtill, and at others twitch and leap in a convulſive manner.

APH. XXII.

" Immoderate Coition requires but a ſlender " Diet, and that of a good Nouriſhment.

Explanation.] Becauſe it ſo much debilitates the Conſtitution, as to diſable it from diſpenſing with a plentiful way of living, of ſuch Meats eſpecially as are hard of Digeſtion. Such a Diet therefore is moſt ſuitable for Perſons too much given to this Exerciſe as will eaſily digeſt in the Stomach, and paſs into the Blood in a ſufficient Plenty, to recruit the continual Waſte that is made thereby; which Waſte, as it conſiſts of the finer and moſt ſpirituous Parts of the animal Juices, ſo ought the Body alſo to be conſtantly ſupplied with ſuch Meats and Drinks as afford the greateſt Quantities of the ſame Nature, and that can ſooneſt be converted into them.

APH. XXIII.

" Coition heats the Liver and Kidneys, becauſe " the Heat which it raiſes does not exhale; but it " cools the Stomach, the Brain, and the Heart; " becauſe the Heat has more open Paſſages entirely " to go off by; and the natural Heat is thereby in " a great Meaſure reſolved.

APH. XXIV.

" From hence by immoderate Coition ariſes Cho- " ler in the Liver, Gravel in the Kidneys, Cru- " dities in the Stomach, a Catarrh from the Brain, " and in the Heart Palpitation and Faintneſs.

Expla-

Explanation.] This, as any violent Exerciſe, affects the ſeveral Parts of the Body, according as by their Contextures and Offices they are diſpoſed thereunto. Thus the ſame thing which ſtrains by its violent Motions the moſt nervous Parts, and renders them weaker thereby, cannot but alſo more briſkly agitate the Blood, and occaſion a greater Heat than before in thoſe Parts where it is moſt plentifully collected; and thus at the ſame time that the Liver (where is the greateſt Collection of Blood for its Bulk of any Part of the Body) is heated, the Stomach is weakned; by which I can underſtand no more when *Sanctorius* ſays it is cooled; and thus of the other Parts as they are naturally by their peculiar Makes diſpoſed to be affected. The Heat having more open Paſſages in one Part to fly away than another; and the Reſolution of it in the Stomach, any more than in the Liver, are Expreſſions that betray but a very imperfect Notion in Anatomy, which was but very lame before *Harvey*'s Diſcovery of the Circulation.

APH. XXV.

" If thoſe Eatables which a Man takes in after
" immoderate Coition beget Flatulencies, as Oyſters
" and new Wine, they are hurtful; becauſe they
" prevent the Bodies coming to its natural *Standard*
" afterwards.

Explanation.] It is a ſure Sign, that thoſe things which collect ſuch Vapours inwardly, do not go off in a due Quantity by the Skin; they are not good therefore at any Time, but eſpecially when the Solids, and conſequently the digeſtive Faculties, are weakened by any violent Motions: whether what is here mentioned, or any other thing is apt to offend this way, every one may beſt judge by his own Experience.

APH.

APH. XXVI.

" Lean Perſons are moſt injured by Coition, be-
" cauſe it more heats and cools ſuch, than others.

Explanation.] This will not appear to be any Contradiction, when it is conſidered, that the more a Perſon is immediately heated by any Exerciſe, the more will he be cooled afterwards; but whether it hath this Effect more upon lean than fat Perſons, I am not able to determine; for I believe the Conſequences are rather governed by the Intenſeneſs of the Actions at that time, than the Bulk of the Perſon.

APH. XXVII.

" Immoderate Coition immediately renders the
" Body lighter, although in the end it diminiſhes
" Perſpiration; for it vehemently exerciſes both the
" Body and Mind; the Body, by a Concuſſion of
" all the Limbs; the Mind, becauſe it looſens that
" which is the Bond of Union between Body and
" Mind, *to wit*, the Spirits.

Explanation.] The latter Part, although it is no uncommon way of talking, lays me under inſuperable Difficulties. The former Part is plain, for during the Exerciſe, the Fluids are more agitated and broke, and a larger Quantity expell'd by Perſpiration, upon which the Body is for the preſent lighter; but as the ſame Action alſo weakens the Solids, Digeſtion afterwards cannot ſo well be carried on as before, and therefore the perſpirable Matter will not be ſo plentifully diſcharged, and conſequently muſt the Body grow heavier.

APH.

APH. XXVIII.

" If after Coition Sleep is uneaſy, it is a ſign " that in the Act of Coition, there was a greater " Waſte made of the vital Spirits, than by Sleep " is again recruited.

Explanation.] Such a waſte and defect of Spirits in the Solids, may ſo much affect them in their Textures, as to prevent that eaſy Relaxation which is abſolutely neceſſary to ſound Sleep.

APH. XXIX.

" After too much Coition, Sleep attracts the Cru- " dities to the Heart: From whence ariſe *Languors*, " and obſtructed Perſpiration, and an Increaſe of " Weight.

Explanation.] This is much the ſame as the xxiſt above, only more obſcurely expreſſed.

APH. XXX.

" Old Men by immoderate Coition grow colder " and heavier: but young Men lighter and warmer.

Explanation.] In old Men the Strength of the Solids is ſo much loſt, and that animal Oil neceſſary for their Invigoration but ſo ſparingly ſupply'd, through the Weakneſs of the digeſtive Faculty, that the Waſte which is made by Coition, is not to be repaired without a great deal of Difficulty; the Circulations of the Fluids are therefore the ſlower carried on, and thereupon there muſt be a Decay both of the natural Heat, and an Increaſe of the Bulk or Weight, for want of due Digeſtion and Perſpiration. But this Exerciſe in young Men, who are apt to err on the ſide of having an Overcharge of Juices, hath no other Conſequence than any other Exerciſe

Exercise would have, which is the breaking the Juices finer; especially the nervous Fluid, whereby the Solids will be rendered more springy, and will perform their Vibrations stronger and quicker upon which the vital Heat must increase, in proportion to the increase of the Velocities of the Fluids, and also must there a much greater Quantity be broke small enough to go off by Perspiration.

APH. XXXI.

" Coition in young Men strengthens the animal, " vital and natural Faculties; it draws forth and " raises the animal by Motion, the natural by an " Evacuation of Superfluity, and the vital by Plea- " sure.

Explanation.] Coition, so that it be not to Excess, is very likely in young Persons to increase the natural Heat, and raise the Spirits; because, like any other agreeable Exercise, it shakes the Muscles, and breaks and dislodges any superfluous Matter that hangs upon the Fibres, sufficiently to exhale it insensibly; by which means the Springs of the Solids are better maintained, and consequently is the Blood circulated and digested, and thereby a more plentiful Stock of Spirits continually separated, and dispensed to all the Parts of the Body. But, on the contrary, were this Exercise used to excess, would the nervous Fluid be so much wasted, that the Solids would decay in their Springiness, and therefore also must follow a Loss of Strength and Spirits. By corroborating the *animal*, *vital*, and *natural Heat* then, is no more than that the Body becomes brisker and stronger; for the Distinction itself of the Heat of a living Body into *animal*, *vital*, and *natural*, is of no further Use, that I know of, than to make a thing, plain in itself, full of Mystery and Obscurity,

rity, and to darken Truth with a Multiplicity of unintelligible Terms; which Unhappineſs even our Author is frequently apt to fall into, whenſoever he leaves Experiment and Matter of Fact, and endeavours to accommodate his Expreſſions to the School Syſtems; otherwiſe he could not talk of driving out *animal Heat* by Motion, raiſing the *natural Heat* by the Evacuation of Superfluities, and the *vital Heat* by Pleaſure. For what the *natural Heat* of the Body is, and how produced, ſee *Explanation* to *Aph.* lxviii. *Sect.* 1. where it is proved to ariſe from the Motion and Attrition of the animal Fluids; concerning which alſo Dr *Pitcairne* demonſtrates theſe two Propoſitions.

I. *That at the ſame Diſtance from the Heart, the Heat of the Blood is as its Velocity.*

II. *That the Heat of equal Quantities of Blood moving with equal Velocities, is as their Diſtances from the Heart.*

The Heat of the Body may indeed be increaſed by Pleaſure, but then it is becauſe ſuch Pleaſure gives that Tenſion and Smartneſs to the Vibrations of the Solids, as any Exerciſe does: and therefore by the ſame Means does it increaſe the Velocities and Warmth of the Fluids.

APH. XXXII.

" For a Perſon to eat more plentifully than uſual,
" upon immoderate Coition, would be deſtructive,
" if a Corruption of it does not follow.

Explanation.] The Solids cannot but be ſo much weakened and relaxed after immoderate Coition, (as indeed would it be the ſame after any other violent Exerciſe) as not to be able to contract and carry on the Fluids with ſuch Force in their circulatory

Motions, as is neceſſary to prevent their falling into Fermentation and Putrefaction. If therefore at ſuch Times a Perſons eats plentifully, he thereby ſtill adds a further Weight to the Solids; and therefore if what is taken in does not corrupt in the *Primæ Viæ*, and run off by a *Diarrhœa*, there is a great Hazard of a putrid or malignant Fever, by its getting into the Blood and corrupting there.

APH. XXXIII.

" Before Coition a Perſon ſhould eat little or no-
" thing; and before eating he ſhould not uſe Coition
" to exceſs, but rather quite forbear it.

Explanation.] Becauſe Coition violently contracts and draws up the Fibres; ſo that if ſuch a Weight be laid upon them as a full Meal occaſions, there cannot but be a great Danger of their being over-ſtrained, and injured in their Springs. Coition alſo by the ſame Reaſon ought not to be uſed juſt before eating, becauſe after ſuch a State of Contraction is over, they naturally for ſome time fall into the other Extream, that of Relaxation, and therefore will they then be unfit for ſuch ſtrong Contractions as are neceſſary to promote a good Digeſtion.

APH. XXXIV.

" When there is no uneaſineſs felt after immode-
" rate Coition, it is a very ill Sign, as with *Ma-*
" *niacks* the Caſe is the ſame, when the Spirits are
" enflamed, for they ſtrengthen the Nerves and
" Tendons for a ſhort Time by their Dryneſs; but
" ſoon after, a Supply of freſh Spirits is cut off, and
" the Strength immediately thereupon decays.

Explanation.] If after ſuch immoderate Coition there is no Wearineſs felt, it is owing to the preter-natural Contraction of the Fibres, which by being

drawn up in the Act of Coition with ſo much Force, and continuing in that State too long, will not eaſily recede, and fall into ſuch a Relaxation, as is neceſſary to their Admiſſion of a freſh Supply of Spirits; the moſt natural Conſequence of which, muſt needs be ſuch a Dryneſs and Criſpineſs of the Fibres, as is inconſiſtent with a right Diſcharge of their reſpective Offices, and therefore the Conſequence of ſuch Exceſs muſt needs be very bad. With Maniacks the Caſe is ſo far the ſame, that the Solids are under a violent State of Contraction; inſomuch, as to hinder thoſe due Refluxes of the nervous Fluid, as are neceſſary to the Buſineſs of Senſation, and to communicate to or make ſuch Impreſſions upon the Mind, as is uſual from external Objects. And this State of Contraction, while it continues, gives an unuſual Strength to all the Solids, not, as *Sanctorius* ſays, properly by drying them, but by increaſing the Contacts of their conſtituent *Machinulæ*, as above explained in the Digreſſion, concerning the *Elaſticity of an animal Fibre*, by which they are with more Difficulty diſtracted, and when ſo, drawn up again with the greater Force. But as this State of Contraction prevents the Derivation of a freſh Supply of Spirits, and it cannot be long before the preſent Stock will be broke and wore away, they cannot but in a little Time loſe that Order and Diſpoſition of their component parts, which is neceſſary to continue their Motions, and fall into a total Incapacity of contracting any longer.

APH.

APHORISMS *added by the* AUTHOR.

APH. XXXV.

" Coition upon natural Provocation, is good; " upon the Incitations of the Mind, it is injurious " to the Memory and its other Faculties.

Explanation.] By Nature or natural Provocation is to be underſtood, when there is ſuch a Repletion of the ſeminal Veſſels as diſtends them, and by its Irritation ſollicits for Ejectment; in which Diſcharge there can be no ill Conſequence, for a Perſon is rather thereby rendered more lightſome and chearful. But when there is not ſuch a ſupply for Ejection, and the Mind by its Purſuit of ſuch Thoughts, occaſions ſuch a Derivation of the Spirits or nervous Fluid into thoſe Organs, as irritate them to Coition, it cannot but ſtrain the Solids, and occaſion ſuch a Waſte of Spirits, as is inconſiſtent with that ready obedience to the Dictates of the Mind, which is neceſſary for a due Exertion of its Faculties.

APH. XXXVI.

" The Weight of the Body in weak Perſons is " increaſed by Coition; becauſe ſuch perſpire for " it the leſs.

Explanation.] Becauſe it is too hard an Exerciſe for ſuch Conſtitutions; for where the Solids are very weak and infirm, almoſt the leaſt Motion more than uſual will over-reach and diſcompoſe them: when therefore ſuch Perſons uſe Coition, by Weak-

ning their Solids, they ſtill further hinder Digeſtion and Perſpiration, and conſequently muſt thereby increaſe in Bulk and Weight; unleſs ſuch a Diminution of that Evacuation be compenſated by the Increaſe of ſome other; as it may very likely be by a *Diarrhœa*, according to the following.

APH. XXXVII.

" Coition without Satiety hinders Perſpiration;
" becauſe it abates the Strength, whence the Body
" becomes heavier, unleſs a *Diarrhœa* happens up-
" on it.

APH. XXXVIII.

" Coition to exceſs does a great deal of Harm,
" by heating and drying the Body; but if the
" Heat be ſupplied by inſenſible Perſpiration, and
" the Dryneſs by any proper Liquor, there follows
" no Injury.

Explanation.] The Body is rendered hotter upon Coition, by the Motion it gives to all parts, and dryer by the Attrition and Waſte of a great Quantity of animal Juices; but if afterwards there be procured a free Perſpiration of all the parts, the Fibres will ſoon be recruited with a freſh Stock of Moiſture, and thereby will both that Heat and Dryneſs be removed.

APH. XXXIX.

" Such a Motion of the Body as reſembles that of
" a Dog in Coition, is more hurtful than a bare
" Emiſſion of *Semen*; for the latter wearies only the
" internal Parts; but the other tires both the Bowels
" and Nerves.

Explanation.] What is meant by wearying the internal parts moſt, I do not underſtand. Any violent Motion, however occaſioned, and in whatſoever part,

part, eſpecially when it is attended with intenſe Thought at the ſame time, will ſoon, by the Conſent of parts, be felt in its Conſequences all over the Body.

APH. XL.

" To uſe Coition ſtanding after a Meal is hurt-
" ful; becauſe as it is upon a full Meal, it hinders
" the Offices of the Bowels, and by the ſtanding
" Poſture, thoſe of the Muſcles, and diminiſhes
" that Quantity which it is beneficial to get rid of
" by Perſpiration.

Explanation.] The Conſequences of Coition upon a full Meal, hath been explained already under *Aph.* xxxiii. of this *Section.* That ſuch a Poſture as ſtanding, may occaſion a greater Strain upon the Muſcles at ſuch a time, is not very unlikely.

APH. XLI.

" Coition is injurious after Exerciſe; after Meat
" not ſo much; but after Sleep it is the moſt whole-
" ſome of all.

Explanation.] By Exerciſe it is to be ſuppoſed the Solids have been already exhauſted of a great deal of their proper Moiſtures, and therefore cannot be in any good Condition to engage in a freſh one, that of itſelf requires a good Stock of Spirits. Coition after Meat, as it is circumſtanced, may be worſe, or not ſo bad; but after Sleep it is leaſt prejudicial, becauſe then the Solids are plentifully furniſhed with freſh Spirits, and it is of Service to uſe any eaſy Means of drawing them up into that State of Contraction, as they muſt neceſſarily be in when awake. Coition therefore at this Time, not only aſſiſts in this good End, but at the ſame time, (as it was before explained of yawning and ſtretching)

aſſiſts in ſhaking off ſuch parts of the perſpirable Matter, as frequently are apt to lodge in the excretory Paſſages.

APH. XLII.

" Coition heats the Liver, and cools the Sto-
" mach: From the Stomach proceeds crude Moi-
" ſture; from the Liver, Choler; whence ariſes
" that kind of Choler which is called *Porracea*, the
" Colour of it reſembling that of a Leek. The
" Remedy is a ſlender Diet and a free Perſpiration.

Explanation.] The ſame Cauſe does very often differently affect different parts; inſomuch, that what occaſions a greater Heat in one, does frequently cool another; and thus Coition as it exerciſes the Muſcles of the whole Body, and gives them very ſtrong Contractions, may at the ſame time heat the Liver, by occaſioning a greater Protruſion of Blood into it, that it cools others, by keeping them in ſuch a Tenſion, as will not admit of their neceſſary Influxes of Blood. For upon an univerſal Contraction of the Muſcles, the Blood muſt neceſſarily be thruſt forward the faſter, and where there is the leaſt Reſiſtance, there will be the greateſt Quantities of it derived; all the *Viſcera* therefore, and the Liver eſpecially, by the great Store of Blood-Veſſels with which it is furniſhed, by their diſproportionate Reſiſtance to the muſcular parts, muſt be at ſuch times overcharged with Blood, and conſequently rendered hotter; but ſuch a part as the Stomach, which is endued with a vaſt number of Nerves, in proportion to the Quantity and Bulk of Blood-Veſſels, will by ſuch Contractions be ſo far drawn into Conſent, that not only muſt it be rendered cooler by too ſmall a Share of Blood, but alſo will it be over-ſtrained, as afterwards to fall ſo far into the other Extream

of

of too great a Relaxation, as to admit of a greater Derivation and Diſcharge of that ſaline Juice, which is accuſtomed to be ſeparated by its Glands, than before; and thereby will not only be rendered cooler but alſo overcharged with what *Sanctorius* in the *Aphoriſm* calls crude Moiſtures: why a ſlender Diet is a good remedy upon ſuch Diſcords, may be upon two Accounts, both as it lays not too great a Load upon the Stomach, whereby its Fibres again in a ſhort time will recover their natural Springs, and be able to manage as large a Meal as before, without any Inconveniency; and as it ſubſtracts from the Blood's uſual Supply, it in time leſſens its Quantity; whereupon it is again circulated in all Parts in its natural Quantities; and ſuch partial Stagnations prevented, which otherwiſe it would be apt to fall into, and by forming preternatural Coheſions and Viſcidities, occaſioned dangerous Obſtructions. But this Diet as it ought to be ſlender, that is, ſmall in Quantity, and eaſy of Digeſtion; it ought alſo to be ſuch as affords a good Supply of Spirits to the Solids, that is, ſuch as we commonly call warm and ſpirituous; for otherwiſe the Fibres would continue ſo long relaxed, that the Fluids would be gone ſo far into preternatural Coheſion, as not eaſily afterwards to be broke, and continued in their due Circulations, and whereupon there might be given Riſe to ſome outward Diſorders.

THE APHORISMS OF *SANCTORIUS.*

SECT. VII.

Of the AFFECTIONS *of the* MIND.

APHORISM I.

" AMongſt the Affections of the Mind, thoſe
" of Anger and Joy, make Perſons lighter;
" thoſe of Fear and Sorrow more heavy;
" and the other Affections operate in Proportion to
" their Participation of theſe.

Explanation.] THIS *Section* is attended with much more Difficulty as to its Explanation, than any of the former; becauſe the Propoſitions herein contained are not demonſtrable in the ſame Manner as thoſe which relate

relate only to the Agency of phyſical Cauſes. For as it was before taken Notice of, under *Aphoriſm* xv. *Section* 5. the Operations of the Mind upon the Body, and *è contra*, do not come under a mechanical Way of reaſoning; it being impoſſible to decypher and trace out the ſeveral Steps and Ways of Procedure of thoſe Agents, which can by no means be brought under the Cognizance of our Senſes. In Enquiries therefore of this kind, there muſt be allowed ſome farther *Data* than need be in ſuch as are merely phyſical; ſo that a Perſon engaged herein, is like a Traveller who has a great way been conducted by Lanes and Cauſeways, where he had ſuch Marks continually in View, as prevented his going out of his Road, but at length comes to a wide common, where the Multitude of Paths without Diſtinction makes him ſtop and recollect, by what Guides he can with the moſt Certainty proſecute his Journey; whereupon for want of readier means, he finds himſelf obliged to have recourſe to his Compaſs: which by conſtant Obſervation, finding the Needle always towards ſuch a Point, and to conduct him with Succeſs, he learns thereby upon all ſuch Emergencies how to direct his Courſe, altho' he is ignorant entirely of the Cauſe why the Needle ſhould always have that particular Inclination. And thus although a Perſon cannot tell either how Thought can produce ſuch a Change in the Humours of his Body, or how ſuch a Conſtitution of the Humours can affect the Paſſions of the Mind; yet if by conſtant Obſervation and Experience it can be found that ſuch a Paſſion or Temper of Mind, is always attended with ſuch Conſequences in the Conſtitution; and that ſuch a particular Temperature of the Conſtitution, always affect the Mind with ſuch particular Paſſions and Diſpoſitions, it will afford very ſufficient Ground of Certainty to a wary and

conſiderate Perſon, in his reaſoning upon their Conſequences, and in the Meaſures which ought to be taken in rectifying the Diſorders of either. As for Inſtance, if Anger or Chearfulneſs are always found to render the Body lighter, although we cannot tell how thoſe particular Paſſions do firſt modify any parts of the Body, ſo as to produce that Effect, yet it being plain how phyſical Agents do the ſame; it is highly reaſonable to conclude, that theſe do it alſo by the ſame means; that is, thus far, as we know that an Invigoration or an Increaſe of the contractile Force of the Solids will promote Digeſtion, increaſe the Evacuations, and render the Body lighter; ſo we have the higheſt Reaſon to believe, when we ſee the ſame to be the Conſequences alſo of a Man's being paſſionately angry, or very merry, that theſe Diſpoſitions of the Mind (altho' we do not know how) do give that particular Modification likewiſe, and degree of Tenſion to the Fibres, as cold Bathing, a cold clear Air, or moderate Exerciſe, when we ſee them attended with the ſame Conſequences. And as we know theſe phyſical Cauſes have this Effect, by drawing up and ſhaking the conſtituent *Machinulæ* of the Fibres, promoting their elaſtick Powers, and breaking the nervous Juice finer; ſo ought it to be concluded, that theſe Paſſions of the Mind do alſo give the ſame Modifications to the Fibres, by which the ſame Effects are produced. Further in the like manner, if Fear and Sorrow are found to be attended with an Increaſe of Weight, it is reaſonable to think that they do it by the ſame means, as by which all thoſe phyſical Agents produce the ſame Effect; that is, by ſlackening the Fibres too much, abating Digeſtion, and conſequently alſo leſſening the Evacuations.

With this View therefore may we proceed in our Reaſonings upon the Contents of this *Section*, with ſome

ſome tolerable Clearneſs and Satisfaction. That is, when any Paſſion of the Mind is ſaid to have this or that Effect upon the Body, we ought to conſider, that Paſſion only as a phyſical Agent; as it draws up or ſlackens the Fibres, and as it increaſes or leſſens the Evacuations: but in this we are guided only by Obſervation and Experience, which is abundantly ſufficient to a Perſon of any tolerable Diſcerning; for by the preſent State of the Secretions and Evacuations, it is always eaſy to tell ſo far, whether the Solids are too ſlack or too ſtrait, and on which ſide the *Equilibrium* is loſt between the contractile Force of the Solids, and the Reſiſtances of the Fluids: And whereas by the preſent Condition of the Body, it will eaſily appear on which Side the Fault is, ſo when any Error therein happens, without any other manifeſt Cauſe than a Paſſion of the Mind, it is highly concluſive that ſuch an Error is owing to that Paſſion; and that it is brought about by the ſame Means as by any phyſical Agent; that is, by drawing up their Fibres too ſtrait, or by letting them down too low, and therefore that for its Remedy, ought the ſame Intentions of Cure to be purſued.

Upon this View, the *Aphoriſm* above may very eaſily be explained. Anger and Joy keep the Fibres in their natural Tenſions, aſſiſt the Secretion and Derivation of Spirits to all the parts of the Body, and conſequently promote Circulation, and Digeſtion, and raiſe thereby a plentiful Perſpiration, and render the Body lighter: but Fear and Sorrow, as they give a quite contrary Modification to the Solids, and a different Determination of the Spirits, they are always attended with the oppoſite Conſequences. All the other Paſſions alſo, as they are more or leſs compounded of theſe, are followed with correſpondent Effects in the Body.

APH. II.

" In Fear and Sorrow the lighteſt perſpires, but " the heavieſt Matter remains behind: In Anger " and Joy there is a good Perſpiration of both.

Explanation.] By Fear and Sorrow the Solids are ſo much ſlackened and injured in their Springs, that Digeſtion is but imperfectly carried on, and therefore the groſſer parts of the Juices will not be ſufficiently broke for Perſpiration, but be obſtructed and lodged in the Capillaries, altho' indeed ſome of the finer parts may get to the Surface and fly off; whereas the contrary Affections ſo differently diſpoſe theſe Inſtruments of Digeſtion and Perſpiration, as to occaſion the Expulſion even of the moſt groſs Matter.

APH. III.

" Hence it comes to paſs, that thoſe who are ſub- " ject to Fear and Sorrow, are apt to be troubled " with Obſtructions, a Hardneſs in ſome parts, " and to hypochondriacal Affections.

Explanation.] Becauſe that part of the perſpirable Matter which by thoſe means is retained, is by Degrees thrown upon ſome parts, and collected in ſuch Quantities, as to occaſion manifeſt Tumours and Diſtentions. And as ſuch Obſervations have been before proved both to give an Acrimony and Sharpneſs to the retained Matter, and alſo to occaſion a greater Derivation of it upon the *Viſcera* where it meets with the leaſt Reſiſtance, it is very likely that by the ſame Cauſes likewiſe, there ſhould all theſe Symptoms ariſe which go commonly under the Name of hypocondriacal Affections, as Diſtentions of the *Præcordia*, Flatulencies, and Cholick Pains; and to this Purpoſe it is very remarkable how ſeldom

dom it is that we meet with a Perſon addicted to Sorrow and Melancholy, who has not a conſiderable Share of ſuch Complaints.

APH. IV.

" Thoſe who are angry, or chearful, do not feel " much Wearineſs in Travelling; becauſe their " Bodies eaſily perſpire the groſs Matter; but it " happens quite contrary to this when they are " troubled with Fear and Sorrow.

Explanation] This may be upon a double Account; both as in ſuch Perſons there is a more plentiful Afflux of Spirits upon the Solids, and becauſe by the Diverſion of the Thoughts, by ſome pleaſing Images, from what paſſes from without, that Wearineſs which otherwiſe would be felt, is not taken Notice of, and thereby does it not occaſion any Uneaſineſs; but Perſons under the contrary Affections, as they are thereby diſpirited, and as their very Thoughts give them a conſiderable Diſturbance, it is from a very ſlight Exerciſe, that they will find a great deal of Wearineſs and Diſorder.

APH. V.

" The heavy part of the perſpirable Matter, be- " ing more than uſually retained in the Body, it " will diſpoſe a Perſon to Fear and Sorrow; but the " lighter part being obſtructed, to Anger or Joy.

Explanation.] This is the Reverſe of the firſt *Aphoriſm* of this *Section*, and univerſally it holds good with the Alterations that are brought about in the Body by the Mind, and the Changes which are made in the Affections of the Mind by the different Temperature of the Body, that what is the Cauſe at one time, may be the Conſequence another, and *vice versâ*; for as Joy will occaſion and promote a more

more plentiful Secretion of Spirits in the Brain, and give to the whole Body both Strength and Facility of Motion; ſo whatſoever promotes a good briſk Circulation, and keeps the Blood duly fluxile, will alſo raiſe the Mind with more agreeable Impreſſions, and diſpoſe it either to Joy or Anger, as the Perſon happens to be entertained by external Objects. Thus alſo as Fear or Sorrow by checking the Motion of the Spirits, and hindering Circulation and Digeſtion give a Heavineſs and Sluggiſhneſs to the Juices, and occaſions Obſtructions; ſo whatſoever elſe obſtructs the perſpirable Matter, and induces a *Lentor* in the Blood, the ſame will alſo diſpoſe the Mind to thoſe Uneaſineſſes which ariſe from Sorrow, or Fear. By the lighter part of the perſpirable Matter being retained, and Joy thereupon occaſioned, I cannot underſtand what is meant, unleſs by that Matter be underſtood only ſuch as the animal Spirits or Oil is made up of, and ſuch as always promote the Elaſticity and Vibrations of the Solids; but then it is very difficult to imagine, how this ſhould be retained when much groſſer parts get out at the Surface, and fly off.

APH. VI.

" Nothing more contributes to a free Reſpiration " than Comfort and Satisfaction of Mind.

Explanation.] As a chearful Diſpoſition very much aſſiſts in the due Performance of the vital Offices, by the means before explained; ſo it cannot but be very ſerviceable, more particularly to Reſpiration; becauſe this entirely depends upon thoſe Requiſites, which this Temper of Mind has been proved to procure, *viz.* a Strength and Facility of Motion in the Solids, and a briſk Circulation of the Blood.

APH.

APH. VII.

" By Fear and Sorrow thoſe parts which are ful-
" leſt of Moiſture, are moſt apt to be rendered
" hard.

Explanation.] The different Fluidities of the Blood in the ſeveral parts of the Body are as its Velocity in each Part; and its Velocity in each part is as the Force of the contractile Veſſels and its Reſiſtances; where then there is the greateſt Reſiſtance and the weakeſt Contraction, there the Blood will be thickeſt; in thoſe parts therefore where there is the greateſt Quantity of Fluids in proportion to the Force of the containing Veſſels, there muſt needs be the greateſt Reſiſtance, and therefore from any Cauſe that weakens the Contraction of the Veſſels all over the Body, will the Fluids in that part ſooner ſtagnate than in any other, and acquire ſuch a Conſiſtence as to give a Hardneſs to that part.

As Grief therefore and Fear do abate of the Force of the Veſſels in Contraction, thoſe parts where there are the greateſt Collections of Juices, will the ſooner ſuffer by a Stagnation, and an Induration of their Fluid Contents: and thus in melancholy Perſons it is very common to find their *Viſcera* ſchirrous, but eſpecially the *Spleen*, which naturally is formed for a *Diverticulum* to the Blood, and to check its Velocity in order to the Secretion of ſome Juices needful in the Œconomy, and therefore it is moſt liable to theſe Conſequences upon any Relaxation, and Abatement of the Force of the Blood.

APH. VIII.

" Sorrow and Fear hinder the Exhalations of the
" groſs perſpirable Matter; and the Obſtruction of
" Perſpi-

" Perſpiration, from what Cauſe ſoever it proceeds,
" occaſions Fear and Sorrow.

Explanation.] What that *Nexus*, or Bond of Union, is, between the Mind and the animal Fluids, God Almighty only knows; but there is not one thing better confirmed by Experience, than that they mutually influence one another. See *Explanation* to *Aphoriſm* v. of this *Section*.

APH. IX.

" If Grief continues long, it will bring on a cold-
" neſs of the Fleſh, becauſe it hinders the Exhala-
" tion of the groſſeſt of the perſpirable Matter.

Explanation.] It has already been ſhewn at large under *Aph.* lxviii. *Sect.* 1. that the natural Heat which is what ought to be underſtood by the warmth of the Fleſh, is as the Force of the contractile Veſſels; whatſoever therefore leſſens that Force, muſt alſo abate the natural Warmth, and that Grief does this, appears from what has gone before.

APH. X.

" From hence it happens, that thoſe Fevers
" which a Perſon falls into after much Grief, diſ-
" cover themſelves in cold Sweats, and ſometimes
" prove mortal.

Explanation.] Grief by its continuance, keeps the Solids ſo long in a ſtate of Relaxation, that the Orifices of the ſecretory Glands, lie ſo far open, as to let through even that Balſamick Juice which is diſpenſed to the ſeveral parts of the Body for their Accretion and Nouriſhment, as well as for their Lubrication and the Maintenance of their Springs; by which means the Body is robbed of its moſt neceſſary Juices, which, by their aptitude to Coheſion,

and

and the ſmall *Momentum*, or Force, with which they are brought to the ſecretory Orifices, as ſoon as they are thruſt thorough, they ſtick to and lodge upon the Skin, and occaſion that greaſy Clammineſs, which is commonly called a cold Sweat.

And from hence may be deduced a conſiderable Confirmation of what is advanced, in the *Eſſay* concerning an *Animal Fibre*, about the animal Spirits; for upon all Relaxations, when this Oily or Balſamick Juice is waſted, in the manner above mentioned, there is immediately felt a very great Decay of Strength and Vigour; and as a Perſon commonly expreſſes himſelf upon ſuch occaſions, he is quite faint and diſpirited: which I cannot but think is a very manifeſt Proof, that thoſe Spirits, by which we are made chearful and ready for Motion, are nothing elſe than the Juice here ſpoke of, which when it is ſupplied to the Solids in due Quantity, gives ſuch a Modification to them, as readily enables them for the Performance of their reſpective Offices; but when its Supply is either cut off, or when its Waſte is too great for its Supply, by Exerciſe or an Enlargment of the excretory Pores, then they grow diſabled and unfit for Action.

The Reaſon why Fevers are ſo dangerous which happen upon ſuch a feeble Diſpoſition of the Solids, is becauſe the Conſtitution is not then able, either to digeſt and wear away any obſtructed Matter, by any of the natural Evacuations, or to continue their Contractions until any morbid Matter, ariſing from the fermentative Motions of the Fluids, is expelled, either by ſome natural Diſcharge, or by an Abſceſs.

APH. XI.

" That Acrimony of the perſpirable Matter, which " is obſtructed by long Sorrow, may with Advan- " tage be taken off by Chearfulneſs: for pleaſing

" Humours are thereby diffuſed throughout the " Body, and thereby both its Weight and Sharpneſs " is removed.

Explanation.] Any preternatural Acrimony of the Juices, which has been contracted by their want of due Motion and Attrition, cannot but be taken away by any means that increaſe the Force and Vibrations of the Solids; as Grief therefore by weakening that Force occaſions this Diſorder, ſo Chearfulneſs by reſtoring it again, proves a Remedy. By pleaſant Humours being diffuſed through the Body upon Joy, I can underſtand no more, than that Joy gives ſuch particular Modifications to the Nerves, as facilitates the Derivation of that Juice to them, which gives them their Springs and enables them, with the more Eaſe, to diſcharge their ſeveral Offices; the Conſequences of which cannot but be a better Digeſtion, and a more plentiful Perſpiration.

APH. XII.

" Anger and Hope remove Fear, and Joy takes " away Sorrow: For a Paſſion of the Mind is not to " be conquered by Medicine, but by ſome contrary " Paſſion, for Contraries are under the ſame *Genus*.

Explanation.] When any Paſſion is ſuddenly raiſed by ſome external Cauſe, it is not expected that a Perſon ſhould take Phyſic to get rid of it; nor is it poſſible to aſſign the Inſtruments and Means by which any Change therein can be effected. So far only of the Affections of the Mind does therefore concern a Phyſician, as can by conſtant Obſervation be found to be under the Influences of the particular Tempers of the Conſtitution; as where by Experience it is found, that any particular Diſorder in the Blood, in time, alſo influences the Faculties and Powers of the Mind, and diſpoſes it either to Anger, Melancho-

ly, or the like, then there appears ſome good Grounds for calling in the aſſiſtances of Medicine, whereby to rectifie ſuch a Diſtemperature of the Blood. As it appears alſo, that ſome Paſſions of the Mind will inſenſibly bring about Diſorders in the Conſtitution; ſo to prevent ſuch an ill Conſequence, it may frequently be of ſervice, to excite, if poſſible, ſome contrary Affections; but *Sanctorius*'s Reaſon for it, becauſe Contraries are under the ſame *Genus*, it is to be feared, but few will be the better for.

APH. XIII.

" It does not imply a Contradiction, that the re-
" tained perſpirable Matter of melancholy Perſons
" is cold, and at the ſame time ſharp or hot; for
" ſo is the Liver of Hydropicks in Fevers; to wit,
" cold in reſpect of the natural Heat, but hot with
" regard to that which is adventitious.

Explanation.] It is here neceſſary to diſtinguiſh well between what is meant by the *natural Heat*, and that which he calls *adventitious*; the firſt, as before explained, is that which ariſes from the Motions and Attritions of the Humours: Where therefore there happens an over-charge of Fluids, by means of an imperfect Perſpiration, as is commonly the Caſe in melancholy Perſons, the Solids will not be able to give them ſufficient Agitation, whereby there will be a decreaſe of the natural Heat; and ſome of the Juices alſo by the ſame means may acquire an Acrimony or Sharpneſs. But as in a little time, ſuch obſtructed Humours will begin to putrify, and ſo, by a fermentative Motion, put on a perternatural Heat; they may with regard to that be ſaid to be hot. And this is the Caſe with the Liver of Hydropicks, or any part where there is ſo great a Collection of Humours, as to occaſion a Stagnation, and a Tendency of Putrefaction.

APH. XIV.

" Diſeaſes that ariſe from Melancholy, and from
" a foul Air, agree in this, that they immediately
" proceed from the Groſſneſs of the obſtructed per-
" ſpirable Matter : for Grief does intrinſically pre-
" vent its Diſcharge, and a foul Air, extrinſically.

Explanation.] The Reaſon of their Agreement herein, ſeems to be but indifferently founded. It is plain, that both of theſe Cauſes hinder Perſpiration; a foul Air, by hanging upon the Skin, and obſtructing the cutaneous Paſſages; and Grief, by preventing a ſufficient Derivation of nervous Fluids to the ſeveral Organs, to keep up their Contractions ſtrong enough for a due Digeſtion. And as the former alſo will in time ſupple the Fibres, and render them too lax; ſo in this they may agree, that they both injure their Vibrations, and thereby are attended with the ſame Conſequences of Indigeſtion, and an over-charge of Juices; but the Manner by which this is brought about, by both, is very different; upon other Accounts, as well as one being from within, and the other outward.

APH. XV.

" They who go to Bed with Grief, perſpire there-
" by leſs in the Night, and the following Day their
" Bodies will be found heavier than uſual.

Explanation.] Becauſe during Sleep, there is made the moſt plentiful Perſpiration; what Cauſe therefore ſoever would do it at another time, will with the more certainty, occaſion it at going to Bed; becauſe the Pores are thereby contracted, when by the Relaxation of the Solids, they ought to be enlarged. How Grief does this, has been already explained.

APH. XVI.

" In venereous Deſires, the groſſer Part of the " perſpirable Matter will be obſtructed by Grief, " which by the Exhalation of the thinner Part, will " ſtill grow more thick and cold. If it be collected " together, it will occaſion an inſenſible Chilline ſs " in the Head, and a Palpitation in the Heart, or " in ſome other Members very difficult to be cured.

Explanation.] Intenſe Thought, eſpecially when attended with great Uneaſineſs, as it hinders the vibrating Motions of the Solids, cannot but very much obſtruct the Paſſage, and Exhalation of the perſpirable Matter; only the thinner Parts therefore will be able to get off, and thereby diſpoſe the retained Matter by its Groſſneſs, to occaſion the greater Obſtructions. The Conſequences of which, as the Fibres will thereby be much defrauded of their proper Recruits of Spirits, will be a Weakneſs and an imperfect Performance of the Animal Functions, eſpecially in thoſe Parts, which by their Offices, have upon them the greateſt Share, as in thoſe of the Brain and Heart.

APH. XVII.

" Melancholy is removed two Ways, either by " a free Perſpiration, or by ſome continued Chear- " fulneſs of Mind.

Explanation.] This, as well as moſt of the following, by attending to what has been already explained (that Grief hinders Perſpiration, and that a free Perſpiration will likewiſe remove Grief, if it can be procured; as alſo that Joy promotes Perſpiration, and that Perſpiration again tends to Chearfulneſs) will appear to be little elſe than Repetitions, and therefore any Notes upon them will not be wanted.

APH. XVIII.

" If after Grief the Body happens to be lighter " than after Joy, it muſt be either through a ſcar- " city of Food, or by its being more than uſually " perſpirable.

Explanation.] For it appears by many of the preceeding, that Grief ſlackens the contractile Motion of the Solids, which muſt retard Digeſtion, diminiſh Perſpiration, and render the Body heavier: where therefore it happens otherwiſe in this Circumſtance, it muſt be either for want of neceſſary Recruits of Food, or by taking in ſuch a one as is eaſily converted into tranſpirable Matter.

APH. XIX.

" Chearfulneſs, from whatſoever Cauſe, opens " the Paſſages, and makes a free Perſpiration.

Explanation.] This Diſpoſition of Mind, cannot happen from the Conſtitution itſelf, but where the Functions are regularly and briſkly performed, where there will neceſſarily be a free Perſpiration, for Reaſons given under many of the foregoing *Aphoriſms*. And where this Temper is introduced from any external Circumſtance, it immediately ſo much quickens the Vibrations of the Fibres, as to accelerate the Motions of the Juices, increaſe their Attritions and Tranſpiration.

APH. XX.

" If after Anger, Joy immediately follows, or " the contrary, allowing the ſame proportion of " Food, Bodies will the next day be lighter, than " if Anger or Joy alone had continued.

Expla-

Explanation.] Becauſe a continuance of the ſame Paſſion, by keeping the Solids under the ſame Modifications for ſome time, will not ſo much favour Perſpiration, as a ſhifting them often by contrary Paſſions.

APH. XXI.

" As ſome great Pleaſure is taken away by a " ſmall Ejection of *Semen*; ſo all immoderate Paſ- " ſions of the Mind, may be removed by ſome " Evacuation of the perſpirable Matter.

Explanation.] It is certain that this is fact, in Coition; but how that concludes for the latter Part, I cannot apprehend, nor does it appear what is to be underſtood of theſe immoderate Paſſions; for ſuch as are to be moſt likely relieved by Evacuation of any kind whatſoever, are Sadneſs and Grief, becauſe theſe are Diſpoſitions of Mind, that are brought by an overload of Fluids, and a ſluggiſh Circulation; but to remove thoſe by an Evacuation of perſpirable Matter, is not practicable without much previous Agitation, to break it fine enough for Diſcharges; but then again, moſt *immoderate Paſſions* will be aggravated by ſuch Increaſe of Motion, which renders this Aphoriſm ſomewhat difficult to underſtand.

APH. XXII.

" Fear and Sorrow, as it appears from *Staticks*, " are removed by a Subſtraction of the groſſer per- " ſpirable Matter: But Anger and Joy, by that of " the thinner.

Explanation.] This confirms what was ſaid under the former, that ſuch are the only Paſſions capable of Relief from Evacuation; and in a groſſer

perſpirable Matter can be underſtood, only that which is raiſed by difficult Exerciſe and Motion from viſcid and ſluggiſh Humours; and by a thinner perſpirable Matter, ſuch as ariſes from a briſk Circulation, but then this is not diſtinguiſhable from the Animal Spirits, an over Quantity of which, may adminiſter to any exorbitant Paſſions; and their Subſtraction, or rather a Diminution of their Supply, be a means to aſſwage them; and in many of theſe Aphoriſms there happens the like Obſcurity, for want of due Diſtinction, between the nervous Fluid itſelf and the perſpirable Matter, which is its Recrement.

APH. XXIII.

" If any one without manifeſt Cauſe, finds him-
" ſelf chearful, it is occaſioned by an enlarged Per-
" ſpiration; and that Body the following Day will
" be lighter.

Explanation.] How Chearfulneſs is the Conſequence of a healthful Conſtitution, already appears: where therefore there is no other aſſignable Cauſe for ſuch a Diſpoſition, it may be taken for granted, to be from a good Perſpiration; that is, more properly ſpeaking, from all thoſe Requiſites to a good Perſpiration, which a healthy State enjoys.

APH. XXIV.

" Moderate Joy inſenſibly evacuates what is ſuper-
" fluous; but immoderate, what is alſo uſeful.

Explanation.] This will not ſeem difficult, when it is conſidered what has been before ſaid about Exerciſe, for moderate and immoderate Joy, may be deemed as a moderate and an immoderate Exerciſe.

APH.

APH. XXV.

" Moderate Joy aſſiſts Concoction; for Nature
" diſengaged from what is ſuperfluous will the bet-
" ter perform her Functions.

Explanation.] The former part of this is explained under *Aphoriſm* xix. above, which ſee: But what is after aſſign'd as a Cauſe, is rather the Effect, and very obſcurely expreſſed.

APH. XXVI.

" Sudden Joy is more hurtful, than what is ex-
" pected: for it not only promotes the Exhalation
" of the Excrements of the third Concoction, but
" alſo of the animal Spirits; but that which is
" looked for, only of the Excrements.

Explanation.] By Excrements of the third Concoction, is meant that perſpirable Matter, which ſudden Joy, like a Convulſion, forces out, but with it alſo, ſome of the Nervous Juices, which cannot be ſpared without Injury.

APH. XXVII.

" Joy and Anger carry off what makes the Body
" both more heavy and more light; but Grief and
" Fear, only that which would make it more light;
" and leaves behind what makes it heavier.

Explanation.] Joy and Anger are always to be underſtood as an increaſed Velocity of the Fluids, and a greater Attrition of their parts, as they are Paſſions that are attended with ſuch Conſequences, and Grief and Fear as an oppoſite State. This Propoſition then can be true of the former, only as they are in Exceſs, and have the ſame Effects; as violent Exerciſe by carrying off, with the groſſer Matter of Perſpiration

Perſpiration, which Diſcharge makes the Body lighter, what is yet of uſe to the Elaſticity of the Fluids, and the loſs of which leaves the Body weaker, that is, more perceptibly heavy: But the latter Paſſions of Grief and Fear, render the Body heavier, not by any Expulſion of Spirits, which preſerve it perceptibly light, but by ſlackening Motion and Concoction, whereby the ſupply of Spirits is cut off; and this Confuſion we are often led into for want of due Attention to Anatomy, and the true Mechaniſm of the Animal Œconomy, which our Author muſt be allowed to have been extreamly defective in, notwithſtanding the Excellency, Juſtneſs, and Uſefulneſs, of moſt of his Statical Experiments.

APH. XXVIII.

" A Continuance of Joy ſeveral Days together, " would hinder Sleep, and ſink the Strength.

Explanation.] Becauſe it would by a long continuance, give ſuch a Straitneſs and Rigidity to the Nerves, as would prevent thoſe Relaxations which are neceſſary to Sleep, and alſo for ſuch derivations of Spirits to the Solids, as are needful to keep up the uſual Vigour.

APH. XXIX.

" If any one after immoderate Joy perceives " himſelf lighter, it does not chiefly ariſe from a " total Perſpiration, but only from that of the " Heart and Brain, where what is evacuated, is " but little in Bulk, but of great Efficacy.

Explanation.] Here again is charged upon an imaginary perſpirable Matter, what is owing to an additional Invigoration of the Solids by the Increaſe of Spirits; and as the Paſſion of Joy more immediately affects the principal Movements of the Œconomy

Œconomy, as the Heart and Brain, ſo they ſeem more remarkably to be lightened, but not from the Tranſpiration of any recrementitious Matter, but from an Invigoration of their Springs. But it is no great wonder that *Sanctorius*, wanders ſometimes into Obſcurity in this Section, becauſe he is to be followed only where he keeps cloſe to Facts, which on this Subject are precarious; and whenever he ventures to conjecture upon his Syſtematical and School Rules, it is a great Chance but he falls into Error or Uncertainty.

APH. XXX.

" Meats which promote Perſpiration, bring Joy;
" but thoſe which obſtruct it, Sorrow.

Explanation.] This is the ſame, as many of the former inverted; for as Joy promotes, and Sorrow obſtructs, Perſpiration, for Reaſons before given; ſo whatever promotes or obſtructs Perſpiration, increaſes Joy or Sorrow; the former by leſſening the Load upon the Conſtitution, and the latter by increaſing it. This alſo explains the following.

APH. XXXI.

" Parſley, and other Openers, occaſion Joy:
" Pulſe, fat Meats, and ſuch Things as in-
" craſſate, and ſoon fill up the Paſſages, induce
" Sorrow.

APH. XXXII.

" If the Paſſages are emptied, and then ſud-
" denly filled; *Hippocrates* has rightly obſerved ill
" Paſſions will ariſe.

Explanation.] Upon great Exinanition from Exerciſe, a Fever, or long faſting, a ſudden Repletion muſt be bad; becauſe the digeſtive Pores cannot

in

in a ſhort time duly fit the Aliments for Nouriſhment, and therefore the Body will be filled with Crudities and groſs Juices.

APH. XXXIII.

" Where Anger predominates, immoderate Exercise is very hurtful; for ſoon the Paſſages will be empty, and will with Violence be again filled; whence *Hippocrates* forbids Wreſtling and Frictions to Cholerick Perſons.

Explanation.] Anger keeps the Fibres too dry and criſpy, by too much exciting their Vibrations: Any Exerciſe therefore with ſuch Perſons, will increaſe that ill Diſpoſition, by ſtill making a greater Waſte of the natural Moiſtures, and adding to the Hardneſs of the Fibres.

APH. XXXIV.

" In Perſons who exerciſe neither Body nor Mind, the Paſſages are not emptied, nor are there any bad Paſſions contracted.

Explanation.] But it is to be feared, that much worſe Inconveniences will enſue in the Conſtitution, for want of ſufficient Motion and Digeſtion.

APH. XXXV.

" A Body at Reſt, does perſpire more by the violent Exerciſe of the Mind, than if the Mind was at reſt, and the Body violently moved.

Explanation.] This will admit of a great deal of Diſpute, and in a very few Inſtances will be found true, unleſs we take the ſame Latitude in explaining this as in ſome of the foregoing, and underſtand by a greater Perſpiration, a greater Waſte of Animal Spirits, in which Senſe only this *Aphoriſm* can hold good;

good; for intenſe Thought does certainly either waſte more Spirits, or prevent the Reception of new ones by too tenſe a ſtate of the Solids; all which amounts to the ſame as to the Conſequences, much more than can the moſt violent Exerciſe, which common Experience can teſtify by thoſe who try both.

APH. XXXVI.

" A Change of the Body, makes a more laſting " Alteration of the Mind, than of the Body itſelf.

Explanation.] By this Change muſt be underſtood a gradual one, wherein the Mind has contracted very different Diſpoſitions, and in ſuch a Caſe it is certain, that the Body muſt be again changed before the Mind will be reduced to its wonted Temper, and therefore will its Deviation from a natural State be more laſting.

APH. XXXVII.

" Paſſions of the Mind, are converſant about in- " ternal Subjects, which move more than they are " moved; becauſe they are, like the *Semen*, of great " Efficacy, although little in Bulk; and according " to their Diſpoſitions, are the Cauſes of Perſpira- " tion, or of Weight or Lightneſs.

Explanation.] This is too Metaphyſical to be explained upon ſuch Principles, as have herein been made uſe of.

APH. XXXVIII.

" Bodies which perſpire more than uſual, not by " Exerciſe, but by ſome violent Paſſion, are with " the greateſt Difficulty brought to their wonted " healthful Perſpiration.

Explanation.]

Explanation.] Becauſe violent Paſſion ſo affects the Origin of the Nerves with unnatural Tenſion, and thereby overſtrains them, and prevents the Secretion into them of freſh Spirits, that the Inconveniencies ariſing therefrom muſt be very great and durable.

APH. XXXIX.

" Too much Exerciſe of the Mind, is more in-
" jurious than that of the Body.

Explanation.] Becauſe the Exerciſe of the Mind expends the fineſt and moſt uſeful Parts of the nervous Fluid, and for the Reaſons alſo given under the foregoing Aphoriſm.

APH. XL.

" The Body would pine, and be deſtroyed by
" Idleneſs, was it not for the Exerciſe of the
" Mind; but not on the contrary.

Explanation.] Where due bodily Exerciſe is not uſed, that of the Mind will not be long ſufficient to keep it from falling into ſome bad Diſorders; and it is much to be feared, that Exerciſe of the Mind only, if it be to much purpoſe, would wear out the Conſtitution in Idleneſs faſter than without it.

APH. XLI.

" Violent Motion of the Mind, differs from
" violent Motion of the Body; this is removed by
" Reſt and Sleep, but the former by neither.

Explanation.] That is, where the Mind is ſo intenſly employed, that even in Sleep it is agitated by Dreams, and Starts of Thought; but then will not the Body be likewiſe refreſhed, and where Sleep

is

is quiet enough to reſt the Body, the Motions of the Mind will be alſo clearly aſſwaged and compoſed.

APH. XLII.

" They that are covetous ought not to game; " becauſe if they always win, through exceſs of " Joy, they will not ſleep at Night, and at length " will loſe the Benefit of Perſpiration.

Explanation.] Where this happens to be the Caſe, it has the ſame Effect, as any intenſe Thought or violent Exerciſe, which has been explained already to hinder Perſpiration.

APH. XLIII.

" A moderate Conqueſt is more healthful, than " one that is more glorious.

Explanation.] That is, if it re-calls the Paſſions beyond Meaſure; but it is to be feared, that thoſe who are engaged in ſuch Purſuits, are not very ſedulous about their Health from ſuch Circumſtances.

APH. XLIV.

" Study, which varies the Paſſions, is better " bore than that which keeps them the ſame; be- " cauſe it makes Perſpiration more moderate and " more wholeſome.

Explanation.] It was before taken Notice, that a frequent ſhifting the Modifications, and Vibrations of the Solids, is much more advantageous, than keeping them continually in the ſame Tone; and therefore a Change of Paſſions, cannot but be much better than the ſame continued.

APH.

APH. XLV.

" Study without any one Paſſion will hardly endure an Hour; with one only, hardly four Hours; with a Change of them, as at Dice, (in which is felt ſometimes the Hopes of winning, and at others the Fear of loſing) it may continue Night and Day.

APH. XLVI.

" In all Study, continued Sadneſs deſtroys the good Conſtitution of the Heart, and Exceſs of Joy hinders Sleep; for too much of any thing is an Enemy to Nature.

APH. XLVII.

" They who are ſometimes merry, ſometimes ſad, ſometimes angry, and ſometimes fearful, enjoy a more healthful Perſpiration, than they who continue in one Affection, altho' a good one.

APH. XLVIII.

" Joy aſſiſts the Diaſtole and Syſtole of the Heart: but Grief and Melancholy renders them more difficult.

Explanation.] There ſeems to be ſo little Variety in the Senſe of moſt of the *Aphoriſms* of this *Section*, that if what has been ſaid at the Beginning be attended to, an *Explanation* of a few of them, may ſerve for all, and therefore to avoid Repetition, I have been ſhort in my Notes thereupon; and the four preceeding are nothing elſe but ſome of the former in other Words, and require therefore no further Explanation.

Medicina

Medicina Statica Britannica;

BEING THE

APHORISMS

OF

Dr *KEIL,*

Explained and compared with the foregoing APHORISMS of *SANCTORIUS.*

THE Difference of Climate wherein we live, and that wherein *Sanctorius* made his Statical Experiments, occaſioning conſiderable Difference in the Quantities and Conditions of Perſpiration, Dr *James Keil* of *Northampton*, a judicious and curious Perſon, hath been at the Pains to make the ſame Trial at the Place where he lived; ſo far at leaſt as was neceſſary and conducive to regulate and adjuſt *Sanctorius*'s Calculations to our own Country and Practice. And for this Purpoſe, he hath digeſted into Tables the Quantities of ſenſible and

inſenſible Evacuation throughout a whole Year, as obſerved every Day at the ſeveral Hours of the Day, with the Circumſtances of Living, and Conditions of Health that whole Time, as alſo the Temperature and Weight of the Air, as it appeared by the Thermometer and Barometer. Theſe he alſo digeſts into more general Tables of Obſervations, and at laſt into one, compromiſing the whole, and ſhewing the Quantities diſcharged by Perſpiration and Urine in the Space of an Hour, both in the Day and Night every Month. After which he deduces the following *Aphoriſms*.

APH. I.

" Since all that a Man eats does not go into " Blood and Juices, Nature hath provided certain " Outlets for the Evacuation of what is Superflu- " ous and Excrementitious.

APH. II.

" The moſt conſiderable Outlets, are the Anus, " Kidneys, and Pores of the Skin; and the Quan- " tities paſſing through theſe every Day, may be " known by Statical Experiments.

APH. III.

" Since many Diſeaſes have their Riſe from " what is taken in or ejected, their firſt Advances " may be diſcovered by the Weight, and a Failure " of the natural Functions.

APH. IV.

" Five Ounces is commonly ejected in one Day " by Stool.

APH. V.

" Two Pound and almoſt ſix Ounces of Urine " is diſcharged in one Day, or twenty four Hours.

APH.

APH. VI.

" More than one and thirty Ounces is expended " in one Day by Perſpiration.

APH. VII.

" All theſe are varied according to the Diffe- " rences of Temperament, Age, Meat and Drink, " Sleep and Waking, Exerciſe and Reſt, and the " Seaſons of the Year.

Explanation.] The Quantity here computed, falls much ſhort of *Sanctorius*'s Calculation, which *Aph.* vi. *Sect.* 1. he makes $\frac{5}{8}$ of what is taken in by Meat and Drink, and in the xxiſt *Aphoriſm* of the ſame *Section* he aſſigns the Quantity to be fifty Ounces. But this will not appear difficult to thoſe who conſider the Difference of Climate; for where he made *his* Trials was vaſtly warmer than where Dr *Keil* made *his*; and therefore would a great deal more, for that very Reaſon, be waſted by the Surface of the Body in inſenſible Steam. That the Variations of the Quantities alſo perſpired ariſe from the Cauſes here aſſigned, exactly agrees with the viith *Aphoriſm* of *Sanctorius*, *Sect.* 1. which ſee.

APH. VIII.

" How much ſoever the Proportions of Evacua- " tion may be altered by ſeveral Cauſes, yet in a " moſt healthful State, the Quantity ejected, is " equal to the Quantity taken in.

Explanation.] This agrees with the ixth and xth of *Sanctorius*, *Sect.* 1. under which the Reaſons for it may be ſeen.

APH. IX.

" More Urine is made in the Day-time than in " the Night.

Explanation.] Becauſe the Warmth of the Bed draws more out by the Pores of the Skin, and leaves leſs

to ſeparate by the Kidneys into the Bladder. By Exerciſe alſo, and in the Day-time, a Perſon is more frequently under ſuch Contractions and Preſſures of the Fibres, as very much conduces to draw out what is collected in the Bladder

APH. X.

" The Summer Perſpiration much exceeds that " in the Winter.

Explanation.] For the ſame Reaſon as warmer Climates exhale more through the Skin than cold ones, See *Aph.* viii. above, with its *Explanation.*

APH. XI.

" What perſpires in the Day-time, is one and " an half as much as goes off by Night.

Explanation.] For the Reaſon ſee *Aph.* viii. above, and many of *Sanctorius*'s, in *Sect.* 4. eſpecially.

APH. XII.

" The Diminution of Perſpiration by Night " does not increaſe the Quantity by Urine; nor " does an Increaſe of Urine by Day, leſſen the " Quantity perſpired at that Time.

Explanation.] This can only happen in ſome certain Circumſtances, where the retained Matter cauſes the Humours to be more viſcid; for otherwiſe, there will certainly the more paſs by Urine, as it is manifeſt in various Inſtances, where an increaſed Quantity of Urine is a very ſalutary Means of diſcharging what was otherwiſe obſtructed, as by external Cold. The Increaſe of Urine indeed does not ſo readily diminiſh Perſpiration in the Night, becauſe a warm Bed will certainly draw out as much as the Pores can conveniently, and in a natural State, diſcharge; tho' a Continuance of ſuch an Increaſe will certainly diminſh in the other Reſpect, or elſe a Perſon

Perſon will ſoon fall away in Subſtance, and grow into a diſtemper'd State.

APH. XIII.

" If we equally divide the Day between Sleep " and Waking, one Day perſpires thirty Ounces " and $\frac{21}{10}$, or ſeven Drams.

APH. XIV.

" If a Perſon lies in Bed but eight Hours, the " moſt of one Day's Perſpiration will not exceed " three and thirty Ounces.

Explanation.] The leſs a Perſon perſpires in Bed, undoubtedly the more will come away in the Day-time, unleſs the retained Matter weakens the Spring of the Solids, by laying upon them too great a Load, and thereby occaſions a Viſcidity, or *Lentor*, which often happens.

APH. XV.

" If the Day be in like manner divided, the " Urine will amount to thirty nine Ounces. The " Quantity perſpired, is, *cæteris paribus*, propor- " tionate to the Degree of Heat.

Explanation.] The former Part of this *Aphoriſm* agrees not well with vth *Aphoriſm* above, where the Quantity by Urine is aſſigned but twenty-four Ounces. In the latter Part, whether the Author means the natural Heat, or the Heat of the Weather, it is much the ſame for Truth, becauſe both thoſe Cauſes much influence the Quantity perſpired: But the natural Heat in particular, certainly determines their Diſcharge to be greater or leſſer, juſt as that exceeds or decreaſes, becauſe the digeſtive Faculties, and the Fluidity of the Juices are govern'd thereby, the greater Heat always giving the greateſt Motion and Attrition, and thereby breaking the

Humours ſo ſmall, as to fit them in greater Abundance for Exhalation by inſenſible Steam.

APH. XVI.

" The Quantity of Urine is in Proportion to the " Quantity of Liquor drank.

Explanation.] The Cauſe of this is very manifeſt, becauſe the greater Quantity of Fluids is taken in, the more will be ſupply'd to all the thinner Secretions, but particularly that of Urine, which drains off almoſt all the Liquids that are left too groſs, to be ſent away through the Pores of the Skin. And this appeared alſo plain by the Author's own Experience; for by his Calculation in the Table, he made three Pounds, or upwards, of Urine in a natural Day, which is almoſt if not quite double the uſual Quantity; but thoſe Days it is obſervable, that he drank largely of Bath Waters, and alſo of Green Tea, the latter of which is a Liquour that runs off very faſt by Urine.

APH. XVII.

" In Summer the greateſt Perſpiration is almoſt " three Pounds, and the leaſt Perſpiration in " Winter about half a Pound.

Explanation.] This appears from the Doctor's Experience; for in the Middle of *June* his Journal mentions near three Pounds perſpired, although it was wet Weather, which is often ſome Obſtruction thereunto: And in *January* the 20th, it was very little, but he ſays indeed, that he had then taken Cold from having his Head ſhaved; which Circumſtances are always attended with a diminiſhed Perſpiration, and denote a *Plethora*; whereas the true Eſtimate of theſe Affairs, is to be made in a healthful State.

APH. XVIII.

" About thirty-three Ounces is the mean Quan- " tity perſpired; and therefore we have laid them " down

" down as a Standard of one Day's Perſpiration, in " our Tables.

APH. XIX.

" The Latitude of a natural Perſpiration is from " about half a Pound to three Pound, and beyond " theſe Extreams a healthful Perſpiration never de- " viates, but ſometimes to one, and ſometimes to " the other, the Conſtitution changes according to " its preſent Temperament.

Explanation.] This is very agreeable to the greateſt and leaſt healthful Standards, which *Sanctorius* ſpeaks of, between which Extreams Health may be preſerved, but further, the Conſtitution muſt degenerate into a diſtempered State.

APH. XX.

" Perſpiration may be carried beyond its natural " Extent by Heat and Exerciſe, or by Cold and Reſt.

Explanation.] Heat and Exerciſe will break and fuſe the Humours beyond Meaſure, and cauſe more to be exhaled through the Skin; whereas Cold and Reſt, will make the Juices more viſcid than natural, and by that means cauſe leſs to go off by Perſpiration than is convenient and neceſſary to a healthful State.

APH. XXI.

" Sometimes two, three, or four Ounces, will " be carry'd off in Perſpiration, by Heat, Motion, " and Exerciſe, in the ſpace of one Hour.

Explanation.] How theſe Cauſes increaſe Perſpiration is manifeſt from what hath been already ſaid: and the Author's own Experience hath confirm'd it; for by his Tables, it appears, that in *Auguſt* when the Weather was hot, and the Pulſe beat 92 Strokes in a Minute, one Pound was perſpired in four Hours after Dinner, and in *June*, with Exerciſe, a yet greater

Quantity exhaled. The ſame Effect had much riding in the Month of *October*.

APH. XXII.

" The greater Perſpiration is made by Motion " and Exerciſe, ſo much the leſs it is in the follow- " ing Hours, when the Body is at Reſt.

Explanation] Becauſe ſuch Agitation forces away all that is broke ſmall enough for Expulſion, and ſome Time is required, before the digeſtive Faculties can break more, when at Reſt, fine enough to go off the ſame Way; and therefore after Exerciſe, and a plentiful Perſpiration, muſt it neceſſarily be leſſened for ſome time. This alſo the Doctor found by computing the Quantity waſted after riding, and what paſſed off in the following Hours.

APH. XXIII.

" By Cold and Reſt, ſcarce half an Ounce will " waſte by Perſpiration in one Hour.

Explanation.] Both theſe cannot but have an oppoſite Effect to Heat and Motion; and the Reaſons why *thoſe* increaſe Perſpiration, makes it plain why *theſe* leſſen it.

APH. XXIV.

" Perſpiration is increaſed by riding.

Explanation.] If all Exerciſe promotes Perſpiration, as abundantly appears already, riding cannot miſs of the ſame Effect, becauſe it is one of the moſt advantageous that can be uſed, ſo that it be moderate; for otherwiſe, inſtead of ſhaking off redundant Fluids, the Solids will be rendered over tenſe, and Perſpiration leſſened, as in many Places it hath been proved of immoderate Exerciſe at any time.

APH.

APH. XXV.

" Perſpiration will ariſe in one Hour to half a " Pound from Bathing in warm Water, nor will it " afterwards be diminiſhed by ſuch an Increaſe.

Explanation.] Warm Bathing not only draws off a great deal of perſpirable Matter, by relaxing and widening the Pores upon the Surface of the Body, but alſo helps to fuſe and render thinner the remaining Juices, by its Warmth, and the Introduction of ſome Parts thereof into the Courſe of Circulation, as *Bellini* hath proved, and is at large explained under the 2d *Section* of *Sanctorius*'s *Aphoriſms*, towards the Beginning. So that the Reaſon why the ſubſequent Perſpiration does not decreaſe, is manifeſted from the additional Quantity of perſpirable Matter that is made by Bathing, to keep it on for the future. And this plainly points out in what Caſes and Conſtitutions this Remedy is beneficial, and when it may prove otherwiſe.

APH. XXVI.

" That Perſpiration which is encouraged by a " Winter's Fire, is not inferior to what will riſe in " a Summer's Day.

Explanation.] This is ſupported by the Doctor's own Obſervation, after ſitting a whole Day in *January* by the Fire-ſide; but it does not ſeem very practicable ſo to circumſtance the Warmth of a Fire, that it ſhall diffuſe ſuch an equal and natural Warmth as that of the Sun; becauſe it may by too near Approach give a Tenſity and Dryneſs to the Fibres, which will hinder Perſpiration; and therefore muſt ſuch Endeavours to promote it be carefully attended with due Quantities of Diluters, and ſuch Coverings of Cloaths, as may keep a Moiſture upon the Skin.

APH. XXVII.

" A Perſon perſpires the leſs for being over " wearied with Exerciſe.

Explanation.] This is explained already under many *Aphoriſms* of the vth *Section* of *Sanctorius*, which the Reader is deſired to turn to.

APH. XXVIII.

" Frequent toſſing about in Bed hinders Perſpi- " ration.

Explanation.] This is alſo exactly the ſame as the liſt and lxxth *Aphoriſms* of *Sanctorius*, in his 1ſt *Section*, whereunto the Reaſons for it are annexed.

APH. XXIX.

" The Motion of a Body in Action, and the " Agitation of a Perſon in Bed, have very different " Effects; *this* promotes Perſpiration, and *that* hin- " ders it.

Explanation.] This again is demonſtrable from many *Aphoriſms* of the vth *Section*, compared with the liſt and lxxth of the 1ſt *Section*.

APH. XXX.

" They perſpire the leſs who ſleep uncovered in " an open Air; and when Sleep retards the Separa- " tion both of Urine and Perſpiration, it certainly " renders the Body weaker and heavier than it " ought to be.

Explanation.] The firſt Part of this is manifeſt from *Sanctorius*'s xxxvith *Aphoriſm* of the 2d *Sect.* and when Sleep therefore, which is ſo great a Promoter naturally of the thinner Secretion, is ſo circumſtanced, that it hinders them, as in this Caſe, it cannot but render the Body more languid, both for want of ſufficient Recruit of Spirits into the Fibres, and alſo by the addition of an Overload from the Retention

Retention of what ought to be caſt out, both which cauſe the Body to be heavier, the former *relatively*, and the latter *abſolutely*; which Diſtinction ſee explained under *Aphoriſm* xxix of the 1ſt *Section*.

APH. XXXI.

" The more a Perſon perſpires in the Day-time, " the leſs will he perſpire at Night.

Explanation.] How an increaſed Evacuation at one Time will leſſen the ſame Evacuation afterwards, depends upon Circumſtances that make a great Difference; for, *cæteris paribus*, it always diminiſhes the ſucceeding Evacuation in proportion to its own Exerciſe; but where the Cauſe of a greater Separation is the Cauſe alſo of preparing more of the ſeparable Matter, as is the Caſe of warm Bathing in the xxvth *Aphoriſm* above, there will not follow a leſſer Separation than natural; and where the Cauſe of Separation is ſuch as preſſes out only what is already fit for Expulſion, as in moſt Exerciſes, the following Evacuation muſt decreaſe, as appears by many of the preceeding *Aphoriſms*; and without regard to this Diſtinction, many Places herein may ſeem to contradict one another, and cannot be well underſtood.

APH. XXXII.

" Perſpiration in the Night-time is ſometimes " leſs by half than natural, without being attended " with any Inconveniences.

Explanation.] By the Doctor's Regiſter it appears, that he perſpired but four Ounces the 19th of *February* at Night, and he ſays there was no manifeſt Cauſe for ſuch a Diminution, nor was it followed by any Diſorder. But in all ſuch Caſes Nature muſt have been either much exhauſted before, ſo that what would otherwiſe make perſpirable Matter, remains ſtill of ſome uſe in the Courſe of Circulation, and goes

goes into Nouriſhment, or elſe ſome other Evacuation is increaſed in Proportion to the Quantity retained; unleſs the Strength of the digeſtive Powers afterwards are able to throw off ſuch Accumulation of obſtructed Matter by an enlarged Perſpiration; but even while that is doing, a Perſon would feel ſome Alteration for the worſe.

APH. XXXIII.

" Friction upon the Skin neither promotes nor " leſſens Perſpiration.

Explanation.] This ſeems to be grounded upon rubbing with a Hair-Bruſh, one Night going to Bed, until the Skin looked red, without cauſing any increaſe of Perſpiration that Night; but it is to be remarked, that there is a vaſt deal of difference in uſing Friction, after a Day's Exerciſe has thrown off all the perſpirable Matter fit for Expulſion, and in a Morning, when a Night's Digeſtion has prepared in readineſs a great Quantity fit to be drawn off by any Sollicitation. In the former Caſe the Fleſh-Bruſh will rather prove ſuch a *Stimulus* as will render the Fibres more tenſe, and prevent their falling into that relaxed Condition as is requiſite for ſound Sleep; and likewiſe by no means increaſe the Quantity of perſpirable Matter, becauſe the Day's Action has already done that as far as is poſſible; but in a Morning the ſame means will, by ſhaking the Fibres, draw out a great deal, which by the previous Night's Digeſtion lies ready broke ſmall enough for Tranſpiration. See further under *Aphoriſm* lxxiv of the 1ſt *Section* in *Sanctorius*.

APH. XXXIV.

" An Obſtruction of Perſpiration is not the " Cauſe of a Cough.

Explanation.] This *Aphoriſm* Dr *Keil* beſtows afterwards a whole Diſſertation upon, in order to explain

plain and prove it; and in that he diſallows the retained and perſpirable Matter, upon taking Cold, to be the Cauſe of a Cough; and endeavours to prove, that it is from a Mixture of frigorifick Particles with the animal Juices; but this Diſtinction does not to me ſeem to be of any great moment. The Doctor's Regiſter, or Table, ſets forth, that *Jan.* 20. he caught Cold from having his Head ſhaved; upon which immediately follow'd a Cough; and that on *Feb.* 15. he ſlept with his Head bare; whereupon followed a Pain of the Tonſils, and a great Cough: And in both the Inſtances it appears that Perſpiration was diminiſhed. Now whether this Cough comes from a *Lentor*, or Viſcidity, which an Increaſe of retained perſpirable Matter occaſions, in the manner that every *Plethora*, or a Redundance of Fluid, will occaſion the ſame; or whether a Sett of particular Particles taken in through the Pores from the Air, induces the ſame Effect, from their Quality and not Quantity, is of no great Importance, as to any thing that regards the Means of Remedy, and therefore not worth diſputing, although probably where Perſpiration is diminiſhed by a cold Air upon the Skin, the Conſequences that may follow of a Viſcidity, a Cough, and the like, may be owing to a Matter offending both in Quality and Quantity; and conſequently ſome Truth may be on both ſides the Controverſy.

APH. XXXV.

"The Body is in equal Times, more diminiſh-
"ed by Sweat, than by inſenſible Perſpiration.

Explanation.] Much Sweat may in many Inſtances render the Body *abſolutely* lighter, than inſenſible Perſpiration would do, by carrying off a greater Quantity of Matter; but it can be ſeldom practis'd, without waſting ſo much at the ſame Time, of Spirits,

Spirits, as to render the Body *relatively* heavier, that is, weaker.

APH. XXXVI.

" If the Weight of the Body is diminiſhed by " large Evacuations, it ſoon returns to its uſual Bulk, " either by a greater Quantity of Food, or its longer " Retention, or by an Attraction of moiſt Air.

Explanation.] The Author here refers to many Obſervations of Facts recorded in his Tables, and takes Notice particularly of the 27th of *Auguſt*, that he waſted an uncommon Quantity by Exerciſe and Riding, but that in the very next Day, from five Pounds of Meat and Drink taken in, he waſted in twenty-four Hours Time but a little above half that Quantity, ſo that two Pounds was retained as a Recruit for the previous Diminution. In Caſes therefore of this Nature, the ſame Care ought to be taken in chuſing a light Food, as after waſting by Sickneſs, becauſe any other cannot but generate Crudities, accumulate bad Humours, and make Obſtructions. As for the Attraction of a moiſt Air by a Body ſo emptied, it ſeems very probable, that there may be a greater Aptitude in the Pores to introduce ſuch Moiſture, but that it can be received in any conſiderable Quantity, and, as the Author mentions, in one Night, *December* 27th, to eighteen Ounces, I cannot well apprehend; nor does it ſeem to me practicable, for the Conſtitution to diſpenſe with ſuch an Addition of cold Moiſture, without very great and unconquerable Difficulties.

APH. XXXVII.

" Purging Medicines do not hinder Perſpiration.

Explanation.] This cannot be underſtood in an unlimited Senſe; for in many Caſes Purging will leſſen Perſpiration, that is, where they either diminiſh greatly the Quantity of animal Juices, as ſtrong Ca-

tharticks

tharticks will do, or where they weaken the digeſtive Powers; the Inſtances therefore the Doctor refers to in his Regiſter, where he one Time purged with *Jalap*, and another with *Elix. Salutis*, will not conclude, that in no Caſes purging will not leſſen the cutaneous Secretion; and when this can be practiſed without ſuch an Effect, it is a manifeſt Sign that the Purge has carried off only an Over-load, or Redundance, of Humour, and left the Animal Functions in as good if not a better Condition, than before.

APH. XXXVIII.

" The Quantity of Meat and Drink, is to the " Quantity perſpired, as 2 to 1.

APH. XXXIX.

" If the Meat and Drink in one Day be four " Pound and an half, the Perſpiration of that Day " will be two Pounds, the Urine as many Pounds " and five Ounces, and the Quantity by Stool, " three Ounces.

Explanation.] Theſe may be compared with the preceeding *Aphoriſms* of this Author, and the beginning of *Sanctorius*'s firſt Section, wherein the Differences may eaſily be accounted for, from what is there ſaid about the Differences of Climates.

APH. XL.

" The natural Diſcharges are not in Proportion " to the Weight of the Body, but the Quantity " of Diet taken in.

Explanation.] For we have many Inſtances of luſty People, who eat and drink not ſo much as leſs; if the Evacuations therefore were in proportion to the Bulk, ſuch Bodies would ſoon be reduced to the ſmalleſt ſize. And whereas the digeſtive Powers being the main efficient Cauſe, which determine the Conditions and Quantities of Evacuation, our Com-

putations are to be taken from thence; and as the Appetite is commonly anſwerable to ſuch Powers, and the Quantities taken in, ſo the Diſcharge in a natural State cannot but be anſwerable thereunto.

APH. XLI.

" That is the Proportion of Diet ſuitable to every " one, by a Diminution of which the Body would " leſſen, or increaſe upon its Exceſs.

Explanation.] Where therefore a Perſon increaſes in Bulk, or leſſens, and it cannot be aſſign'd to any other manifeſt Cauſe, it is very probable from too plentiful, or too ſparing a Diet; and every one is able how to regulate any Diſorder from this Original.

APH. XLII.

" The Proportion of daily Food ſuitable to a " Body in the forementioned Circumſtances, is a- " bout four Pounds; for this Quantity commonly " brings the Body every Day to the ſame Standard " of Weight; but leſs ſinks it, as a greater Quan- " tity increaſes it.

Explanation.] The healthful Standards have been often explained above in *Sanctorius*'s Aphoriſms; and what Quantities of Food will beſt preſerve ſuch a Standard, is beſt within every one's own Experience; becauſe ſome will digeſt off a great deal more than others, tho' this ſettled by the Author, is very likely to be the Quantity convenient to moſt People.

APH. XLIII.

" If the Quantity of Food be greater or leſſer than " needful, then it will not anſwer to the Quantities " evacuated; for whether we eat more or leſs, Na- " ture always keeps a certain Rule in Evacuation.

Explanation.] That is where the digeſtive Powers keep in their natural Force; but it is pretty difficult

to go into Exceſs of Feeding either Way without affecting thoſe Powers, and therefore will that Rule, which the Author ſpeaks of here, be often broke, and the Quantities evacuated be made moſt commonly to bear ſome Proportion to the Quantities taken in.

APH. XLIV.

" This Rule of Evacuation hath a certain Lati-
" tude, and the more every Conſtitution will ad-
" mit of that Latitude, the leſs liable will it be to
" Diſeaſes.

Explanation.] This is manifeſt alſo from many of *Sanctorius*'s Aphoriſms, and what hath been ſaid in their Explanations. Common Experience likewiſe informs us, that the more yielding a Conſtitution is to ſuch ordinary Accidents, as will in ſome Meaſure increaſe, or diminiſh, or change the Evacuations, the much eaſier is ſuch a one preſerved in a State of Health; whereas thoſe who ſeldom vary from a conſtant Standard and Condition of Evacuation, are the moſt diſordered when they do ſo: For that robuſt Tenſity of the Fibres, which makes ſtrong People the leſs liable to Accidents, and the leaſt changed by them from a healthful Standard, whenever they are put out of Courſe, are more unruly, and much ſooner break into irreparable Diſorders; the Greatneſs of their Springs being much leſs under Subjection in many Caſes to the Means of Remedy, and much more miſchievous to the animal Functions when excited into irregular Motions. In the whole therefore, a Conſtitution that can go into the greateſt Deviations, is moſt ſafe from Accidents and ordinary Diſtempers.

APH. XLV.

" By how much any one exceeds the due Propor-
" tion of Food, ſo much he increaſes the Bulk of
" his Body, unleſs ſome violent Evacuation follows.
" For ſince there is a certain Rule for Evacuation,

" not able to throw off every Increaſe of Food; it
" is neceſſary that what abounds, ſhould either go
" into Nouriſhment, or, if the Conſtitution cannot
" ſo diſpenſe with it, there muſt ariſe either ſome
" Diſeaſe, or follow ſome preternatural Evacuation.

Explanation.] This is little more than a Comment upon ſome of the former, and wants no *Explanation*, as is alſo the following.

APH. XLVI.

" But how much a Perſon abates of the due Quan-
" tity of Food, ſo much Strength and Bulk will he
" loſe; and by emptying the Veſſels, will Death
" itſelf at laſt enſue.

APH. XLVII.

" The Rule for eating to every Body, is a natural
" Appetite; and by this Monitor may every one be
" advertiſed of the Quantity proper to be taken in,
" without weighing; for Nature never requires
" more or leſs than is convenient, and the Appetite
" is proportionable to the natural Evacuations.

Explanation.] In this is ſummed up moſt that is material in the foregoing, and is of the utmoſt conſequence for a Perſon to attend to: For the natural Appetite is certainly the beſt Guide, both in the Quantities and Qualities of the Meats and Drinks to be taken in; but Perſons muſt be careful to diſtinguiſh a *natural* Appetite from one that is *vitiated* and *debauched* by Exceſs and over Indulgence. This ought to be compared with the xliid and xliiid *Aphoriſms* above, and the Standard of Digeſtion and Excretion will be eaſily enough underſtood.

APH. XLVIII.

" Let a Perſon eat much or little, if he keeps the
" ſame Bulk, and hath any Ail, it is not from a
" depraved Appetite.

Explanation.] For if the eating more or leſs was owing to a Diſtemperature of Appetite, the digeſtive Powers would alſo be in fault, and the Body not be kept up to the ſame Bulk.

APH. XLIX.

" Oyſters give the greateſt Nouriſhment, not " becauſe they are the leaſt perſpirable of all Food, " but alſo becauſe they hinder the Perſpiration of " other Meats. For leſs is perſpired thoſe Nights " where Oyſters are eat for Supper, than where " there was no Supper at all.

Explanation.] It requires good Attention to diſtinguiſh between Things that leſſen Perſpiration, by being uncapable of Reduction, by the digeſtive Powers, to a fineneſs ſuitable for ſuch Diſcharge, and ſuch as leſſen Perſpiration by their fitneſs for Lodgment in the Habit, and making Matter for Nouriſhment. The firſt are Subſtances extremely hard and viſcid, that cannot be broke fine enough to go into the laſt Stages of Circulation, but are thrown out of the Body by ſome of the greater Outlets, as the *Anus* or *Kidneys*; but the latter are ſuch as will eaſily break ſmall enough to go into the fineſt Paſſages, but are even then of that light adheſive Nature, that they eaſily lodge upon, and make a Part of the Paſſages themſelves, eſpecially where there are Interſtices to take them out of the perfluent Current; and by this Property, theſe not only leſſen the Quantity to be perſpired at that time, but alſo wrap up and incloſe other fine Particles, that come in their way, which might elſe fly out through the Pores; and this Difference is manifeſt in the Texture of thoſe Subſtances which common Experience ſhow to be very little, or very much nouriſhing; the firſt are very hard, rigid, or tough; and the latter are very ſoft, yielding, and adheſive. The Author builds

this *Aphoriſm* about Oyſters, upon many Inſtances of his own Experience, to which he refers in his Tables; whereby it appears, that he always perſpired leſs after a Supper of theſe Fiſh: But where there is too great a *Plethora*, or the digeſtive Powers are very weak, care muſt be taken not to indulge too much with ſuch Food, becauſe of their Aptitude to run into Corruption and Fermentation, as *Sanctorius* cautions in many Places; and in what Caſes likewiſe ſuch Subſtances are to be choſen, has been largely explained under theſe *Aphoriſms*.

APH. L.

" That Liquor which our Countrymen call " *Punch*, is both Diuretick and Sudorifick.

Explanation.] For this the Author refers to Inſtances of his own Experience; but might have alſo appealed to the Experience of all who have uſed it: Beſides the Nature of the Materials of which it is made, being chiefly Spirit, an Acid, and a common Diluter, would demonſtrate to us the Neceſſity there is for its having thoſe Effects, more or leſs, wherever it is uſed.

APH. LI.

" Drinking ſmall Liquors promotes Urine, but " very little affects Perſpiration.

Explanation.] Becauſe they very naturally, with a little Alteration, make the ſerous Part of the Blood, and waſh off by the Kidneys; but an aqueous Fluid is too groſs to be comminuted fine enough to go into ſmaller Paſſages, and therefore has it nothing to do in thoſe Parts, where the laſt Digeſtion is concerned and where the perſpirable Matter is chiefly made.

APH. LII.

" Perſpiration is not ſo much affected by Meats, " as Urine is by Drinks; or Urine ſo much affect- " ed by the Seaſons of the Year as Perſpiration.

Explanation.] Becauſe that particular Concoction wherein, the perſpirable Matter is chiefly prepared, lies furtheſt off the Influence of what is taken in at the Mouth; whereas the Liquors we drink are ſoon ſtrained into the Blood, from whence they immediately affect the parts which ſeparate the Urine; and that Urine is not ſo much influenced by Changes of Weather, as Perſpiration, is very plain; becauſe ſuch Changes immediately affect the Surface of the Body which lies open thereunto, and upon which the Pores venting the perſpirable Matter are diſperſed; whereas the Urine is prepared and ſeparated in the middle of the Body, where the Parts are fenced and guarded from the immediate Contacts of Air, and the Influences of different Seaſons.

APH. LIII.

" There is no difference perceivable between Per-
" ſpiration before and after Dinner, nor does going
" to Bed without a Supper, diminiſh Perſpiration.

Explanation.] That is, where every thing is managed with Moderation and Temperance, for a little Exceſs will make an Alteration herein, as it appears by many of the preceeding *Aphoriſms*.

APH. LIV.

" The Pulſe is much quicker in the Evening
" than in the Morning, and is accelerated by eating
" Dinner.

Explanation.] Becauſe the Day's Exerciſe has waſted a great Quantity of the animal Fluids, and left leſs Reſiſtance to the contractile Fibres; beſides that additional Tenſity which the Fibres obtain, whereby they vibrate quicker and ſtronger: Both theſe may be in the Caſe of common Hecticks. That a Meal will quicken the Pulſe, is both from the additional Quantity of Spirits which thereby is ſtrained into the Fibres; as explained in the *Eſſay of an animal Fibre*, which ſee; and the Reſiſtance which a full

Stomach gives to the deſcending Blood, whereby the Head has a greater Share, and conſequently are there more Spirits ſeparated into the Nerves which move the Heart, and influence the Pulſe of all the Arteries.

APH. LV.

" There is an eaſy and a continual Egreſs and " Ingreſs of Air thro' all the Pores of the Body.

Explanation.] This may be conceived from what hath been before ſaid under the firſt *Aphoriſms* of *Sanctorius*'s ſecond *Section*, concerning Water in Bathing, which ſee.

APH. LVI.

" Thoſe watery Particles which float about in the " Air like Vapours, are attracted by the Skin, and " mixed with the Blood, and add to the Weight of " our Bodies.

Explanation.] For this the Author refers to his Tables, where he ſays, that eighteen Ounces was gained from the moiſt Air in one Night. But how this can be aſcertained I cannot yet conceive, nor how ſo great a Quantity can be diſpenſed with, without great Miſchiefs; tho' the following ſeems probable, that

APH. LVII.

" Bodies emaciated by Sickneſs, or Evacuation, " draw more than full ones.

Explanation.] Becauſe ſuch Emptineſs cannot but add to that Faculty, which admits the Introduction of any Fluid into the Body through the Pores of the Skin.

APH. LVIII.

" We attract more in a rainy Seaſon, than a dry " one; more in the Night than in the Day; more " ſleeping than waking; and from hence it is, that " the Day's Perſpiration is greater than that in the " Night.

Expla-

Explanation.] Wet Weather, and the Night Season conduce to this more than the Day-Time, and a dry Air, by leaving a Moisture upon the Skin, and relaxing it; but there are other Causes concurring to make the Night's Perspiration less than that in the Day-Time besides this, as appears by many Places in *Sanctorius*'s *Medicina Statica.*

APH. LIX.

" Garments of all Kinds draw the Moisture of " the Air; and such Attraction in Garments of " equal Extent is as their Weights.

APH. LX.

" The Attraction of Garments of equal Weights " is as their Superficies.

APH. LXI.

" The Attraction of Garments of the same Stuff, " are in a compound Proportion of their Weights " and Superficies.

Explanation.] Garments in general do this as all dry Bodies absorb Humidities that are contiguous to them, and may be easily enough understood by the common Operation of Filters. And the Proportions in which they attract in the recited Conditions, is demonstrable at first View, from the Principles of all Reasoning in such Cases.

APH. LXII.

" Those Garments which are made of animal " Substances, attract more than those made from " Vegetables.

APH. LXIII.

" There is the same attractive Power in Silken, " as in Woollen Garments, if in all other Respects " they agree.

APH. LXIV.

" Leather draws more than any other Garment.

APH. LXV.

" Linnen draws the least of any Cloaths.

APH. LXVI.

" Black Cloaths, *cæteris paribus*, draw the leaſt " Moiſture of any.

Explanation.] What that particular Diſpoſition of the Pores and Fibres in theſe Caſes, that gives this Difference, is, cannot very certainly be aſſign'd; but this Rule in general will hold, that where the Pores are moſt numerous and ſmall, and the Fibres moſt ſoft and yeilding, there the Attraction will be greateſt, as in common dreſſed Leather, which is very ſoft and ſpongy; and where the Pores are wideſt, and the Fibres hard, as in Linnen, there the attractive Powers will be weakeſt. And what is here ſaid of Garments attracting Moiſture from the Air, is alſo true of their attracting Moiſture from the Body, and therefore may ſuggeſt a very good Hint in what Caſes and Circumſtances they are to be ordered. Such as draw moſt, are the leaſt to be uſed where the Body has leaſt to ſpare, and indulged in groſs Habits that are full of Humours, and ſuch as draw leaſt to be regulated by the obvious Diſpoſitions and Exigences of the Patient.

Thus far hath Dr *Keil* had leiſure to go in Statical *Aphoriſms*, founded upon Facts of his own Tryal; and for what concerns the Influences of the Moon, Weight of the Air, and Courſe of the Winds, is by him referred to future Opportunities; but we have ſince loſt that worthy and ingenious Gentleman by Death, and whether any other Perſon of equal Application and Judgment will ſupply this Defect, is as yet doubtful; however, a very great Aſſiſtance hereunto may be had, from Dr *Mead*'s Book, *De Imperio Solis & Lunæ in Corpora Humana*, wherein is contained ſuch a demonſtrative Theory of this Affair, that an intelligent Reader may draw from thence many uſeful Deductions for Life and Practice.

MEDICO-

MEDICO-PHYSICAL

ESSAYS.

I. Of AGUES.
II. Of FEVERS.
III. Of an ANIMAL FIBRE.
IV. Of the GOUT.
V. Of a LEPROSY.
VI. Of the KING'S-EVIL.
VII. Of VENEREAL DISEASES.

By JOHN QUINCY. *M. D.*



LONDON: Printed in the Year 1737.

THE

PREFACE.

IT *may be neceſſary to obſerve, by way of* Preface *to the following* Eſſays, *that the three firſt were printed before, under the Title of* Digreſſions, *in the Explanations of* Sanctorius's *Aphoriſms, but that the four latter were never yet made public; and the chief Reaſon why they are ſo now, is in Compliance to ſome Expectations, which I find have been raiſed by Hints given, in my Diſpenſatory, on thoſe Subjects.*

As

The PREFACE.

As to the Eſſay *upon the* Gout *in particular, I would obſerve, that the main of it hath lain by me many Years, by which I have had frequent Opportunities of reviſing and comparing it with my own Experience, when I have been afflicted with that Diſtemper. In my Endeavours to account for its Appearances, and Manner of Exertion, I have as much as poſſible avoided all precarious and* hypothetical *Reaſonings, they being ſuch as I conceive never did, or ever will contribute to any Diſcoveries of Truth: And how far the Method I have followed hath ſucceeded to any good and uſeful Purpoſes, I willingly ſubmit to every candid Judgment.*

Since this hath been almoſt finiſhed at the Preſs, I have read a Treatiſe of Dr Cheyne's *juſt now publiſhed on the ſame Subject; and am not a little pleaſed to find my Thoughts confirmed by ſo ſubſtantial an Authority; for in the main, I cannot ſee any Difference of moment. The former Writings of that Gentleman, have given me the greateſt Eſteem for his Knowledge in the animal*

animal Oeconomy, and his Mechanical and Demonſtrative Way of treating thoſe Subjects, is ſuch as muſt be pleaſing and inſtructive, to every one who reads with deſire to be informed; but ſuch great Abilities may ſometimes overlook thoſe little Advantages in the Furniture and Management of Remedies, which a more contracted View may chance to hit upon; and I cannot but own it ſome Alleviation to the Conſciouſneſs of my Wants on other Accounts, to have obtained ſome uſeful Notices from a much inferior Courſe of Induſtry. What Dr Cheyne *ſays of* Sulphur, *and particularly of the* Bath-Waters, *where he imagines them to be had to the beſt Advantage, I conceive to be true in a much greater Degree of the Medicine whereon I lay the greateſt Streſs in this Diſtemper, and that whereſoever* Sulphur, *or any of its Preparations, can be of Service in ſuch Caſes,* Camphire *will be much more ſo, for the very ſame mechanical Reaſons as are given for the Efficacy of the other. As to that particular Confirmation*

and

and Capacity of the capillary Veſſels, in ſome different from others, which Dr Cheyne *makes the Foundation of ſome of his Reaſonings; it ſeems to me of ſo little Importance in the main, either as to what is by him, or me, advanced, as not to be worth contending whether it be ſo or not; nor can I apprehend any thing materially different as to the Intentions and Means of Cure, but only as they are here conceived to be carried to a much higher Degree of Efficacy.*

But I now ceaſe to be a Judge herein, and freely leave my Thoughts upon this difficult Subject to the impartial Conſideration of others, reſolving never to be drawn into any Controverſy thereupon, but chearfully and thankfully to receive all candid Intimations of Miſtakes or Defects; or to find the ſame Thoughts improved by Perſons of more Leiſure and Capacity.

Medico-

Medico-Phyſical

ESSAYS, *&c.*

ESSAY I.

Of AGUES.

ON this Head, it may not be out of the Way to premiſe, that all periodical Diſtempers have their Riſe from a Diſproportion between the Supply and the Waſte of ſome of the Animal Fluids, by which they come to offend in Quantity, or Quality, or both; and alſo that upon adjuſting this Irregularity, and bringing the Secretions to their natural State, and preſerving the *Equilibrium* between the Force of the Solids, and the Reſiſtances of the Fluids, depends always their Cure. And without entring into the Account of any particular Diſtemper that is periodical, thus much in general may be received for Truth; for if there was not a Removal of the imme-

immediate Cauſe, every time it makes its Attacks, the Diſtemper would be continued; and if there were not a Continuance of the remote Cauſes, it would not return: And nothing therefore is more certain, than that in order to make an effectual Cure, there muſt be a Removal of the *Cauſæ remotæ*, or what *Inſtitution* Writers commonly call the *Cauſæ procatarictícæ*, as well as an abſolute Removal of the preſent Fit.

This being premiſed, it may be laid down as a general Propoſition, that *Agues have their Riſe from an increaſed Viſcidity of the Blood.* That this is the State of the Blood, in perſons labouring under this Diſtemper, cannot eaſily be queſtioned, when we come to conſider the Loſs of Colour, Want of Appetite, a Senſe of unuſual Weight, Liſtleſſneſs to Action, and a general Coldneſs of the Fleſh; which will further alſo be confirmed, when we come to conſider the Means, by which this Diſorder is the moſt effectually removed, all of them having a Tendency to heat and thin the Blood.

The Blood becomes too viſcid by an Increaſe of its Quantity, or by ſubſtracting from the Force of the Heart and Arteries, or by both together. An Increaſe of its Quantity only, whether it be by a Diminution of any of the Evacuations: or by taking in more than uſual by Food, ſuppoſing the Force of the contractile Veſſels to remain the ſame; the Increaſe, I ſay, of its Quantity alone in this State, will increaſe its Viſcidity; becauſe by its giving thereby greater Reſiſtances to the Veſſels in their Contractions, they will not be able to preſs it forward ſo faſt as before; whereupon the attractive powers of its component Parts, will be greater in Proportion to the Force impreſſed upon them *ab extrà*, and thereby will they run more into mutual Contacts with one another, than they did before; and as it hath been proved by

Dr

Dr *James Keil* of Animal Secretion, *Prop.* 2, and 9. that the ſpecifically lighter Parts, that is, ſuch Parts as have the largeſt Surfaces in Proportion to their Solidities, as they are ſloweſt in their Attractions, and ſtrongeſt in their Coheſions when brought into Contact; ſo upon this Retardation of the Blood's Velocity, will their attractive powers be greater in Proportion, than the attractive Powers of thoſe Parts, which have ſmaller Surfaces and greater Solidities; that is, the lighteſt and moſt viſcid Parts of the Blood will draw one another, more in proportion to what they did in a greater Velocity, than the more heavy and ſolid Parts, and form ſuch Coheſions, as will not admit them through the Capillary Veſſels; ſo that when they are thrown into them there they muſt lodge and be obſtructed.

With the ſame Conſequences alſo is attended any Subſtraction of the Force of the Heart and Arteries, when the Blood remains in its natural Quantity; as it is well known in *Mechanicks*, that the weakening the motive Powers of any Body, is the ſame as increaſing its Reſiſtance with regard to its *Percuſſion*, and *vice verſâ*. And therefore all that it concerns a Perſon to know on which Side the Fault lies, is only ſo far as regards the Cure; in which, when a thing is to be brought about ſeveral ways, (as hereafter I ſhall endeavour to prove that of this Diſorder is) there may ſome Circumſtances ariſe, which may make it much more convenient and ſecure to take one way than another. That both theſe Cauſes may alſo ſometimes concur in producing this State of the Blood, is not to be queſtioned; as debauching in Seaſons when the Air is hot and moiſt; for hereby both the Quantity of the Blood is increaſed, and the Solids weakened at the ſame time; wherein if either of them ſingly will have this Effect, they cannot but both together more ſpeedily bring it about.

But beſides the Blood's Increaſe by too great a Supply from eating and drinking, or a leſſening its Waſte by too flaccid a State of the Solids, or by a Diminution of the ſenſible Evacuations, there is alſo another Way of doing it, and that is, by drawing up the Solids too ſtrait, which before has been proved always to leſſen Perſpiration, and frequently, likewiſe, other Evacuations. And in this ſeems chiefly to conſiſt the Difference between intermitting Fevers, and acute continued ones, that the latter is owing to too great a Fulneſs, attended with too contracted and too ſpringy a State of the Solids, and the former to too great a Fulneſs, when the Solids are too looſe and flaccid; which are ſo very oppoſite, and require ſuch different Methods of Cure, that whoſoever is not well appriſed hereof, will do more Miſchief than ſervice to his Patient. And conſidering how manifeſt this Difference is upon any diligent Enquiry, it is to be wondred at, that ſo little Notice is taken of it. It is well known, that the moſt rational and ſucceſsful Practice in acute Fevers, is diluting, raiſing Sweat, and quieting and abating the too great Springineſs and Contractions of the Solids; all which is brought about by thin ſubacid Liquors and Juleps, by a gentle Promotion of any of the Evacuations, and keeping the Body as ſtill and free from Motion as poſſible. But in Intermitting Fevers, it is quite otherwiſe, for there all theſe things are deſtructive; and the greateſt Service and moſt effectual Cures, are always brought about by ſuch Means, as draw up and increaſe the Springineſs of the Nerves; by plentiful Doſes of ſpirituous Liquors, piperine Medicines, Sub-aſtringents, briſk Exerciſe, ſudden Frights, and the like: And herein all Evacuations, unleſs that by inſenſible Tranſpiration, and even Sweat itſelf, except to relieve the preſent Fit, are always bad, and

ſome-

ſometimes fatal; nay, frequently Evacuations, ſoon after a Recovery, return the Diſtemper, and ſometimes with more Violence than before.

Thus then the Matter is drawn into a narrower Compaſs, and it appears more particularly, that *an Ague is from a relaxed State of the Nerves, and a viſcid Blood together*. Both theſe are brought about by various Cauſes. The Solids ſometimes grow too ſlack by a Diminution of the Atmoſpherical Preſſure upon the Circumference of the Body; for ſuppoſing the Quantities of the Fluids the ſame, or their *Niſus* againſt the Sides of the Veſſels, that convey them, to remain with equal Strength, whenever the Preſſure of the Atmoſphere decreaſes, the Veſſels will be the more ſtretched, and their conſtituent Fibres lengthened, in which State their Reſtitutions and Contractions will be weakned: Another external Cauſe alſo, may be too moiſt or foggy an Air, which, by hanging too much upon the Skin, will hinder the Exhalation of the perſpirable Matter, and both together render it ſo ſupple and flaccid, as in a little Time to draw alſo into Conſent the Fibres of the whole Body. Too tender a way of living alſo will render the Solids too looſe, as wearing too thick Garments, lying too much in Bed, continuing much by a Fire-Side, warm Bathing, and a diſuſe of accuſtomed Exerciſes: There are alſo internal Means by which the Fibres loſe their due Tenſions, as an inſufficient Supply of Food in Quantity, or a Supply of ſuch, as by its Quality, is not fit to furniſh the Solids with that Recruit of Spirits, as is neceſſary to maintain their Firmneſs and Elaſticity.

The Blood will grow viſcid, and itſelf be often firſt in Fault, by feeding too plentifully upon ſuch Meats and kinds of Food, as in themſelves have a natural Tendency to run into thoſe Coheſions, as cannot eaſily be ſeparated, and form ſuch Subſtances

as are glutinous and tenacious; of which ſort are *Fiſh*, and ſeveral Fruits, as *Melons*, *Cucumbers* and the like. Another Cauſe likewiſe is a Weakneſs of the Spring of the Air, which it is well known, in ſome Seaſons and Places, is much more ſo than in others; for by this only, that Part of it which mixes with the Blood, and ought to raiſe its Globules, will do it ſo faintly, that thoſe Globules will in ſome meaſure ſubſide, and by that means their Contacts will be greater, and conſequentely their Coheſions ſtronger; that is, the Blood, will thereby be rendered more viſcid. But ſtill the moſt common Cauſe of the Blood's Viſcidity, is from a Loſs of the due Force and Elaſticity of the Solids; for whenever this happens, the Parts of the Blood by being leſs agitated, cannot but thereby the more attract one another, and form ſtronger Coheſions, in ſuch a manner as hath already been demonſtrated at large under *Aph.* xxii. *Sect.* 3.

That theſe are the Cauſes of Agues or Intermitting-Fevers, and that this is the true State of an Aguiſh Conſtitution, it might further be a great Confirmation to go through all the Shapes and Symptoms of this Diſtemper, from its firſt Attacks to the Declenſions of its Paroxyſms through all its Periods; but becauſe this would draw out this Digreſſion into too great Length, I muſt beg the Reader for further Satisfaction to conſult Dr *Jones*'s Book, *de Febribus Intermittentibus*, and *Bellini de Febribus*, Prop. 18——26. And as the moſt effectual and natural Methods of Cure, are likewiſe a great Addition to the Proof of this Theory, I ſhall content myſelf only with juſt taking Notice of them.

And firſt, nothing is more obvious to this Purpoſe, than that the Viſcidity of the Blood muſt be broke and this is to be done by ſuch Means, as will keep its Parts from running into thoſe Contacts and Coheſions

heſions which cauſe its Viſcidity, and as will break and divide thoſe Coheſions when formed. The former is to be done by mixing ſomething with it, as by the peculiar Bulks and Figures of its Parts, may be a hindrance to thoſe of the Blood, which cohere ſo ſtrongly when got together, from coming into cloſe Contact with one another; and the latter, by giving them ſuch briſk and forcible Motions, as are ſufficient to ſeparate them when joined.

Now whereas it already appears, that thoſe Parts of the Blood that are moſt viſcid, are ſuch as have the largeſt Surfaces, and the leaſt Solidities; what therefore is moſt proper to keep theſe parts from coming together, muſt be ſomething ſpecifically heavier, that is, ſomething that conſiſts of parts of much leſſer Surfaces and greater Solidities: whatſoever therefore is endowed with theſe Properties, will, if mixed with the Blood in ſufficient Quantity, deſtroy its Viſcidity, or at leaſt prevent it from growing more ſo.

But that which is moſt effectual to break its preſent Viſcidity, is to give it very forcible Agitation; for ſeveral Parts may ſo ſtrongly cohere as not to be divided by the Inſinuation of any other Particles moving againſt them but faintly; whereas when they are forcibly moved, and ſtruck one againſt another, by degrees they will be broke and reduced ſmall enough to be diſcharged by ſome of the Evacations: This way likewiſe of breaking the Viſcidity of the Blood by Motion, as it is not to be done but by the Aſſiſtance of its contractile Veſſels, ſo ſuch Concuſſions of the Veſſels, will help to wear away whatſoever Parts have before been lodged and obſtructed in the Capillaries. This Agitation indeed of the Blood from the Solids, may be very much aſſiſted by ſpirituous and aromatick Compoſitions, which by their ſubtilty and activity of

Parts help more intimately to keep up the inteſtine Motion of the Blood.

But further, beſides deſtroying the preſent Viſcidity, the Solids muſt be drawn up ſtraiter, and Digeſtion and Perſpiration regularly carried on; for after every Paroxyſm, altho' the Blood is entirely brought to rights, yet if the Flaccidity of the Solids remains, the Vibrations of the Veſſels will not be ſmart enough to digeſt the continual Supply of the Blood, and wear off a proportionate Quantity by Perſpiration; whereupon ſooner or later, as the Solids are more or leſs ſlacken'd, there will be a Renewal of the Viſcidity and Quantity of the Blood, until it comes to ſuch a Height as before, when it brought on a Fit; and in this altogether conſiſts a confirm'd and laſting Cure of this Diſtemper, that the Solids be reſtored to their natural Firmneſs and Elaſticity; the Neglect or Ignorance of which, is the Reaſon why it ſo frequently returns, ſoon after the Efficacy of the Remedies, which put it by for ſome time, are over: For ſuppoſe, for Inſtance, that the Viſcidity of the Blood ariſes barely from the Increaſe of its Quantity, that the Increaſe of its Quantity, proceeded only from a Diminution of Perſpiration, (or as we commonly ſay from taking cold) and that the Diminution of Perſpiration is occaſion'd by the Weakneſs, or Flaccidity, of the Fibres, as moſt commonly indeed in this Caſe it is; then if half a Pound, for inſtance, of the perſpirable Matter be obſtructed in twelve Hours, and the Quantity of two Pounds additional is ſufficient to bring a Fit, then in eight and forty Hours time, there will be a Fit; which if it carries off all the additional Load, and leaves the Blood as before, yet as long as the Cauſe remains, that is, the Flaccidity of the Solids, in forty-eight Hours after, there will be again the ſame Overcharge and another Fit;

and

and ſo on, while things remain in this State: now if ſuch a Remedy is found, that will draw up the Nerves ſo far after a Fit, as to bring ſuch an Increaſe of the obſtructed perſpirable Matter to four Ounces, then it will be four Days e'er there is another Fit; but if this Diſproportion be ſo far removed, as to reduce the Quantity obſtructed to an Ounce only in twelve Hours, then it will be ſixteen natural Days e'er the Return of a Fit; and about this length of time it is, that the celebrated *Peruvian Bark* is found to make a Cure; but as the Cauſe is not entirely removed, there is as much Neceſſity of the Fit's returning at the end of ſixteen Days, as there was before of its return after two Days. And thus appears the abſolute neceſſity of having a particular regard to the State and Tenſions of the Solids, in order to make a laſting Cure of this Diſtemper; as well as to the Correction of the Blood and Humours, as People commonly talk, for by this we ſee one will not do without the other.

As both theſe are therefore to be ſet about, in order to effect a perfect Cure, *viz.* to break the Viſcidity of the Blood, and draw up the Solids ſo far as to perform a perfect Digeſtion and prevent a re-increaſe of the Blood's Quantity; it is next of the greateſt Concern to know, by what means both of them are to be brought about, and which of them ought firſt to be attempted. As to the latter it ſeems plain, that the Viſcidity of the Blood ought firſt to be broke, and what is obſtructed in the Capillaries to be diſlodged; becauſe otherwiſe to draw up the Solids whilſt ſuch Obſtructions remain, is the moſt likely way to tie up the faſter that viſcid Matter, and thereby aggravate the Diſtemper; beſides, it will be a Taſk of difficulty to bring up the Fibres to their due Force, with ſuch a Load upon them; and for theſe Reaſons 'tis that we frequently ſee ſo much Miſchief done

by giving the *Bark*, or any ſuch Remedies as anſwer that Intention of ſtraitening the Fibres, before the *Lentor* of the Juices is ſufficiently removed, altho' indeed it very frequently happens, that a removal of the *Lentor* is brought about upon drawing up the Fibres only; as we ſee Perſons frequently cured by Frights, or great Strength of Imagination, upon pretended *Amulets* and *Charms*, and the like; yet as it may be attended with the ill Conſequences abovementioned, it cannot but be much better to break the *Lentor*, before any ſuch means are attempted; and further, becauſe when the Diſtemper has been really removed by the latter Intention only, it frequently happens, that the morbid Matter is thrown upon ſome of the *Viſcera*, ſo as to diſturb their proper Offices, and according to the Part affected, either produce *Jaundices*, *Cachexies*, or *Aſthmas* or elſe it remains cloſed up in the Glands and Capillary Veſſels, until by ſome freſh Cauſes the Fibres are ſlacken'd, and then it never fails to appear in its former Shape.

It next then is of Conſequence to know, by what Means and Inſtruments, both theſe Intentions are moſt effectually to be anſwered; the firſt, as hath already been taken notice, is to be brought about by mixing ſuch Particles with the Blood in Plenty, which are both much ſmaller and ſpecifically heavier; than thoſe Parts which form its viſcid Coheſions, and alſo by giving very briſk and ſtrong Agitations to the Solids. The former is anſwered by taking volatile Salts, and all Compounds of Aromaticks and Bitters, as thoſe of the Alexipharmick Tribe generally are; and the latter is done by nothing ſo effectually as by Vomiting, which not only drains off from the Stomach and its Glands, a great deal of this viſcid Matter, but alſo by the forcible Actions it gives to the Muſcles of the whole Body, all the *Viſcera*, and

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even the extreameſt Parts of the Body, are very much ſhook, ſqueezed, and cleared of their viſcid Contents, which is very manifeſt from the profuſe Sweats which will eaſily ariſe after this Operation, when it is well timed, and a Doſe of ſome good Alexipharmick exhibited after it.

And when this is done, and the Blood rendered duly fluxile, as for the latter Intention, and which indeed is the chief, I hardly know what will not anſwer under the Management of one, who hath any juſt Notions of the Mechaniſm of the Solids; all kinds of moderate Exerciſe and all Sub-Aſtringents will do it. But by Exerciſe I would be underſtood with a conſiderable Latitude, for of this Kind I take to be cold Bathing, and whatſoever affects the Mind with intenſe Thought, which will further appear to draw up and give a greater Tenſity to the Nerves, by what hath been ſaid in *Sect.* 7. And this is the Reaſon why ſo many are cured by what are commonly called *Charms*, the weakneſs of ſome Minds expoſing them to be intenſely affected, and rais'd with ſtrong Expectations, from the ſtrange and confident Aſſurances with which thoſe People treat them who deal in ſuch kind of Cures. By all *Sub-Aſtringents*, I ſay, becauſe if the *Lentor* of the Blood be firſt removed, whatſoever is rough, and gently irritates the Fibres, will draw them up ſhorter, render the Muſcles harder, and effectually make a Cure. But of this kind they are much more preferable, which have likewiſe in their Compoſition, ſomething bitter and ſpicey; becauſe by ſuch, both the Intentions are often anſwered at once; and upon this Account only it is, that the famous *Indian Bark* hath had the good Luck to get the Name of a Specifick, which becauſe it is taken for ſuch a celebrated Remedy in this Diſtemper, I ſhall according to the Theory here laid down, briefly examine how it

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cures an *Ague*, and then it may better be judged, whether any thing elſe can do the ſame or not.

I hope by what hath been already ſaid in the *Introduction*, that the Reader has got over all ſuch Prepoſſeſſions as incline him to expect any other Virtues or Properties, from any Parcel of inanimate Matter, by what name ſoever dignified, than ſuch as reſult from the particular Figures and Modifications of its conſtituent Parts: Whatſoever Honours and Names therefore have been aſcribed to this wonderful *Bark*, I hope it will not be accounted irreligious, to level it with others of the ſame Claſs, and to affirm it to be endowed with no other Virtues, than reſult from the peculiar Modifications of thoſe eſſential Properties of Matter, which it has in common with all other Bodies of much viler Account.

To know then how this wonderful *Drug* diſplays its Virtues, we muſt take it to Pieces, and ſubject it to the ſame Ways of Examination as other Bodies; which is to enquire into the Bulks, Shapes, and Solidities, of its conſtituent Particles; and herein when we come to conſider its Contexture, as it appears to the naked Eye; its roughneſs upon the Palate, and the Difficulty of reducing it into a fine Powder by pounding or deſtroying the natural Diſpoſitions of its conſtituent Parts by Infuſion or Digeſtion, and drawing from it by ſuch Means, any Tincture endowed with the ſame healing Virtues, as it is known to have when it is given in Subſtance; when all theſe I ſay come to be conſidered, it will readily appear, that it is made up of Parts very irregular, pointed, and ſolid. By the Texture of the Bark, and the Diſpoſitions of its component Parts, which are diſcernible to the naked Eye upon breaking, it is plain, that they are like little Cylinders or Needles, ſhooting one over another, not much unlike ſeveral Salts upon their Chryſtallization, and when it is broke

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tranſverſely, any one may ſee their Points; which Shape alſo they may be ſeen to continue upon pounding as far as the Eye is able to follow them. Their Solidity alſo is manifeſt from the Difficulty of reducing it into an impalpable Powder, but moſt of all by the little Alterations it undergoes, even by long Infuſion; for if it be then examined, after the Liquor is ſtrained, and it is dried, it will not be found much to have waſted in Weight, and but very little changed either in Colour or Taſte; it loſes indeed moſt of its Bitterneſs, but its Roughneſs remains; and upon Tryal it hath generally been found, that if it be then powdered and given in Subſtance, it will make a Cure as effectually as when given befor ſuch Infuſion. The Solidity likewiſe, as alſo the Angular Figures of the component Parts of the *Bark*, is further manifeſt from its Aſtringency and Roughneſs in the Mouth, which any one who pleaſes to taſte it, will ſoon be convinced of.

But beſides theſe groſſer Parts, which the *Bark is* plainly compounded of; and which are (not without great Difficulty) broke very ſmall; it hath alſo in its Compoſition, ſome Parts very ſmall and eaſily diſſipable, as appears by that which ſo eaſily riſes and flies off upon breaking it, as likewiſe by that penetrating *Bitterneſs* which is diſcernible in it by the Palate.

That this is the true Contexture and Modifications of the component Parts of this famous *Drug*, every one's Senſes are ſo able to inform him, that I think it can hardly be called in Queſtion; thoſe who would be farther ſatisfied, may turn to Dr *Cole*'s Book, *de Febribus intermittentibus. Cap.* 10. and to Dr *Jones* on the ſame Subject, *Part* 3. *Cap.* 2. the laſt of which ſeems to have omitted nothing that might give any Light into this Matter; and indeed the whole Book is ſo full, rational, and convincing, that

that this Subject ſeems wholly to be exhauſted; ſo far eſpecially as relates to curing with the *Bark*.

In this View then it will not be at all difficult, to conceive how this *Drug* is of Service in anſwering both the Intentions of curing an *Ague*: Both by the Smallneſs, Solidity, and Irregularities of its Parts, as ſoon as it mixes with the Blood, it cannot but give it a greater *Momentum*, increaſe the Impulſes of its Parts one againſt another; upon which Account a great many Coheſions will be broke, and other Parts prevented from running into ſuch cloſe Contacts, as occaſion thoſe Coheſions; that is, the Viſcidity of the Blood will thereby be broke, and the whole Maſs preſerved fluid. The other Intention will be anſwered, by its corrugating the Nerves, and rendring the Contractions of the Veſſels more briſk, by which, Digeſtion will afterwards be better performed, and an Increaſe of the Blood's Quantity, and conſequently of its Viſcidity thereby prevented. But in the latter Intention it ſeems to have the moſt Efficacy, becauſe it never fails to cure for ſome time, and ſo ſuddenly, that it cannot be expected in ſo ſhort a time it ſhould have done it by the firſt.

And that the *Bark* is very efficacious this way, *viz.* in drawing up the Fibres, and giving a greater Firmneſs to the Solids of the whole Body, is farther confirmed by its Effects upon ſuch who are ſubject to ſweat too much; whereas it effectually cures as in an *Ague*; for this we are certain is done, by ſtraitning the Fibres, hardening the Muſcles, and thereby enabling them to break and digeſt the Fluids far enough, to throw off that Overcharge by inſenſible Tranſpiration, which before went off by Sweat.

And this Effect of drawing up the Solids, is brought about by the *Bark*, by its aſtringing and corru-

corrugating the Fibres, whereſoever it touches them throughout its whole Paſſage, from its firſt entrance into the Stomach, to its Diſcharge out of the Body. That it acts as a *Stimulus* upon the Stomach and Guts, cannot be queſtioned, when it is conſidered how often it irritates them to a Diſcharge of their Contents, and goes off as a *Cathartick*; but then very much loſing its Efficacy in putting by the Diſtemper. Its curing alſo, or putting by a Fit, by one large Doſe only, taken about an Hour before its time of coming, is a further Confirmation, that it does it only by drawing up the Solids into a ſtraiter Tone, and preventing the Eruption of the obſtructed morbid Matter into Action.

If then it has ſo much Efficacy as an Aſtringent in the Stomach and Guts, where the Fibres are ſo much guarded by their natural *Mucus*, which is always in great Plenty lodged upon them; with how much more Force muſt it needs act in the ſame manner upon the Solids, when it is brought into much ſmaller Veſſels, both as it paſſes into the Blood, and when it comes there; for where a Particle in the Stomach chances to ſtrike againſt a Fibre once, when it comes into one of the Capillary Veſſels, is more likely to do it a thouſand Times; therefore as the Blood comes to be pretty well charged with theſe Particles, the Fibres in all Parts are corrugated and ſhortened at once, whereby the whole Body acquires ſuch a Strength and Firmneſs, as will not only admit of the Attacks of the morbid Matter, but ſuch as frequently likewiſe occaſions its Attrition and Expulſion quite out of the Body.

And here I cannot but take Notice, how little need there is, (with Dr *Cole*, who has drawn out his Conjectures upon theſe Inquiries into an incomprehenſible Fineneſs) to look for any other Scene of Action, (as he calls it) of the *Bark* than what I

have here aſſigned; for to carry it through that intricate Secretion, which is made in the Brain into the Nerves, which he argues to be tubular, and pleaſantly enough calls the *America* of the *Microcoſm*, not only to me ſeems needleſs in order to account for this Diſtemper, and the *Bark*'s curing it; but alſo goes too far from thoſe Evidences, which in Phyſical Searches ought always to be kept in View.

But the greateſt Difficulty that yet remains is, that this Diſtemper ſo frequently returns, after a Cure by the *Bark*; and this is alſo accounted for by the foregoing Doctrine; for the *Bark* operating only upon the Fibres, and not inducing any alteration into the Juices, unleſs by accident, whereſoever the Blood is under ſuch a diſorder, as is not removed within that Time wherein the *Bark* keeps the Fibres up to their due Tenſion, then the Diſtemper muſt return as ſoon as its Efficacy ceaſes.

For where an *Ague* happens upon, or brings a weak thin *Craſis* of the Blood, the Cure made by the *Bark* laſts no longer than while it remains in the Blood, and that *Tenſity* which it gave to the Fibres continues: In ſuch Conſtitutions therefore, or when a Perſon is brought into ſuch an ill Habit by a long Continuance of this Diſtemper, there is another Intention alſo to be anſwered, and this, to reſtore the natural *Craſis* of the Blood; and if this be neglected, a laſting Cure will never be made. But where the *Craſis* and Temperature of the Blood remains good, although an Obſtruction of the perſpirable Matter hath increaſed its Quantity, and occaſioned an adventitious Viſcidity, or whether this Cauſe firſt ariſes from a Relaxation of the Solids and an *Ague* enſues, the *Bark* in Time is ſufficient; but if after about fourteen Days it returns, 'tis a certain ſign alſo the Blood wants mending, and in ſuch Caſes after

after Vomiting, the common *Bitters* with *Aromaticks*, *Aſtringents*, *Steel*, or any warm generous Medicines, according to the Strength, Age, and Conſtitution of the Patient, never yet deceived me, although herein ſometimes I have found neceſſary the Aſſiſtance of a conformable way of Living, as briſk Exerciſe as much as can be endured without Sweating, and a Diet that is warm, ſpirituous, eaſy of Digeſtion, and what *Sanctorius* calls eaſily perſpirable, in which, Fleſh is better than Fiſh; roaſted better than boil'd; every thing high ſeaſoned, excepting with Salt; ſtrong ſtale Beer, old dry Wines in moderate Quantities, are perferable to ſmall and new Liquors. But all theſe Things are to be managed with Care and particular Directions, and in ſuch a Manner as always to fall in with the Intentions of Cure; and I cannot but ſometimes entertain a Belief, that this Diſtemper, by a Perſon thoroughly appriſed of its Nature and Cauſes, might be cured by as different Ways and Means, as any one Diſtemper beſides, notwithſtanding an unaccountable *Biggotry* to the *Bark* has drawn Perſons into the Uſe of that only. But as to *Chalybeated Bitters*, eſpecially after the Fit is once put by: Thus much I have to ſay farther, that by them I have ſeen Perſons, not only thoroughly recovered from their *Agues*, but alſo from the Borders of the *Jaundice*, *Dropſies*, and other ſtubborn and often fatal Diſtempers, which their long Continuance are very apt to bring People into. How ſuch Means as theſe not only take away an aguiſh Diſpoſition, but reſtore alſo a Perſon to a ſound Health, needs no Explanation, to ſuch who are converſant in theſe Enquiries.

But before I quite cloſe this Eſſay, it will be worth the while enquire into the Reaſon, why an Increaſe of any of the ſenſible Evacuations, or Phlebotomy ſoon after a Cure, is ſo apt to return

the Diſtemper; and this the *Sanctorian* Doctrine admirably accounts for. For in ſeveral of theſe *Aphoriſms*, it hath already been proved, that an Increaſe of one Evacuation, will always be a Means to leſſen the reſt; when therefore a greater Quantity than what is natural, is drawn off by Stool, Urine, Sweat, or the Quantity of Blood is leſſened by Phlebotomy, a great Deal of that which ſhould go off by inſenſible Perſpiration, cannot but be diverted, the cutaneous Paſſages leſſened in their Capacities, the Quantity of Blood in time increaſed, and conſequently its Viſcidity, and a Return of the Diſtemper muſt follow; and upon this Account only, it is ſometimes that an *Ague* is ſo difficult to be perfectly cured, becauſe where it hath continued long, Nature has been ſo much uſed to an Increaſe of the other Evacuations, and throwing off its Overcharges by the Criſis of every Paroxyſm, that the cutaneous Paſſages are cloſed too much, to be brought eaſily to their natural Diſcharges; whereupon as ſoon as the Efficacy of a Medicine, which for ſome time has brought all things to rights, is over, or whenſoever by any external Cauſe there happens an Increaſe of the Quantity of the Fluids, the Overcharge will run off by the ſenſible Evacuations, and leſſen the Quantity which ought to be inſenſibly perſpired, as before. And this may not only admoniſh us, how we tamper with Purgative Medicines upon every ſlight occaſion, becauſe the Benefit we may receive by them, may not at all compenſate the Injuries received by a Diſuſe, or Remiſſion of other natural Evacuations at the ſame Time; as this alſo cautions us againſt frequent Blood-letting, it alſo ſhews us how perſons grow in their Bulk thereupon, becauſe leſſening the Quantity perſpired, leſſens the perſpiring Paſſages, and increaſes the Matter retained.

ESSAY II.

Of the Difference between Inflammatory and Nervous FEVERS.

AS a *Corollary* alſo of the foregoing Doctrine, it may not be amiſs to take notice of the Difference between an Inflammatory and a Nervous Fever; or, as People commonly word it, a Fever of the Blood, and a Fever of the Spirits.

How a Fever is raiſed by an increaſed Quantity of Blood, has been particularly explained under *Aph.* XLVI. *Sect.* 1. and ſuch a Fever is properly call'd Inflammatory, becauſe it is attended with ſuch a prodigious Heat, as is little leſs than that of boiling water; the natural Moiſtures are exhaled in ſuch Quantities, as to occaſion a Drineſs upon the Surface; and whereſoever thay have room to fly off, and more eſpecially from the Mouth, ſo much as to occaſion an inſatiable Thirſt: The Colour is wonderfully raiſed, and the Eyes ſeem to ſparkle with Fire. It either goes off by an Increaſe of ſome Evacuation, generally by that of the Skin; or continues until the Solids are ſo overſtrained and defrauded of their due Moiſtures, as not to be able any longer to continue their Contractions, and then ends in Death. Herein all *Stimuli*, and whatſoever has any Tendency to increaſe the Celerity of the Blood, are fatal; but nothing is ſo deſtructive as

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bliſtering, and ſpirituous Juleps, as was before obſerved in the preceeding Eſſay concerning *Agues*, notwithſtanding the common Practice runs very much this Way; and although ſome Perſons have advanced *Theories*, on Purpoſe to eſtabliſh it, the moſt labour'd of which, is that of Dr *Cockburn*, about the Operation of *Cantharides*, and the manner by which they are ſerviceable in Fevers; but the Miſtake is very manifeſt both from Reaſon and Experience, as may be eaſily made appear to any conſiderate Enquirer; who likewiſe may find ſomething very rational upon this Sudject in *Baglivi's* Diſſertation *de Uſu & Abuſu Veſicantum*. But to return; almoſt any Evacuation in this Kind of Fever, eſpecially if timely procured, is of Service; but that of the cuticular Diſcharges, is generally of the greateſt Advantage; for if it can be plentifully raiſed, it hardly ever fails either of quite terminating the Fever, or bringing it to an Intermiſſion. This moſt commonly attacks young People, and thoſe who are moſt robuſt and ſanguine. It generally has its Cauſe in the Diminution of ſome of the natural Diſcharges, by which although the Blood at firſt is the ſame in Quantity, yet by the increaſe of its Quantity only, will it raiſe a Fever, as above cited.

But the latter, *viz.* a nervous Fever, appears in a very different Shape, ariſes from very different Cauſes, and requires a very different Management; and is not unjuſtly called a Fever of the Spirits, becauſe the Patient from the firſt Attack, is Pale, Feeble, and Sluggiſh; has a low ſhort Pulſe, feels rather cooler than natural, and has little or no Thirſt. All theſe Symptoms will go off at firſt ſometimes for a few Hours, and the Spirits ſeem to return, but they ſoon appear again, and frequently with ſlight Rigours and Shiverings, whereby a Perſon

ſon, not well appriſed hereof, is apt to be drawn into a Miſtake, and taking it only for an *Intermittent*, fall upon it immediately with the never failing *Bark*: but after a few ſhifting and deluſive Appearances, the Patient at laſt is tied down to his Bed, and grows ſo ſtupid, as to be ſenſible but very little of his Danger, or of what paſſes about him; he begins to fumble with his Hands, ſtammers with his Tongue, if he is not quite ſpeechleſs, and at laſt has very litle Appearance of Life, beſides a general Convulſion of the whole nervous Syſtem, but eſpecially of the Stomach, where they are diſpers'd in greateſt numbers; which occaſions Hiccoughs, and if Death does not cloſe the tragical Scene, it looks more like a Reſurrection than a Recovery. Towards the latter end, ſometimes appear Spots under the Skin, which the more florid and lively they are, it is the better, but worſe where livid or duſky. It is common to fall into a Looſeneſs, and have a diſcharge of very black fœtid Stools, and ſometimes alſo of a Urine of the ſame Colour. The ſenſatory Organs frequently loſe their Offices, inſomuch that they have not been able to diſcern broad Day-light, nor to hear a Perſon ſpeak very loud: the latter Symptom has been obſerved to be almoſt an infallible Sign of Recovery, and to be ſometimes followed by Matter running from the Ears; which ſhows a critical Diſcharge of ſome morbid Humour upon that Organ. But whenſoever there is a Recovery, there ſeldom is any viſible *Criſis*, but all the Symptoms as they inſenſibly came on, ſo they generally go off; and this further is alſo very remarkable, that a great many perſons after their Recovery from theſe kind of Fevers, have not under a long time, if ever, regained that Quickneſs of Senſe, and Strength of Mind, as they before enjoyed.

It is very certain, that an Inflammatory Fever very often changes into one of this latter kind; which happens when the Solids are able to continue their Motions ſo long, that the overcharge of Blood is wore away; but by that time they are ſo far overſtrained, and injured in their Springs, as not to be able to carry on the Fluids with ſuch a Celerity, as is requiſite to prevent their falling into Fermentation and Putrefaction; and therefore as that Heat goes off, which was occaſioned by an increaſed Quantity and Velocity, another ariſes, tho' much more languid from its inteſtine and fermentative Agitation. And as a Fever thus changes its Shape, ſo ought alſo its Intentions of Cure to be differently regarded.

As the former kind generally ariſes from a diminution of ſome of the Evacuations, and an overcharge of Blood; ſo this latter moſt commonly has its Riſe from an Exceſs in ſome of the Diſcharges, from hard Exerciſe, from too ſparing a Diet, from long trouble of Mind, from an immoderate uſe of Venery, and frequently from Epidemical Contagions; the Efficacy of all which things upon the Conſtitution, make it very plain, that the immediate Cauſe of this Fever, is in the Diſtemperature of the nervous Fluid, either as to its Quality or Quantity; whereby it is rendered unfit to give that Elaſticity to the Solids, as is neceſſary for their Contractions, and the carrying on the Animal Fluids with their due Velocities; whereby, as was ſaid before, they fall into inteſtine and fermentative Motions.

That the remote Cauſes are frequently in the Conſtitution of the Air, cannot be queſtioned by thoſe who conſider the many Inſtances wherein this Diſeaſe has in one Seaſon, and in the ſame Place, ſwept away vaſt numbers, all of them no farther differing in their Symptoms, than what may readily be

be accounted for, from the Difference of thoſe Conſtitutions which have been ſeized with it. But theſe have moſt generally happened after long ſultry Weather; by which the Spring of the Air is much broke, whereby that Part of it which mixes with the Blood, is not ſufficient; to raiſe its Globules, and keep them from running into mutual Contacts and Coheſions; and alſo by keeping the cutaneous Pores long open, there is ſuch a Waſte made of the nervous Juices, as to damage the Solids in their Contractions, and induce a general Relaxation; eſpecially if a damp moiſt Air follows upon ſuch Heat.

Any Evacuation, ſo as to cut off the Supply of the nervous Juice, cannot alſo but be attended with the ſame Conſequences, for the Reaſons frequently given under the *Aphoriſms* of the foregoing *Sections*; the *Launcet* therefore (with which ſome are ſo very buſy whenever they get any thing to deal with that can be called a Fever) in theſe Caſes ought to be avoided as Death itſelf; as likewiſe all thoſe *Cathartick*s, thoſe Friends to Nature, with which ſome Enthuſiaſts pretended to purge off the peccant Humours. And to this purpoſe it is very remarkable, that all thoſe Fevers which fall in upon, or ſooner after, the Courſes which are generally gone through in Venereal Caſes, eſpecially *Gonorrhœas*, are of this kind; for by frequent purging, and evacuating ſeveral Ways, the Solids in time come to be robbed of their proper Supplies, and thereby, for want of their uſual Springs, are apt to let the Blood fall into inteſtine Motions, and run into preternatural Coheſions. The Medicines indeed herein frequently made uſe of, do not bring about this ill Diſpoſition only as they are purgative, but alſo as they at the ſame time give a Numbneſs or Inſenſibility to the Solids, as it is very well known that *Mercurials* will do.

From unuſual Evacuation by any of the ſenſible Diſcharges, not only the Solids are defrauded of their proper Moiſtures, but alſo by its Diverſion of the perſpirable Matter for ſome time together, or leſſening at leaſt the Quantity which ought to paſs the Skin, in proportion to the increaſe of any other Diſcharge, the cutaneous Pores will be ſo much leſſened in their Capacities, as with much the greater difficulty to be brought to admit of ſuch a Diſcharge through them, as is neceſſary for the Termination of a Fever by its moſt natural *Criſis*. What Hazards do they run, who under a Notion of cleanſing the Blood, and purging off ſcorbutick Humours, are almoſt continually drenching themſelves with Medicinal Drinks, ſuch as Scurvy-Graſs, *Butler*'s and College Ales; in the tippling of which, ſome ſeem wonderfully to bleſs themſelves, as having found out a much more happy way to clear themſelves from ill Humours, than by the nauſeous Doſes of Medicine: but let ſuch aſſure themſelves, that thereby they are purſuing their own Deſtruction; for keeping the Body in ſuch a lax State, entirely ruins the Offices of the cutaneous Pores, the benefit of which diſcharge they cannot but frequently happen to ſtand in need of, and likewiſe does in time procure ſuch a general Imbecillity in the Solids, that they will be but in an ill Condition to weather the ſeveral Changes and Accidents of Life, eſpecially when attacked by Fevers, or any Diſtemper of Moment. Drinkers of the Purging Waters, and particularly thoſe who doſe themſelves with that notorious Cheat, commonly call'd *Epſom* Salt, likewiſe lie liable to the ſame ill Conſequences; for a long uſe of them will ſo far deſtroy the beſt Conſtitution in the World, that if it does not immediately bring on a dangerous Fever, of the kind that we are now ſpeaking, it never fails of being followed by ſo many

many Shocks and Diſorders, as cannot but the ſooner wear it out, and ſhorten both the Enjoyments of Health and Life,

This kind of Fever then which is commonly called nervous, or a Fever of the Spirits, ariſes from a *Fermentation of the Animal Fluids*, ſuch a *Fermentation* I mean, as is explained under *Aph.* XXII. *Sect.* 3. which ariſes from the weakneſs of the contracting Veſſels, whereby they are not able to give that Motion to the component parts of the Fluids, as is neceſſary to prevent their running into preternatural Coheſions; that is, the Force impreſſed upon them by the contractile Veſſels, is not ſo great at that attractive power by which they are drawn into mutual Contacts with one another, and therefore at all ſuch Times do they coaleſce into Particles of different Bulks and Diſpoſitions, than what are neceſſary and uſeful for the Animal Machine, and from what the ſecretory Organs are naturally conſtituted to ſecern. And this is the Fever, which may juſtly be called putrid, becauſe there is really ſuch a Change brought about in ſome or all of the Animal Fluids, as is truly a Putrefaction, or Corruption. This agrees with the *Bellinian* Doctrine of Fevers, and accounts how the Blood is more thick, and more thin at the ſame Time, as all coagulating Fluids prove. Of this kind alſo I take thoſe to be which are called *malignant*; although I know but little uſe of the Diſtinction, unleſs it be to thoſe who have got a knack of ſhowing their Learning more by their Knowledge of Words, than of Things.

And for a conſiderable Confirmation that this is the State of the Animal Fluids in this Diſtemper, I cannot but think it will go a great way, when we conſider, what black fœtid Stools often happen after it has ſet in ſome time, or for want of them if the Patient recovers, thoſe Abſceſſes which frequently

ariſe and diſcharge a very ſtinking Matter of the ſame Colour; for theſe are plainly nothing elſe than a Deſpumation, of the Juices, which during their Fermentation, raiſed and threw off, either by the Glands of the Inteſtines, or by an Abſceſs, ſuch particles as by their peculiar Figures and Gravities were not fitted to make a part of, and continue their Circulations with, the remaining Maſs, as it happens to all fermented Liquors whatſoever. But when the contractile Force of the Solids, cannot be maintained until this Depuration and Diſcharge is made, Death muſt of neceſſity enſue. Sometimes indeed this Matter, which truly may be called the *morbid or peccant Matter*, is thrown upon the Surface, and appears under the Skin, in Spots of various Colours, as Red, and Florid, Duſky, Livid, and ſometimes alſo quite Black; and as this Matter is chiefly raiſed from the grumous Parts of the Blood, which for want of due Agitation, ferments and puts on new Shapes and Properties, ſo that farther it degenerates from its natural State, the more it loſes of its natural Colour, and like Blood drawn out of a Vein and ſtagnant in a Porringer, will, the longer it ſtands, and the nearer it approaches to Putrifaction, loſe ſtill more and more of its natural Colour, and change at laſt into black; ſo alſo may pretty certain Prognoſticks be taken of the Condition of the Patient from theſe Spots.

That Perſons in this Caſe are ſo ſtupid, and at laſt convulſed, is not much wonder; becauſe the Cauſe of it conſiſts in a previous Diminution of Spirits, and a general Flaccidity of the Fibres, that after the Diſtemper has ſet in ſome, and the Conſtitution of the Blood ſo deſtroyed, as not to afford any Recruits, it is almoſt impoſſible it ſhould be otherwiſe; for hereby the Nerves are not in a Condition to be ſo affected by external Objects, and to

give

give ſuch a Reflux of Spirits, as is neceſſary to convey to the common *Senſorium* any Notices about them; and by the extraordinary waſte of this Fluid ſome of the *Fibrile Machinulæ* may be duly moiſtened to perform their Motions, when others are ſo dried, as not to be under any Capacity of Diſtraction; and therefore muſt their Contractions be performed very irregularly, and inſtead of keeping up thoſe ſteady Vibrations which they ought, fall into diſorderly Starts and Catches.

The whole then being taken in this View, it very plainly appears, that the moſt likely Way to ſave the Patient in theſe Caſes, is by keeping up the Contractions and Vibrations of the Solids by all the Means poſſible, and to haſten forward, as much as can be, the Depuration of the Juices, and the Diſcharge of that peccant Matter or Spume which is raiſed thereupon by ſome of the Emunctories, which peccant Matter ſometimes is found to be but very little in Quantity, although by the Expulſion of it, there is immediately a manifeſt Recovery, inſomuch frequently to be not eaſily perceived by what Diſcharge it goes off. This Matter alſo appears to de in every Perſon ſo peculiarly modified, as not to admit of its Expulſion, equally by any of the Evacuations; but in ſome it is thrown off one Way, and in others by different Paſſages; and this is the Reaſon why it is to no Purpoſe to attempt to draw it off by any of the Evacuations, before it is found by which Nature herſelf is diſpoſed to expel it; and agreeable to this, Experience inſtructs us that one Stool ſometimes goes further than twenty times the ſame Quantity, thrown off by any other Diſcharge: ſometimes this Matter comes away by Urine, ſometimes by Sweat, and ſometimes inſenſibly. But there is one Secretion in this Caſe, which I have known to be enlarged upon a Reco-

very, and which I cannot but think has anſwered the ſame End, and that is by the Ears; which will not appear ſtrange from the ſmallneſs of the Quantity, which is capable of being thrown off this way, to any one who conſiders by what minute Agents the animal Fluids may very ſtrangely be diſcovered: And it may perhaps be no unreaſonable Conjecture, that the Protruſion of this Matter upon that Organ, is the true Cauſe of the Deafneſs before taken notice of in this Diſtemper, and that therefore it is ſo good a Symptom, as it is a Sign, that the Blood is able to depurate and rid itſelf of the peccant Matter.

It may be owing to the want of this Diſtinction between this kind of Fever, and that which is Inflammatory, that Dr *Pitcairne*'s Theory, *De Curatione Febrium*, before taken notice of, is not of ſo much Service as it otherwiſe might have been; for it can hardly be imagined, that the Doctor thought it applicable to all kinds of Fevers; but only to ſuch as without any previous Indiſpoſition, either in the Conſtitution of the Fluids, or in the Elaſticity of the Solids, ariſe immediately from an increaſe of the Blood's Quantity, upon the Diminution of any of the natural Diſcharges, but eſpecially of that, by inſenſible Perſpiration. For there it is plain that the Quantity drawn off, if it be in time, does the Buſineſs, by reſtoring again the *Equilibrium*, between the Solids, and the Fluids, and therefore that it is beſt done by thoſe Evacuations as will admit of the greateſt Enlargment; but here it is not the Quantity to be diſcharged that ſignifies any thing, but the Nature and Quality of it; upon which account, as was ſaid before, it is not equally to be drawn off any way, but only by ſome particular Evacuation, by which it is naturally fitted to paſs off; although even this itſelf cannot

not ſometimes be done, and then it is that we find it collected into an Abſceſs.

But as the greateſt Difficulty lies in keeping up the Pulſations of the Solids, until all this is brought about, ſo the greateſt Effort muſt be made to this purpoſe; and this is to be done both by the application of *Stimuli* externally, and by furniſhing the Solids, as much as poſſible with freſh Supplies, from generous good Cordials, and volatile Spirits. In this Caſe therefore it is, that the *Volatile Alcali* of the Shops have their Place, and not only as they ſerve to keep up the Vibrations of the Solids, but alſo as by their Lightneſs and Action they help to preſerve the agitative Motion of the Fluids, and in a great Meaſure prevent their running into preternatural Coheſions. Thoſe called Perfumes alſo have herein been found of Service, altho' at other times perhaps they might have proved very offenſive and prejudicial, as Muſk, Ambergris, and the like. But for anſwering the other Intention, of keeping up the Contractions of the Solids by ſharp *Stimuli*, we muſt be beholden to the *Cantharides*; for herein it is, that they are not only uſeful but neceſſary. Thoſe Gentlemen therefore who are ſo fond of Bliſtering, may here practiſe it without Hazard, for the only ill Conſequences they can be attended with in this Caſe, is a Mortification upon the Part, and even that ſometimes in prudent Hands may be turned to an Advantage. But what is diſcharged ordinarily by theſe, I cannot conceive to be of any great Importance; all the Service they do, is by ſpurring the Solids, and keeping up their Pulſations, very little of the peccant Humours happening to run off this way: And alſo by a great many ſubtile active Parts, which get from them into the Blood, are the Fluids more briſkly moved, and thoſe

Parts

Parts which have already run into preternatural Coheſions, are, as by the Volatile Alcali's before ſpoke of, and oftner ſtruck upon, and thruſt forward, until by ſome Out-let or other, they are expelled the whole Maſs.

ESSAY III.

On the Elaſticity of an Animal FIBRE

IT has been already proved in the *Introduction*, that a human Body, as it comes under the Notices of a Phyſician, is meerly a Machine, and that whoſoever goes any other Way to enquire into its Conſtitution, with regard to its Make, and the Regulation of its Diſorders, abuſes his Faculties, and leaves the only Means to which his Maker has fitted him, of receiving any ſatisfactory Knowledge therein. Conſidering it therefore in this View, it very naturally comes to be divided into *Solids* and *Fluids*: The *Solids* are vaſcular, and have continually propelled through them ſome Liquor or other neceſſary for the Purpoſes of the Machine. And theſe circulating Fluids are of different Kinds, reſulting from the different Agitations and Velocities impreſſed upon them by the Veſſels, which circulate them. And in this View they have a neceſſary Dependance one upon another, that the Diſtraction and Power of Reſtitution in the Veſſels, is owing to their being duly moiſtened by ſome convenient Fluid, ſeparated and diſpenſed to them from the common Promptuary of all the animal Juices, the Blood; as likewiſe does that due Conſtitution of the

the Blood, which fits it for the Ceceſſion of ſome of its Parts for that Uſe, depend upon its certain Degrees of Fluidity, which always are as the Contractions of its circulating Veſſels: But yet even in this, the Solids have the principal Share, becauſe as that Power by which the Blood is preſerved in a due Conſtitution, is derived from itſelf, that is, of beſtowing upon the Solids a Juice neceſſary for the Preſervation of their Springs; yet that Conſtitution enabling it to afford ſuch a Power, being primarily derived from the Actions of the Solids upon it, the chief Spring or Riſe of Motion is in the Solids. To know therefore the moſt ready Ways of altering the Conſtitutions of the Fluids, is to find out the moſt convenient and effectual Means of influencing the Contractions of their Veſſels: But it is not likely this ſhould be done, without knowing firſt upon what Texture and Mechaniſm of Parts, their Powers of Contraction and Diſtraction do depend; whereby when they are once put into Motion, and filled with a convenient Fluid, they may maintain themſelves therein, until they are actually worn out, or their Textures by ſome external Cauſe deſtroyed.

But here it may be neceſſary to advertiſe the Reader, that the Mechaniſm here ſought after, is very different from that whereby the Muſcles are continued to move any Part of the Body; for the latter is voluntary, and ſubſervient to the Operations and Dictates of the Mind; but the other is ſuch only, as regards the Motions of thoſe Parts, which are neceſſarily employed in carrying on the vital Offices, which are no ways to be ſtopped or increaſed by Volition, but go on to move whether in ſleep or waking, in the ſame Manner, and by the ſame Contrivance of their conſtituent Parts, as when they were firſt put into Motion, until by ſome external

ternal Cauſe that peculiar Contexture is deſtroyed, and Death enſues. As the continual Dilatations and Contractions of the Heart and Arteries, by which the Blood is maintained in its circulatory Motion, can no ways be either intended or remitted by the Power of Thought; ſo that peculiar Mechaniſm, by which they continue thoſe Motions when once begun muſt be ſomething very different from that Diſpoſition of the Muſcles, which enables them to reſt or move, juſt as the Thinking Faculty pleaſes to direct them; the Motions of the former being the neceſſary Reſult of the peculiar Diſpoſitions of their component Parts, and the latter only ſuch as they fall into according to the Determinations of an external Agent. This laſt Enquiry, hath employed a great many Heads, and produced great Variety of Hypotheſes and Conjectures, but very little to the ſatisfaction of ſuch who have been unprejudiced and ſincere Searchers after Truth, until Application hath been made to thoſe proper and only Means, by which the Operations of all Phyſical Agents are to be determined, which is upon *Mechanical* Principles; and upon theſe, *Steno* and *Borelli* have had the Honour of making a very good Beginning, upon whoſe Foundations, Dr *Bernoulli* of *Baſil*, (whoſe Account of *Muſcular Motion*, printed in the *Leipſic* Tranſactions in 1694, hath been lately publiſhed in *London* by Dr *Mead* under the Title of *Diſſertatio de Motu Muſculorum*) and ſince him Dr *James Keil* has improved much to the ſatisfaction of thoſe who are not to be contented without ſuch Conviction and Demonſtration as the Nature of ſuch Things will admit of, and do require.

It is well known, that any Membrane or Veſſel may be ſeparated and divided into very ſmall Fibres or Threads, I mean when it is juſt taken out of the

Body, and that theſe Threads may be drawn out a conſiderable Length beyond that which is natural to them without breaking, and that when ſuch external Force which ſo diſtracted them is removed, they will again reſtore themſelves to their natural Dimenſions. It is further alſo manifeſt, that this Property is preſerved in them by a convenient Moiſture, becauſe if one of theſe Threads be dried, it immediately loſes it, ſo that upon the Applications of any Force to ſtretch it, it will break; as likewiſe will its lying ſoaked in Liquor too much, render it ſo flaccid, as to deſtroy alſo its Power of Reſtitution when diſtended. Now what is exactly the conſtituent Texture, or what are the Shapes, and what is the Arrangement of thoſe Parts of which an Animal Fibre is compoſed, I dare not be very poſitive in aſſerting, becauſe they are too fine to be perceived by the Eye: But if ſuch a Diſpoſition of a determinate Sett of Particles can be found out, as will anſwer all the Appearances of one of theſe animal Threads, I hope it will not be looked upon too bold a Perſumption to conclude, that ſomething very like this alſo muſt be the Contexture of their Parts, ſo far at leaſt, as to allow the natural Conſequences of the former to be a juſt Foundation for the other.

The Obſervations and Experiments which have been made of late, but more particularly by Mr *Boyle*, about the Spring of the Air, have explained to us the Contrivances and Properties of a *Syringe*, and the Reaſons upon which that *Phænomenon*, of the Difficulty of drawing back the *Embolus*, when the Pipe is ſtopped, depends, and the Neceſſity of any Liquors following it, wherein the Pipe is immerſed: the Reaſon of which being well conſidered, it will be found, that all which is neceſſary for this Contrivance, is, that the *Embolus* be ſo exactly

adapted

adapted to the inner Surface of the *Barrel*, as to prevent any Air paſſing between them when it is drawn up; that it matters not what Figure the *Barrel* is of, ſo that the *Embolus* is well fitted to it. It eaſily therefore might be contrived to make a Caſe of *Syringes*, wherein every *Barrel* may alſo ſerve as an *Embolus* to its Exterior which immediately includes it. And with this View it is not at all difficult to imagine a continued Series of Particles ſo put together, that the inner may be moved and drawn upon one another, without ſuffering the Air immediately to enter into the Interſtices made by their Diſtraction; whereupon as ſoon as that Force which drew them is removed, they will for the very ſame Reaſon, as the *Embolus* of a *Syringe*, ruſh up again into their former Contacts, as may further be illuſtrated by *Fig.* 8. ſuppoſe *A B* two Particles touching one another in *e f*; and *C D* two other, covering on the oppoſite Sides their Contacts. It is alſo to be ſuppoſed, that on the other Sides they are covered by other Particles in the ſame manner as by *C D*; ſo that the Places of their Contacts are on all Sides encloſed from the Air, or the Inſinuation of any Fluid Body; wherefore if *A B*, by an external Force, greater than that of their Coheſion, be drawn from each other as far a *G l* and *H K*, in *Fig.* 9. as ſoon as that Force is removed, they will again run into their former Contacts in *e f*, *Fig.* 9. that is, if they are not drawn ſo far, as to bring their tranſverſe Surfaces to coincide with *C* and *D*, for then the Air, or circumambient Fluid, will interpoſe, and prevent their Re-union. So that by this Contrivance, ſo much of *A* and *B*, as is encloſed by other ſurrounding Particles, is as the *Embolus* of a *Syringe*, and the Particles ſurrounding them as its *Barrel*; and therefore when *A* and *B* are diſtracted from their Contacts in *e f*, it will be with ſome Difficulty,

ty, and when the diſtractile Force is taken away, they will again run up into their former Contacts, juſt as the *Embolus* of a *Syringe*, and for the ſame Reaſon.

Since therefore an Animal Fibre has this Property of Diſtraction and ſelf Reſtitution, it is very reaſonable to ſuppoſe it owing to the ſame Contrivance and Diſpoſition of its component Parts. I do not rigidly mean, that they muſt needs be exactly of ſuch certain determinate Figures, but ſomething like this, whereby the Interſtices of the interior Orders, may be covered by the exterior, in ſuch a manner, that when the Thread is diſtended, that is, when its conſtituent Parts are drawn from their tranſverſe Contacts, neither the Air nor any other external Fluid, can get between them, ſo as to hinder their Re-union, as ſoon as ſuch Force is withdrawn. That is, if their Diſtraction, as was before ſaid, be not ſo far as to bring their tranſverſe Surfaces to a Coincidence with one another: for then the circumambient Fluid will interpoſe, that is, the Thread will be broke.

But beſides this peculiar Arrangement of a determinate Sett of Particles to compoſe the main Subſtance of an Animal Fibre, endowed with the Properties abovementioned, it ſeems not at all an unreaſonable Conjecture, that into their Compoſition alſo enters a common *Capſula*, or Covering, which aſſiſts in the wrapping up and holding together thoſe *Faſciculi* or Series of Particles already deſcribed, not much unlike the *Perioſteum* of the Bones; the Contexture of which Covering, reſembling that of a Net, cannot any Ways hinder, either the tranſverſe or longitudinal Diſtractions of the other Parts.

If this can then be allowed to be the Conſtructure of an Animal Fibre, (in which opinion alſo I am not a little confirmed, from what hath been ad-

vanced by Dr *Clopton Havers* in his *Oſteologia* concerning that of the Bones and Cartilages, as well as from the abovementioned [*Aph.* VIII. *Sect.* 2.] Propoſitions of *Bellini*) it will next be neceſſary to conſider, what *Requiſites* are needful to put them into that State which they are in a living Body, to ſhew how they are maintained in continual Motion, and what are the conſequences of it.

I. And firſt it is neceſſary to take notice, that all the Fibres in a living Body, are in a State of Diſtention, that is, they are drawn out into a greater Length than they would be in, if ſeparated from any Part, and taken out of the Body; which is eaſily demonſtrated by any *Solutio Continui*, eſpecially by any tranſverſe Diviſion of a Nerve or Artery, (which are altogether Compoſitions of theſe Threads we are ſpeaking of) for immediately we ſee the divided Parts run up, and leave a great Diſtance between them, and the Fluids contained in them upon ſuch Contraction, to be ſqueezed out; and this alſo makes it appear, that their natural Diſtractions are owing to ſome Fluids being propelled into the Veſſels which they compoſe, with a Force greater than their Endeavours of Reſtitution, ſo far as to obtain a cloſe Contact of all their tranſverſe Surfaces, but yet leſſer than that which is neceſſary to diſtract them, ſo far as to bring them to a Coincidence, for then, as was before proved, the Veſſels would break.

II. Next then this State of Diſtraction muſt neceſſarily leave *Vacuola* between all the tranſverſe Surfaces, as between G I and H K in *Fig.* 9. and may be repreſented by the ſeveral Series of Particles, delineated by *Fig.* 10. which *Vacuola* will continue as long as the longitudinal Surfaces of its component Parts continue ſo cloſe to one another, as to prevent the Inſinuation of any foreign Matter, how

how ſubtile ſoever, between them: For the ſame Reaſon therefore as when the *Embolus* of a Syringe is drawn, and the Pipe is ſtopped, there muſt needs be continually a *Niſus Reſtituendi*, or an Endeavour of Contraction: There is alſo further this Neceſſity of being maintained in ſuch a State of Diſtraction, becauſe if they were cloſely to touch one another in all Parts, they could not be put into, and continue in, theſe undulatory Motions which they are always in, in a living Body, without being altered both in their Figures and Contextures.

III. But it being very manifeſt, that all the animal Fibres are continued by the perpetual ſucceſſive Impulſe of the Fluids, in ſuch undulatory Motions; beſides this Neceſſity of their Diſtraction, they alſo muſt be continually moiſtened with ſome convenient Fluid, becauſe otherwiſe their continual Attritions againſt one another, would wear them out, and alſo render it difficult to move them. The Fluid likewiſe ſuited for this Purpoſe, muſt be very fine and ſubtile, becauſe otherwiſe it cannot be inſinuated into all the Interſtices of the Fibres, without ſo far ſeparating their Parts, as is inconſiſtent with that Contexture and Mechaniſm here laid down; the Parts alſo of this Fluid muſt not only be very ſubtile but ſoft and yielding, whereby the Motions of the Particles againſt one another, may the better be maintained, and alſo, as by a Cement, that they may be prevented in their receding from one another in their longitudinal Surfaces, ſo far as to admit of the Inſinuation of any foreign Matter between their tranſverſe Surfaces, in ſuch Quantities, as to hinder their Re-union when occaſion may require it.

With this View of the Contrivance and Mechaniſm of an animal Thread, or Fibre, we come by a very eaſy and natural Explication of the ſeveral

Terms or Expreſſions, frequently neceſſary to be made uſe of in many Places of the preceding Explanations and which likewiſe are to be met with very common in ſome late Writings, ſuch as the *Diſtraction*, *Contraction*, *Vibration*, *Undulation*, *Tonick Motion*, *Concuſſion*, *Relaxation*, *Corrugation*, and *Elaſticity* of the Solids; all which are but different ways of expreſſing the various Modifications and Diſpoſitions of thoſe *Machinulæ*, of which all the Fibres are compoſed.

If thus far then may be granted about the Contexture of a Fibre, and the Requiſites neceſſary for its Office, or the Continuance of its Motion in a living Body; it comes then to be conſidered, how it may firſt be ſet in Motion, and by what Mechaniſm it afterwards is carried on. Let then a Fibre be deſcribed by R S, *Fig.* 10. and in ſuch a State of Diſtraction as before mentioned. It is certain by *Req.* 2. that in all Parts there is a continual *Niſus* or Endeavour of Contraction; if therefore any external Force or Impulſe be made againſt it ſucceſſively from R to S, on the Side P, thruſting it towards Q; it is certain, that when the Impulſe is againſt No. 1. the Thread will be diſtracted there, more than in any other part; that is, the tranſverſe Surfaces of its conſtituent Parts, will further be divided from one another, and thereby will there be a greater Endeavour of Reſtitution, or, which is the ſame, a ſtronger Contraction in that Part than any where elſe; which contractile Force, at laſt over-powering the Impulſe made againſt it; will reſtore the Fibre again to its former Poſture in that Part; and ſuch Impulſe by Suppoſition, ſucceſſively going on from one End of the Thread to the other, all its conſtituent *Machinulæ*, 1, 2, 3, 4, will ſucceſſively be moved one after another.

But

But to make this Matter ſtill more plain, let a Portion of an Artery be repreſented by *Fig.* 11. through which the Blood is continually propell'd, in a Direction parallel to its Axis; nothing is more certain, than that if it were not for the Reſiſtances of the Sides of the Artery at E F, the Blood ſetting out at A B, would go on by the pricked Lines to C D, and therefore it cannot but ſtrike againſt the Sides of the Artery at E F, and diſtract them there more than in any other Place, whereby their Endeavours of Reſtitution will be greater there than any where elſe; and therefore when the Impulſe of the Blood has raiſed them to a certain Meaſure, (wherein their Endeavours of Reſtitution will exceed the Force of the Impulſe that raiſed or diſtracted them) their Contractile Powers will draw them up again into their former Dimenſions, and conſequently will the Blood be thruſt forward into the next Section of the Artery, and ſo on ſucceſſively from one to another through the whole Courſe of its Circulation: and upon this Mechanical Conſtructure of the Heart and Arteries is it that the Blood is carried through its whole Circuit, the Contraction of one Section of an Artery, being the true Cauſe of the Blood's Impulſe againſt, and raiſing the next. And this alternate Diſtraction and Contraction of the Veſſels, thus naturally reſulting from, and depending upon, the peculiar Arrangement and Diſpoſitions of their component Parts, would for ever continue, were the Diſtraction conſtantly kept up by the due Impulſes of their circulating Fluids, and were all the Requiſites of that Mechaniſm, by which they again contract themſelves always to remain the ſame; but as it is impoſſible but that the Solids muſt in time, by their continual Attritions wear out, and ſeeing that all the Requiſites neceſſary for the carrying on ſuch

Motions, are liable to be affected and disturb'd by almost an infinite Number of Causes; nothing can give a greater light into the Means by which the animal Machine is to be preserved, than the knowing both how its own necessary Motions naturally tend to wear it out, and how it may be injured or assisted by external Causes; and this brings me to the last Thing proposed, *viz.* the Consequences of the continual Motions of the Solids; and of that peculiar Contexture here assigned of the constituent Parts of an animal Fibre.

The most natural Consequence of this Motion, will be the breaking still smaller and smaller, the Component Parts of that Fluid, which by *Req.* 3. is dispensed to them to lubricate and facilitate their Motions; which Comminution will be continued, until it is rendered so fine as to fly off at the Surface whenever it happens to get there, and thereby must there continually be made a Waste of it, and meerly by such Attritions of the Parts, as necessarily arise only from their due Discharge of the vital Functions; and that Matter which thus insensibly flies off, is the true *Materia insensibilis Perspirationis* of *Sanctorius*, the Exhalation of which is so necessary and beneficial: What a Light this sets the whole Doctrine of Perspiration in, may with what has been said under several *Aphorisms*, very easily appear to any one who is but indifferently acquainted with the animal Œconomy, without entering into more particular Explanations about it.

But this Waste must needs make it necessary that there be a continual Supply, and this is made from what is taken in by the Stomach; which after divers Digestions and Alterations, at last is mixed with the Blood, and there fitted for the Secession of some Parts, through Glands constituted for that Purpose in the Brain, which from thence are dispensed

penſed through the whole nervous Syſtem in ſuch a Manner as continually to keep up a due Supply of this animal Fluid. There is another way by which it is very probable that the Fibres take up freſh Supplies, and that a much nearer; for according to their natural Conſtructures, it is very likely that even in the Stomach and throughout the whole Paſſage of the Food into the Blood, thoſe Parts of what is taken in, which are ſoon ſeparated from the reſt and ready fitted for this Uſe, may when they chance to ſtrike againſt any of the Interſtices of a Fibre, be laid hold on, and by Degrees conveyed into the Subſtance of the Thread; as ſuppoſe a Particle fitted for this Purpoſe, that is to make a part of ſuch a Fluid as this we are ſpeaking of ought to be, ſhould ſtrike againſt the Interſtice of the Fibre R S *Fig.* 10. between No. 1, 2, at the time when it happens to be deflected towards P, as it is certain that the Interſtice at that time is larger than at another, and likewiſe that thoſe Ends of the Particles, No. 1, 2, which are the neareſt one another, muſt ſomething recede from their former Contacts againſt thoſe of the next Series; ſo ſuch a Particle may ſo far be carried in that when that part of the Fibre again returns towards Q, it may be cloſed up and ſqueezed forward between the longitudinal Surfaces, until it comes againſt an Interſtice of the next Order, and gets thro' that in the ſame manner. And this Conjecture, beſides the mechanical Account which may be given of it, is further ſupported by common Experience, by which it is evident, that the Solids are invigorated with freſh Recruits of Spirits, immediately upon taking into the Stomach ſuch Meats and Drinks as are ſpirituous, and contain in their Compoſition, Plenty of Particles very fine, active, and eaſily to be divided from the reſt, of which kind the Fluid we are ſpeaking of muſt con-

ſiſt ; and thus every one upon eating a good Meal, or upon drinking of any ſpirituous Liquor, eſpecially if it be after long faſting, or a large Expence by hard Exerciſe, finds himſelf immediately, as ſoon as it is in his Stomach, raiſed with new Spirit and Vigour ; which could by no means happen, were the Solids to obtain theſe Recruits altogether from the Blood as it paſſes through the Brain, becauſe it is impoſſible that what a perſon finds himſelf recruited by, ſhould in ſo ſhort a time have gone through the uſual Digeſtion and Circulations.

But by this it will be thought that I make no Difference between this Fluid and the *Animal Spirits*, to which I muſt confeſs I do not, or can I poſſibly come at the leaſt Gueſs at any other Sort of *Animal Spirits* in a human Body. I am not inſenſible how much has been invented and ſaid hereupon by ſome cunning metaphyſical Heads, who to account for ſeveral of the Operations of the *Animal Machine*, have contrived ſome inconceiveable nimble Meſſengers, to do whatſoever they have a Mind to employ them about ; but whatſoever Notions have been advanced concerning them, not agreeable to thoſe Laws by which all material Agents operate, are meerly chimerical and deluſory. If there are therefore any other Spirits than that *Animal Oil* or *Juice*, which moiſtens and preſerves the Motions and Elaſticity of the Fibres, in the manner abovementioned, and that are not ſubject to Mechanical Laws, I think it much more belongs to another Order of Men, than to the Phyſicians to tell us what they are. And when that Elaſticity, which the Fibres obtain by the peculiar Contrivance of their component *Machinulæ*, comes to be well conſidered, I cannot believe there will be found any want of thoſe imaginary Aids, to account for the Animal Operation. Of this Fluid only then, which is in this Manner, and

for

for the Purpoſes abovementioned ſupplied, I would always be underſtood to ſpeak, whenſoever I uſe the Terms *Animal Spirits* or *Oil*, *Liquidum Nervoſum*, *Succus Nervoſus*, the *Nervous Fluids* or *Juices*, it being nothing elſe in the *Animal Machine*, than a convenient Moiſture to lubricate and facilitate the Motions of the ſeveral Parts, as it is abſolutely neceſſary for the Wheels and Movements of any *Machine* whatſoever, to have ſomewhat of the like kind.

And upon this View, with what wonderful Eaſe may be explained, many of the foregoing *Aphoriſms?* the Body by Exerciſe, that is by what is moderate, is made lighter upon a two-fold Account; both becauſe there is occaſioned by it a Subſtraction of its *abſolute* Weight, as it aſſiſts Digeſtion, and by breaking the Matter to be perſpired finer, it promotes the Diſcharge of that Matter; and becauſe at the ſame Time by the quickned Vibrations of the Solids, there is a larger Quantity of freſh Spirits taken up by them from the circulating Blood, both by the Secretion made of them in the Brain, and in the manner juſt now explained; whereby they become more invigorated, and ſo much the more able to carry on a due Diſcharge of all the vital Offices, and in ſo much, that the Body alſo will be made *relatively* lighter, that is, will not have the Senſe or Perception of ſo much *abſolute* Weight as it had before. The Ligaments and Muſcles are cleared of their Excrements by Motion, that is, whatſoever ſuperfluous Particles of the digeſted *Materia Perſpirabilis* may hang about them, is by Motion diſlodged and ſhook off: The Spirits are rendered finer; that is, ſuch Parts of the Nervous Fluid as are juſt received by the Fibres, are by the Actions of their component *Machinulæ* broke ſmaller, and made fitter for the Services of the Œconomy.

It would go too far here to enter into all the Particulars, in which this Theory would afford a great deal of Light: I ſhall inſtance therefore but in two or three; firſt, taking Notice what Diſorders this Fluid is moſt likely to fall into, or how it is moſt liable to be diſtemper'd, which I think is plain, to be one of theſe two Ways, either by becoming too groſs and ſizey, or too fine and exhalable. The firſt may be occaſioned by a Want of ſufficient Agitation and Motion in the Solids, whereby its Parts attract one another, and from viſcid Coheſions, in the ſame manner as it happens in the Blood in the ſame Caſe, which renders the Motions of the *Fibrile Machinulæ* very difficult and troubleſome, and ſometimes ſo obſtructs or plugs up thoſe *Vacuola* between their tranſverſe Surfaces, which are neceſſary to the Maintenance of their Elaſticity, as to prevent in a great Meaſure, at leaſt, their Powers of Reſtitution, whey they are diſtracted; as it happens in a *Leucophlegmatia*, *Anaſarca*, and the like; where the Springs of the Fibres are ſo much deſtroyed, that an Impreſſion upon a Muſcle will ſometimes remain a great while, before its conſtituent Threads can recover their natural Dimenſions; or, as we commonly expreſs it, the Part will pit. Another Diſorder of this Fluid, and which is oppoſite to the former, is its being broke too fine; which will make it ſo exhalable as to fly off in Quantities, greater than the digeſtive Power in the Stomach is able to recruit it, and this is often brought about by too violent Exerciſe, too large Evacuations, or drinking too great a plenty of ſpirituous and hot Liquors, whereby the Conſtitution of the Blood is ſo far weakned, as not to give a due Reſiſtance to the Contractions of the Veſſels which circulate them, whereupon they vibrate quicker, and break the Nervous Juice too fine; which brings on a Hectick, and Death, if not timely remedied. Nothing

Nothing is more plain than that the firſt of theſe Diſorders is to be remedied by giving briſker Motions to the Solids, and increaſing the Vibrations of the Contractile Veſſels, in which how far Exerciſe will go, cannot be a Secret to any one who is at all acquainted with theſe Matters; as likewiſe what Sort of Exerciſe will beſt agree to the Caſe in Hand, and moſt effectually fall in with the Intentions of Cure; and whether it is to be brought about by Medicine, or external Means, or both; for Vomiting, as hath before been taken Notice of, and every thing which acts as a *Stimulus*, comes under this Head, and their Efficacies are chiefly to be determined by their greater or leſſer Power of irritating, ſhaking, and contracting, the Fibres. By theſe Means the *Fibrile Machinulæ* are ſo forceably moved, as to looſen ſuch parts of the *Animal Oil*, as are obſtructed in their Interſtices, and by degrees break them ſmall enough for Expulſion; and a freſh Stock of ſuch Spirits will be ſupplied, as will reſtore to them their natural Springs. The latter Diſorder is to be rectified by Medicines and a Diet that agglutinates, and gives a greater or ſtronger Conſiſtence to all the Fluids, and by all ſuch Means as check the inordinate Motions of the Solids; ſo that upon the whole it ſeems, that to keep from either of theſe Extreams, and preſerve the Body in perfect Health, Care is to be taken to maintain a juſt Balance between the Elaſtick or Comprehenſive Force of the Solids, and the Reſiſtances of the circulating Fluids; becauſe if the *Equilibrium* is loſt on either Side, the Body cannot but fall into ſome Diſtemper; and in this conſiſts the whole Art and Buſineſs of a *Rational Mechanical Practice*, to know when to add to, or ſubſtract from, the Reſiſtances of the Fluids, and when to check or ſpur the Motions of the Solids, and alſo to be well acquainted with the various Methods,

Methods by which all theſe Intentions are to be brought about.

But as the *Gymnaſtick Practice*, is more particularly eſtabliſhed by this Theory, and as this ſort of Management of ſome Diſeaſes, ſeems much of late to have got into the good Opinion of the World; I cannot forbear juſt taking Notice how wonderfully the Effects of Muſick in ſome extraordinary Caſes are explained hereby; for according to this Contexture of an Animal Thread, it is very plain that the leaſt Stroke imaginable upon it, muſt move its component *Machinulæ* in all their Parts: Every Wave therefore or Undulation of the Air, which is made by a muſical Inſtrument, gives the Fibres of the whole Body, more or leſs, according to their Degrees of Tenſion, correſpondent Concuſſions, whereby all the *Machinulæ* are ſucceſſively moved from one to another throughout the whole Thread; and conſequently the Spirits are not only raiſed and made finer, but the other Animal Fluids are alſo more briſkly agitated, and their preternatural Coheſions, and Viſcidities deſtroyed. And this Advantage has Muſick above any other Exerciſe, that thoſe Concuſſions made upon the Fibres thereby, are ſhort, quick, and eaſy, whereupon the nervous Fluid is not only more briſkly agitated, but alſo the natural Contextures of all the Animal Threads are better preſerved by their never being overſtrained hereby, as they frequently are with other Exerciſes: Upon this View the extraordinary Effects of Muſick in ſeveral Diſtempers ceaſes to be a Wonder, and it rather comes to be admired, that it is not much more brought into uſe.

And as Muſick hath this particular Advantage, that it can never overſtrain the Solids, ſo the Injuries which are frequently received from rough Exerciſes, in ſome Conſtitutions eſpecially, are very manifeſt,

nifeſt, and ſometimes never to be repaired; for when a Fibre is diſtracted ſo far that ſome of its component Parts coincide, ſuch a Coincidence will prevent the others drawing up again into their former Poſtures; and if this State of Diſtenſion continues until the tranſverſe *Vacuola* are filled with the nervous Juice, which of neceſſity will by degrees be ſqueezed into them, it is a great Chance if the Fibre be ever repaired, but that it remains uſeleſs for ever after; and this is the Reaſon, why Strains upon ſome of the Tendons are ſo troubleſome, and ſometimes ſo much, that they continue weak and painful, if not altogether without the Power of Motion, through a Perſon's whole Life.

This further admirably explains that common Effect of Exerciſe, in its giving always a greater Firmneſs and Strength to the Solids; for the more a Fibre is kept in Action, the clearer it will keep its component *Machinulæ* from the Lodgment and Adheſion of any foreign and ſuperfluous Matter upon them; by which means whenſover it is diſtracted, there will be the more Room for each Particle to draw up again, and conſequently will its Return be with great Force; but that Exerciſe which does this, is ſuch only as does not exceed the powers of the Conſtitution, for otherwiſe the Conſequences mentioned in the preceding Paragraph would follow; but when it is within ſuch Bounds as the Capacities and Stretch of the Solids will bear, then for the Reaſons already given, will they be rendered more able and ready to obey the Dictates of the Mind, in the performance of their natural Actions; But, on the contrary, by Reſt and Inactivity will every Part loſe in its Strength, and the leſs it is moved, be ſtill rendered leſs able for Motion; and upon this Account it is that we daily ſee ſuch a mighty difference between active ſtirring Perſons, and ſuch whoſe Circumſtances

cumſtances of Life, inures them to Labour and Exerciſe; and thoſe whoſe Inclinations and Condition, indulges them in Eaſe and Inactivity; the former are ſtrong, hardy, and healthful, but the latter weakly, tender, and diſeaſed.

Only one thing further I would take Notice of, before I cloſe this Eſſay, and that is with regard to either ſudden Evacuation or Repletion. It is certain that neither of theſe can be done without altering the Tenſion or Diſtraction of the Fibres all over the Body; for upon ſudden Evacuation, by what means ſoever the Matter is drawn off, the Reſiſtances of the Fluids againſt the Sides of the Veſſel, muſt more or leſs, in proportion to the Quantity ſubſtracted, be diminiſhed, and conſequently muſt every Thread which enters into the Compoſition of thoſe Veſſels, draw up or contract itſelf into a ſhorter Compaſs: And if this Evacuation be made in any particular Part, although the containing Part does more immediately draw up, yet in a very little Time will the Fibres of the whole Body be brought into Conſent, and acquire a cloſer Poſition of their conſtituent *Machinulæ*: As for inſtance, ſuppoſe the Fibre R S *Fig.* 10. be equally diſtracted in all Parts, by the Impulſe of any Fluid equally preſſing againſt it from one End to the other: Now if that Impulſe be taken off, by taking away the Preſſure of the Fluid againſt it, only between 1, 2, it is very certain that its component Parts will draw up into a cloſe Contact with one another, immediately upon it, but the reſt of the fluid Maſs, receding towards the Place where the Subſtraction was made, leſſens its Preſſure againſt the Fibres quite to the other End, and therefore will all the *Machinulæ*, 1, 2, 3, 4, from one End to the other ſucceſſively draw up, quicker or ſlower, according as ſuch Recedure is made, and as the Elaſtick or Contractile Force of the Thread is

greater or leſſer. And thus for the very ſame Reaſon, upon any partial Repletion when the Fibres are more diſtracted by it, in that Part than in any other, will even the remoteſt in a very ſhort Time be drawn into Conſent; and upon this Account it is that a full Meal gives a Straitneſs and Weight to the whole Body as well as to the Stomach, as hath often been taken notice by *Sanctorius* in theſe *Aphoriſms*; and alſo hence may manifeſtly appear the Reaſon, why Perſons, eſpecially the moſt robuſt, upon making a large Quantity of Urine at a Time, feel a certain Shudder all over the Body, which is nothing elſe than a total Contraction of all the Solids drawn into Conſent with that which is made by the Bladder upon the Expulſion of its Contents. But ſtill the moſt delightful and uſeful Application of this Theory might be to Phlebotomy; but the incomparable *Bellini*, hath already done this ſo well, by determining the Times of Bleeding the Quantities to be drawn off, and the Conſequences of it, that there is no need of enlarging upon it: The Reader may conſult his Propoſitions *de Miſſione Sanguinis*.

ESSAY IV.

Of the GOUT.

INtroductory to this Subject, it may be neceſſary to premiſe ſome things, as *Lemmata*, which ſtand demonſtrated in other Writings, that are too tedious to be enlarged upon here, altho' uſeful to a right Underſtanding thereof.

1. *There*

1. *There is a nervous* Fluid.

For the Demonſtration of this the Reader is referred to the Writings of *Borelli*, *Bellini*, *Pitcairne*, *Mead*; and all that have wrote intelligibly concerning the Animal Œconomy; as alſo to the preceding *Eſſay*, of an *Animal Fibre*, &c.

2. *That this* Fluid *is ſeparated chiefly in time of Sleep.*

The forementioned Authors, and all others of the ſame way of thinking and writing, ſpeak of the Body when awake, as in a State of wearing out, and when aſleep as in a State of Reparation; and every one's Experience informs him, how every thing that regards our Strength, and that we commonly call our Spirits, decays when we are awake, and recruits by Sleep; and that the nervous *Fluid*, is what ſupports and maintains this Aptitude to Motion in the Solids no one will doubt, who has duly conſidered many of the preceding Explanations, and eſpecially the *Eſſay* of an *Animal Fibre*, and if therefore the Strength and Fitneſs for Motion, is reſtored by Sleep, and this *Fluid* is the principal Means of ſuch Acquirements, then it is manifeſt that it muſt be ſupplied at that time. But the Nature alſo of that Secretion, which is made in the Brain, and its Appendages, will make it appear, that this *Fluid*, which is there ſeparated, can only be in ſuch a State of Circulation and vital Action, as happens in Sleep, as may be at length ſeen in Writings on that Subject.

3. *That Part of this* Fluid, *naturally goes into Nouriſhment, and Part into the Matter of Perſpiration.*

This is alſo manifeſt in a great Meaſure from the preceding Diſſertation. The Diſtinction that ſome *Anatomiſts* and *Phyſicians* make about the different

manner of nouriſhing different Parts, is not at all material to us here; it being ſufficient to be convinced that the Nervous *Fluid* which lubricates the *Fibres*, and facilitates their Motions, as it paſſes through them, does ſome of it reſt in the Parts themſelves and maintain their proper Bulk, as all nutritive Particles do wherever they fall, and from whatſoever Source depoſited: And what does not thus lodge in Interſtices, cannot but by its frequent Attrition and Comminution, become at laſt ſo fine, as to fly away in an inſenſible Vapour, whenſoever it gets at the Surface, will be evident from many of the foregoing Aphoriſms and Explanations, beſides from what has been ſaid in the *Eſſay* about the *Elaſticity* of an *animal* Fibre

4. *That the nervous* Fluid *conſiſts of a very ſubtilized* OIL *and* SALT *incorporated together.*

By *Oil* and *Salt*, here is meant no further than what we can underſtand of the *Chymiſts*, when they talk intelligibly of the Subſtances, Monſ. *Lemery*, who argues but wildly about ſuch things, is yet conſiſtent enough to be underſtood upon this Matter; and his Account of the inflammable Spirit of Wine, or any other vegetable Subſtances, plainly demonſtrates to us the Exiſtence of theſe two Diſtinctions of Matter, in Conjunction together. But the ordinary *Sal volatile oleoſum*, is an indiſputable Inſtance how theſe comport with each other; and the ſenſible Properties of theſe Subſtances alſo ſhew, how well fitted they are to form ſuch a *Fluid* as is here ſpoken of; for what is altogether of an oily or a ſulphurous Nature ſeems impoſſible by its Viſcidity, and Inaptitude of Motion on that Account, to be broke or comminuted into a *Fluid* of any tolerable Fineneſs; and Salts of themſelves are, by the over Quantity of Matter they contain in Proportion

to their Surfaces, ſo much inclined in their Attractive Properties as to form Concretions or *Moleculæ*, too groſs for ſuch a ſubtile *Fluid*; but when theſe come intimately to be mixed, the Salts divide the Oil ſo as to make it capable of greater Diviſion, and Comminution, and the Oil prevents the Attractions of the Salts, ſo that both together may be broke into the moſt ſubtile *Fluid* imaginable; and ſuch a one as in this Caſe is ſuggeſted to exiſt in the nervous and fibrous Parts.

And the production of ſuch a Fluid in an animal Body will be very eaſily conceiv'd, when we conſider that the ordinary way of Living ſupplies ſuch Materials as are requiſite for its Compoſition, and which Materials by the Management they undergo in the Body, cannot but form ſuch a one. A great Part of our Diet conſiſts of fat unctuous Subſtances, and a great Part of our Liquors of ſpirituous and volatile Particles; theſe, when hurried and forceably ſhook together in the Organs of Digeſtion and circulating Veſſels, are at length comminuted into ſuch a ſubtile Fluid, as that which is ſecerned in the Brain, and paſſes into the *Fibres* of the whole Body. And very remarkable to this purpoſe is it, that the groſſer theſe Subſtances are which perſons feed upon, the more Exerciſe is required for breaking them into a due Supply of this Fluid; whereas thoſe who feed high, and uſe plenty of Liquors, where ſomewhat analogous thereunto already exiſts, but a little trouble is requiſite to fill the nervous Tubes with a proper Recruit. Upon the ſame Theory is it alſo to be accounted, why ſome particular ways of living much more contributes to an Agility both of Body and Mind, than others; but this will occur to us in another Place.

5. *Very*

5. *Very groſs and ponderous Bodies may be ſubtilized into Volatility; and the moſt volatile Bodies condenſed into very groſs ones.*

Monſ. *Lemery*, abovementioned, is at a great deal of Pains, in his Explanations upon the Principles of Chymiſtry, to deduce the volatile Salt that is found in vegetable and animal Subſtances from the ſame Origin, *viz.* the Foſſile Salt, or *Sal Gemma*, that is found in the Earth, which in itſelf is groſs, ponderous, and far enough from all Marks of Volatility: And this he brings about by ſeveral Elaborations and Comminutions, that are natural and obvious to every Inquirer. The Sea is impregnated from this vaſt Store in the Earth which it gradually waſhes away; a great deal of this is raiſed in Vapour, and by its Motion in the Air ſo far broke as to fall down again in Rain and Dews with a manifeſt Addition of Volatility; as in Nitre and all penetrating Salts of the like Kind and Production. This is in a great Meaſure mixed with the Surface of the Earth, and there riſes again in Vegetation, ſo as to be further refined, and give more or leſs Volatility and Scent to Plants and Fruit. Theſe again in the Food of Animals are further digeſted and broke, until the original groſs Salt is arrived to the utmoſt Degree of Volatility, and makes part of that Fluid abovementioned.

I would by all means here avoid Abſtruſities and Speculations, further than what ſenſible Evidence, and a demonſtrative Way of Reaſoning will bear me out in; but thus far I cannot doubt of Confirmation from all Experience and Obſervation, for nothing is more manifeſt and common in the Proceſſes of Chymiſtry, than to ſee very ſolid Concretions and Maſſes, by Solutions and other Means of Diviſions and Comminution, reduced into the

moſt ſubtile and volatile Particles: Nor is it likewiſe any more uncommon to ſee ſuch Particles again cryſtalized, and coaleſced into ſolid ponderous Subſtances. To the former, is only required ſuch a Diviſion and Comminution of Parts, as to render them ſpecifically lighter than other Bodies; and to the latter, only ſuch a Removal of all interpoſing Matter, and ſuch an Approximation of the ſaline Particles, that brings them again within reach of one another's Attractions.

Under this Head might be diſtinguiſhed between Particles ſpecifically heavy, and light, and the Properties thence ariſing with relation to Volatility, Percuſſion, Moments, or Quantities of Motion; but theſe are what I muſt ſuppoſe the Reader well appriſed of, from former Enquiries. There are alſo many other *Præcognita* from *Anatomy*, *animal Secretion*, and the like, with which it is expected that he ſhould be acquainted, and therefore I ſhall next proceed to an hiſtorical Deſcription of this Diſtemper, as it is found by the Experience of moſt, and already given with Judgment by *Sydenham*.

The *Gout* generally afflicts Perſons towards the decline of their Age; and thoſe chiefly who have lived ſumptuouſly, and drank plentifully of ſpirituous, and vinous Liquors; eſpecially, if they deſiſt from uſual Exerciſes, and indulge themſelves in Inactivity. It ſeizes alſo ſuch as are given much to Venery, and to hard Studies; as likewiſe Perſons who have large Heads, and a more than ordinary Strength of Conſtitution. Women it hardly ever viſits, unleſs ſuch as are of a maſculine Diſpoſition, or have been, when young, ſubject to *Rheumatiſms*, or *Hyſterical Affections*: If it ſeizes People not till they are very much in Years, it does not appear in Fits that are ſo regular or painful; and when it over-

takes Men of a middle Age, or nearer their Youth, it at firſt dodges, and ſhifts with ſo much Irregularity, as not to be well known, but after ſome Returns, it forms itſelf into more ſtated Fits, and often to ſuch proves ſevere and laſting.

The more regular Fits of the *Gout* happen generally in the Winter-time, *Sydenham* ſays, at the latter End of *January*, or the beginning of *February*, tho' I have not been able to obſerve it then more, than at the Beginning of the cold Weather, whenever that happens firſt to ſet in, ſooner or later. All the Fore-runners of this are a Crudity and Indigeſtion at Stomach for ſome Days, and ſometimes a Week or two, attended with a windy Pain, and Uneaſineſs, or Laſſitude all over the Body. A few Days before the Fit appears in its true Shape, the Flatulency at Stomach, and Uneaſineſs upwards ſeems to move downwards, and a Pain will be in the Loins and Thighs, with Twitchings like the Cramp, and Shiverings. When the Fit actually begins, it is commonly two or three Hours after falling aſleep, when a Pain is firſt felt about the Ball of the great Toe, or the Heel, the Ancle, or Inſtep; which Pain reſembles that upon a Diſlocation, and the part ſeems, as if Water were pouring upon it; a ſhivering with feveriſh Symptoms comes on. The Pain at firſt is moderate, but as the ſhiverings go off it increaſes, till about Midnight it comes to its Height, when it ſo rages among the little Bones of the *Tarſus* and *Metatarſus*, and the Ligaments, that the Patient ſeems to be gnawn with Dogs, or torn with Pincers, and feels ſometimes forceable Conſtriction upon the Part. Thus with the utmoſt Torture, he is confined until the peccant Matter for that Bout is depoſited upon the Part, and it begins to ſwell, firſt with a Redneſs, but afterwards with Whiteneſs, when the Pa-

Patient compoſes to Reſt, and the Fit for that Time ceaſes. If the Part does not give way enough by ſwelling, and the gouty Matter that is in readineſs does not wholly ſettle or perſpire, then the ſame Scene is acted over again the following Night, and ſo on till it is quite puffed up; but it has ſeldom above one or two Efforts at the ſame Place; as ſoon as the Pain ceaſes, and the Patient falls to ſleep, he commonly ſweats as at the Cloſe of an Intermittent. The Veins upon and leading from the Part affected, ſeem very turgid, and ſo continue till the Pain abates. A few Days after the ſame ſhall be acted over again in the oppoſite Foot, for it very rarely comes in two Places at once, and then to the Hands and others Joints, till the gouty Matter is ſpent; and of theſe little Fits which *Sydenham* calls *Paroxyſmuli*, is the one great Fit or *Paroxyſmus* made, which includes the whole Space of Time from a Patient's firſt Decumbiture, to his entire Recovery for that Seaſon of the Year.

Of a Series of theſe little Fits, is the great Fit continued for one, two, or three Months; but in their Progreſs they decline, and grow milder and ſhorter, until the gouty Matter is quite ſpent. In the more hale Conſtitutions, this Courſe is generally over in a Month, or a little more; but in Declenſion and an advanc'd Age, it holds much longer. At firſt the Urine is high coloured, till after ſome Time it depoſits a red ſandy Sediment; but the Patient hardly piſſes the third Part of what he drinks, and is at firſt ſubject to be coſtive. At the Declenſion of the Fit, the Parts that have been affected and moſt ſwelled begin to itch grievouſly, and the Cuticle peels off; and, what *Sydenham* takes no Notice of, the Joints will for ſome time ſeem dry, and painful to move, as if the Bones rubbed and grated againſt one another. In proportion to the

the Length and Severity of the great Fit, does the Appetite and Strength more or leſs renew, and the Patient keeps clear the longer from a Return, as he hath been more ſharply handled by what is paſt.

Thus far concerns the moſt regular Courſe of this Diſtemper, which in proportion to its Complication with others, the natural Diſpoſitions of every particular Conſtitution, and different Ways of Living, deviates more or leſs into Irregularities, and all thoſe different Shapes which *Muſgrave (a)*, and ſome other nice Obſervers have trac'd it through, and which will carry us into too great a Length to be particular in here: and it being the beſt Help towards knowing this Diſtemper under its irregular Appearances, to underſtand it in its moſt ſimple and natural Shapes, it will be ſufficient to add to the foregoing Hiſtorical Notices, that after a Fit of the *Gout*, many Complaints will be removed, more effectually than by any Courſe of Medicine; as moſt of thoſe Diſorders ſaid to be nervous and hypocondriacal: That Arthriticks have many Symptoms in common with Nephriticks, having frequently Interchanges from one to another; and that not only the moſt wealthy, but thoſe of the beſt intellectual Accompliſhments, are generally the greateſt Inſtances of the Severity of this Diſtemper.

And thus far we follow common Experience, and have the Teſtimony of all who can witneſs herein for themſelves. In the next Advance, that true Follower of Nature, and cautious Reaſoner, Dr *Sydenham*, ventures to lay the Fault of this Diſorder on Indigeſtion, and this he does for theſe Reaſons;

(a) *De Arthritide Anomolâ & Symptomaticâ.*

becauſe thoſe who are afflicted with it, are ſuch as are advanced in Years, or by over-faſt Living have ſtrained their Conſtitutions, and impaired their due Stock of animal Spirits by immoderate Venery, and a libidinous luxurious Life: Or, they are ſuch, as have either through Age, or Idleneſs, abated of thoſe due Exerciſes which are requiſite to maintain a proper Warmth in the Blood, and a ſufficient Force and Firmneſs in the *Fibres*, whereby the Conſtitution is become flaccid and clogged with Humours that ought to have been excreted, and thrown out by ſome of the natural Diſcharges: becauſe alſo Study and Meditation, with Conſtancy and Intenſneſs, increaſe this Complaint, by waſting over much that Stock of Spirits which are neceſſary to a true Digeſtion. Furthermore, becauſe Arthriticks are not only when the Fit is off, of a more greedy Appetite than others; but are alſo ſubject to be coſtive, whereby both more is taken in than can well be digeſted, and of that which is not ſufficiently digeſted, a greater Quantity is carried into the Blood, and moſt remote Stages of Circulation: Over Quantities of Wine, likewiſe are charged to the ſame Account, by their waſting and ſtraining the natural Powers of the *Viſcera*, and laying upon them an Over-load. To theſe Cauſes of Indigeſtion, are added all thoſe things, which give a Laxneſs to the *Fibres* and *Muſcles*; in which Circumſtance many Particles continue ſo long in the Blood, as to contract new Qualities; ſo that thay cannot paſs the natural and ordinary Strainers, but are lodged upon the Joints, and there, by their Aſperities and Acrimony, prick and lacerate the fine Membranes and Ligaments, with the moſt exquiſite Senſe of Pain. And this Determination of the indigeſted Matter, which he makes alſo the gouty Matter, upon the Joints, is ſooner or later, oftener or ſeldomer, as

the

the more remote Cauſes concurring to its Production, are intended or remitted.

Upon a Review of the preceding Hiſtory, I imagine it may be reaſonably concluded, That *the* Gout *is a Diſeaſe from Redundance*, that is, *from the Retention of ſome Matter that ought to be excerned.*

But the more fully to be inſtructed and ſatisfied in this Matter, it may not be amiſs to take a ſhort Survey through the whole Courſe of Circulation, of the ſeveral outlets Nature has provided for Particles not ſuited to any Purpoſes of the Œconomy, and the many Hindrances ſuch Diſcharges are liable to, with the moſt immediate Conſequences reſulting therefrom; which Premiſes may be annex'd to the foregoing *Lemmata.*

6. The Offices of the Stomach and Inteſtines are to break and digeſt the Materials for Nouriſhment, into a Smallneſs ſufficient to admit them thro' the Lacteals into the Blood, and what cannot be thus prepared, is detach'd quite out of the Blood by Stool. The more vigorous therefore this Faculty is in them, the greater Quantity is ſent forward into the Blood, and the weaker it is, the more is ſupplyed to the Matter of Excrement; and of Conſequence the ſtrongeſt and moſt robuſt Conſtitutions, *cæteris paribus*, diſcharge leaſt by this firſt Evacuation, and the moſt tender and weakeſt the moſt; inſomuch that without conſiderable Variety of differing Circumſtances is this general Rule, as to the firſt Evacuation, never deviated from. A too aſtringent Diet, and all the Cauſes of a preternatural Retention in the Guts, will forward the Protruſion of a groſſer Juice into the *Lacteals* than otherwiſe would get into them; and Laxatives, or preternatural Solicitations to Stool, will leſſen the Quantity

Quantity to be ſent that way, and occaſion that which paſſes to be of a finer Conſiſtence.

7. The next Scene of Digeſtion and Alteration, is in the Heart and Arteries, and what cannot by them be broke fine enough for further Secretions, is ſtrained off by the Kidneys, and ejected by Urine. And here again holds good the ſame general Rule, that the ſtronger this Faculty is in the Heart and Arteries, the more is ſent forward into the minuter Paſſages; and the weaker it is, the greater Quantities are let fall through the urinary Outlets. And, as was alſo before ſaid of the Inteſtines, this Faculty is moſt vigorous *cæteris paribus* in ſtrong Conſtitutions, and moſt languid in weak ones; of Conſequence therefore ſtrong People make leſs Urine than weak ones and ſend forward a greater Quantity of Juices into more remote Scenes of Preparation. Preternatural Cauſes may herein likewiſe occaſion Deviations from the common Standard, and a Reſtriction of the urinary Paſſages ſend forward a greater abundance, and a groſſer Stock of Fluids; whereas an uncommon Laxneſs of them, will much divert from ſuch a Supply, and by drawing off the groſſer Particles, make that which paſſes much finer than otherwiſe it would be. But herein it is particularly to be remarked, that the Faults of the firſt Excretion from Reſtriction, are very naturally amended by this, becauſe the too groſs Particles, which by that means are drove into the Blood, find their Outlet at the Kidneys; for if they do not, they lodge upon the *Viſcera* and Glands, as their particular Properties diſpoſe them to the different Textures of thoſe Parts, whereby they occaſion Obſtructions, Indurations, and Tumours, of various Appearances, and Conſequences; and hence the Stone, Gravel, Jaundice, and many other chronical Diſtempers are generated.

8. But

8. But the third and laſt Stage of Circulation, if it may be here ſo called, of the *animal Fluids*, is in the *Fibres*, and thoſe fine Threads of which the Solids of the whole Body are formed. For all that comes into the Blood, is either waſhed off by Urine or taken up by ſome of the *Viſcera* and Glands, as the Gall in the Liver, Pancreatick Juice by the *Pancreas*, *Semen* by the Teſticles, and *Lympha* by its proper Strainers, which are deſtin'd for further uſes in the Œconomy; or elſe is diffuſed into the moſt minute Meanders, and fills the Solids with their due Moiſtures and Nouriſhment. In this laſt Circuit, that tonick, elaſtick, Force of the *Fibres*, which indeed gives to the more complicated Organs their due Powers, is the main Agent; and the whole Maſs of Humours, beyond the Arteries, or what is called Blood, is kept in a ſufficient Motion, by the Undulations, Vibrations, and Concuſſions of the *Fibres*, either from their natural Springs or the Influence of Exerciſe, to digeſt it further into the moſt minute Particles, till it is paſt even all Purpoſes of the Œconomy, and makes its Eſcape through the Skin by Sweat, or inſenſible Tranſpiration; for no other Excretion have the Recrements of this laſt Digeſtion. And here again is every thing carried on *cæteris paribus*, in proportion to this Elaſtick Force of the *Fibres*, and the Motions which they are aſſiſted with by animal Action; and the Quantities, which tranſpire thro' the Skin in inſenſible Steam, are increaſed or diminiſhed as this Force is intended, or remitted. What therefore can get through this way, and is not added to the true Subſtance of the Parts as Nouriſhment, muſt be either re-abſorbed, or taken back by the refluent Blood, and thrown off by the opener Outlets, or it will clog the Habit, according to the Properties of the Matter ſo detained

tained, with viſcid, or rigid Particles. As the nature of this Matter is, and the Parts it lodges upon, will there be occaſioned Obſtructions, Tumours, and Pains, with the whole Tribe of thoſe Complaints ordinarily called nervous.

Through theſe three different Stages of Action and Preparation, may we very naturally imagine all that is taken into the Body does paſs before it is again diſcharged out of it, unleſs it be what runs off by the firſt and ſecond Emunctories. And becauſe what gets into the third Stage is of much the greater Quantity of what is taken in, as is evident from the Quantities expended by Stool, Urine, and Perſpiration; ſo it is of the utmoſt Moment, how the Affairs of the Œconomy are conducted therein. The Diſorders of the firſt, go not beyond the Stomach and Inteſtines, and lies ſo near the immediate Reach of Medicine, as to admit of ſome Certainty in Cure. Thoſe of the ſecond, becauſe they are ſomewhat more remote, require more Art and Application to be come at; and beſides the Aſſiſtances of Medicine, admit of great Influences from Motion, Concuſſion, and ſuch like Means. But in the third and laſt Stage, it requires the utmoſt Skill, to ſend a Medicine with any tolerable Certainty of Effect; it is liable to be altered by ſo many Cauſes, before it gets ſo far; and here likewiſe the Application of Externals are more practicable, and great Things may be done by Exerciſes, Frictions, Baths, and the like. This is the firſt, ſecond, and third Concoction, as ſome Authors ſo much ſpeak of, tho' not with any diſtinct Regard to the Mechanical Conſtruction and Agency of the human Conſtitution.

This ſhort View of the Œconomy, I thought proper for the better Illuſtration of the following Theory and Practice in the *Gout*; and further it may

may be alſo convenient here to remark, that the Operation of all evacuant Medicines may be conſidered, as of thoſe to which we apply the particular Appellation of Catharticks. For as theſe have their Effects in the Bowels, either by irritating and quickening their expulſive Motions, or fuſing, and making thinner, their Contents, or both; ſo Diureticks do the ſame in the Arteries to increaſe the Diſcharge by Urine; and Sudorificks, the ſame in the finer Veſſels, to promote the cutaneous Excretion: And why a Diuretick will not operate in the Bowels is, becauſe its Parts are too fine to effect thoſe Membranes and their Contents, and a Sudorifick fails to operate by Urine for the ſame Reaſon although in ſome particular Circumſtances, one may accidently, and in a lower Degree, ſupply the Place of another. And as for Alterants, their Efficacies lie altogether in the two latter Stages, and principally in the laſt; where it requires the utmoſt Dexterity to manage them.

From theſe Premiſes may it further be concluded, that *the* Gout *is from a Redundance of rigid Particles in the extream Parts, that gathers chiefly upon the Glands of the Joints, and occaſion very ſharp Pains.*

By *rigid Particles*, I would be underſtood to mean ſuch as approach near to ſaline, of the Nature of Tartar, and not much unlike that which forms itſelf into Concretions in the urinary Paſſages; and that this is ſubtilized enough by the Force of Digeſtion, to paſs into the moſt minute Canals of the Body, where meeting with Stops, and collected in Quantity, it again (*Lem.* 4, and 5.) coaleſces into more groſs Corpuſcles.

Whatſoever this matter is ſupplied by in Meats, or Drinks, the greateſt Quantities of it will neceſſarily be carried into the laſt Stage of Digeſtion or Concoction

coction in the ſtronger Conſtitutions, (*Lem.* 6, and 7.) and therein it will be more or leſs detained in Proportion to the Force of Digeſtion, (by *Lem.* 8.) which at the ſame Time demonſtrates to us the Reaſons both why the ſtrongeſt People are ſubject to this Diſtemper, and why in them it comes not till ſome decline, and weakening of the Conſtitution; for in weak People this Matter could not be carried ſo far into the Habit, but would be let out by Urine or Stool, and in thoſe who are ſtrong, it would be comminuted and digeſted into a Fineneſs ſufficient for Perſpiration; but as ſoon as ſuch Strength abates, and any means hinders its Perſpiration, then it ſtops and cauſes this Diſtemper.

And for Illuſtration of this Affair, it may be convenient to obſerve, that thoſe Decays of the Conſtitution, which come about only from natural Courſes, and thoſe Circumſtances which from the Conditions of its Exiſtence ſubjects it to wear it out, are ſooneſt manifeſt in the laſt Stages of Circulation, where we place the Seat of this Diſtemper in the ſame Manner, and for the ſame Reaſons as the Branches and Extremities of Vegetables by Age firſt dry and wither. In theſe Parts of a human Body therefore muſt the Secretory Organs firſt fail in their Office, and conſequently a peccant Matter be detained and lodged upon Parts not by Nature deſigned for its Reception. But indeed by Irregularities of Life, Intemperance, and ſuch Cauſes as deſtroy the Functions in the firſt Offices, will be firſt made an Accumulation of peccant Humours in the firſt Paſſages, becauſe the Strength of Nature in ſuch Circumſtances can carry it no further; whence inſtead of the *Gout*, comes the Jaundice, Dropſy, Aſthma, and the like.

Why

Why this Matter ſhould fix chiefly upon the Joints, is becauſe by their Texture, and Offices of their Glands, they ſeem moſt ſuited to receive it, and to be diſordered by it. For where it abounds, ſo that the Particles come near enough to attract and ſhoot together, they are moſt likely to do it, where the Motion of the Fluids in which it moves are leaſt, and by the known Laws of *Secretion*, they are ſo, where the Veſſels are contracted, and the Matter ſecreted is of a Conſiſtence like that ſeparated in the mucilaginous Glands of the Joints.

But with a View to this Theory, let us follow the preceding Deſcription of a Fit of the *Gout*, thro' all the Stages; in order to ſee what Fitneſs there is between the Cauſe here aſſigned and the Effects.

The Gout more commonly happens in Winter, than in the warmer Seaſons, becauſe by the cold and damp Weather there are more Hindrances to the Perſpiration of this Matter, than at other times, as is demonſtrated in Statical Medicine. As to the exact time of Return, it cannot be aſcertained; but this ſeems to hold in general, that the ſtrongeſt Conſtitutions hold it out longeſt at theſe Seaſons, before they are ſeized, which ſeems manifeſtly owing to their digeſtive Powers, not ſuffering this Matter to ſtop and accumulate in Quantity ſufficient to make a Fit, ſo ſoon as thoſe who are weaker. All Arthriticks therefore, unleſs thoſe who are very ſtrong, hold up but a little while after the cold and wet Seaſons ſet in; as ordinary Obſervation convinces us that few paſs the Month of *October*, before it overtakes them, and many not ſo far.

Moſt of the *Præcedentia*, or Forerunners of the Fit, are to be explicated and underſtood in the ſame Manner, as in common Intermittents, and as they are to be met with in *Bellini de Febribus*; and as I am obliged for Brevity to ſuppoſe my Reader ac-

quainted with ſuch *Præcognita*, it may ſuffice to obſerve, that there is a great Affinity in many Reſpects between a Fit of an Intermitting Fever, and a Fit of this Diſtemper; for, agreeable to the Accumulation of a peccant Matter in the former, its Exertion into morbid Symptoms, Progreſs, State, and Declenſion, or Expulſion, is the Accumulation alſo of a peccant Matter, its Exertion, Progreſs, State, and Expulſion in a Fit of the latter; there being no other Differences, than what ariſe from the different Properties of the peccant Matter, the different Structure of the Parts wherein they are brought into Action, and the various Ways of their Expulſion, ariſing from ſuch Difference in Structure. All which, one duly acquainted with the human Œconomy, will eaſily be appriſed of, without being led through particular Explanations of the Symptoms. But from the peculiar Nature of the peccant Humour in the *Gout*, and the Parts it is thrown upon, there are theſe remarkable Differences of its firſt Appearance, that when the Uneaſineſs upwards abates, there begins to be great Weight and Pains in the extreme Parts and chiefly in the Loins, and Thighs; which muſt be from the growing Accumulation of the peccant Matter, and its Progreſs towards the Parts it at leaſt ſettles upon; the Cramp and Twitchings are likewiſe from the Aſperities and Irritations of its Angles and Points, as it paſſes through the fine Canals whereinto it is protruded.

Why the Fit begins after having been ſome Time aſleep, may be underſtood by a Reviſal of *Lem.* 2, 4, 5. For the progreſſive Motion of thoſe Juices with which the peccant Matter is joined, is moſt forwarded at that time, and there is then the leaſt Interruption to its natural Tendency and Inclination, whereby it attracts and ſhoots into more bulky Corpuſcles.

puſcles, and accumulates in Quantities upon the Parts moſt likely to lodge it: And the like Accerbation of all Diſtempers truly nervous, we experience at thoſe Times, and undoubtedly for the ſame Reaſons; becauſe let the peccant Matter be of what kind it will, and the Diſorders occaſioned by it never ſo various, yet as long as it flows with this Vehicle, it cannot but be moſt accumulated when that is moſt ſeparated.

The Parts where this Matter ſettles, is always upon the Joints and Ligaments; for the Uſes of thoſe Parts require a greater Derivation of that ſmooth ſoft Juice, which the laſt Scene of animal Circulation ſupplies, and Nature has furniſhed with Glands on Purpoſe to ſeparate it. Where therefore Particles of this Kind abound in that Juice, they will be moſtly collected, where the greateſt Quantities of That are ſeparated, that is, upon the Joints and Ligaments; and conſtant Experience confirms it to us, that thoſe Joints which moſt abound with theſe Glands, and have the greateſt Share of this oily mucilaginous Juice furniſhed to them, are moſt afflicted with this Diſtemper, both for ſeverity and frequency of Return.

The Reſemblance of the Pain at firſt to a Part, diſlocated, is from that Inaptitude to Motion, which the Joint immediately receives from the Rigidity and uneaſy Senſation of its Ligaments, which the Gouty Matter cauſes as ſoon as it begins to ſettle upon them. The Senſe of cold Water pouring upon the Part, is likely to be occaſioned by the beginning Irritation of thoſe ſaline Bodies which the gouty Matter is full of, and which in many Inſtances will occaſion a Senſation of Cold upon their Application to other places.

The Accerbations of the Pain, with all the *Concomitantia*, and Attendants of the Fit itſelf, are alſo to be eaſily reconciled with this Theory by the *Bellinian* Doctrine aforementioned; and the exqui-

ſite Senſe of Pain cannot be a Wonder to any who conſiders the Tenderneſs of the Parts, and the Sharpneſs of the Inſtruments we here have to do with. The Reſtriction upon the Part alſo muſt come from the Rarefaction and Extenſion of the included Humours; and the Reſiſtance of the including Parts, all which Symptoms continue, till at length the Part ſtretches enough to hold the accumulated Matter, without Uneaſineſs, when the Fit ceaſes, and the Tumour continues, at firſt red and angry, but as the Irritation abates within, growing paler, and receiving any Impreſſion made upon it. If the Neceſſities however of Sleep, and the ſtrong Propenſity thereunto, does, before things are brought to this Iſſue, procure a Truce, the continuance of the Shivering, and a little Fever, will at length diſpoſe a great deal of this Matter for Excretion, through the Surface, and the Patient will fall into Reſt, and a breathing Sweat, as is natural at the Cloſe of every Paroxyſm of an Intermittent. But if this Part is not yet got to its Stretch, and the gouty Matter continues yet in Quantity upon it, after ſome Interval the ſame will happen over again, and ſo on till it is ſo diſtended, and the Matter ſo far digeſted, that what cannot tranſpire quite out through the Skin, is taken back by the refluent Blood, and either waſhed off by Urine or depoſited in Conjunction with more of the ſame kind, upon ſome other Part; where the ſame will be acted over again, and ſo on, till the gouty Matter is wholly expelled the Body.

Why the Veins upon, and leading from, the Part affected, ſhould be ſo turgid, as certainly they are, I cannot ſo well reconcile to myſelf, for this happens from the Beginning of the Pain, to its Decreaſe, and ceaſes long before the Tumour ſubſides; ſo that it cannot be occaſioned by any thing the Blood

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brings back with it and how the Pain can by conſent draw the *Fibres* ſo at a Diſtance, as to make thoſe which paſs over theſe returning Veins preſs upon them as a Bandage, I cannot well apprehend.

And thus of one Fit which laſts about 5, 6, 7, or 8 Hours, is made up the great Fit, or Courſe of the Diſtemper at one Decumbiture, if I may be allowed ſo to call all that Space between the firſt and laſt little Fit, as the various Fits of an Intermittent make up that whole Space of Time in which a Perſon is ſaid to have been ill of an *Ague*, or an intermitting *Fever*.

Theſe little Fits however in their Progreſs decline, and grow milder and ſhorter, becauſe every one of them leſſens the Quantity of peccant Matter; by one of the ways already mentioned, or both; and the more ſmart and ſevere theſe are, the ſooner they are over, becauſe in Proportion to the Pain is the peccant Matter re-acted upon it, if I may ſo call it, by the contractile Force of the containing Parts, and thereby is more of it broke fine enough for Perſpiration; whereas in a ſlow and languid Fit, moſt of it is re-abſorbed by the venal Blood, and brought back again into its firſt Stage of Circulation, when it will renew its former Diſorders, and greatly lengthen out the great Fit, or Time of Decumbiture. The ſame alſo is to be ſaid of its Continuance more or leſs in Proportion to the Strength and Vigour of the Patient, and for the ſame Reaſon: And therefore is it that we ſee the older Perſons grow under this Malady, that is, the weaker they are, the longer do they lie by the *Gout* whenever it comes, unleſs by medicinal Aſſiſtance they have ſo altered their Conſtitutions as to get clear of the Cauſe, which rarely happens.

At the beginning the Urine is high coloured, by its being overcharged with this Matter, which

in its groſſeſt Combinations exactly reſembles the red gritty Stuff, the Urine often depoſites; and therefore ſuch a Settling does it diſcover after ſome time by the Quantities which the Blood brings back from the afflicted Parts, in Corpuſcles large enough to ſink to the Bottom, as ſoon as they are thrown out by the Urine into a ſtagnant Veſſel. The Tranſpiration likewiſe of the ſubtile and volatile part of this Matter thro' the Skin, in the Breathings at the cloſe of every little Fit, leaves the Remainder more groſs, and at length capable of Expulſion by no other Outlet than the Kidneys; and upon that Account too, muſt there be more and more of this found in the Urine, until it is quite waſhed off, that way.

The *Cuticle* peels off after the Declenſion, from Parts ſwelled; becauſe upon its ſtretch it has been in ſome meaſure looſened from the *Cutis*, as it will in all Tumours whatſoever: The Acrimony alſo of the Matter perſpiring, may contribute hereunto, as it does in many other Inſtances where the Diſtemper is principally terminated by Tranſpiration.

It is ſomewhat to be wondered at, that it ſhould be omitted by *Sydenham*, that the Joints feel dry after a Fit, and the Bones to grate and rub againſt one another; becauſe it is very obſervable by many who labour under this Diſtemper, and it is almoſt impoſſible to be otherwiſe; for after the Diſcharge of ſo much harſh rigid Matter, upon Parts ſo naturally ſoft and ſlippery, it cannot but be ſome time before ſuch a Senſation can be removed, and the Part filled again with its due Lubricity and Smoothneſs.

Why Perſons continue the longer without a Return of the *Gout*, from the Severity of a preceding Fit, is manifeſt; becauſe the more the Body has been cleared of the peccant Matter, it will require

quire thereby a longer Space of Time to be overcharged with it again; beſides, ſuch Caſes are alſo commonly the Attendants of the ſtrongeſt Conſtitutions, and from what hath been already ſaid, it appears, how ſuch will always have the ſtrongeſt and moſt ſevere *Fits*, and longeſt Intervals.

To this it may be added, that a *Fit* of the *Gout* removes a multitude of other Complaints, becauſe this ſeems to be the ſame ſort of Depuration of the nervous *Fluid*, and all that lies beyond the Blood, as a *Fever* of the Blood itſelf; that is, the Matter which makes the *Gout*, is not only the Cauſe of many other Diſorders in the Nerves, before it is formed into regular *Fits*, but alſo when it is formed into Fits, theſe Fits occaſion ſuch Concuſſion and Motion in the whole nervous Syſtem, as with the gouty Matter to occaſion alſo the Expulſion of a great deal, that is, the Parent of other Miſchiefs. There are many Humours which gradually accumulate in the Courſe of the Blood's Circuit, ſuch as Viſcidities and watery Humours, which in Time would quite interrupt its Circulation, and load the ſecretory Strains with invincible Obſtructions, and theſe a *Fever* in Time will digeſt, break, and quite extirpate out of the Body, greatly to the Benefit of the Conſtitution; and in the nervous Syſtem alſo, and the *Fluids* ſecerned from the Blood, are there admitted Particles, which would do a great deal of Miſchief, and which cannot well be got any otherwiſe rid of, but by the means here deſcribed of the *Gout*, which alters and fits them for Expulſion.

But becauſe this is of the utmoſt Importance to a right Underſtanding this Diſtemper, and particularly with Relation to its Cure, may it more nicely be obſerved, that all which gets beyond the Blood's Circulation, and is not aſſimulated into Nouriſhment, or

converted into perſpirable Matter, muſt lay a load upon the Habit, and diſable the Parts in their proper Motions; and according to the Properties of this retained Matter, and the Parts it is thereby moſt diſpoſed to accumulate upon, will the Diſorders by this means occaſioned be diverſified and diſtinguiſhed. But the greateſt Part, if not all of ſuch retained Matter, will be of that Kind as hath here been aſſigned as the Cauſe of the *Gout*, becauſe the more viſcid and ſpecifically lighter Particles are ſo fitted for Adheſion and Aſſimulation to the Parts through which they paſs, that they cannot but for the moſt Part be taken up into Nouriſhment, and theſe more rigid and ſaline Particles in a natural State ſeem to have no other Uſe, but as Helps to the progreſſive Motions, both by their greater *Momenta*, and their preſerving the Capacities of the *Fibrous Tubes*, which otherwiſe would be apt to cloſe; when therefore theſe Particles are too haſtily ſupplied, or by a Diminution of the digeſtive Powers too weakly broke for Tranſpiration, they fill the ſolid Parts, that is, thoſe fine threads of which they are compoſed, with an over Proportion, whereby inſtead of enabling them to keep on in equable and natural Undulations and Vibrations, they are twitched, convulſed, and ſtraitned. Here Palſies, Apoplexies, Head-ach's, Vertigo's, Depravation of the intellectual Faculties, and all the Train of nervous Diſtempers ariſe. But becauſe there is no getting rid of this, but by increaſing the digeſtive Powers, ſo as to extirpate it through the Skin, or ſheathing its Aſperities by an over proportioned Supply of ſoft oily Particles, or re-aſſuming it back again into the Blood, or drawing it to ſome particular Parts, to facilitate the former Intentions, whatever moſt conduces to theſe Ends, muſt moſt effectually remove the forementioned Diſorders;

and

and every one well acquainted with the Powers of the Œconomy will know how much more likely, and more ſuitable to the Courſe of Nature, is the Accumulation of this Matter upon particular Parts, than any of the other Ways directly, and that this Way alſo is the moſt ready to haſten its Expulſion thro' the Skin, or its Re-aſſumption by the Blood. As this Accumulation therefore is in every Reſpect a legitimate *Gout*, the Diſtemper thus called, is the beſt Removal of all thoſe nervous Diſorders which have their Riſe from the Matter here aſſigned, and is truly and properly ſpeaking, only a critical Solution of a Diſtemper, rather than one itſelf

And that there ſhould paſs ſo far into the laſt Stages of Circulation ſuch a deal of Matter to be the Cauſe of Diſeaſes, as is by this Theory ſuppoſed, will not be thought ſtrange to any one, who conſiders the vaſt Quantities of our Aliment that is carried ſo far. For if we take our Computation from Statical Experiment, $\frac{5}{8}$ of it goes this way, and as all that paſſes through the Skin muſt more or leſs take its Courſe thro' the laſt Concoction, ſo is ſuch a Proportion of morbid Matter *cæteris paribus*, more likely to be depoſited in theſe laſt Scenes, than in any of the former, yet further in the Sequel it will be ſhewn that the ordinary Diet, and manner of living, amongſt Arthriticks, gives a much over Proportion of this ſaline gritty Matter, and that upon that Account, will the Parts concerned in theſe laſt Preparations be vaſtly over loaded with it; and eſpecially when thereto is added the particular Byaſs of thoſe Conſtitutions moſt ſubject to nervous Diſorders, and chiefly the *Gout*.

It will ſuffice when we come to the curative Part to ſhew, why all Attempts by Medicine are ſo difficult in this Caſe; but it may here be further neceſſary to take Notice, that not only all the Symptoms

of nervous Complaints are relieved and diſappear after a Fit of the *Gout*, becauſe that has been a critical Removal of the peccant Matter, but alſo that the Reaſon why Arthritick and Nephritick Symptoms ſo frequently interchange, and ſometimes happen together, is becauſe the Matter of them both is ſo near a kin; the ſame which concretes into Gravel and Stone in the urinary Paſſages, by a greater Force of Digeſtion in ſtronger Conſtitutions, is ſometimes ſubtilized into more minute and volatile Particles (*Lem.* 5.) and accumulated in the finer and minute Meanders in the Courſe of the Gout; as alſo are the Concretions and Corpuſcles formed by that, when lodged upon the Joints, re-aſſumed by the refluent Blood, and waſhed off through the Kedneys. So that this Affinity all centers here, that an invigorated Concoction changes the Gravel into the Gout, and a Fit of the Gout makes freſh Matter for Gravel, but in leſs Quantity than otherwiſe would have been, becauſe Part of it eſcapes through the cutaneous Pores: And as the Cauſes are which promote or retard Digeſtion, and forward this into the remote Parts, is this Interchange or Concurrence of Arthritick and Nephritick Symptoms more or leſs frequent, and their Aggravations or Remiſſions determined.

This further remarkable Concomitant of the *Gout*, or of thoſe Conſtitutions rather that are ſubject to it, is a more than ordinary Activity of Mind, and Capacity in thinking; tho' this indeed is an odd Circumſtance, for an Arthritick himſelf to reaſon upon, and may very probably furniſh ſuch who have a Propenſity to jeſt, with an occaſion to be witty; however, I ſhall venture to reſolve this, ſo far as there is any thing in it, into that over Agility which the Matter forming the *Gout* gives to the nervous Fluid: For ſo far by Conſequence

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we know the Effects of the Mind upon, or its Agency over the Body; we know that an Aptitude and Readineſs to Motion in the Nerves is the means of its Influences upon it, and in Proportion to that do we diſcern its Operation more or leſs plain; the more therefore approaching to the Nature of a volatile Salt is mixed with the nervous Juices, the more quick will be its Undulations, and the more lively and ſenſible its Impreſſions upon the diſtractile Fibres; whereby likewiſe the Organs of Senſation are more quick, and all the immediate Inſtruments of the Mind in the Body better diſpoſed for its Operations upon them; whereas, on the contrary, a too ſoft, and viſcid Fluid, gives a Sluggiſhneſs to the Parts themſelves, and makes them much more inſenſible to all foreign Influences. To this it may be added as a Confirmation, that ſtrange Propenſity to Paſſion of any Kind, when this Matter is more than ordinarily ſet into Action, or a Fit of the *Gout*: for every Arthritick experiences, that at thoſe Times much weaker Impreſſions of external Cauſes will put him into a Hurry and Flutter, than at others, and that there is an uncommon Promptneſs of Spirits, upon every ſmall occaſion, inſomuch, that it requires a more than ordinary Guard to reſtrain the Sallies and Excurſions a Perſon is at ſuch Times inclined to. But this is however abſtracting ſo far from the only Guides of Mechanical Reaſoning, as makes it more properly conjectural than demonſtrative.

To return therefore to thoſe Objects which we can more ſenſibly view; the more wealthy People are generally troubled with this Diſtemper, becauſe their Way of living moſt ſubjects them to it on many Accounts.

Their Conveniences for Eaſe, abates ſo much of Action and Exerciſe, as is neceſſary to give firmneſs

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to the Solids, and weakens the digeſtive Powers, ſo far as in a good Conſtitution to make the firſt Redundance, or Accumulation, of peccant Matter, in the laſt Stage of Circulation, (*Lem.* 8.) and very often the Continuance of ſuch Indulgencies, ſo far ſinks the Conſtitutions, and relaxes it, that it cannot carry the redundant Humours ſo far, but fills with an Over-load in the firſt Stages of Digeſtion, (*Lem.* 6, 7.) and at laſt entirely ceaſes from all vital Action. But the Neglect of due Exerciſe is not more miſchievous this Way, than that Exerciſe with which ſuch People are moſt converſant, *viz.* Venery, and over-drinking. For as ſuch Motion which moderately ſhakes the whole Frame, as Riding, Walking, and the like, continues a due Firmneſs to the whole, ſo thoſe Actions which partially effect the nervous Syſtem, and chiefly in their Origin, as Venery, intenſe Study, *&c.* do by that means over-ſtrain and weaken their Springs, and make the digeſtive Power particularly weak in the laſt Scenes of it. And it is in every one's Experience how luxurious Living incites to ſuch Titillations, and intenſe Exertions of the chief Springs of Life. As the former ſhakes the whole Maſs of Fluids and aſſiſts their due Secretions, ſo the latter ties, as it were, the Fibres in ſuch a State of Tenſion, that the Fluids, which are forwarded by their Vibrations, are not only retarded, and leſs digeſted, but the fibrous Springs alſo will afterwards be relaxed. Exceſs in Drinking, likewiſe in particular, both overſtrains the nervous Syſtem, and ſends in ſuch Quantities of an unſuitable Fluid into the Habit, that much ſooner accumulates the material Cauſe of this Diſtemper in Quantity ſufficient to bring on a Fit.

But the Qualities of that Aliment which the more wealthy ſupport themſelves with, are every

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Jot as miſchievous as its over Quantities; for their high Sauces and Pickles are full of theſe ſubtile, ſaline, rigid Particles as are here complained of, and their Wines are particularly loaded with it; for the Tartar in the *French* Wines, which they generally drink, as nearly reſembles it, as any thing whatſoever poſſibly can do; and all know how much thoſe ſmall rough Wines are full of it, and Arthriticks who have tried, can ſoon perceive to their Sorrow the Truth of it, a Fit being very frequently and ſenſibly precipitated by drinking conſiderable Quantities of theſe Liquours; Punch alſo, of all kinds, which is a common Liquor too amongſt ſuch People, contributes to it, by the Quantity it contains of ſaline, rigid Particles.

To this Purpoſe it is very remarkable, how the *French* Nation in particular, that is, the Inhabitants of thoſe Countries where thoſe Wines are moſt Plenty, and all Perſons who liberally uſe them, are ſubject to its kindred Diſtempers, the Gravel and Stone. And that the *French* are not troubled with the Gout ſo much as the *Engliſh*, and more with the Stone, ſeems owing only to their falling ſhort of them in that degree of Strength as is requiſite to tranſmit the ſame common Cauſe into another Scene only of Action and Appearance (*Lem.* 6, 7, 8.).

Why the *Gout* comes not till ſome decline of Conſtitution, either by the Cauſe of Age, and the natural and neceſſary Decay of the Springs of Life, cannot but be manifeſt by many things already mentioned.

Perſons who have large Heads are moſt liable to it, from the ſame Reaſons as they are ſubject when young to what is commonly called the *Rickets*; for this Diſtemper alſo is plainly from an over Quantity of ſuch Particles ſeparated with the nutritive

Juices

Juices, as are of a bony Nature, that is, hard and rigid, which therefore either indurate upon the Glands of the Joints, and harden and knot them, or thruſt into the Bones themſelves with ſuch an Inequality of Diſtribution, as to increaſe their Subſtance unequally, that is, to make them crooked and deformed. In the *Rickets* alſo is remarkable that Livelineſs of Mind, and Capacity of Thinking, beyond the uſual Age of the Patient, as hath been already taken notice of in adult Arthriticks, which further points out ſomewhat common in the Cauſe of both; and that large Heads have ſome ſhare in promoting and adding to this Cauſe in both, is natural to think; becauſe the larger the Brain is, not only the Quantity ſeparated by it is likely to be greater, but is probably alſo groſſer in Quality, and has in it more of thoſe Particles that are here aſſigned to be the Cauſes in ſome Meaſure of both theſe Diſtempers.

Dr *Joſ. Moreland*, in a Corollary from ſome Propoſitions concerning the Force of the Heart and Arteries, is of opinion, that the very Matter which is ſeparated for the Accretion and Nouriſhment of the Bones during the growth of an Animal, is afterwards, when thoſe Parts are capable of receiving no more, and the Body not ſtrong enough to detach it off by Tranſpiration, the Cauſe of the *Gout*, by being thrown into the mucilaginous Glands between the Joints: But how far his bony Matter agrees with what is here aſſigned, is not material to decide; it being ſufficient that this hath the Properties aſcribed to it, becauſe with them it is adequate to the Effects. Dr *Havers* alſo in his Oſteology conjectures a Matter formed upon the Joints, and mucilaginous Glands there ſituated, to be the Cauſe of the ſame; tho' the Manner of bringing it thither does differ in ſome Meaſure.

And

And with Reſpect to any Affinity between the *Rickets* and the *Gout*, it is very remarkable, that even Children in the former Caſe complain of great Pains in their Limbs, which is undoubtedly from Diſtention and Irritation of the Membranes by a rigid Matter ſo protruded upon them; and theſe Pains do not ariſe to that Acuteneſs as in the *Gout*, may very ſatisfactorily be accounted for from the greater Laxity of their tendinous and ſolid Parts, to what it is in adult Arthriticks.

Why a ſtrong Conſtitution is neceſſary to the Formation of this Diſtemper, as it appears to be ſo by many things already ſaid, is a Reaſon alſo why Women are ſeldom troubled with it, becauſe they are always of a laxer Make than Men, and thereby unable to carry the peccant Matter ſo far into the Habit. Their way of living alſo does not ſo much ſubject them to it, becauſe they are not ſo luxurious, nor given to drink ſuch Quantities of thoſe Liquors particularly which ſupply it. And that it is the true and only Reaſon, is more certain, becauſe thoſe few who happen to be of a virile, or, what we commonly call, of a maſculine Conſtitution, or are addicted to an Exceſs in living, and particularly in the uſe of thoſe Liquors as are known to conduce to its Cauſe, are as certainly ſubject to it as Men, and ſometimes as ſeverely handled by it. Why Rheumatiſms likewiſe and hyſterical Affections are frequently Fore-runners of the *Gout* in the female Sex, is becauſe thoſe Diſorders are from the ſame peccant Matter as the *Gout*, which is further confirmed by their entire Removal after a Fit of the *Gout* in manner as moſt other nervous Diſtempers are.

The Irregularity and Languidneſs of this Diſtemper when it comes not till great Age, is from the Weakneſs of the Conſtitution, which then is not able to form it into more ſtated, and ſmart Fits;

its alſo dodging at the firſt Seizure of younger People, muſt be from the Reſiſtances of a yet ſtrong Conſtitution, to the Lodgment of the peccant Matter upon particular Parts, which are more or leſs from various accidental Cauſes, till the Parts have been accuſtomed to ſuch a Diſcharge and receive it with more Regularity. And to ſuch as it viſits young, it commonly proves moſt ſevere, becauſe it is both a Sign the Agents in the laſt Concoction are more particularly decayed, by Venery, Debauches, or intenſe Study; while thoſe employed in the firſt Scenes are yet ſtrong enough to throw all the gouty Matter upon them. And if ſuch Perſons in their way of living are accuſtomed to Drinks that ſupply much of this Matter, as Punch, and all the ſmall Wines, moſt abounding with Tartar, they cannot but be frequently afflicted herewith, becauſe the Matter will always be carried into the extream Parts, and by the Defect therein of the Powers of Digeſtion, will it continually be adding to the immediate Cauſe of the *Gout*.

Whoſoever duly conſiders what hath been here advanced, will eaſily perceive how particular Accidents and Interruptions will occaſion Deviations therefrom, and cauſe the ſame Matter to fix on other Parts, to produce very different Symptoms, and require a very different Method for their Removal.

Whatſoever Cauſes, for inſtance, can occaſion a Derivation of this Matter upon the Brain, the chief Functions of Life will immediately be affected, and will enſue a Diſorder greater or leſſer in all theſe Faculties to which that momentous Organ contributes.

In the Breaſt, or any of its principal Parts containing or contained, it will contract the Parts, and produce all the Symptoms of an *Aſthma ſiccum*, or what is ſometimes called a nervous Aſthma.

In

In the Stomach or Bowels, it will be the Cauſe of Cholicks, and Pains of various Kinds, according to the particular Parts it affects, and the Intention or Remiſſion of its peccant Qualities.

In the Liver it occaſions Indurations, and the Jaundice, and in any other *Viſcera*, ſuch Diſtempers as ariſe from the Perverſion and Depravation of their natural Functions.

And while this Matter hangs about the Nerves and Fibres in general, it occaſions erratick Pains, Twitchings, Cramps, Convulſions, and all thoſe Diſorders commonly included under that general Term the Vapours, and Hypochondriacal Affections; and, in ſhort, all thoſe Symptomatical Gouts, which are often miſtaken for other Diſtempers, and which Dr *Muſgrave* has ſo accurately deſcribed in his learned Treatiſe on that Subject.

And that theſe various Ails are from the ſame peccant Matter as the Gout, is further very manifeſt from their Removal after a thorough Fit. This every Arthritick can teſtify, and the common Obſervation of others can witneſs to the ſurprizing Alteration a Fit makes for the better; that is where it is regular, and continues till the whole offending Matter is thrown out.

Nay ſome Conſtitutions are under ſome Neceſſity of this Diſtemper; for wherever this Matter by Diet, or any particular Way of living, is accumulated in Quantities upon the laſt Inſtruments of Digeſtion, there will be an Iliad of much worſe Miſchiefs ariſe, if it cannot be formed into a Gout. All the whimſical Complaints of Hypochondriacks are hardly any other Way remediable; and what Relief ſuch can at any Time procure from Medicine, is from ſuch Means as are beſt ſuited to alter and extirpate this Matter, ſuch as the moſt potent detergent Alterants, and Diureticks.

And that Hypocondriacks, with all the Train of Vapours attending them, owe their Riſe to the ſame immediate Cauſe, is very remarkably confirmed by the Colour of their Urine during the Height of their Complaints, which is perfectly limpid like Fountain-Water, whereby the Salts that ſhould waſh away with it, and tinge it with its natural Colour, are left behind, and accumulated upon the Habit; but when ſuch Salts can be again brought away by Urine, which will be viſible in its Colour and Conſiſtence, or changed into perſpirable Matter by Attenuants and Alterants, or derived upon the Joints, and formed into a Gout, thoſe Complaints ſoon go over. And that the Urine is ſo high coloured at the latter End of a Fit, ſeems plainly to be from the Salts, or gouty matter, which the refluent Blood has waſhed off the tumified Part, and brought back to the Kidneys in its natural Circuit, and there, by the Conditions of their particular Secretions let fall thro' with the Urine into the Bladder. By the State therefore of this Secretion are we not only enabled to be aſcertained of the common Cauſe of the abovementioned Grievances, but alſo inſtructed in their preſent State and Condition; for when the Urine hath continued longer than ordinary, without any other manifeſt Cauſe, as plentiful Drinking, the Uſe of Diureticks, or the like, white and limped, one may be aſſured that the Nerves will ſoon be diſordered, and more or leſs thoſe Symptoms ariſe, which are charged to the Vapours and Hypo, in Proportion to the Quantities of Matter thus detained; and even the Gout itſelf may after the ſame Manner be foretold; for, by *Lem.* 6, and 7. the leſs ſuch Matter is thrown off with the Recrements of the ſecond Concoction, the more of it will be carried forward into the laſt Stages, and by

by lodging upon the Habit in too great Quantities, be the Cauſe of the forementioned Complaints.

In the next Place it concerns us to conſider this Diſtemper with Relation to its Cure; and herein the foregoing Theory directs in the firſt Place to be highly cautious in what is done this Way, and to conſider when and how to forward and promote it, rather than leſſen and remove it. For it is hereby manifeſt, that the Gout is a critical Diſcharge of a morbid Matter upon the Joints; ſo that to hinder this Diſtemper, if this Matter is in being, is to hinder the Expulſion of it from Parts where it would do much more Miſchief; and the curing it, that is, putting a ſtop to it, before ſuch Matter is all diſcharg'd is doing a great deal of Injury to the Patient.

Every Arthritick feels a great deal of Diſorder before the Paroxyſm (by which I mean a whole Courſe conſiſting of many ſmall Fits, or *Paroxyſmuli*, including the whole Decumbiture) and if for want of Strength, or thro' any ill Management, the Matter is not forwarded into the Extremities, he certainly falls into much more dangerous Ails tho' perhaps not ſo painful.

The Gout therefore in this View, is ſo far from being a Diſtemper which we ſhould be ſollicitous to cure, that in moſt Circumſtances, it is the only Relief the Conſtitution can have againſt much greater Evils. if this ſandy, gritty, ſaline Matter is in the Body, and a Perſon has not Strength enough to carry it any further than the Inteſtines, which cannot be but in an extream Weakneſs, that no one would wiſh for, and if it does not all waſh off by Urine, which alſo cannot be but in very feeble Conſtitutions, there is then no Riddance to be procured for it, but by Tranſpiration, and if that fails, it will gather upon the chief Organs, ſo as to hinder their Offices, and put a Stop even to Life, unleſs there is Strength enough to throw it upon

the more ignoble Parts. In this Caſe therefore, I ſay, a Perſon muſt have the Gout, or ſuffer much worſe; and it is the Duty and Buſineſs of Medicine to forward and procure this ſalutary Tormentor, rather than pretend to prevent, or cure it. The Diſtemper itſelf, is a critical Solution of much worſe Diſtempers, and ought to be as much encouraged, as the direct Means of Cure in any Caſe whatſoever; when therefore a Fit is either forming, as may eaſily be known by preceding Symptoms, or already formed, to pretend a Cure, is betraying a great deal of Ignorance, or a great deal of a much worſe Quality.

What muſt we then think of the Tribe of Empiricks, who are continually ſtuffing the daily Papers with Advertiſements and Pretenſions of Cure in this Caſe, but that they are a Drove of Robbers and Murtherers, without the Reach of the Law. But ſuch Wretches I am not pretending to diſpute with; by this I would only be glad to caution the unfortunate Arthritick of his own Condition, and ſave him from the Hands of ſuch mercenary Deſtroyers, with Perſuaſions to ſit down with the beſt Satisfaction poſſible, under a Circumſtance which the very Conditions and neceſſary Requiſites of his Exiſtence naturally ſubject him to, and which is as much the Portion and Inheritance of this Life, in certain Conſtitutions, as the common Returns of Appetites for our Subſiſtence, and other inſeparable Accidents of Being.

All therefore that I can ſee to be done herein, is to promote Eaſe, to ſhorten the Fit when coming, and to prevent the Re-accumulation of the gouty Matter as much as poſſible.

In the Management of a Fit then, the main things to be done, are to enable the chief Organs to throw off this Matter, and encourage its Settlement upon ſome of the extream Parts, to eaſe their Pain there as much as is conſiſtent with Conveniency and Safety; to draw out as much as can be of the Matter by Tranſpiration,

ſpiration, and to dilute and get it back with the refluent Blood, and thence detach it, by Urine or Stool, quite out of the Body.

The chief Organs, and main Functions of Life, are at this time to be ſupported by *Cardiacks*, and a more plentiful uſe than ordinary of Wine, and ſpirituous Liquors; and of theſe Choice is to be where there is the leaſt Tartar, or Tendency towards Acidity; and the Quantities to be regulated by the Patient's Strength, Uſage of Living, and Urgency of Symptoms.

The Stomach and Bowels likewiſe may be fortified, and the peccant Matter forwarded into the Extremities, by medicinal *Cardiacks*, and Stomachicks, ſuch as the aromatick Bitters, and the like, which will not only anſwer the preſent End, but alſo aſſiſt its Digeſtion, and occaſion, by that means, a greater Expulſion of it by Tranſpiration, when it is got into the Extremities. Such as,

℞ Rad. Gentian. Galang. Calam. aromatic. Angelic. Hiſpan. ana ℥ j Fol. Abſinth. rom. Flor. Centauri ana Mſs. infund. frigid. in Vini albi *Liſbonenſis*, ℔ j in vaſe clauſo ad tertium diem, deinde cola, & ſum. Cochl. vj vel viij bis in die, ſcil. hor. ante Prandium, & 6ta pomeridianâ.

The following Electuary may likewiſe be given in the ſame Circumſtance to ſuch as it may be more agreeable.

℞ Conſ. Anth. Abſinth. rom. ana ℥ j Specier. Diambræ ℥ j Spt. Lavend. ℥ ij Syr. Caryophyl; q. ſ. ut f. Elect. mollioris Conſiſtentiæ, cujus ſum. Quant. N. M. bis terve in die ſuperbibendo Cyath. Vini albi, vel Infuſion. ſequentis.

℞ Rad. Serpent. Virginian. ℥ ij. Specier. Diambræ ℥ ſs Croci pulv. ℈ j infund. in Aq. Epidem. ℥ iv. Lact. Alex. ℥ xij Spt. Lavend. ℥ ij Sachar. albiſ. ℥ iſs in vaſe bene clauſo per hor. xij. dein cola ad uſum prædictum, ſumend. por. Doſ. Cochl. v vel vj.

With other Cordials and Encouragements of the like kind, may the Fit be formed, Care being taken

ſuitable to the natural Strength and Conſtitution of the Patient, not to precipitate or retard it, with means too vigorous, or too weak, and in moſt Conſtitutions, the natural Powers will be ſufficient; and without particular Pains or Twitchings at Stomach, or in the Bowels, or about the Breaſt, and remarkable Shootings in the Head, or Symptoms of Diſeaſes threatning immediate Danger to the principal parts, theſe artificial Aſſiſtances are not to be had recourſe to.

If reachings to vomit are troubleſome, as they often are in this Stage, it is ſeldom ſafe to encourage them, for fear of revulſing the peccant Matter from the more remote Parts, and bringing it into the Membranes and Fibres of the Stomach, or Parts thereabout: Nor is it ſafe, for the ſame Reaſon, to uſe *Cathartick*s while the Matter is in great Plenty hovering about; nor indeed any other means that may poſſibly interrupt its natural Progreſs towards the Extremities. This *Sydenham* forewarns us againſt, by taking Notice that it is not in this Caſe as in common humoral Redundancies, where the offending Matter is to be expelled by Stool or Urine, and alledging the gouty Humour to be of a peculiar Nature, and got ſo far into the Habit beyond the Reach of ſuch Medicines, as to admit of Expulſions only thro' the pores of the Skin; and by purging in particular he ſays, the matter is only diſturbed from its natural Tendencies, and brought back again upon the noble parts to the great Detriment and Hazard of the Patient.

The greateſt Streſs is indeed laid upon this Method by all our Empiricks, and where a Conſtitution can bear it, they ſometimes run away with the Credit of a Cure, but this is very deceitful and miſchievous. For in robuſt Habits, where ſevere purging is practiſed, or even in others that can but juſt out-live it, the peccant Humours may poſſibly in a great Meaſure be drawn away by Stool, or at leaſt ſuch an Exinanition and Weakneſs induced, that the Strength is

not

not ſufficient to form it into a Fit; and this makes ignorant Patients immediately flatter themſelves with a Cure, and is a Circumſtance that ſuch Sharpers as they have to do with, know how to improve well enough to their own preſent Advantage; but as ſoon as the Strength is recovered, and the Secretions come again to their natural Standard, the gouty Matter will be again ſupplied, and the Patient become as true an Arthritick as before. So that in Reality this Method is no otherwiſe a Cure, than as it is a Means of killing, and puts away the *Gout*, only by making the Patient unable to have it; which is a Change no one will covet, who thinks but of the fatal Conſequences, and the ſhort Reprieve which it at beſt procures.

I have ſometimes indeed obſerved ſome particular Cartharticks ſeem at firſt to do good, and to adjourn at leaſt the Fit, and theſe are ſuch as promote chiefly a *Diureſis*, as *Cream of Tartar*, GLAUBERS Salt, and ſuch like mixed with *Lenitives*; but theſe are of very uncertain Effect, and aggravate a future Miſchief, for a preſent Good.

What *Sydenham* ſays of *Phlebotomy*, in this firſt Stage, is of no great Conſequence; and unleſs in very ſanguine and phlethorick Habits, does not ſeem practicable with any Succeſs; but in ſuch indeed it may be of ſervice, as it is well known that in too great a Croud of Humours, there is not ſo ready a Seceſſion of morbid Matter, as after ſome Evacuation.

In this Stage likewiſe, to forward the Settlement of the morbid Matter upon the Extremities, beſides the uſe of the above preſcribed *Cardiacks* and *Stomachicks*, may be uſed Topicks to the Parts themſelves where it is gathering, or moſt deſired to be had; which Topicks ought to be made of what warms gently, relaxes, and ſoftens them, as the *Unguentum Dialthææ*, *Oleum Palmæ*, *Oleum Hypericum*, and the like.

But when the Fit is formed, and the Part begins to rage with Pain, warm Emollients thereupon will

be of uſe both to haſten the Accumulation, and to make the Part give way, by ſwelling with leſs Tenſion and Straitneſs; of this kind may be;

℞ Unguent. florum Sambuci, Dialth. ana ℥ i. Spᵗ. Sal. Armoniaci ℥iſs M. ad partem affect. illinendum, cui etiam ſuperimpon. Pannum walleum, eodem Liniment. illitum; vel,

℞ Unguent. Dialth. Ol. Roſar. ana ℥ i. Ol. Palmæ ℥ſs Spᵗ. Lavend. vel Aq. Regin. *Hungaric.* ℥ſs Miſ. ut f. Linimentum eodem modo uſurpand.

In this Period nothing can be done with Evacuation of any kind, unleſs by breathing Sweats, and particularly of the Part affected, for all tendency towards Revulſion is more fatal. To breathe the Part affected, there are many Contrivances with the Steams of hot Liquors, the Application of hot Bricks wrapped in woollen Cloth, of hot Grains, hot ſcalded Bran, new hot Bread, and many other Things, of which thoſe are beſt, that are moſt conveniently procured and applied, if ſo that they give Warmth and Moiſture at the ſame Time.

When the Fit appears alſo to be at its full Height, and there is the leſs Danger on that Account of recalling the peccant Matter, gentle *Paragoricks* may be adminiſtred, if well guarded with *Cardiacks*; and if theſe are well timed, and duly proportioned, they will be far from ſtagnating, as ſome are apprehenſive, or recalling the offending Matter, that they will better ſecure its Settlement where it began to lodge: for exquiſite Pain ſometimes raiſes ſo much of a Fever, and quickens the Motion of the Fluids, that peccant Humours do not ſo readily ſeparate; and therefore in ſuch Caſes a ſmall Compoſure will greatly conduce to this main End, as well as ſuſtain the Patient in thoſe Extremities of Torment, which could not otherwiſe be bore with. And if in theſe Endeavours to make the Pain tolerable, and quicken the Fit's Termination,

there

there be any threatnings of Miſchief, the Stomach will give the firſt warning, and generally ſoon after the taking ſuch a Medicine, by Straitneſs and Cholick Symptoms, when the Patient may be ſecured by the uſe of *Cardiacks* and ſtrong hot Wines, which, timely adminiſtred, will infallibly keep the Enemy at a due Diſtance. Of this Kind of Medicines I have experienced a great deal myſelf, when the Intenſeneſs of Pain has put me beyond all further Patience; but this I have always found, that taking them too early, or repeating them too often, has not only endangered a Tranſlation of the Diſtemper from the Extremities to the Stomach, but hath lengthened out the great Fit by ſhortening, and retarding in ſome Meaſure the ſmaller Fits; yet even on theſe Conditions, ſome would be glad to have Eaſe, or Abatement at leaſt, of Pains that are otherwiſe inſupportable. Of this kind are;

℞ Mithrid. ℥ſs Camphoræ, Croci pul. ana gr. iv. Pil. Pacific. *Mathæi* gr. vi. Syr. de Meconio q. ſ. ut f. Bolus quem ſumat poſt aliquod Tempus ſevierint Dolores Arthritici, ſuperbibendo Hauſt. ſequent. vel alicujus Vehiculi ejuſmodi.

℞ Aq. Theriac. Lactis alex. ana ℥iſs. Syr. Papav. errat. q. ſ. ut f. Hauſtus ad uſum prædictum; vel,

℞ Aq. Peoniæ compt. ℥ſs. Ceraſor. Nigr. ℥ij Syr. Caryoph. ℥ij. f. Hauſtus ad uſum prædictum; vel,

℞ Aq. Epidem. ℥j. Lactis alex. ℥ij. Syr. Papaveris errat. ℥ii. f. Hauſtus ad uſum prædictum.

This Bolus likewiſe may be varied according to the Symptoms or Patient's Strength, or thoſe who cannot take it, made into a Draught in the following manner:

℞ Pil. pacif. *Mathæi* gr. vj Croci pul. gr. v. Aq. Theriac. Lactis ana ℥iſs. Syr. Papav. errat. ℥ij. m. f. Hauſt. ſumend. ut præſcribitur de Bolo præcedente.

But in this Form the *Camphire*, which I moſt ſet by, cannot well be included, becauſe it will not incorporate with any Vehicle leſs than a high Spirit, and therefore the Bolus is much more eligible. And Medicines of this Kind, juſt in this Period, do Service on other Accounts than by procuring ſome Mitigations of Pain, for they procure a general *Diaphoreſis*, which cannot but force away a great deal of this Matter out of the Habit, by the cutaneous Pores; and the Reaſon why I prefer the *Pil. pacific. Mathæi* to any other *Opiate* is, becauſe it is ſo well guarded by the *Sapo Tartari*, principally againſt all thoſe miſchievous Effects of other Opiates, in cauſing Stagnation, and giving too great an Inſenſibility to the Fibre. And common Experience teaches us, that in *Aſthma's*, and ſome other Diſorders, where Opiates are apt to induce Suffocation, this Medicine will not only be deſtitute of ſuch Conſequences, but ſometimes alſo to procure and encourage even Expectoration.

But in this particular Caſe of the Gout, *Camphire* ſeems to have a peculiar Property which is of great Service. It may be remembred what hath been ſaid of the great Subtilty of gouty Matter, and how far it gets into the ſmall Threads and Fibres; now by this Means it lies out of the Reach of any but the moſt ſuitable Medicines, and this we know *Camphire* to be; beſides which alſo it ſeems the only oily Subſtance that can reach to, and incloſe, ſuch minute Aſperities, and deſtroy their Pungency upon the Fibres; and whoſoever tries this Remedy, will find a much greater Degree of Eaſe and Compoſure procured, than by Opiates without it. And this ſtrange Property of *Camphire*, in blunting the Edges and Pains of rigid Particles, is by ſome experienced in joining it with *Mercurials*, which ſhall by that Means be diveſted of their *Emetick* and *Cathartick* Qualities, and changed into *Sudorificks*: *Calomel*, and even *Turbith Mineral*, (I am inform'd by the Tryers, and thoſe of undoubted

Veracity,

Veracity, tho' I never yet uſed it myſelf) will paſs the Stomach and Bowels without any Operation, if they are given with *Camphire* in a Bolus or Pills. And this I have been informed alſo is the main Herculean Alterant, with which ſome have got ſuch a Name, in venereal and cutaneous Diſtempers.

Somewhat analogous to this, we obſerve in the Salt and Fat of the Viper: The *Spicula* immediately thrown into the Blood on a Bite, bring on the worſt of Symptoms in a little Time, without a Remedy be applied, and the *Axungia* of the ſame Creature is found to be the only certain one in this Caſe; which ſeems plainly to be owing to the ſubtilty of this particular *Axungia*, which is thereby enabled to follow thoſe minute Inſtruments, where groſſer Subſtances would not touch them: Where therefore, as in the Caſe before us, the moſt remote and fine Paſſages are crowded with a ſubtile volatile kind of Salt, which rakes, wounds, and irritates the ſmall Fibres, this ſeems the propereſt Medicine imaginable, both to help them quite out by Tranſpiration, and ſheathe their Aſperities during their Paſſage. But from this Doctrine it is to be hoped none will be ſo abſurd, as to argue for the uſe of the groſſer Subſtances under the Diſtinction of Oils; for the human Machine is too fine a Piece of Work, to be greaſed like a Jack or a Clock; and we find even in the nicer Pieces of Workmanſhip, the Artiſt is uncommonly curious in chuſing this ſmall Aſſiſtance; For unleſs the Oils are exquiſitely fine and clean, they will hinder and clog the Motions of the Wheels rather than promote them: What then muſt we think of a Phyſician that goes this coarſe Way to work, and is not ſo exact as an ordinary Artificer, but daubs over the fineſt Machine in the World with Materials as foul as thoſe uſed to his Coach-Wheels.

This volatile Oil then ſeems to be the beſt, and almoſt only Remedy we have againſt thoſe pungent ſubtile Inſtruments we have here to do with. The

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eſſential Oils indeed of Aromatick Plants bear ſome Reſemblance hereunto; but they are neither ſo ſubtile by far, nor ſo tolerable to the Stomach and firſt Paſſages; for altho' this gives a great Heat at taking, they are altogether intolerable, unleſs in the ſmalleſt Quantities imaginable. There are many other Conſiderations to be ſuggeſted in Favour of this Remedy, or Remedies of like kind; but I muſt leave them to the Obſervations and Experience of Practice, which produces Abundance of Inſtances to its Advantage, both as a powerful Sudorifick, and uſeful Aſſiſtant with Opiates to aſſwage Pain.

After the gouty Matter is by theſe Means got down to the Extremities, and its irritating corroſive Qualities in ſome Meaſure blunted; the Part itſelf where it ſettles may with Advantage be kept warm with Flannel, and embrocated with attenuating Applications; but in theſe Caſes this is never to be neglected, that the more ſpirituous and hot any Fotus's are, the more the Part muſt be kept moiſtened with unctuous Medicines, elſe inſtead of breathing out the peccant Humour, it will give that Tenſity and Hardneſs to the Surface, as rather to pen it in. And in Proportion to the natural Laxity or Tenſity of the Fibres, and the Viſcidity or Fluidity of the animal Juices, are ſuch Means to be more or leſs unctuous or irritating. In ſanguine Habits, and where the Solids are pretty firm, beſides the Liniments already mentioned, ſoftening and emollient Cataplaſms will do ſervice, ſuch as,

℞ Fic. no. vj. Rad. Lillior. alb. in Pulp. coct. ℥ij Pulv. Sem. Fœnugrec. ℥j. Ungt. Dialth. Ol. Cham. ana ℥ſs m. f. Cataplaſma. Parti affect. applicandum.

Or where a Conſtitution is more inclined to Corpulency and Viſcidity, and the Fibres can bare a ſtronger *Stimulus*, the following may be uſed to better Advantage.

℞ Fic.

℞ Fic. no. vj ſepar. in Pulp. coct. ℥j ſaponis Nigr. ℥ſs Mellis ℥iij Camphoræ ℈j ſem. Fœnugrec. pulv. ℥ſs Ungt. Martiat. ℥ſs m. f. Cataplaſm. Parti applicandum.

A few Grains of *Opium* may be joined with Topicks of this kind, where the Pain is extremely acute, and the *Stimulus* likely to be too ſharp: But however, all Applications of this Nature are to be avoided, unleſs in grievous Exigences, where the Conſtitution and digeſtive Powers are too feeble to bring the Matter to a narrow Compaſs, and help it thro' the Skin, or attenuate it enough to waſh it back with the refluent Current, and detach it off, by larger Outlets.

Theſe Cataplaſms may ſometimes be taken off, and the Part fomented with hot Flannels heated in ſomewhat like this:

℞ Fol. Hyperic. Mj Flor. Chamæmeli, Samb. ana Mſs Baccar. Lauri ℥j coq. in aq. Fontan. q. ſ. ad Col. ℔ij cui adde Spt. Juniper. ℥j Aq. Regin. Hungar. ℥ſs. m. f. Fot. ad uſum prædict.

And inſtead of Cataplaſms, ſometimes the Ingredients after Fomentation have been laid upon the Part hot with good Effect.

In ſome Circumſtance Friction may be likewiſe uſed to encourage the Diſlodgment and Extripation of the morbid Humours; but as it hath already been obſerved, all theſe Means are to be uſed only in phlegmatick groſs Conſtitutions, where the critical Lodgment of the gouty Humour is imperfect, and hath a great deal of mixture along with it of a different Nature, which rather ſtuffs up the affected Part than enrages it by its Acrimony; for in the latter Caſe the Part is generally exquiſitely ſenſible and tender, as to endure no ſuch means to be uſed, and not ſo much as to be touched even by ordinary Coverings.

The next Care of an Arthritick in managing the Declenſion of the Fit, that is, the ſhort Fit, when any particular Part ceaſes to ſwell, and the Pain abates, requires

requires great Skill and Attention. For if the returning gouty Humour be diſturbed too much in its natural Tendencies by Medicines, it may be diverted to Parts of Conſequence where it would not otherwiſe ſettle; and if no Advantage be taken of that Interval, more will remain in the common Maſs to be depoſited in the ſubſequent Fit, than in many Caſes need be ſuffered.

As towards the Concluſion of the greater Paroxyſm or Time of Decumbiture, the Urine grows very turbid and gritty; ſo at the Declenſion of every leſſer Fit, there may be ſomewhat of the like perceived: In this Conjuncture then, when the morbid Matter is in float with the common Maſs, ſo much as can be detach'd by any Outlets, will be gaining upon the following Fits; and this ſeems moſt conveniently to be done by mild *Diureticks*, and drinking plentifully of ſuch Liquors as have a known Tendency to promote the Diſcharge by Urine, ſuch as the ordinary *Emulſions* ſweetened with *Syrup of Marſh-mallows*, and the Decoction, for the *Syrup of Marſh-mallows* itſelf is inferior to nothing for this End: But as ſoon as the Matter begins again to ſettle, in order to another Fit, every thing muſt be again refrained but what helps that forward, as before directed.

To uſe Cartharticks in this Interval, is very precarious and uncertain; for whether they will fetch away any of this Matter, cannot be eaſily foretold by any Circumſtance, and there are a great many Hazards riſqued in the Attempt, and particularly of bringing ſo much more of it upon the Glands and Coats of the Inteſtines than they can diſpenſe with; thence Cholicks and Spaſms of the worſt kind do ſometimes enſue. The only Guide therefore in this Affair is from the Patient's own Perception of any Tendencies that Way, without any Pains or Uneaſineſs; for then Stools may be encouraged by eaſy Helps with Advantage. For ſometimes the gouty Humour comes to be naturally fitted for Expulſion this way, as I have often

often taken notice, but this is known by eaſy Rumblings in the Bowels, and diſpoſitions to Stool, without any manner of Gripings and Uneaſineſs, tho' the Stools ſhall be moſt intolerably fœtid, and in a very unuſual manner; and the more theſe are encouraged by gentle Means the better; but if there is any Inclination this way with great Pains and Twitchings, it is very unſafe to promote it by any *Cathartick*s, and therefore much better by warm *Cardiacks* and Aſtringents to keep ſuch an Enemy further off, and in the Extremities, altho' never ſo tormenting there, until it has obtained Diſpoſitions more ſuitable to bring it thro' the Bowels. There is then equal Difficulty in forwarding or oppoſing Evacuation this Way; the natural and ſalutary Tendencies of the Conſtitution are therefore carefully to be watched, and made the only Rule of Proceedings in this tickliſh Circumſtance.

The ſame Difficulty alſo attends every other Evacuation, and even that which ſeems naturally to be beſt fitted for moſt Advantage in this Diſtemper, Tranſpiration: For there is a certain Degree of Maturation in Comminution of the gouty Humour neceſſary to fit it for its eaſy Expulſion any where; and it may be precipitated into the Extremities too faſt, or its Exſudation too haſtily attempted by Topicks. There is no meddling therefore in the Fit with any Remedies, till the Tendencies and Abilities of the Conſtitution are manifeſt, and then they are only to be gently forwarded and aſſiſted. But the greateſt nicety is in ſuiting Opiates for the Eaſe and Relief of the Patient; and altho' the preſcribed Forms, joined with Camphire, I take to be much the ſafeſt, and moſt efficacious; yet there are Times even when they are hazardous, for if the Humours are dodging and hovering, and ſufficiently ſettled upon a Part ſuited for their Lodgment without Danger; ſuch means will ſometimes determine it upon Parts not ſo well able to bear it, and perhaps upon the principal Organs: But in this

this one Caſe they are carefully to be avoided, when the Tendencies of the peccant Humours, are towards the Bowels, and ſollicit Ejectment by Stool, without Gripings or Cholick Pains, which towards the latter End of a Fit they often do, with great Benefit to the Patient; for then Opiates and Cardiacs will turn them again into the Habit, and greatly prolong and aggrivate the Fit: And this Miſtake I have more than once fallen into myſelf; by being much accuſtomed to ſuch Helps in the Extremities of Pain, when the Matter has been upon the Joints, it has been difficult to forbear them after that Neceſſity was over; ſo that by uſing them inadvertently, when Nature has been forwarding the Recrements of the Diſtemper thro' the Bowels, I have checked that Diſcharge and renewed the Fit, which might in all Probability quite ſpend itſelf that Way, without any Uneaſineſs or Hazard. But this Rule obtains, in all Exigencies and Tendencies of the Diſtemper, to dilute well and keep up the Spirits with proper Liquors; which are chiefly to be contrived according to the Patient's Strength and manner of living; for ſuch means not only give a ſufficient Ability in the Conſtitution to contend with the Diſtemper, but keep alſo the offending Humours in ſuch a State of Fuſion and Motion, as facilitates and promotes its Lodgment upon the Extremities, or its Ejectment at any convenient Outlet.

Having thus gone thro' the general Rules of Management in a Fit of the *Gout*, it remains only to learn how to order an Arthritick Conſtitution, ſo as to ward againſt its Return without laying a Foundation for worſe Miſchiefs. And to this Purpoſe it very naturally ariſes from the preceding Theory, that the Matter of the *Gout*, is a great Addition to the Vigour and Elaſticity of the Solids, that is, all the Means that moſtly tend in certain Conſtitutions to occaſion the *Gout*, are alſo the Means of Strength to the Body, and that ſubſtracting from that Vigour by a contrary Management,

Management, ſo that a Perſon ſhall not have the *Gout*, will endanger worſe Inconveniences; wherefore the Nicety in this Caſe is as much as can be, to keep between the Extremes, and ſo to order the Way of Living that may as little as poſſible add to the gouty Humour, and yet preſerve the natural Strength. In this View therefore let it be conſidered, what may be done under theſe main Heads, *Exerciſe*, *Diet*, and *Medicine*.

As to the firſt of theſe, it is ſufficiently manifeſt from many of the Aphoriſms and Explanations above, in what Circumſtance and Condition Exerciſe conduces to give and preſerve Strength and Firmneſs to the Conſtitution, and in what Exceſſes it will have the contrary Effect. It may therefore on this Head be enough to obſerve, that Arthriticks in general will bear and require more Exerciſe than other People. For they are generally hearty Feeders, and on that Account, want more Motion to digeſt and comminute the Quantities of Food fit for the Purpoſe of the Œconomy, and the Extirpation of its Recrements. The more they exerciſe alſo, ſo that it be not in ſuch Exceſs as to ſtrain the Elaſticity of the Fibres, the more will the tartarous rigid Particles that form the *Gout*, be broke, and expelled before their Accumulation in Quantity ſufficient for a Fit. But of all Exerciſe, the Fleſh-bruſh and riding are much preferable, becauſe the firſt ſollicits the finer Matter through the Skin, and the latter ſhakes the more groſſer Parts through the Kidneys.

In Diet, both as to Meats and Drinks, this obtains as a general and certain Rule, to avoid as much as with conveniency can be, all thoſe things which carry into the Body a Number of Particles, like what have been here aſſigned, to cauſe the *Gout*, and to uſe ſuch in their ſtead, as give a ſofter Texture and Diſpoſition to the animal Fluids. Thus ſalt Meats, and eſpecially ſalt and dried Fiſh, are to be ſparingly uſed,

and

and a vegetable and Milk-diet ſubſtituted in their room, ſo far as is conſiſtent with keeping up the natural Strength and Vigour, for that is always the Rule to be obſerved in every reſpect; and inſtead of thin tartarous Wines, ſuch as the *French* and *Galicia*, and hard acid Liquors, ſuch as Punch, *&c.* ought to be uſed the generous, ſtrong, mellow Wines, ſuch as the *Greek* and *Turkey* Wines, which abound more with Sulphur than Tartar, and for the ordinary Draught, the Port Wines that are mellow'd by age, ſo that their Tartar ſeems to be rotten as it were in them, provided they are yet ſound and not growing acid, are generally beſt. The white Mountain Wines are alſo to be commended, ſo that they are not uſed too haſtily.

But the common Diluter to drink with ſuch Wines, or alone, ought to be the ſofteſt Waters, and ſuch chiefly as riſe thro' a chalky Soil: And for want of regard only to this ſmall Circumſtance, Arthriticks may ſuffer much more than they imagine; for in many Spring-waters there abounds great Quantity of hard mineral Particles, which cannot but greatly contribute to the Ails here complained of. Of this no one can be unappriſed who has conſidered what hath been obſerved by many natural Hiſtorians and Phyſicians; the writings of both abounding with divers Inſtances of indurated Tumours upon the Glands, Gravel and Stone, common to thoſe who have been accuſtomed to hard Spring-waters; and it is notoriouſly known, how much the Inhabitants upon the *Seine* in *France*, which waſhes over a very ſandy Bottom, are ſubject to thoſe Ails, tho' they ariſe not but ſeldom to the *Gout*, is to be accounted for very eaſily upon the foregoing Theory, becauſe theſe People live much upon Herbage, and have not Vigour and Robuſtneſs enough of Conſtitution to carry ſuch rigid Particles into the furtheſt Stages of Circulation.

The beſt Waters therefore for Arthriticks are ſuch as come off from Chalk, as was before ſaid, becauſe

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ſuch a Soil gives a Softneſs to them, and fits them greatly to ſweeten and ſmooth the Juices that before abounded with Aſperities; and of this Kind thoſe of the *Briſtol* Springs are the moſt famous in our Country; but where theſe cannot be conveniently procured, an ordinary Chalk-Stone may be keep in the Veſſels where Water is preſerved for Drinking, and ſhifted often, for by this means the hard mineral Particles of many Springs will be in ſome Meaſure abſorbed or blunted. Common River and Rain-waters, are not indeed charged with Particles of this Nature, but then they abound with thoſe of an oppoſite Make, and ſuch as may foul the Glands, and generate Viſcidities and Obſtructions of a different Kind, unleſs they ſtand a long Time to ſettle; beſides, they generally have a foul muddy Reliſh, which palls the Stomach and weakens the digeſtive Powers: The ſureſt Way therefore to have a Water that is a pure Diluter, and that will carry nothing of either of theſe Extrems into the Body, is by Diſtillation; for in that Manner no Particles could riſe that are injurious, and conſidering how extremely ſome Arthriticks are tormented, the additional Helps that might ariſe from this Management conſtantly kept to, would well compenſate the Trouble and Coſt.

To this Purpoſe a very material Advantage might alſo be procured from a Uſe of the *Sulphur* Springs, ſuch as thoſe of *Bath* in *Somerſetſhire*, for they carry into the Habit a great deal of a very ſubtile *Sulphur*, and how far ſuch a Mixture with the rigid Aſperities of the gouty Humours will be of ſervice, may be eaſily conceiv'd from what hath been already obſerv'd about *Camphire*; altho' they vaſtly fall ſhort of that in Subtilty, and therefore cannot be depended upon in the Extremities of a Paroxyſm, as that may, to ſheath the Pungency of the gouty Humours, and facilitate their Expulſion.

Yet if to common Water diſtilled, as above-men-

tioned be added ſome few Ingredients that may give it a detergent Nature, as well as an additional Softneſs, it could not but anſwer a great many good Ends; becauſe it would not only help to cover and ſmooth the Points of the irritating Humours, but ſcour and open the fine Strainers of the Body, and make room for their Motion and Expulſion quite out of the Body. Thus any of the terebinthinous Plants, ſuch as *Pine* and *Juniper*, with *Earthworms*, *Snails*, and ſuch like Ingredients thrown into the Still in ſmall Quantities, ſo as not to pall the Taſte too much with a medicinal Flavour, would be of great Service; and, by a Continuance, much contribute to leſſen, if not wholly wear away, the gouty Paroxyſms without inducing any other Miſchiefs in their room. *Milk* alſo joined with a Courſe of this Nature would be helpful, as alſo Infuſions of *Sarſa China*, and ſuch ſoftening Subſtances; but ſtrict Care muſt be had, as was before obſerved, not to be ſo intent upon ſoftening the Juices, as to deſtroy the Elaſticity of the Solids, becauſe the Diſeaſe would then be changed for a worſe.

As the whole Art therefore in the Management of a gouty Paroxyſm conſiſts in giving ſuch Aſſiſtances to form the Fits upon Parts beſt able to bear it, and forward the Expulſion of the peccant Humours, as the Conſtitution can beſt admit of, and does require without hazarding a worſe Diſtemper in its ſtead; ſo in the Way of Living, out of the Fit, the greateſt Nicety is to hit upon ſuch a Meaſure of ſoftening and diluting as will prevent the Re-accumulation of the gouty Matter, without relaxing ſo much as to weaken the digeſtive Powers, and bringing worſe Diſorders: And as the former ſeems to conſiſt in ſheathing the offending Humours when lodged upon the Extremities and tranſpiring it thro' the Skin, ſo the latter appears to be beſt accompliſhed by cutting off their Supply as much as can be in Diet, and fitting of them for Ejectment by the common Strainers of the Body before

their Accumulation in Quantity enough either to make or require a Fit.

ESSAY V.

Of the KING's-EVIL.

THIS is ſubjoined to the foregoing *Eſſay*, becauſe it is imagined, that from ſeveral Circumſtances common to both Diſtempers, this will require but little Pains to be underſtood after a right Underſtanding of *that*.

What they moſt remarkably agree in is, in being frequent amongſt Perſons ſtrong both in Body and Mind, who are hearty Feeders, and on other Accounts well and healthful; in this Reſpect however conſiderably differing that the *Evil* generally appears at three, four, or five Years of Age; and dries away by that State of Manhood that the *Gout* gives its firſt Warnings of Approach; though neither of theſe are without ſome Latitude of Exception. And as the *Gout* is owing to ſharp ſaline Humours, that are contracted by a particular Way of living, and favoured in their Accumulation by a peculiar Make of the Parts where they ſettle, upon the Declenſion of the natural Strength; ſo this Diſeaſe ſeems owing to a hot ſharp Humour propagated *à Semine* from the Parent, in the firſt Formation diſcovering itſelf at an Age, when certain Glands are fitted for its Reception, and diſappearing when the digeſtive Powers have arrived to their greateſt Strength.

That Perſons ſubject to the *Evil* do early ſhew an uncommon Vivacity of Mind, and Forwardneſs of Underſtanding, is a Fact that all have experienced who have been accuſtomed to ſuch Opportunities of

Obſervation; as alſo, that if the Diſtemper goes on without much interruption from its natural Courſe, and dries away about the Age of Manhood, as it commonly does, ſuch Perſons are generally ſtrong, and free from Diſtempers afterwards; and how theſe are the Reſult of the very Nature of the peccant Humour, may eaſily be conceived from what hath been advanced in the preceding *Eſſay*, without any further Explanation.

That ſuch a Humour can be derived from the Parent, is granted perhaps in more Inſtances than where it is really ſo, and is likely to be yielded by many, more on the Score of a vulgar Opinion, than for any true Notions of the Manner how ſuch a thing is poſſible; it may be therefore neceſſary to form ſome rational Conceptions hereof, in order to judge what Diſorders ſpring from ſuch an Origin, and which not; becauſe without ſome Rules to determine by, Caſes may be confounded and miſtaken from ſome Reſemblances in their Appearance, which flow from very different Cauſes.

To this purpoſe then I cannot ſee what we have to do with the Philoſophy of the Microſcope, ſo far as it aſſerts the *Semen* to be animated before Generation, becauſe it ſeems not in any manner to affect the Matter under Enquiry; but ſo far as we get any Knowledge of the ſenſible and manifeſt Properties of that ſmall Portion of Matter, from whence we boaſt the Production of the fineſt Machines in the Creation, it appears to conſiſt of a very ſubtile active Salt, floating in a ſoft Balſamick Vehicle; whereas therefore we can conceive what Conſequences to the Œconomy already formed, may flow from an Exceſs or Defect in the more active Principle of ſuch a Compoſition; ſo may we, by a Parity of Reaſon, conjecture, what muſt be the Reſult of every Deviation from the natural Standard in the ſame Principle before its Animation in the *Matrix*. Where then this Principle abounds with Heat and

and Pungency in the maſculine *Semen*, it will not only irritate more frequently and more ſtrongly to venereal Embraces, but carry with it the ſame Qualities into the impregnated *Ovum*, and without ſome uncommon Interruption, or Contemperature from oppoſite Qualities, will it increaſe in the growing *Fœtus*, in Proportion to its Enlargement, and make a Part of that Conſtitution to which it gave Being, with the ſame Affections and Properties as it ſtood poſſeſſed of in the generating *Semen*.

Hence it will be no difficult Thing to imagine, what a Condition the Off-ſpring of ſuch a Parent muſt be in; and how ſooner or later, in one or another Part, this primitive Matter may ſhew itſelf in a very troubleſome, if not a very miſchievous, Manner; as the Circumſtances of Life and Strength of the Conſtitution encourage or obſtruct is Exertion, and the peculiar Configuration of the Glands favour or reſiſt its Accumulation and Lodgment: And that in the Caſe immediately under Enquiry, it chiefly ſhews itſelf from a little Time after Birth to a State of Manhood, is probable from this Reaſon, that ſooner, it is not in Quantity enough to be diſcernable, or is hindered from Exertion by the Laxity of the Parts, and Viſcidity of Humours, which is always more or leſs the Caſe of very young Children; but that when the Parts have got ſome Degree of Firmneſs, and have digeſted away the rough Humours, this hot ſharp Matter becomes ſenſible to the fine Strainers and Membranes as it paſſes in the Courſe of Circulation, and at laſt fixes upon them ſo as to occaſion Pain, Inflammation, Swelling, and running Sores; but when again the Conſtitution takes another Turn, and arrives to its utmoſt Vigour, the digeſtive Powers become able either to deſtroy its Pungency by Attrition and Comminution, to detach it off by ſome natural Outlet, moſt commonly the Glands of the Skin, or to leſſen it, ſo much at leaſt, in Quantity, that it flows with the ordinary

Current without ſenſible Effect, and never afterwards appears but in giving to the generating Principle the ſame bad Taint from whence it derived its own Exiſtence: And that even frequent Coition and Propagation ſhall vent and draw off a great deal of this Matter, to the Benefit of the Parent, and Detriment of Poſterity, is not only probable but almoſt demonſtrable; becauſe during that time of Life, and in Proportion to ſuch Indulgence, the Parent is always the moſt free from it, and that during the Travel of a Woman with Child, before ſubject to ſuch Humours, or any of the like Kind, ſhe ſhall be entirely free from them, tho' if the Iſſue ſurvives the common Fate of Convulſions, a little more Age ſeldom fails to diſcover whence ſuch a Mother had her temporary Relief.

That the Diſtemper then under Conſideration may be thus propagated, is not only out of Queſtion from common Experience; but the Manner of it may in ſome meaſure be conceived from theſe Hints, and the Nature of the generating Matter. The ſame Way of thinking alſo will ſuggeſt in what Circumſtances a Perſon may fall into this Diſtemper without having it to charge upon Parents, or the Milk of a tainted Nurſe, which likewiſe may poſſibly happen, tho' it is believed but very rarely; and that is from a way of Feeding, or any other Condition of Living, that gives to the Maſs of Humours an uncommon Heat and Sharpneſs, which in time ſhall fix upon the ſame Part, inflame and ulcerate them in the ſame manner as that derived from a diſtemper'd *Semen*. And this will not appear at all ſtrange to thoſe who conſider how many cutaneous Foulneſſes, that are generally propagated by Infection, do ſometimes derive their Origin from a Conſtitution thus diſpoſed to generate the ſame Humour within itſelf, without any Infection; as what is ordinarily called the Itch, which is commonly got by Infection, does yet in ſome ſcorbutick Habits ariſe to the Height of that Diſtemper, ſo as to be in a Condition

tion of infecting others, tho' it was generated *de novo* of itſelf.

The various Shapes and Appearances of this Diſtemper, as it is differently circumſtanced in proportion to the Quantities, Aſperities, and other Aggravations of the peccant Humours, with the Parts it ſettles upon, muſt be left to the Deſcriptions of Authors who have profeſſedly wrote about it; it being ſufficient to our Deſign here, to take Notice that it is from a hot ſharp Humour, fitted to be depoſited upon certain Glands, and affect them in the Manner as it is too notoriouſly known to do.

But ſo far as from the chief Circumſtances of this Diſtemper are ſuggeſted to us any Means of Cure, it is moſt obvious, that as the greateſt Difficulty in getting rid of the morbid Humour which cauſes the *Gout*, is in its lying ſo far diſtant in the Habit from the common Reach of Medicine; ſo this ſeems not quite ſo remote, but to flow moſtly in the common Stream of the Blood, and to be immediately depoſited by that upon the Parts affected, and moſt ſuited for its Reception: Beſides therefore, the Means before hinted in the foregoing *Eſſay*, for promoting Digeſtion, Comminution, and Tranſpiration, as alſo for ſoftening and ſmoothing the Aſperities of burning corroſive Humours, all which cannot but take Place here alſo, a conſtant well choſen Courſe of Diureticks muſt neceſſarily be of great Service. And too many Inſtances we have by Experience of Caſes that have been ſufficiently laboured with *Mercurials*, and the ordinary *Officinal Alterants*, without Succeſs, that have afterwards been conquered by Means ſeemingly much ſlighter, ſuch as the *Millepedes*, and the common anti-ſcorbutick Drinks, made chiefly with cooling and diuretick Herbs and Roots; no general Form of which can be contrived to ſuit every Patient and Circumſtance, and muſt therefore be left to the Contrivance of a Phyſician, according to the particular Exigencies

of different Conſtitutions. As to that ſingular Way of Cure, whence this Diſtemper comes by the Name of the *King's-Evil*, there is ſomething in it ſo remote from all good Senſe, ſince it can take place only on a deluded Imagination, that I think it juſtly baniſhed with the Superſtition and Bigotry that introduced it.

ESSAY VI.

Of the LEPROSY.

AFter what hath been conſidered in the two preceding Eſſays, there needs no other *Præcognita* to ſatisfy us, that a *Leproſy* is from a morbid Humour, near the ſame Qualities as before mentioned, in particular Conſtitutions favouring ſuch a Diſcharge, thrown upon the Glands of the Skin.

This Diſeaſe ſeldom appears till the Conſtitution is arrived to its full Growth and Vigour; the Laxneſs of the other Glands, or the Viſcidity of the Juices ſome way or other either abſolving or covering thoſe Salts, which afterwards croud ſo faſt thro' the Skin as to lodge upon its Surface, and very much deform it with Blotches and ſcabby Eruptions. And it frequently is hereditary from a hot ſaline *Semen*, as hath been ſaid of the *Evil*, or is acquired by a coarſe Diet, upon ſalt Meats chiefly.

And here it may be proper to take Notice of one thing which is often a great Aggravation, if not ſometimes the ſole Cauſe of many Diſorders from a ſaline Origin, but particularly of cutaneous Foulneſſes, and a *Leproſy* more eſpecially; and that is an inſufficient Diſcharge by the Kidneys: For, without any other Cauſe, it is eaſy to imagine how a Retention of ſome of thoſe Salts in the common Stream, that ſhould naturally

turally waſh off with the Urine, ſhould add to the Neceſſity of detaching them by ſome other Outlet, and load ſome excretory Glands with them which are by Nature ſuited for their Reception, and therefore liable to be fouled and eroded by them, ſo as to make Blotches, Sores, and the like. The ſerous Part of the Blood is the natural Diſſolvent and Vehicle, for ſuch Salts as come into the Body with our Food, and are of no further Uſe there but require Ejectment; and the Kidneys are the natural Organ for this purpoſe, in Proportion therefore to the Failure of that in this Office, muſt the common Maſs be overcharged with ſuch Particles, and either ſome Diſtemper ariſe to the whole Frame, or ſome other ſecretory Outlet be crouded with them, ſo as to be diſtempered in that particular Part. And as the Glands of the Skin ſeem by Nature moſt ſuited to ſupply this Defect of the Kidneys, ſo they moſt commonly ſuffer; and in having ſuch groſs Particles protruded thro' them, they become obſtructed, eroded, and covered with Deformities.

Sometimes other Glands ſuffer by this Defect, and indeed the whole Courſe of Animal Secretion may be affected; inſomuch that there is no one Diſtemper from a ſaline Matter, but may receive Aggravations from this Cauſe; and once in particular I met with a very odd Inſtance to this Purpoſe of a Patient with an *Opthalmia*, and the Glands of whoſe Eyes ouzed out an uncommon Quantity of a ſharp *Serum*. A long Uſe of the common Abſorbents and Wood-Drinks, with Repellents alſo outwardly applied did but little, when trying the *Millepedes*, and other Diureticks, the Caſe was conquered, and the Eyes became well; but ſoon after the Perſon complained of an uncommon Quantity of Urine, and great Faintneſs and Pain in the Reins, whereupon the ordinary Strengtheners, ſuch as red *Coral*, &c. made into Pills with *Terebinth*, were given, and by ſuch means theſe Diſorders were removed

removed, when ſoon again the *Opthalmia* returned, and all the Symptoms upon the Eyes with Aggravation; and thus afterwards, for many Succeſſions, the Patient by Aſtringents and Diureticks was alternately cured and affected, between *Opthalmia* and a *Diabetes*.

But the ill Succeſs of Cure in this one Inſtance, changing the Diſtemper only into another, does by no means forbid the ſame Method to be purſued in like Caſes, but ſtrongly ſuggeſt the Uſefulneſs and Neceſſity of ſuch Procedure: And in the Diſtemper under Conſideration particularly, it is almoſt impoſſible to make any Impreſſion to Advantage without ſuch Help. *Mercurials* have undoubtedly their Share in this as in all the like Diſorders from ſharp ſaline Humours; but, I believe, they are oftner eluded by this than any; and I have known Salivations repeated to no Purpoſe: Which is a Manifeſtation that the Cauſe is in a great Meaſure, in ſome *Mala Confirmatio*, in the Neceſſity of one ſecretory Organ doing the Office of another, to which it is not naturally fitted: So that in ſuch Caſes, tampering upon the Fluids with *Alterants*, can be to little purpoſe, becauſe the Conſtitution and Make of the Strainers are to be altered; and where the Kidneys prove defective, all Endeavous ſhould be uſed to force and urge the proper Humours to be thrown out that Way.

It is not unlikely alſo, that ſometimes the cutaneous Glands may in this Caſe be in themſelves faulty, in not being ſuited to let out the due Quantities of perſpirable Matter thro' them, without Obſtruction, Eroſion, and Lodgment upon the Surface; for in a natural State, even that has ſome Degree of Sharpneſs. Here then the Fleſh-bruſh, Friction, and Cold-bathing come in for a Share towards a Cure; for the frequent uſe of ſuch Means not only keeps the tranſpiring Humours from Lodgment, but alſo helps to reſtore and preſerve the natural Texture of thoſe Glands, ſo as to be afterwards better fitted for their Offices.

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In all Conditions however, and Circumſtances of this Diſtemper, the common way of Living, ſuggeſted in the preceding *Eſſay*, muſt be of ſervice, and more particularly a frequent uſe of Antiſcorbutick and Diuretick Herbs, in Broth, Sallads, and ordinary Food, as well as in medicinal Preſcriptions.

ESSAY VII.

Of VENEREAL DISEASES.

HERE I intend to be confined to that State only of what commonly goes under this Name, wherein the whole Habit is tainted, ſo far as to threaten the Infection even to Poſterity; for as to ordinary *Gonorrhœa*'s they come but little into that Condition of Diſtemperature, which I am endeavouring in theſe *Eſſays* to give ſome uſeful Hints about, although even in that, thus much may not be amiſs tranſiently to obſerve, that the uſual Method of ſtrong Purging, ſeems extremely detrimental, as it ſerves neither any Purpoſe as to the Extirpation of the Infection, or to obviate any Miſchiefs from the morbid Matter, by leſſening its Virulency; for the Seat of the Contagion lies out of the way of ſuch Medicine's Operation; nor is there the leaſt Fitneſs in the things commonly given by the ordinary Dabblers in Wickedneſs and *Mercury* to weaken the Effects of the original Taint; but they rather exhauſt the Veſſels of their natural Balſamick Moiſture, and give room for a more ſpeedy Derivation of the diſtemper'd Matter into the Habit; beſides the Damage they bring upon the Solids, by weakning and overſtraining their Springs.

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I am alſo unwilling to take up Room here in any Declamations againſt that profligate Tribe, who plague Mankind with their pretended Cures of this Diſtemper; but one great Abuſe from this Quarter, which cannot be paſſed in Silence, is the taking all Advantages from confeſſing guilty Perſons, to treat them as if really *in for't*, as thoſe in their accuſtomed Cant are pleaſed to term it. The firſt Adventures into thoſe Pleaſures, which afterwards bring ſo much Repentance, give moſt young People, that Dread and Apprehenſion, that every Pimple, or Alteration, about the offending Parts eſpecially, ſhall be ſuſpected venereal; and whenever ſuch a Trifle comes before theſe abandoned Stagers in Impoſture, they are preſently hurried into *Mercury* and Purges, to the vaſt Detriment of a youthful, ſound Conſtitution, and drenched with as many nauſeous Doſes as if really diſeaſed. This Remark I would not have troubled a Reader with, had I not myſelf met with many from the Hands of ſuch notorious Deceivers who were brought into real and deplorable Ills by the uſe of Means to get rid of imaginary ones, and who have been treated as abſolutely Pox'd that have had no one real Symptom belonging to it, nor have never had ſo much as a ſimple *Gonorrhœa.*

But to return, where this Infection is juſt received and appears in a *Gonorrhœa* only, a patient Uſe of *Emollients* with *Rhubarb* at proper Intervals will ſeldom fail; but if the infected Matter increaſes much, and eſpecially in its worſt Qualities, Mercurials will then do more good as *Alterants*, than ſtrong *Carthartick*s, and the *Ethiops* with terebinthinous Mixtures will hardly ever fail; but what may moſt certainly be relied upon, is almoſt any of its rougher Preparations wrapped up in *Camphire*, as before directed in the *Eſſay* on the *Gout.*

But it is the whole tainted Habit, that requires the moſt Attention and Skill. And herein however the venereal

venereal Poiſon or the diſtemper'd Humours may be imagined to come by its noxious Qualities, and of what kind ſoever it may be conceited from the Manner of its Propagation, it can be regarded no otherwiſe when it is phyſically conſidered, but under the ſame Modifications and the ſame ſenſible Properties as other hot, ſharp, corroſive Humours, which in like Manner deſtroy the Textures of the Parts upon which they ſettle, and carry Pains and Tortures with them through the whole Habit. The venereal Taint then in this Condition is not to be baffled with *Specifficks* and *Arcana*, to whoſe Properties and Operations we are Strangers, but to be managed by Things we are acquainted with, and whoſe mechanical Affections we know are fitted to deſtroy thoſe noxious Qualities in the peccant Juices.

As this Diſeaſe therefore at this Height comes under the ſame Conſiderations as thoſe mentioned in three foregoing *Eſſays*; and ſince they differ from one another but in ſome leſſer Circumſtances that fits the offending Humours to ſettle rather on one Part than another, altho' it is in all much of the ſame Nature, the Patients of each kind require much the ſame Management. Yet thus far indeed may be ſaid in Compliment to Arthriticks, that they generally derive the Evil from leſs criminal Cauſes, and that the peccant Humours in them are in a much lower Degree noxious, and much leſs communicable, if ever, to others.

In all theſe Caſes then, where the Glands are ſtuffed with, and eroded by, a ſaline hot, irritating Humour, the Means of Remedy common to all, are in the firſt Place a Diet and way of Living as keeps up the Vigour of Digeſtion, and as much as is conſiſtent therewith, ſoftens and ſmooths the animal Fluids; and as for reaching the morbid Matter, ſo as to deſtroy it in its hurtful Qualities, or extirpate it quite out of the Body, Medicines are to be uſed of more or leſs

Subtilty and Efficacy, as the Scene of Affliction is more or leſs remote, and in Proportion to the Severity of the offending Humours: And as in this laſt Caſe the Cauſe ſeems to be fixed in the fineſt, and moſt diſtant Parts from the Reach of Medicine, the Means of Cure ought to be very ſubtile and efficacious. And that even Salivations will often leave it untouched, or ſo little weakned, that it ſoon appears again in its wonted Severities, ſeems owing to the Means therein uſed, and the Manner of their Operation, not being penetrating enough to reach it in its minute Receſſes; for the *Mercurials* uſed for this Purpoſe are generally of the coarſeſt Preparation, and they begin to operate as ſoon as they are brought to the larger Glands about the Throat, and go off in ſuch profuſe Diſcharge that Way, that they reach very little, or at all, further; whereas the venereal Taint often lies in much ſmaller Receſſes, and infects even the medullary Cells, and Fibres of the Bones with its Acrimony.

To make a thorough and a laſting Cure therefore in theſe Caſes, beſides what is common in the forementioned Diſtempers a Courſe of ſuch Medicines ought to be perſiſted in, that are ſubtile enough to reach the Infection in the minuteſt Threads, and there deſtroy or extirpate it; and of this Claſs we know none preferable to the *Mercurial Alterants*, but thoſe which are groſs and bare enough to ſtimulate in the larger Paſſage, will elude our Expectations, for the Reaſons before given; and how to ſecure a *Mercurial* Medicine for lying long in the Body, and penetrating into the fineſt Meanders, muſt appear from what hath been already ſaid about *Camphire*. But beſides the Advantage from *Mercurials* ſo managed, there will alſo reſult this Benefit from the *Camphire* itſelf, of ſoftening and volatilizing the acrimonious Salts that give the Diſeaſe its Origin; and the frequent Repetitions of *Camphire* with common Aromaticks and Sudorificks, without *Mercury*, at proper Intervals, hardly ever

Fig. 1.

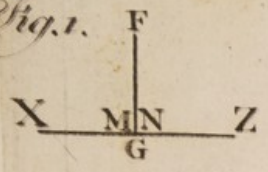


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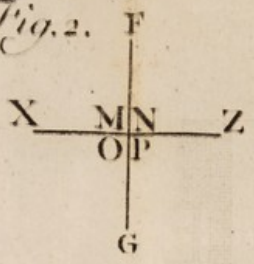


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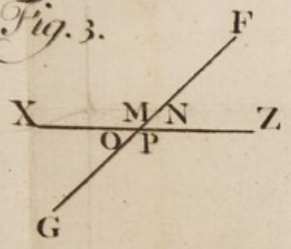


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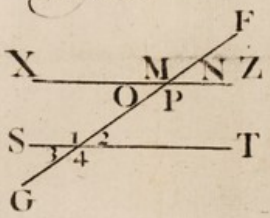


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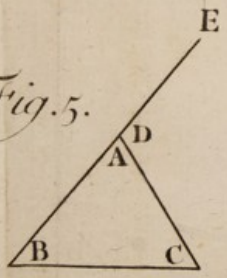


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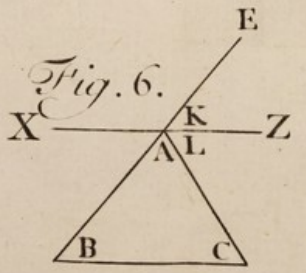


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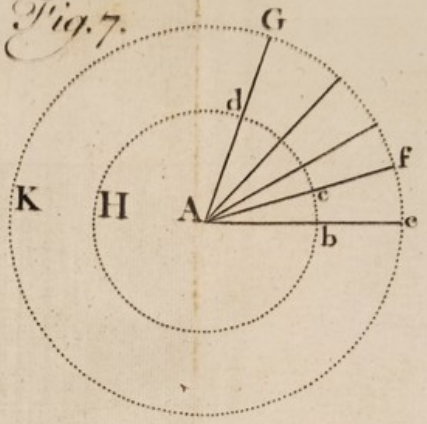


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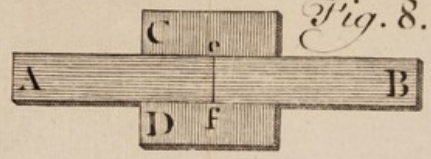


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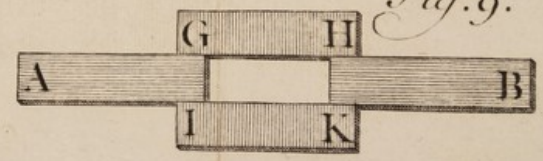


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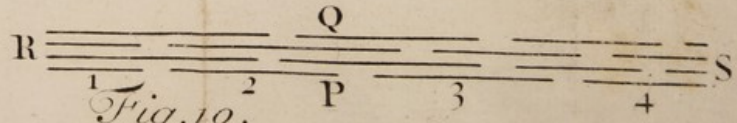
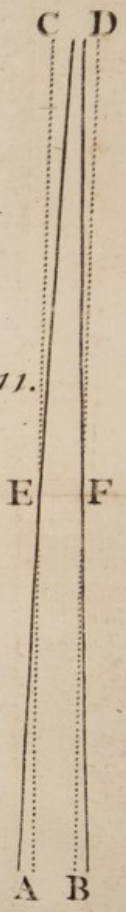


Fig. 11.



ever fail, if joined with a ſuitable Way of Living in all other Reſpects of eradicating the moſt obſtinate *Lues* that was ever met with.

Although as to the Method of Living in particular, I conceive much more may be done by ſoftening nutritive Diet than is commonly imagined, as alſo by Medicines of the ſame Intentions, and thoſe commonly termed *Emollients* and *Balſamicks*; becauſe they not only fill up the Habit with neceſſary Subſtance, but guard alſo the Solids very much againſt the Depradations and Acrimony of the tainted Humours, inſomuch as ſometimes quite to get the better of it. And in this Reſpect I alſo am jealous, that the common Methods of *Salivation* and rough *Carthartick*s do not only fail of Cure, but alſo occaſion great Miſchiefs, becauſe they rob the Conſtitution of its beſt Defence againſt the Diſtemper, a ſoft balſamick Blood, and leave it afterwards much more expoſed to a mercileſs Tormentor; whence infallibly alſo comes on an incurable Hectick.

The ſubjoining any particular Forms of Preſcription can in this Reſpect be of little Service, becauſe the almoſt infinite Variety of Circumſtances both of the Patient and the Diſeaſe make ſome ſmall Variations ſo frequently neceſſary, that a careful and judicious Phyſician only can be truſted to ſuit them to the ſeveral Exigences that may occur in Practice. And as here I would by no Means be thought to encourage either Empiricks, or Patients themſelves to meddle beyond their Reach; ſo I conceive thus much neceſſary to anſwer the Ends intended, of ſuggeſting only ſuch Hints to thoſe of Skill and Penetration as may conduce to a more efficacious Management of theſe obſtinate Diſtempers than ſeems heretofore to have been practiſed.

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