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C.R. P. 123



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Medicina Statica:

BEING THE
APHORISMS
OF
SANCTORIUS,

Translated into ENGLISH with large
EXPLANATIONS.

The Second Edition.

To which is added
Dr. *KEIL's Medicina Statica Britan-*
nica, with comparative REMARKS, and
EXPLANATIONS.

As also
MEDICO-PHYSICAL *Essays*
ON

- | | |
|-------------------------|-------------------------|
| I. AGUES. | V. The LEPROSY. |
| II. FEVERS. | VI. KINGS-EVIL. |
| III. An ELASTICK FIBRE. | VII. VENEREAL DISEASES. |
| IV. The GOUT. | |

By JOHN QUINCY, M. D.

Pondere, Mensurâ, & Numero Deus omnia fecit.

L O N D O N:

Printed for W. and J. NEWTON in *Little-Britain*, A. BELL at
the *Cross-Keys* in *Cornhill*, W. TAYLOR at the *Ship* in *Pater-*
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street. MDCCXX.





T H E

P R E F A C E.



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; as it may general-

ly 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 Channells, all of which have by the Subtlety of some Enquirers been pursued into such Intricacies, as make 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
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The P R E F A C E.

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 *Aphorisms* have formerly appeared 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 not 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 Assistances 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

Sanctorius himself thought fit to give to the Publick, 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 gathered, that a wise Man by observing what Effects every thing which turns up in the Course of his Life has upon his Constitution, may come to a tollerable 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 Assistances 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 offered 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 *Ballance*, 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

charges 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 propose 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 Ballance, 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, 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 Country-man 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 published, 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

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 publick; 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 talked of now in Physick, and by some perhaps, more than it is well understood; but the greatest number of Professors in Medicine are declared Enemies to it, and make nothing of breaking their Jest upon *Angles, Cylinders, Cones, Celerity, Percussion, Resistance*, and such like Terms, which they say have no more to do with Physick 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 laboured 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 my self at this Time, even in my Apology to him, as not to mention what that Fault was. I have herein also endeavoured to make him amends, by large Additions, both to the Explanations, and to the End of the Book of some *Essays*, never before in Publick, which the Reader will find some account of thereunto prefixed.



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 suppositious 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 Qualities,

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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 done 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 oftentimes 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 Natures 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 chuſe to do in this Place, becauſe our Author, although he compoſed thoſe *Aporiſms* at a time when this way
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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 stedily 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 with 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 bewildered 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 Caesar* 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 looked 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 considered 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 itself 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 *à 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 thorough the several Steps whereby the Mind comes at the Truth of this Proposition ; which altho' it may be done various ways, yet they all 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 F. G. Fig. 1. be let fall upon the right Line X. Z. and it makes two right Angles M. N.
2. If then the Perpendicular F. G. be drawn thorough X. Z. as in Fig. 2. there will be made four right Angles, M. N. O. P.
3. Farther, If the Perpendicular F. G. be changed into a Line which cuts the other X. Z. 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 O. N. are lessened, the other opposite Angles M. P. will be enlarged, and therefore their Sum will be as before.

4. If again, as in Fig. 4. there be another Line S. T. drawn Parallel to X. Z. then there will be four more Angles 1. 2. 3. 4. made in all respects equal to the former, M. N. O. P. 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 A. B. 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 seperately to B. and C. and how this may be done appears from Step 4th, by drawing a Line through the Vertex, as X. Z. which shall be Parallel to the Base B. C. 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, is K equal to B. in Fig. 6. and L equal to C. If then the Sum of A. L. K. 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

B 4

A. B. C.

A. B. C. will be equal to A. L. K. 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 uncompounded 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 abovementioned, which will admit of several ways
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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 ex-
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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 itself 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 inclosed 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 Bodies being thrust into, and possessing the same Place, which that takes up, before it is first thrust out, and thereby makes room for the others coming into it.

Extension also appears with as much Clearness and Conviction to be another Property ; although 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 no other 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 circumscribed 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 *Thicknes*, 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 *Thicknes*; 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 itself 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 intermediate 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 *subtile 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 privative 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
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which appears with as much Certainty, and of which we are able to form as clear and distinct Notions as of any of those beforementioned, 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 handsomly exposed by Mr. Keil in the abovementioned Place.

With equal Certainty also we find an absolute Incapacity in Matter to put itself 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 itself 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 possibly can 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
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necessary Consequence from the Idea of Body that it should be endowed 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 itself, 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 farther 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 Phœnomena 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. 9. Part 1. 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.* N^o. 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 odoriferous 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 thorough 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 considered, 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

Particles of any Fluid is in it self a 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 it self 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 endewed 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 endewed 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.

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And as no Body whatsoever has in it self 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 Buiks 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 what 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 of 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 their 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
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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 ones 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 it self 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
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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 concurrent 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 Vertues 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 competent 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 any 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 Vertues any Bodies are endewed 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 uncompounded 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 endued 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, Vertues, 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, joyn 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 joyn, and cohere as before.

Farther likewise, when we see a Thread or Chord 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 Chords 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 our Minds, and keep in view the Figures, Magnitudes, and Conditions of Motion of whatsoever is under our present Enquiry; and to find out their Vertues 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 Assistan-ces 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 Vertues 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
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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 *Entbusiasts* 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 most made 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
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up the Form of that Metal which is called *Gold*. So that it is 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 much therefore been 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 it self, 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 Understanding, 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
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the Mind finds as necessarily inseparable when less, than to make it self 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 farther 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, tho' never so near it, but by Contact ; if therefore external Objects are not united to our Minds, when they produce Ideas in them, 'tis evident that some Motion must be continued 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,

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* farther 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, although 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 essential

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 Vertues of Bodies depend only on the different Modifications of those essential and primary Qualities before mentioned, may be farther 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 heightned or by Spirit of Sal Armoniack 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 alter'd 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 on 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 Fire the Metal, from a consistent into a fluid State, may be termed not improperly Qualities *mediately* perceivable.

The Qualities and Vertues of all material Substances thus appearing to Operate upon us, or upon other Bodies, either by their immediate Contact, or by
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their Impulses upon interposing Bodies ; and it being evident from Experience, that several do affect others at a Distance by the Emission of subtile *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 it self round about, (the Air or *Medium* through 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 inner 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 subtile *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 govern'd by. From all which, I say, it appears very plain, that the Properties and Vertues 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 explain'd 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 material

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 ones Laughter as well as Amazement, to reflect upon the Extravagances of some subtile, crafty Heads, who, to account for the Operations of a human Body, have abstracted and spiritualiz'd 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 enhanced by the Qualifications of the Persons 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 Pollytheism, and thrown out of the human Body all those *Pagan* Deities, which had their Rise only from the Invention of a corrupted Generation, but has also laid open 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 reserved 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 *Pollychreston'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 inquired into, and examin'd, 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 disorder'd.

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 obliged, 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, Leavers, 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 wasting 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 continued 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 Subtraction of its Quantity, or by any means encreasing 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 Encrease 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 humane 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 render

der it impossible with strict Certainty to determine their Efficacies, because it is not possible exactly to assigne 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 thorough, 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 Chronick Distempers remain the *Opprobria Medicinæ*. 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 Chronick 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 *Topicks*, than by long Courses of the most celebrated *Alteratives* or *Sweetners*. And thus when there are Symptoms of a præter-natural 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 encrease the Vibrations of the Solids, which Exercises or cold Bathing cannot fail to do; for by this, the Motions of the Fluids must be encreased, 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.

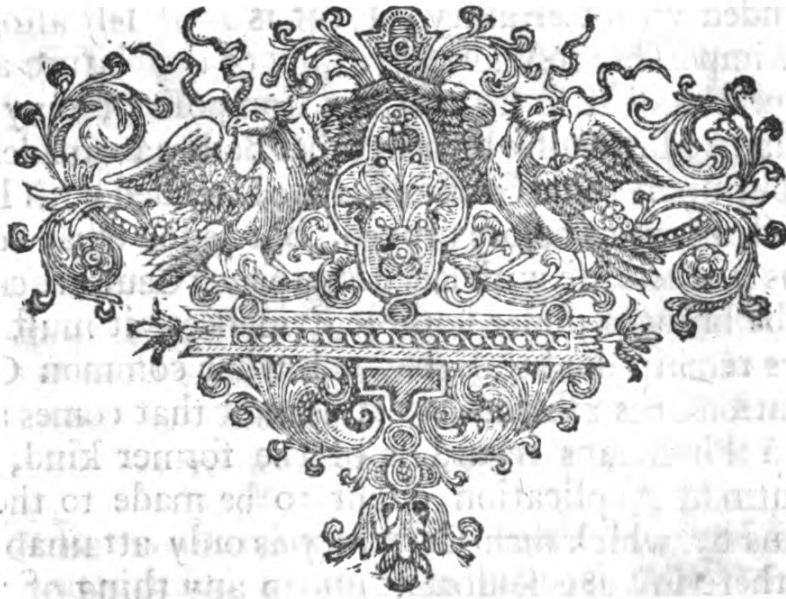
In any other Case likewise where there is only a partial Disorder, suppose of the *Liver*, or any other of the *Viscera*, according to the Symptoms and State of the Secretions, it may be certainly known by one who understands the Make and Office of that Part, whether it be from too lax or strait a Tone in the Part it self, 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 Subtraction 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 encreased, 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 determine the Force and Efficacy of such Agents as cannot be brought under the Notices of our Senses, we are obliged to proceed by other Measures, and trust altogether to Observation and Experience.

Infomuch 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 it self 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 Physicians 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

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 preserv'd.

Explanation.] PERSPIRATION, both as to the Matter of it and its Quantity, is so absolutely necessary to the well being of a human Body,

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 Wast of Substance, and a proportionate Supply: The former is occasion'd by the constant Circulations of the Animal Fluids, and the forcible Contractions and Attritions of the Solids, whereby such Parts as are found not suitable for the Accretion and Nourishment of the Body, at length become broke so small, as to fly off thorough 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,

A P H. II.

' If a *Physician* who has the Care of another's Health, is acquainted only with the sensible Supplies and Evacuations, and knows nothing of the Wast that is daily made by insensible Perspiration, he will only deceive his Patient, and never cure him.

A P H. 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 Preservation of Health.

A P H. 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 Wast 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 *Physician*, 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 less'n'd, according to the several Exigencies of his Patient; either for the Preservation or the Recovery of his Health.

A P H. V.

' *Insensible Perspiration*, is either made by the
' Pores of the Body, which is all over Perspirable
' and covered with a Skin like a Net; or it is per-
' formed by Respiration thro' the Mouth, which
' usually in the space of one Day amounts to about
' 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

increas'd 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 encreas'd, 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, wherever 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 pass'd 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.

Lewenboeck pretends by the help of the Glasses to have discovered 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.

A P H. VI.

' If eight Pounds of Meat and Drink are taken
' in one Day, the Quantity that usually goes off
' by Insensible 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 disorder'd 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*, endeavoured to prove that the common Notion of a diminished 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.

A P H. VII.

' The Quantities insensibly perspir'd, vary according to the Differences of Constitutions, Ages, Countries,

‘ Countries, Seasons, Distempers, Diet, and the
‘ rest of the Non-naturals.

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 influenc’d and alter’d according to the several Causes above-mention’d; so that Quantity which is beneficial to one, may be more or less than what is convenient 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 appriz’d of, as may be further collected from several of the following *Aphorisms*. To which the Reader is therefore referred, as also to Dr. Keils Aphorisms annexed hereunto with their respective Explanations.

A P H. VIII.

‘ If the Body be weigh’d in the Morning before
‘ and after sensible Evacuation, then it will be easy
‘ to determine the Quantity that is wasted that
‘ Night by Perspiration.

A P H. IX.

‘ If the Body encreases beyond its usual Weight
‘ without Eating or Drinking more than Customary,
‘ there must either be a Retention of some of the
‘ sensible Excrements, or an Obstruction of the Per-
‘ spirable Matter.

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

A P H. X.

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

‘ any encrease of the sensible Evacuations: But if it
 ‘ comes to its Standard by larger Discharges, either
 ‘ 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 stop’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 encrease of the sensible Evacuations, it is a great Chance but some Distemper ensues; for

A P H. XI.

‘ If by Weight it appears, that Perspiration is
 ‘ diminish’d; the following Days it must either be
 ‘ encreased, or some sensible Evacuation enlarged;
 ‘ or else there will be laid a Foundation for a Cachexy, 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 contract-

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.

A P H. XVIII.

‘ From too great Fulness arise bad Qualities, but not, *vice versa*.

‘ *Explanation.*] That is, good Qualities do not arise from Emptiness. Excess on neither side can be good; because several ways the Body may be injur'd thereby.

A P H. 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.

Ex.

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 Cohæfions of the Fluids, and by laying at the same time too great Weight upon the Solids: But the contrary is not always true, because 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.

A P H. 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 encrease of Strength: The other is when awake, and arises from indigested Humours, and is weakning 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 performed, 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 perform'd; 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, although the Business of *Perspiration* goes on never so well, until fresh Recruits are supply'd by Sleep.

A P H. 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 pre-

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 necessary weakens the Constitution, and makes it liable to Abundance of Disorders.

A P H. 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 Bloods Velocity, as the former by enlarging the Passages, only with this Difference, that what is forced out by an additional Impulse of the Fluids, although 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.

A P H. 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 preceding *Aphorisms*, where the Reasons of it will manifestly appear; very much likewise to this Purpose is the following.

A P H. XXIV.

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

A P H. 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.

A P H. 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 Sponge, 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 discharged 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 to great a Weight by the thinner than the thicker Evacuations; which plainly points out the most certain Methods to disengage the Body from *Pletora's* and *Præternatural 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.

A P H. XXVII.

The most Liquid Parts of our Food are likewise the most heavy, and the Solid lighter: Bread and Flesh are light, Wine and Broaths heavy. A Glass of Wine is almost three Times as heavy as a Piece of Bread of the same Bulk.

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

A P H. 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 a 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 or 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 Incumbrance, 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 prescribed Means succeed. From these Considerations also it appears further that,

A P H. XXIX.

Weight, with Relation to the Perception of it in a living Body, is *Equivocal*; because it is consistent, that at the same time a Body may actually be heavier, and yet seem lighter; and on the contrary, it may be render'd lighter than usual, and yet at the same time feel heavier.

Explanation.] So that when a Body is said to be heavier or lighter 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, although 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.

A P H. XXX.

Where both these concur, that a Person perceives 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 *Manicks* and *Delirious* Persons, who have certainly the same Perception as to themselves, and yet are far from being in a State of Health.

A P H. 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 aded, they cannot easily fail of Success.

A P H. XXXII.

When a Body sinks below its healthful Standard, 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 repaired, and therefore must of Consequence thereby be render'd much weaker. But it is quite otherwise when the Body becomes lighter after Sleep, because that is occasion'd 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 over-straining 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.

A P H. XXXIII.

‘ If without the Force of Exercise the Weight decreases, and the Strength decays, it is because there is not a Supply of Nourishment in Proportion sufficient 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.

A P H. XXXIV.

‘ There are but three ways only by which a Body can grow weaker; the one is when its Bulk encreases 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.

A P H

A P H. 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.

A P H. XXXVI.

‘ The Weight or Bulk of the Body adds considerable
‘ 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, although not invigorated with a like Quantity of Spirit in Proportion to his Bulk will be absolutely much stronger; especially in the Exercises above-mention’d, 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.

A P H. 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.

A P H. 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 throughly di-
gested, 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 render’d thereby lighter, yet Inconveni-
encies will ensue.

A P H. 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 with-
out are easily remedied; but where any Part is
weaker than the rest, either from hereditary Causes,
or the Injuries of former Distempers, the least In-
disposition affects it, and without timely Care will
bring the whole *Oeconomy* into Disorder. And
when any particular Part is thus indispo’d, ’tis
impossible but the least Irregularity or Accident
will so much disorder it, as to hinder its right Per-
formance

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

A P H. 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.

A P H. 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, and those to the due Impulses of the Solids, '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 lessend in its Quantity, and consequently the whole Body become heavier: The Reason of which will further appear under *Aphor. XLIX.* in this *Section.*

A P H. 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.

A P H. 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 Retention 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 Swiftnes 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 Circular 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 rendring 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.*

A P H. 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 some-
 times fly off by Violent Exercise, or any other
 Cause, cannot but leave those Fibres they last part-
 ed 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 Distem-
 pers which have wasted much the Substance of the
 Body, untill that Loss is throughly repair’d, to
 live with a great deal of Temperance, feed sparing-
 ly, and of what is easie to digest: To observe the
 same likewise after long Fasting, or after any Vio-
 lent 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.

A P H. XLV.

' If what is thus lodged in the secretory Passages, 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 impostumate. 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.

A P H. XLVI.

' If the obstructed Matter can neither be removed by Nature, nor a feverish Heat; there is immediate Danger of a Malignant Fever.

Ex-

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 Natures removing it, can be understood no other, than the Over-charge 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 encreased 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. *Wainwright* in *Propos. 18. of Animal Secretion*. By this, the Secretion of the *Succus Nervosus* in the Brain will be encreased, and thereby the Vibrations of the Solids become quicker and stronger. *Fourthly*, The quickned Vibrations of the Solids will encrease the Velocity of the Blood, and break 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 Artendants put out of Danger.

A P H. XLVII.

Feverish Persons are as much in Danger, when Perspiration is hinder'd by an unskilful Administration 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.

A P H. XLVIII.

‘ A moderate Dose of *Cassia* does not divert Perspiration, nor impair the Strength, but only rids the Body of a superfluous Load: But other Purges empty too much, and reach the Parts more remote, 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 encreased Evacuations do, strong Purgatives have further this ill Effect, as they stimulate the Solids much, they both Occasion thereby a greater Wast of the nervous Juices, and at the same time contract them so as to hinder Perspiration, which makes the Body heavier.

A P H. 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 straightened, 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 Convulsions 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 lessened, 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.

A P H. 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 useles 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.

A P H. LI.

' One of the most common Hindrances of Perspiration 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.

A P H. LII.

' There are three internal Causes which hinder Perspiration; Natures being employ'd another Way, Diversion, and a Decay of Spirits.

Explanation.] By Natures 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 itself 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.

A P H. LIII.

To this Purpose it appears upon weighing, that during the Operation of a Medicine, and after rest for the Space of three Hours together, there is but very little Perspiration: For in the Operation of a Medicine Nature is employ'd in the sensible 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 Encrease of one Evacuation must 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 shortned at once, and the Pressure remains the same; the Quantities forced out will be lessen'd, and their Velocities encreased: that if their Diameters are lengthned *è contra*; that if one Orifice is only straightned, the Velocities and Quantities passing at the other, will be encreased: 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.

A P H. LIV.

‘ In a looseness and vomiting, Perspiration is hindered, because the Matter is diverted another way.

A P H.

A P H. LV.

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

Explanation.] That is, by Supleing 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 practis'd; 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 Consequents 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*.

A P H. LVI.

‘ The Body does not perspire at all times alike,
‘ for in the first five Hours after eating, there wafts
‘ 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 Apb. 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.

A P H. 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 Apb. LIII.* above. They therefore who consider of what Consequence a due Perspiration is, will be wary how they disturb it.

A P H. 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 *Apb. IV. V. and VI.* above.

A P H. LIX.

° Sixteen Ounces of Urine is generally evacuated in the space of one Night; four Ounces by Stool, and forty Ounces and upwards by Perspiration.

A P H. LX.

° There is as much carried off by Insensible Perspiration in the space of a natural Day, as by Stool in the Course of five Days.

Explanation.] It appears from the three preceding 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 Fullness, 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 *Mafs* by having more Room being subject to generate new
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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, 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 *Pletora* 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 sometimes 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 rendring 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.

A P H. 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.

A P H. 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 benefitted thereby, and receives a greater stock of Spirits and Vigour. But it is thus only where there is a perfect state of Health.

A P H.

A P H. 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 distemper’d, is call’d 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.

A P H. LXIV.

‘ How much is necessary for every one to perspire, in order to preserve a State of perfect Health may be thus known. Take Notice in the Morning, 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 Days Dinner) which suppose to be twenty Ounces: Then chuse 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
G brought

‘ 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 thorough 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.

A P H. 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
 ‘ usual Weight, to the Quantity of one or two
 ‘ Pounds ; and at the Months end, return again to
 ‘ their usual Standard, in the same manner as Wo-
 ‘ men do ; but then by a critical discharge of
 ‘ Urine, it being either increas’d in its Quantity,
 ‘ or more turbid.

A P H. 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 Hemorrhage* 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 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 *Diarrhea* 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 influenced 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 Lune in Corpora*

pora humana; and Dr. *Friend's Emmenologia*, where these Matters are treated in a way truly Mechanical and Demonstrative.

A P H. 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 Intermision of usual Exercise, and Difuse of Venery.

Explanation.] Cold Air and swimming in cold Water, may be so managed, 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 weaken'd, 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 Cohæions, than are agreeable to the Purposes that Fluid is design'd for, and render it too siezy 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 weakned 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 rendring the Juices too thick for Perspiration; as also has an Intermision 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 Difuse of Venery, we shall see below in the *Sixth Section*.

A P H. LXVIII.

External Cold hinders Perspiration in weak People, because their natural Heat is dissipated; but in robust, it encreases 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 merely 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

G 3 Heat

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 snarter 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 mention'd, as a *Stimulus*: For whenever we have a greater Sense of Cold from the circumambient Air, the *Barometers* will prove the *Atmosphpherical Pressure* at that time to be encreased; 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 accompanied with a *Stimulus*, cannot but assist them in their Contractions, and carry on the faster the circulating Fluid, and consequently encrease 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 lessen'd 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 explain'd) it follows of Consequence, that whatsoever encreases or diminishes the one, will likewise

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

A P H. LXIX.

‘ The Health of that Body is much more lasting
‘ and establish’d, whose Weight in the Course of
‘ several Years neither encreases or 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 must 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.

A P H. LXX.

‘ To return to the usual Standard by an Addition
‘ of indigested Juices, is bad: But by what is well
‘ digested, healthful.

Explanation.] See *Aphorism* XLIV. and XLV. of this Section.

A P H. 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
G 4 Part,

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.

A P H. 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.

A P H. LXXIII.

‘ If through any Error, a Pound of Perspirable Matter is detained in one Day, Nature is generally 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.

A P H. 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 empty'd and lessen'd, 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 harden'd, 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 greater Regularity. See *Aphor. XXXIV. Sect. IV.*

A P H. LXXV.

‘ The Perspirable Matter is of two Sorts, a lighter and a heavier.

A P H. LXXVI.

‘ The heavier Part coalesces together, in its going off, in such a 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 Mater without Animal Parents is a mistake,

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.*

A P H. LXXVII.

From the grosser Part proceeds contagious Diseases amongst such as lie together; for the lighter flies away, and the heavier Part gives the Infection.

Explanation.] It is very likely to be thus in the Propagation 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 subtile Particles that fly off, and are efficacious at a very considerable Distance.

A P H. LXXVIII.

To those who have the Perspirable Matter obstructed in very hot Weather, 'tis very troublesome: But to those who freely perspire their due Quantity, the Heat is not uneasy.

Explanation.] Because the obstructed Matter not only encreases the Weight, but also at such Seasons is apt to raise preternatural Ferments, and occasion 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.

A P H. LXXIX.

The greatest healthful Standard the Body is capable 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 Fullness there is, although 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.

A P H. 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 oftner renewed, from the lowest Standard of Weight to the greatest : For they are capable of more Weights that are healthful. Why do most old People of Necessity die? Because they arrive to the only last healthful Standard 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

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 explain'd, *Aphor.* 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 seized with obstinate Distempers, 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 Repletion as before, and as the Distemper has been more or less inflamed 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 Motion 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.

A P H. LXXXII.

Old Persons by frequent spitting protract their Lives : For if what they spit was retain'd, it being incapable of Digestion, would hinder Perspiration ; 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 intirely 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 *Mala 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.

A P H. LXXXIII.

‘ Old Age may truly be reckoned a Distemper,
 ‘ but it may be long protracted if the Body perspires well.

A P H. LXXXIV.

‘ Venerly destroys those who are Ancient, as
 ‘ also an actual Coldness of the Body, immoderate
 ‘ Drinking, and Eating like young People, Passionate
 ‘ Anger, and too much Exercise.

Explanation.] All these accelerate the Motions of the several Parts of the Animal Machine, more than the Weakned and decayed Springs of Old Age can admit of, without considerable Damage.

A P H. LXXXV.

‘ Old People fail of reaching to a long decrepid 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

and languid to propel the proper Fluids into them, and invigorate 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.

A P H. 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 Gangrene.

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.

A P H. 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 latter 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.

A P H. 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 Eminentory. See *Essay on the Gout.*

A P H. 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 concern'd 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.

H

A P H.

A P H. XC.

‘ Frequent turning in Bed, so as to exercise all
 ‘ the Muscles by it, weakens the Constitution,
 ‘ and lessens Digestion and Perspiration. The
 ‘ best Remedy 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 Retention of a superfluous Load. But the Remedy mentioned, I am afraid, is hardly practicable.

A P H. 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 occasion'd 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 *Aphor.* LIII. above, and therefore for the same Reason.

A P H. XCII.

‘ A Looseness may be remov'd 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.

A P H. XCIII.

‘ As a Load-stone armed with much Steel, and
 ‘ as a larger Vessel of Wine, keeps its strength best;
 ‘ so the most weighty Bodies better preserve them-
 ‘ selves in a vigorous Health, than such as are sunk
 ‘ with Abstinence.

Explanation.] It was taken notice of before *Aphor.* XXXVI, above, that the larger the Body is in Bulk, *ceteris paribus*, it is the stronger; and consequently better preserved 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 Proposition, 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. *Wanewright'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.

A P H. 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 easie to be restored to its natural State; for in time, not only the Excretory Passages may for want of their usual Attritions and Impulses subside, 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.

A P H.

A P H. 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. 16. of *Animal Secretion*, that such Glands whose compounding Arteries are most complicated, seern the most viscid Matter from the Blood. And by Dr. *James Keil*, on the same Subject, Prop. 2. 6. and 9. 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 Vicidities of the Blood, the extreme Parts, are mostly overcharged 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 Febris, Propos. 18, and 19.* Where he will meet with a full and demonstrative Account of this Matter.

A P H. XCVI.

“ In Dropfies the Water in the *Abdomen* does not pass away, because it is too gross and Sizely to perspire.

Explanation.] Another Reason likewise may be owing to the ill Constitution of the Membranes inclosing it, which at such times must needs be flacid 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 through it: And further, would it not be too tedious here, it might easily be proved, that the Membranes themselves without Motion, are not porous enough to admit through them the most subtile Streams 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 subtile 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.

A P H. XCVII.

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

Expla-

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 Inflammation; 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.

A P H. 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 cooled 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.

A P H. XCIX.

‘ If the Puncture of a Nerve is stopped with glutinous Pultus’s or such like Applications, the obstructed *Ichor* will contract such a sharpness as to
‘ bring Convulsions and Death, unless the Wound
‘ be again opened 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 changed by their obstruction into a very noxious Acrimony. We must therefore understand *Oily Dressings*, in the Aphorism as put in opposition to *glutinous Poults*'s, to consist of the more Subtile and Spirituous, as of Turpentine, and the like.

A P H. C.

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

Explanation.] This is also very material to observe in Chyrurgical Practice, for moistening or humid Applications leave the Part obstructed soft and yeilding, 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 *Schyrris*.

A P H. CI.

‘ Any Part obstructed with Blood, or other Juices,
 ‘ as in Tumours, and even in a Pleurisy, 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.*

A P H.

A P H. CII.

‘ Hypochondriacal Persons, are cured by promoting 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 by a great deal too straight, and differ not much from *Manaicks*; 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 Reflexes 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 *Pracordia*, 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 *Substringents*, and moderate Exercise.

A P H. CIII.

Perpiration 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.

A P H. CIV.

Those Bodies which perspire much insensibly, as Children, are neither to be let Blood, or Purged.

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.

A P H. 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 it self breaking thorough 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.

A P H. CVI.

‘ Where there is a good Perspiration, a Gangrene
‘ will go off; but if it suppurates, the Part will
‘ mortifie.

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

A P H. CVII.

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

Ex-

Explanation.] Whensoever too great a Quantity of Blood, for want of sufficient Motion grows thick and Sizely, it may be the Cause of the Obstruction of the small Arterial Branches; but until it grows so Sizely, 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.

A P H. CVIII.

‘ The most gross Humours in robust People, will
 ‘ pass thorough the narrowest Passages; as it ap-
 ‘ pears 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 in-
 ‘ sensible Pores.

Explanation.] There is something very extraordinary in the Tonick vibrating Motions of the Membranes. For 'tis very plain that in a Carcass 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 accounted for, but by the continual shiftings of the Contacts 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 its 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.

A P H. 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 encreases 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.

A P H. CX.

‘ That Perspiration which is insensible, is natural, and a Token of Health; but Sweat is the contrary.

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

A P H. 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 straightened; by which Perspiration will be hinder’d, and Digestion interrupted; See above *Explanation* to *Aphorism LXVIII*.

A P H.

A P H. 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 farther appear in *Explanation* to the following *Aphorism*) but from staying in too long, and the Dampness of the Air at that time, which will be apt to hang upon and obstruct the Pores.

A P H. 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.

A P H. CXIV.

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

De-

‘ Degrees to be drawn off again; for obstinate Fasting injures the Stomach, Brain and Heart, and sometimes the whole Constitution.

Explanation.] Although a Body may be encreased 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 remov'd. 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.

A P H. CXV.

‘ In Autumn the Weight of the Body encreases; 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 retained Matter is very apt to stagnate in the capillary Arteries, encrease 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 pro-

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.

A P H. 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.

A P H. 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.

A P H. 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 hinderance 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 Winds 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 *Hermocrates*.

Explanation.] See *Aphorism CXVI.* above.

A P H. CXXII.

After Bathing, the cutaneous Passages are lessened by anointing with Oil, on Purpose that there

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.

A P H. 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 great 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.

A P H. CXXIV.

The *Midriff* by Contraction enlarges the Capacity of the Breast, and upon that Dilatation, Inspiration is made; and upon its Relaxation the Breast is straightned, 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* 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 *Tborax* 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 *Reaction* 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*, Page 24, 25.

A P H. 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.



O F T H E
P L A G U E.

A P H. CXXVI.

Whatsoever is infected with the *Plague*, that Infection will be propagated, as long as its proximate and remote Causes remain; but either 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:

A P H. CXXVII.

The *Plague* is communicated not by any immediate Contact, but either by drawing in Infectious 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 Buboës; and if not sufficiently discharged, occasion Death; but if it be all thrown out, they escape.

Explanation.] Authors abound who have writ 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.

A P H. CXXVIII.

‘ If the whole Infection be forced out into *Buboes*
‘ and *Carbuncles*, it is well; otherwise fatal.

Explanation.] Because by such Exclusion, there is made a perfect *Crisis*, and the whole peccant Humours 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.

A P H. CXXIX.

‘ The Plague is not produced in us, but arises
‘ from external Causes; as is manifest from such who
‘ are shut up in *Cloysters*:

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.

A P H. CXXX.

‘ All do not die of a 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 *Apotheism*, 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 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 Effence of this Distemper is uncertain, for this cannot be true without some Limitation of that kind.

A P H. CXXXI.

‘ They who think black Spots and *Carbuncles* denote an Aduſtion of the Humours, are miſtaken; for very often old People, both externally and internally cold, and without any Fever, in the Space of two Days go off with the ſame Symptoms, 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.

A P H. 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 128 above.

A P H. CXXXIII.

‘ Where the *Buboes* and *Carbuncles* are opened, and the tainted Matter wholly diſcharged, they recover; but otherwiſe they die.

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

Vessels, will likewise alter the Textures and Cohæsi-
ons of the Blood, by giving it a greater or lesser de-
gree of Motion than it had before. Where therefore
the Spirits are distemper'd, that is, when the Solids
are not duly supplied 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 dis-
pose its Parts to more forceable Attractions and Co-
hæsi-
ons, by which such Grumes and Stagnations
are generated; but if the Constitution is strong
enough to keep on the Circulations 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 reco-
ver its natural Constitution: Whereas, when it is
not so thrown off, it is a great Chance but it indu-
ces a total Stagnation, which is Death.

A P H. 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 In-
‘ fected, to Air themselves; the latter likewise is to
‘ be done two Ways; by not confining the Infected
‘ to Places disagreeable to them; and by not bur-
‘ ning their Household-Stuff.

Explanation.] We are here again under some ob-
scurity, in what is meant by *Burning of Household-Stuff*,
for it is not easy to conceive how that can propo-
gate 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.

A P H. 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. 27. De Febris*; 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 weakned, 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 through 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.

A P H. CXXXVI.

‘ The Pestilence is not as a Fire which increaseth
 ‘ 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.

A P H.

A P H. CXXXVII.

‘ Pestilential Steams are carried away by Currents 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 Winds 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.

A P H. 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.

A P H. CXXXIX.

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

A P H. CXL.

‘ Why does the *Plague* continue long?

‘ *First*, Because while it rages, Persons air their tainted Furniture, which being stole by Thieves, spreads

‘ spreads the Infection, whereas when the *Plague* is
 ‘ abated they would not in themselves be infecti-
 ‘ ous; 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 pleased.

‘ *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 in-
 ‘ fected Persons communicate the Contagion to those
 ‘ who are well.

Explanation.] All these Reasons together, I be-
 lieve will fall short of giving full Satisfaction for
 the long continuance of such Contagions. Burning
 Household-Stuff or any thing else at such times, al-
 though belonging to infected Persons, has been al-
 ways found of Service, and not to have any Ten-
 dency at all to propagate the Disease. The *Sixth*,
 is owing to his particular Prejudice against Medi-
 cine in such Distempers, as appears above: But it is
 well known, that there are abundance of Medicines
 of singular use at such times.




THE
 APHORISMS
 OF
 SANCTORIUS.

SECT. II.

Of AIR and WATER.

APHORISM I.

 OLD Air and cold Bathing, give a greater Warmth to strong Constitutions, and by removing what is superfluous, render them lighter; but they cool weak Persons, by overcoming their natural Heat, and thereby also render 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

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 I.* 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 performed 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

Vi-

Vibrations, and accelerating the Bloods Motion, is with certainty to be had from hence. All Diseases therefore from a fizy 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 Inconveniences 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 encreased 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 lb; for 2, the Number of cubical Feet of Water, pressing upon a Foot square of the Skin $\times 76$, 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 lb *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 any Bodies, 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, being 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 Sponge, 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 Degree of Curvity is to be considered 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 increased, 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 itself into contiguous Bodies, being so great as above explained. And tho' the Quantity of Perspirable Matter is very great in 24 Hours, being $\frac{1}{3}$ 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, $\frac{1}{1200}$ i. of the Skin perspires $\frac{1}{1200}$ of a Scruple in a Minute, and consequently $\frac{1}{3}$ i. of the Skin perspires $\frac{1}{1200}$ of a Dram in a Minute. Now suppose a square Inch of the Skin weigh $\frac{1}{3}$ 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 $\frac{1}{3}$ iv. $\frac{384}{1728}$, throwing away the Fraction, 24 cubical Inches must be 96 Drams. Now since only $\frac{1}{1200}$ $\frac{1}{3}$ 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 96, 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.

A P H. II.

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

Explz-

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 encrease Perspiration, and of Consequence lighten and cool the Body. As for hot Bathing, the chief in our Country 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 not 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 Sulphurous. 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 supplies and strengthens the Parts all over the Body at once, and by gently 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.

A P H. III.

‘ The external Air which passes through the Arteries into the Body, may render the Body heavier or lighter; lighter, if it be subtile 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 moist 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 lb, for $76 \times 35 = 2660$; and so many Foot square as is upon the Superficies of a Body, so many times 2660 lb 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 lb, 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 lb: The Difference therefore between the greatest and the least Pressure of Air upon our Bodies, may be proved to be equal to 3982 lb. The Difference of the Airs 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 lb, a cubical Foot of Mercury must be 1064 lb, = 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 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 Mals of Mercury of a Foot square Base = 144 square Inches, and three Inches high, must contain 432 cubical Inches of Mercury, which \times 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 = $15 \times 25488 = 382320$ Drams (= $\frac{47790}{12}$ Ounces) = $3982\frac{1}{2}$ lb 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 a 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 encreased 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 rendring 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.

A P H. IV.

‘ What the Weight of the Air is, may be collected
 ‘ from several Kinds of Salt dried first in the warm
 ‘ Sun, and then exposd 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 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*. *Fourthly*,
 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 mention'd 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.

A P H. V.

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

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

better, it also passes afterwards the Straineries 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 Heterogenous 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 Cohæions, 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.

A P H. VI.

‘ A heavy Water, and a foggy heavy Air, convert 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 Emmunctories, according as the Constitution at that time may be disposed to manage it.

A P H. VII.

‘ In a cold wholesome Air, Perspiration may be hinder’d ; but if the Fibres likewise thereby obtain a greater Firmness and Strength, the Weight of the retained Matter, will not be injurious or perceivable.

Explanation.] From *Aphorism* XXVIII. and XXIX. *Section I.* 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 perjudicial. But.

A P H. VIII.

‘ In a foggy Air, Perspiration is lessen’d ; the Pores are obstructed, and the Fibres weaken’d and not rendered more firm, and the Weight of the retained 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 I.* Where it is said, that External Cold hinders Perspiration in weak People, but encreases 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 it self 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 wish'd, 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, whether the Reader may turn for further Information in this Affair.

A P H. 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 Perspira-
 ‘ ble 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 straightning 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.

A P H. 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 effected by Degrees 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 alter'd, 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 it is by a gradual increase.

A P H.

A P H. XI.

‘ Being exposed to a cold Air after Heat, by leaving off Garments, a Body may perspire thereby in the Space of a whole Day about two Pounds the less, and yet perceive 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 tryed by any other.

A P H. 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 obstructs Perspiration, and weakens it. Whereas the other does obstruct, but at the same time strengthens it, and thereby renders 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 turns upon a true Knowledge of its Causes; See, as before, *Aphorism CXIII. Sect. I.* 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.

A P H.

A P H . XIII.

‘ Those ill Qualities in the Air and Waters, 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 *Manaicks*.

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 esteemed Book of *Poisons*; as for the Solids of *Manaicks* being render'd 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 'tis agreed, That their Distemper is remitted or enflamed as their Fibres are more or less harden'd or let down, of which *Baglivi* takes notice in several Places of his
Spe-

Specimen de Fibra Motrice & Morboſa, and obſerves in the Diſſection of ſome *Maniacal* Perſons, the *Dura Mater* to have been harden'd 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.

A P H. XIV.

‘ Swimming in cold Water after violent Exerciſe
‘ is very delightful, but fatal; for nothing is more
‘ deſtructive than Extrems 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 joyned with the Chillneſs 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.

A P H. XV.

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

Explanation.] As in ſome Conſtitutions not fitted for ſuch ways of Living, the frequent ſupping 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

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

A P H. XVI.

‘ Violent Exercise in a pleasant Southern Air, is
‘ often destructive: For the Air hinders Perspirati-
‘ on, and the Exercise inflames 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 Aphor. Sect. I.* where therefore this is done, and at the same time Perspiration by any Cause whatsoever hinder'd, 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 by 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 alter'd, 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*.

A P H. XVII.

' When too cool an Air is discerned after Supper, the Perspiration of those Parts which are uncovered with Cloaths, will be obstructed: And the next Day at Night, in a great many will occasion a Heaviness and Pain 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 hindrance of Perspiration necessarily increases the Quantity and Weight of the Fluids, the Sense and Uneasiness occasion'd by such an Increase or Addition, must needs 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.

A P H. XVIII:

' To be carried suddenly from a hot into a cold Air, is hurtful; because the Body is thereby rendered heavier than it ought to be: And likewise the same, to be removed from a cold into a hot Air; because it is thereby weaken'd.

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.

A P H. XIX.

‘ Weak Persons convert the obstructed Perspirable 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 Kidnies 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 weaken’d 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.

A P H. XX.

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

A P H.

A P H. 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* I.

A P H. XXII.

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

Explanation.] That 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 dryer 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 moisten'd 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.

A P H. XXIII.

‘ Temperate Persons weigh in Summer Time
 ‘ about three Pounds less than in the Winter.

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Expla-

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,

A P H. XXIV.

‘ That Lassitude or Weariness which is perceivable 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.

A P H. XXV.

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

A P H.

A P H. 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.

A P H. 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 sufficient 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 extrem 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 Bloods Motion, and the Bloods 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 is, 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 *Apborism*, is least in the Summer Time, the Solids being then more relaxed, and not so able to circulate the Fluids with so much Force, although it may indeed be said to be *relatively* hotter, that is, it does not feel so much Cold: And after this manner, Custom has established 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 rarefying 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 or Acrimony of the Perspirable

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.

A P H. 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 Uneasiness 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.

A P H. XXIX.

' A sudden Cold upon hot Weather, will occasion 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 Diminutions of the Excretory Passages, by such Changes. See *Aphorism* XVII, XVIII, of this *Section*.

A P H. 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.

A P H. XXXI.

‘ If in the Beginning of the Summer Season it
‘ sets in violent Heat, 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 encrease, 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 lightned 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.

A P H. 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. I. Apor. XXVIII.* and *XXIX.*

A P H. 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 encreased Evacuations always defraud the Body of some Parts, as cannot without Injury be parted with; but the

greatest Damage is sustained by an encreased 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.

A P H. 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.

A P H. XXXV.

An obstructed Perspiration in Summer, disposes to malignant Fevers; whereas in Winter it makes but small Alteration: For Bodies are more subject to an Acrimony or Sharpness of the Perspirable

‘spirable Matter in Summer, than in Winter Seasons.

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.

A P H. XXXVI.

‘Sleeping in Summer Time with the Body uncovered, or in the open Air, by hindering Perspiration, very much disposes the Humours to Putrefaction.

Explanation.] It already appears from what has been said under *Aph. XX. Section. I.* 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*.

A P H. 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.] Although external Cold often obstructs Perspiration, yet by this it is manifest, that the Body is not rendered the warmer by the Retention 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.

A P H. XXXVIII.

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

A P H. XXXIX.

The sudden change into a cold Air after *Venery*, makes amends for the Loss sustained thereby by its Concentration of the 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, inso-much 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 harden'd, that all the Limbs will be new braced, and the Damage received hardly at all perceivable. But if such a Constitution of the Air does not continue, until the Solids are supply'd and invigorated with a convenient fresh Stock of Spirits, from proper Food; and the Weather happens again
to

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 Colds *Concentrating* the Spirits, is to be understood as before explained, only as the Solids are strengthen'd by it.

A P H. XL.

' In Summer Nights a Body is most liable to Fevers, because of the various Alterations of the Air; for in the beginning it is sultry; in the middle 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 rarefied 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.

A P H. 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 Distemper'd, 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 mention'd; 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, 'tis not possible to arrive even at any tolerable Management of a Disease.

A P H. XLII.

The Autumn is unhealthful, both because Perspiration lessens upon the supervening Cold, and because that which is obstructed acquires an Acrimony, and a corrosive Quality.

Explanation.] The former Part appears from what has been said immediately before in the preceding
Apho-

Aphorism. How the latter is brought about may be seen under *Aphor.* XXXV. and XXXVI of this Section.

A P H. XLIII.

‘ They escape the Autumnal Distempers, who
‘ can preserve 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 continually 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 be mild, and not such as by large Discharges of Stool, will indanger the Diversion of what ought to pass thorough the Skin, the ill Consequences of which sufficiently appear already.

A P H. 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.* I. *Aphorism* CXIV.

A P H. XLV.

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

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. II.*) 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 *Plebotomy* 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*.

A P H. XLVI.

There is no Danger of the Autumnal Distempers, if the Body be well guarded against the increasing 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. II.* 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 straighten'd by it; they preserve also a due Warmth thereby throughout the whole Body. But care must be taken not to overdoe it this way neither, for too great a Burthen of Cloaths may be injurious, both as it wasts the Strength (See *Aphorism LV. Sect. I.*) and brings a
Person

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

A P H. XLVII.

‘ To be well covered with Cloaths assists P^{er}spi-
‘ ration, and lightens the Body.

A P H. 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 enjoyed in the Summer.

A P H. 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 rarefying and opening the
Animal

Animal Juices, will very much favour and assist the Operations of a Medicine, and make it much more easie 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 un-governable Symptoms. From all which, and the preceding, appears also the Reason of the next.

A P H. L.

They who in Spring-Time throw off their *Winter* Garments too hastily, and are too backward, in putting them on again in the Fall, in the Summer-Time are subject to Fevers, and in the Winter 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 been before explain'd: But by taking Cold in the Fall, the Solids at that time rather increasing than loosing 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,

A P H.

A P H. LI.

‘ If the obstructed Perspirable Matter, acquires
 ‘ an Acrimony, it produces Fevers, and Inflamma-
 ‘ tions; but when it offends only in Quantity, it
 ‘ causes, Apostumations, 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 consider’d.

A P H. LII.

‘ External Cold, by concentrating the *Vital Heat*,
 ‘ renders Nature so much the stronger, by how
 ‘ much the easier she can dispense with the Additio-
 ‘ nal 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 I.* All therefore that can be learn’d 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.

A P H. 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
 M be

be promoted, and the Body lighten'd ; 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 *Aphor. XXXV. Sect. II.*

A P H. LIV.

‘ Health may be preserved intire 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 Waft 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,

A P H. LV.

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

A P H. 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 in.

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 disorder'd 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.

A P H. 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.

A P H. 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 *Aphor. XVIII, XIX. Sect. I.*

APHORISMS *added by the*
AUTHOR.

A P H. 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 streightned thereby.

Explanation.] It has already been explained how
warm Coverings assist Perspiration, and like-
wise how easily that Business is disturbed in time
of Sleep,

A P H. 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 explai-
ned above.

A P H. LXI.

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

Ex-

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 forceably 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 encreases such a Tensity, and straitens the Passages.





THE
 APHORISMS
 OF
 SANCTORIUS.

SECT. III.

Of MEATS and DRINK.

APHORISM I.

I 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;

A H H. 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 *Aphor. XX. Sect. I.*) 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. *Lifter* 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 immoderate Quantities of Spirituous Liquors, or violent Exercises, for both these, by accelerating the Motions of the Fluids occasion greater Wasts 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 performed within the Bloods 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.

A P H. 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.

A P H. IV.

‘ Very nourishing Meats, excepting *Mutton* between 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 easie Assimilation with the Animal Juices, and ready Entrance into the Substance of the Solids, necessarily lessens the Quantity to be perspired.

A P H. 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;

A P H. VI.

‘ Such Food keeps the Body heaviest, as is full of Nourishment and Crudities.

A P H. VII.

‘ Those Meats which the Body has been most accustomed to, and such as are in their own Natures most exhalable, will keep it lightest.

A P H

A P H. VIII.

‘ *Mutton* easily digests and perspires: For it will
 ‘ waft 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 Siezy, than several Kinds of fresh Fish, which are often prescribed, upon a false Notion of their not being so feavourish 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 easie 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 feavourish 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.

A P H. IX.

‘ Those Eatables which are made of fermented
 ‘ Paste, do not render the Body heavy, for they
 ‘ Perspire much more easily than Roots.

A P H. 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 LIXth *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 consider'd, 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 applies this in his *Dissertatio, de Curatione Febrim 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 persuade 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 Evacua-

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 Retention 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 found 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 *Keils Medicina Statica Britannica* hereunto annexed.

A P H. XI.

‘ A full or an empty Stomach, lessens Perspiration, 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 express'd, 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 Perspiration,

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

A P H. 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. I.* 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 *Hypocondriacks*, 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 foremention'd Disorders) drawn off by the outer Skin, and raising up the *Cuticula* in several Parts, as it passes; and sometimes abrading, and taring 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 wandring 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 Interstices of the Muscles, and by its Grossness or Acrimony, occasion those sharp and severe Pains that are felt in Rheumatifms, 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 incapable of Motion. I cannot but be persuaded, that from hence likewise may be deduced a very good *Rationale* of all the Symptoms and Changes, commonly attending what we usually call
th

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

A P H. XIII.

‘ A *Flatus* is nothing else but a gross Perspirable Matter.

A P H. 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 Kidnies, 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.

A P H. XV.

‘ If a Person eats no Supper, and continues with an empty Stomach, it will hinder Perspiration, and the obstructed Matter will acquire a sharpness; whence the Body will be subject to distemper’d Heats.

Explanation.] Perspiration will be hinder’d 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 Consequences of long Fasting: The Fluids also hereby will lose their due Texture and Consistence, and become thin and sharp;

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 oftner, the Motion of the Blood increased; and the Pulse quickned, and such Kinds of Fevers produced, which are called *Hætick*. And therefore of Consequence,

A P H. XVI.

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

A P H. XVII.

Why do any die of hunger, who have no want of Blood whilst living? Because the Blood crowding towards the Stomach, leaves the Heart empty.

Explanation.] This is another Mistake owing to the Ignorance of the Bloods 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 maintain'd 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.

A P H. 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 cappillary Vessels, whereby afterwards it hinders the Passage of such as is well digested.

A P H. 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 I.* with its *Explanation.*

A P H. 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.*

N

Expla.

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 all so well discharged, that even the last Concoction is in right Order, it is no wonder that the Body should be lightsome and active.

A P H. XXI.

‘ Indigested Food by how much the more Nourishment it contains, is so much the worse, because it occasions either a greater Increase of Weight, or degenerates into a greater Corruption.

A P H. 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 past 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 Perspiration,

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 Cohæ- sions 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 loose 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, tho' 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 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 *Disfractile*; 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 Cohæions, 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 Cohæions, 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 Cohæions 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
at-

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. VI. pag. 21. is very just and rational. His Distinctions of the several Motions are into what he calls Circular, 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 Resistances 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.

A P H. 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.

A P H. 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 Sawce, *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 incline 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.

A P H. XXV.

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

A P H. 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.

A P H. XXVII.

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

A P H. 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 Con-
 texture, gross, and hard of Digestion, will remain a
 long time in the Stomach and Guts, and occasion a
 sense of Weight and Uneasiness.

A P H. 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 per-
 form the Animal Functions, with more Ease and
 Regularity, than in those who lead inactive and se-
 dentary Lives.

A P H. XXX.

‘ The Body best Perspires with that Food, whose
 ‘ Faeces or Recrements, pass thorough 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, un-
 til 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.

A P H. XXXI.

' *Chicken* does not nourish even so much as *Lettice*,
' 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.

A P H. XXXII.

' By weighing it may be known, when Fasting
' will be of Service, and when not: It will be serviceable, when all the former Days Food is not
' thoroughly perspired; otherwise it will be hurtful.

A P H. 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 Distempers,

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

A P H. XXXIV.

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

A P H. 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 overloading the Solids, and at others, by not giving them sufficient Resistances, and thereby disturbing their wonted Contractions.

A P H. 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 easie Rule for any one to observe, who would be careful of their Health.

A P H. 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 overreach and destroy the Springs of its constituent Fibres.

A P H. XXXVIII.

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

A P H. XXXIX.

' That Quantity of Food may at all times be
' ventured upon, which Nature is able to concoct, di-
' gest, 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.

A P H. 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.

A P H. 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 ar-
‘ rive at an healthful old Age, that will bring the
‘ Quantity, which goes off by insensible Transpi-
‘ ration, to twenty two Ounces.

Explanation.] Compare this with *Aphor.* LXIV. *Sett.* I. wherein the Computation of the Quantity perspired, something differs from what it is here.

A P H. 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*.

A P H. 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 III.*
with its *Explanations.*

A P H. 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.

A P H. 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 nourish-
ing remains longer in the Body, as has been already
proved, and is not so soon fitted for Perspiration.

A P H. 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.

A P H. 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.

A P H. 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 Cohæſions, 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 thorough the *Lacteal* Veſſels) they muſt of Neceſſity, by the Periftaltick Motion of the Inteſtines, be thrown off by Stool.

A P H. XLIX.

‘ Where there is a Difficulty of Diſteſtion, there
‘ Perſpiration is ſlow.

Explanation.] Becauſe the Matter to be perſpired, is broke ſmall enough, and fitted ſo to paſs off by a previous Diſteſtion, 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 Diſteſtion, 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.

A P H. 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.

Expla-

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.

A P H. LI.

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

A P H. LII.

‘ The time of least Perspiration, is when the Sto-
 ‘ mach is full, especially if it be so with a Variety
 ‘ 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.

A P H. 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 forceable 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.* I. 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 e'er the heavier thereby, because in Proportion to the Decrease of the Quantity perspired, some other Evacuation is enlarg'd. 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.* I. That Lassitude which also ensues, is only from cutting off a Supply of Spirits, as is above explained.

A P H . L I V .

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

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

A P H . L V .

‘ 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, be-
 cause Irregularities and Excesses therein, and early
 Debauches, so much destroy the natural Constitu-
 tion 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.

A P H . L V I .

‘ 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 loose 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.

A P H. 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 light-
some, is an infallible Sign, that whatsoever is taken
in is well digested, and converted to the several Pur-
poses which the Exigencies of the Constitution re-
quire; whereby the Body is not only kept cleared
of any superfluous Load, but also every Wheel of
the Machine is preserved fit for Motion.

A P H. 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.

A P H. LIX.

‘ If a Supper of eight Pounds corrupts in the Sto-
‘ mach, 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 under-
stood

stood that Change which it undergoes by an intestine or fermentative Motion, which see largely explained under *Aphorism* XXII, XLVIII. of this *Section*.

A P H. LX.

‘ Those Meats which are most suitable for Perspiration, do not corrupt, and even upon nocturnal Watchings, will preserve a Person from heaviness 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.

A P H. LXI.

‘ Food which does not perspire, occasions Obstructions, 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 *Aphorism* XLIV, XLV. *Sect.* I. compar’d with several others.

A P H. 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 performed 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.

A P H. 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.

A P H. 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 Broath 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 I.*

A P H. LXV.

‘ If too much Drink makes the Eyes watery after
‘ Sleep, it is a sign the Body has not sufficiently
‘ perspired.

Explanation.] An overcharge of spirituous Liquors does frequently so much increase the Bloods Motion

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.

A P H. 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 forceable 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 thorough 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.

A P H. 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 loosing their proper Capacities.

A P H. LXVIII.

' The customary Drinking, even amongst temperate Persons in this Age is ill proportioned, for to about Twelve Ounces of Meat, they drink Forty 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 Tipling. 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 Extream; for nothing is

more certain, than by how much the more is taken in, than is sufficient for the Exigencies 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.

A P H. 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 *Keils Medicina Statica Britannica*.

A P H. 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 subtracted 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 mult needs be hurtful, but more especially to a weak Constitution, because such a one will with the greatest Difficulty recover its Loss.

A P H. LXXI.

‘ A plentiful Meal after long fasting will increase 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.

A P H. LXXII.

‘ After immoderate Exercise, to feed very plentifully is not good: Because a weary Body Perspires 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. Sect. I.*

A P H.

A P H. 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.

A P H. 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 continual Stock of Spirits, 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 incapable 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.

A P H. 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. I.*

A P H. 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 Apor. Sect. I.*

A P H. 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 know-
ing with certainty when the Body comes exactly to
such a Weight, without bringing it to a Tryal by
the Ballance. 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.

A P H. 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 Nights Debauch does hurtful prove,
 A Glas 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 Evacuati-
 ons.

A P H. LXXIX.

‘ If the Weight of a healthful Body after Supper,
 ‘ be two Hundred Pound, and that Body be after-
 ‘ wards 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,*
 ‘ will

‘ will lessen the Quantity of Food usually converted into Nourishment, by two Pounds.

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

A P H. 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 Perspire, 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 decayed 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 wast of Strength, where there is no Danger of raising a Fever.

A P H. LXXXI.

‘ Any turbid new Liquor if it digest in the Stomach, it will not Perspire well it self, but also assist the Perspiration of other Meats: Of this Kind also are hot flatulent Liquors.

Ex-

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.

A P H . LXXXII.

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

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

A P H O R I S M S *added by the*
A U T H O R .

A P H . LXXXIII.

‘ A very small Portion of Meat, is not perceivable
‘ in the Stomach; and therefore it neither digests,
‘ 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.

A P H. LXXXIV.

‘ The Matter of inſenſible Perſpiration is the Excrement 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 Diſteſtion, 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.

A P H. LXXXV.

‘ By obſtinate Faſting, the Head will be filled, the Temples heated; the Hypochondres diſtended, and the Arms and Leggs 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 Nervofus*, 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 incapable 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 deriv'd that Juice or *Animal Spirit*, upon which both its own, and the Motions all the Solids depend: So that whichever 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 Fibra 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*, sometime 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 forceably 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.

A P H. 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.

A P H. 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.

A P H. 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*.

A P H. 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 Hinderance of Perspiration by some ill Disposition of the external Air, an Obstruction should happen, it will discover it self early enough to be remedy'd in time, and therefore no Danger of a Distemper need be feared where such due Care is taken.

A P H. XC.

‘ It is better for ancient 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.

A P H. 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*, *Aphor.* VIII. *Sect.* III. and for the Reason of the latter Part, *Aphorism* XX, XXI. *Section* I.

A P H. 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 Di-
 stempers as have their Rise chiefly from a Siezeness
 Viscidity of the Juices, as in Agues and Rheuma-
 tisms, and are most commonly occasioned by Ob-
 structions 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 Be-
 nefit by that Discharge. *Cucumbers* and several other
 things abounding with cold viscid Juices, are
 also hurtful much in the same manner, by thick-
 ning 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.

A P H. XCIII.

‘ Why does a Putrefaction of the Food occasion
 ‘ a Lassitude? Because it hinders Perspiration: But
 ‘ how? By causing a *Diarrhœa*: How does a *Diarr-*
 ‘ *hœa* 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 forego-
 ing *Aphorisms*, concerning a Putrefaction or Corrup-
 tion of the Food. See *Aphor. XXII. Sect. III.*

A P H.

A P H. XCIV.

‘ He who eats a plentiful Supper upon a weariness, as soon as he sleeps will perceive a Coldness and Lassitude: But about twelve Hours after Supper, all will be well: Because by that time Digestion will be perfected, and Perspiration serviceable.

Explanation.] Nothing is more common than a Chillyness 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 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.

A P H. XCV.

‘ Food after violent Exercise is hurtful, both because 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.

A P H. XCVI.

‘ He who eats with a troubled Mind, digests much less, than one who is easy and chearful.

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. VII.

A P H. XCVII.

‘ To drink between Dinner and Supper is hurtful: But if we drink so much the less for it at Supper, its Inconveniencies will thereby be removed.

Explanation.] See *Aphor.* LXVIII. Sect. III.

A P H.

A P H. XCVIII.

‘ To Vomit after Supper is weakening, because
 ‘ it defrauds the Body of its Aliments, and also be-
 ‘ cause it hinders Perspiration.

Explanation.] The Hinderance of Perspiration is
 a Consequence of the former, as it is explained un-
 der *Aphor.* LIII. *Sect.* III. and therefore unless it be
 Medicinal, and to remove some greater Evil, it is
 always injurious.

A P H. 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.

A P H. C.

‘ They who use a regular Diet, want the Benefit
 ‘ 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 sever-
 al 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 Consti-
 tution 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 Healths 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 proportiona-
 ble Evacuation, such a strain may possibly break away
 the beginning Load.

A P H. 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.*
 III. and produce the Effects mentioned in the for-
 mer Part of this, for the Reasons therein given.
 And that in hot Constitutions it produces 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 pre-
 ternatural Cohasions, and form such Particles as
 are fitted only for the Secretion of those Organs,
 that are constituted for such a Separation.

A P H. CII.

‘ Nothing hinders Perspiration more than to drink
 ‘ during Chylification.

[*Explanation.*] This must be understood of immo-
 derate drinking, whereby the Stomach becomes di-
 stended 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.

A P H. CIII.

‘ By cooling the Liver it less attracts the Chyle,
 ‘ and much the 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

rions 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.

A P H. 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.

A P H. 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.



OUND 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 *Keils Medicina Statica Britannica*, at the latter End hereof.

A P H.

A P H. 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 Tryal, 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 enquire into; or is it indeed possible, that this Evacuation shou’d be found the same in different Countries, different Seasons, or different Constitutions; and therefore Allowances are to be made, upon any such Tryal; 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 *Aphor. XXI. XX. Sect. I.*

A P H. 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.

A P H . I V .

' The Body is lighter after Sleep, both by an Increase 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 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.

A P H. V.

‘ Interrupted and unquiet Sleep, lessens the Quantity usually thrown off by Perspiration, about a third Part.

Expalnation.] 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

A P H. VI.

‘ Perspiration in sound Sleep is sometimes greater, 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 *Aph.* III. of this *Section*.

A P H. 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.

A P H. VIII.

‘ Whatsoever hinders Sleep, hinders also the Perspiration 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.* 5th of this *Section*.

A H H. IX.

‘ Short Sleeps are occasioned by the Acrimony of some obstructed Perspirable Matter ; and the Perspirable Matter is often obstructed, by Natures 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 hindered by Natures having something else to do within, I cannot understand any otherwise, than as it is explained under *Aphor.* LVII. *Sect.* I.

A P H.

A P H. 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. I.* 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.

A P H. 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 Sight 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.

A P H. XII.

‘ Whosoever sleeps with his Legs and Hips bare,
‘ will Perspire that Night a Pound less than usual.

Ex-

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 Superfices 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 hindered thereby.

A P H. XIII.

‘ Continual Restlessness in Bed, agitates the Body 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.

A P H. 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.

A P H. XV.

‘ If the Nights Sleep is less than usual, the Exhalation 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 expelled, but not without a mixture likewise of some Parts, not yet broke far enough for that Discharge, as it is performed during Sleep.

A P H. XVI.

‘ From Meat of easy Perspiration, the Body is render’d weaker, rather than heavier; but from

Q

‘ Meats

Meats difficult to Perspire, both weaker and heavier.

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 overcharg'd, 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 *prima via* never so well, yet it tends to make the Body both heavier and weaker; for it encreases the Weight of the Body by not passing off in sufficient Quantities by insensible Perspiration, as hath been before prov'd 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 retain'd, and by its 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.

A P H. 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 Digestion, without Acrimony, and is refreshing to the whole Body; but the latter arises, from Crudities, and is sharp, violent and laborious. *Ex.*

Explanation.] From *Aphor. XX. XXI. Sect. I.* 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 tonic 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 plentifully 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.

A P H. XVIII.

‘ A Person when asleep, perspires as much more as when awake, from whence is the accustomed Saying, that *an Hours Rest with Sleep, is as good as Two waking.*

A P H. XIX.

‘ Insensible Perspiration, in the Space of Seven Hours during Sleep has been found in a great many, to be about forty Ounces, and in Watching twenty.

Explanation.] The Calculation here agrees with several of the foregoing. In the first *Aph.* 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.

A P H. XX.

Whosoever goes to Bed with an empty Stomach, 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.

A P H. 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 Twitchings at the Heart, Vertigoes, and Epilepsies, as it happen'd to *Diodorus*.

Explanation.] See *Aph.* LXXXV. *Sect.* III. 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 back also under *Aph.* Cl. *Sect.* III.

A P H.

A P H. 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,

A P H. 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 encrease the Burthen already laid upon the Solids, and thereby render Digestion very difficult, and occasion more Uneasiness than is consistent with sound Sleep.

A P H. 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 OEconomy, is a partial Distribution of the Fluids, and a Retardation of the Bloods Motions, which will always occasion a Sense of Cold, as has already been proved. But at first, what will be the Consequences of such Disorders 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 crowded that way, so that if the first cannot get through, the continual Protusion *a 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.

A P H. XXV.

‘ Changing a Bed occasions disturbed Sleep, and
‘ lessens Perspiration; for an unaccustomed Place,
‘ although better than before, disturbs both the
‘ Body and Mind.

A P H. 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 At-
tention, and thereby prevent that easy Relaxation,
which is necessary both to a good Perspiration and
sound Sleep.

A P H. 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 sleep-
ing and waking, wherein although the Mind does
not exercise such a Power over the Body, as to di-
rect 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 per-
formed at such Times, as when in quiet Sleep.

A P H. XXVIII.

‘ Sleep about four Hours after eating is most fer-
‘ 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 Natures 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 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.

A P H. 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.

A P H. 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 in-
sensible 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 Di-
stemper, that takes its Rise from such an Obstruction.

A P H. 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 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.

A P H. 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.

A P H. XXXIII.

That stretching and yawning after Sleep, is occasion'd by a great Plenty of perfectly well digested perspirable Matter, which is in readiness to be thrown off.

A P H. 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 extrem 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 considerably diverted, and the Fibres somewhat 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 to 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 shaken 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, wou'd 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. I.

A P H. 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 at Stomach, astringes and draws up the Fibres so much as to hinder Perspiration.

A P H.

A P H. 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 Renewal 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.

A P H. 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 Deficiencies 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,

A P H.

A P H. XXXVIII.

‘ If any of the former Days Perspiration is retained, 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.

A P H. XXXIX.

‘ If four Hours after falling asleep the Food corrupts, immediately afterwards these two Inconveniences 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 *Diarrhæa*'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.

A P H. XL.

‘ Nothing more frequently interrupts Sleep, than
 ‘ a Putrefaction of the Food: Such is the Sympathy
 ‘ 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 Velications, the Brain becomes disturbed thereby, because the nervous Threads are so numerously dispersed 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.

A P H. 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. II.*

A P H.

A P H. 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 light-some, 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.

A P H. XLIII.

When the Head seems light after Sleep at Noon, it is a Sign that no Part of the former Days Perspiration hath been obstructed.

Explanation.] For the same Reasons as in the foregoing.

A P H. XLIV.

Sleep universally moistens both the inward and outward Parts, because it attenuates the perspirable Matter, and dispenses it when so broke thorough 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

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 rendering 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.

A P H. 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.

A P H. XLVI.

‘ By Sleep the Humours are concentrated, and
 ‘ the exterior Heat is united with the innate, Thirst
 ‘ is removed, unless Cholera predominates; the Blood
 ‘ is converted into its second Juices, and the Body
 ‘ is rendered lighter.

Explanation.] This *Aporism* is expressed with a great Deal of Obscurity; by Concentration of Hu-
 mours;

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 already been 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 Outlets, 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.

A P H. XLVII.

‘ By sleep the Animal, by watching the Vital and Natural Spirits decay.

A P H. XLVIII.

‘ By watching the animal Spirits are strengthened, but the vital and natural weakned.

R

A P H.

A P H. XLIX.

By sleep the inward Parts grow warmer and lighter ; by watching the outer Parts.

Explanation.] I must confess my self 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 advanced hereupon: Indeed, I find my self able to form some *Idea* of a very thin volatile Matter arising from a due Motion and Preparation of the Blood, and dispensed 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 weakned or strengthened by sleep or watching, than imagine how the *Ballance* comes to make any Discovery about it. It is indeed within every ones Experience, that this Power a 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 *Apb.* it is most commonly able to exert it self 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 by which Lesser is preserved, and the ordinary Functions of the Body performed, and by *Natural*, that by which the Body is Nourished and Augmented.

The Contents of the XLIX, 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 Performace 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.

A P H. L.

‘ By too much Sleep, both the inward and outer
 ‘ Parts grow cold, the Humours are obstructed, and
 ‘ rendered imperspirable, and the whole Body hea-
 ‘ vier.

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 Seizy, they suffer the less to pass off by insensible Transpiration, and consequently make Bodies heavier.

A P H. LI.

‘ Bilious Constitutions are very much hurt by too
 ‘ much Sleep, not because the Recrements of the
 ‘ third Concoction do not go off by Perspiration;
 ‘ but because they are very acrimonious, and there-
 ‘ by 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 derived 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.

A P H. 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.

Ex-

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 encreasing, until it occasions very great Disorders. But for the Heats retiring inwards, I am obliged still to own my Ignorance.

A P H. 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 it self,
 ‘ and by accident; weaker, because where there are
 ‘ Crudities, there will be no Assimilation, and con-
 ‘ sequently 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 Assimilation of nutritious
 R 3 Matter

Matter with the Substance of the Body will be defective.

A P H. LIV.

‘ In seven Hours sleep after long watching, the
‘ Quantity that perspire, will be encreased about
‘ a Pound.

Explanation.] Perspiration is then encreased, 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 lengthned, 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.

A P H. LV.

‘ Continued Watchings renders a Body lighter,
‘ not by a greater Perspiration, or any encrease of
‘ the sensible Evacuations, but because the Recruit
‘ is not proportionable 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.

A P H. LVI.

‘ The Body in a Morning is lightest, and perceives it self 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 it self so, both because it is really lighter,
‘ and because by a good Digestion of easily perspi-
‘ rable 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 it self so by an Increase of Strength, from a fresh Recruit of Spirits, dispensed to the Solids in the preceding Nights Sleep.

A P H. LVII.

‘ The Body by unusual watching, may be ren-
‘ dered heavier, if the Food with which it is nou-
‘ rished, be difficult to perspire.

A P H. 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: Although I believe very few are communicated this way, but such as are only cutaneous.

A P H. LIX.

‘ From Eating comes Sleep, from Sleep Digestion,
‘ and from Digestion a good Perspiration.

Explanation.] All these have frequently been explained above.

A P H. LX.

‘ Marmalet, not immediately after Supper, but
 ‘ after the first Sleep, provokes Sleep, so that it
 ‘ is not drank after.

Explanation.] I cannot conceive how drinking after it should hinder its procuring Sleep, unless by deluting 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.

A P H. LXI.

‘ Marmalet with Cinnamon, strengthens the Sto-
 ‘ mach, by which Sleep is promoted.

A P H. 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 be again 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.

A P H. 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 Cohæ- sions and Degrees of Fluidity, and put on such new Forms and Dispositions, as are more suitable for those Purposes they are further designed for; but while waking their circulatory Motions are too rapid to allow of their obeying such Dispositions, and their Generation of new Cohæ- sions; 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 OEconomy require. A further Account may be had of this Matter from *Guillielmi- ni’s Prælectio, de Circulatione & Natura Sanguinis*. In this Sense is to be understood the following.

A P H.

A P H. LXIV.

‘ If a Weariness remaining after Sleep is removed
 ‘ by Exercise, the Fault is owing to Digestion, and
 ‘ not to Concoction.

Explanation.] Because that Weariness must have been occasion’d 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 our selves 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.

A P H. LXV.

‘ When we rise with our wonted Weight, but
 ‘ with greater Weariness, unless that Weariness be
 ‘ removed with usual Exercise, it denotes a Colle-
 ‘ ction 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 hindring Perspiration, in the manner already explained, as the latter does, by weakning the Strength and Vigour of the Solids; for it hath before been made appear, that a Diminution of Strength, is the same as to the Sense of Perception that arises thereupon, as a real Increase of the *absolute* Weight of the Body.

A P H.

A P H. 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 undigested Matter follow, as will be too gross to pass; and consequently plug up the excretory Ducts, and thereby occasion very considerable Disorders.

A P H. 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.

A P H. LXVIII.

‘ To sleep with the Body stretched is hurtful; but
‘ with the Limbs drawn up beneficial: For the
‘ closer Positions of the Bowels assists Concoction,
‘ 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.

A P H. LXIX.

‘ If 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 the 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.

A P H. 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
‘ lessen 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
 APHORISMS
 OF
 SANCTORIUS.

SECT. V.

Of EXERCISE *and* REST.

APHORISM. I.



THE Body insensibly Perspires less in violent Exercise, than in a Morning Nine or Ten Hours after the Time he supped.

Explanation.] Violent Exercise so much encreases that agitative or confused Motion of the Blood, taken Notice of under *Aph. XXII. Sect. III.* that none of the Secretions are then so regularly made as at other Times, and con-

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.

A P H. 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 expell’d.

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 Preparation of it going on much more regularly in Time of Sleep. See *Aph.* I. II. VI. of the foregoing *Section*.

A P H. III.

‘ Sweat is always from some violent Cause, and as such, [as *Statick* Experiments demonstrate) it hin-

‘ 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.* I. And how violent Motion hinders Perspiration already abundantly appears.

A P H. IV.

‘ A Body Perspires much more plentifully during
‘ a quiet Rest in Bed, than by frequent tossing
‘ about.

Explanation.] See *Aph.* XC. *Sect.* I.

A P H. V.

‘ Cheerful and Passionate Persons, are less fati-
‘ gued with long Travelling, than those who are
‘ Fearful and Melancholy; because the former Per-
‘ spire 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.*

A P H. VI.

‘ They who feed quickly after hard Exercise, in-
‘ jure themselves thereby; because to be weary and
‘ filled with Meat at the same time, will much hin-
‘ der Perspiration.

Explanation.] It has been proved, *Aph.* XLIV, XLV. *Sect.* I. 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,

Branches, hinder Perspiration, and also in *Aph.* XI. *Sect.* III. 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.

A P H. VII.

‘ Exercise from the Seventh to the Twelfth Hour
 ‘ after Eating, wasts 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 encrease 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 preceeding Exercise.

A P H. 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 there-

therefore Exercise it self, which under the two following *Aphorisms*, will be found of vast Service, both for the procuring and preserving 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.

A P H. 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.

A P H. 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 *Aph.* XX. XXI. *Set.* I. of the difference
 S between

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 encreased by Exercise; but this also frequently makes it of great Service when there is an over Weight, and need of Discharges.

A P H. 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.

A P H. 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 Fluid grows fizy, that instead of assisting, it rather obstructs the Motions of the Fibres; also by a long State of Relaxation, it cannot but insinuate it self 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.*

A P H. 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 overstock 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 Hands and Arms. See *Essay on the Gout*.

A P H. XIV.

‘ There are two kinds of Exercise, 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 principal 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

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.*

A P H. 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 Notices 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 thorough 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 thorough 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 Pleasure of a rational Mind, are preferable to sensual Enjoyments. That such Engagements of the Mind indeed as fill it with Pleasure and Gaiety, 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.

A P H. XVI.

‘ Those Exercises of the Mind, which are most conducive to exhale the Spirits, are Anger, sudden 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.

A P H. XVII.

‘ Even those Persons that are subject to vehement 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.

A P H. XVIII.

‘ By too much Exercise, the Excrements of the
‘ first and second Concoctions are for the greatest
‘ Part distributed thorough the whole Habit of the
‘ Body; by which the Belly becomes costive; but
‘ the Body is rendered lighter, because the insensible
‘ 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 encrease 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 encrease of that will so far exceed the Diminution of the other, as to render the Body lighter thereby.

A P H. XIX.

‘ Violent Exercise both of the Mind and Body,
‘ renders Persons lighter but it hastens an 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 an old Age or immediate Death.

A P H. 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.

A P H. XXI.

‘ By Exercise the Body Perspires the less, but the
‘ more by Sleep, and the Belly is rendered thereby
‘ more loose.

Explanation.] This is true 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.

A H H. 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 entred 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 Overcharge 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.

A P H. 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 Ballance 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.

A P H. XXIV.

Swimming soon after violent Exercise is bad: because it very much obstructs Perspiration.

Ex-

Explanation] This is exactly the same as *Aph.* XIV. Sect. II.

A P H. XXV.

Violent Exercise where the Wind blows, is bad.

A P H. XXVI.

From the Wind comes an Obstruction of the Perspirable Matter; and from Motion its Acrimony.

Explanation.] See *Aph.* XVI. XXI. Sect. II.

A P H. XXVII.

Riding seems rather to promote the Perspiration of the Parts above the Loins, 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 affected, is during

during the Violence of another Motion prevented, and therefore nothing is felt of that part; but as the Cause it self 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 overdo in Fondness for Exercise, as to use for an Argument in its favour, that Pain is not so perceptible 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.

A P H. XXVIII.

‘ Carriage in a *Litter* or a *Boat*, does not so well promote Perspiration as walking.

A P H. XXIX.

‘ The Motion of a *Litter* or a *Boat*, if it continues long, it is most healthful; and then only, because it wonderfully promotes due Perspiration.

Ex-

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.

A P H. XXX.

‘ To be carried in a Chariot is of all the most
 ‘ violent; for it not only forces out the indigested
 ‘ perspirable Matter, but it is also very injurious 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 discern 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 Weight
 and

and multiplicity of Angles, cannot but very much press upon, and wound the Membranes, and thereby occasion very sharp Pains.

A P H. 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.

A P H. XXXII.

‘ The Exercise of the *Top*, as it is compounded 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.

A P H. 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 health-
ful Exercise, and many considerable Advantages
may be obtained from it with respect to our Health.

A P H O R I S M S *added by the*
A U T H O R .

A P H. XXXIV.

‘ When Perspiration falls short of its proper Quan-
‘ tity in sound Persons, it is to be remedied by Ex-
‘ ercise.

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*.

A P H. XXXV.

‘ By too much Exercise the Fibres become hard;
‘ whence Old-Age, which is a universal Hardness
‘ of the Fibres; this by condensing the Pores, suffo-
‘ cates 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 *Machinule* of the Fibres, for want of this
animal Oil, will loose 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.

A P H. XXXVI.

‘ He who would preserve a youthful Countenance, 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 loose its beautiful Smoothness and run into Wrinkles, as it is very observable in the Hands upon dabling in any Liquor for a considerable time together.






 THE
 APHORISMS
 OF
 SANCTORIUS.

S E C T. VI.

Of VENERY.

A P H O R I S M. I.


 O O great an Abstinence from Vener-
 nery, and an immoderate Use of it,
 obstructs Perspiration, but an immo-
 derate Use of it does it most.

Explanation.] THE Action of Coition, as
 Dr. *Lifter* observes in his
Note hereupon, is of the Nature of a Convulsion, at
 that Time therefore the Fibres cannot but be intently
 drawn up, whereby the cutaneous Pores will neces-
 sarily

family 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 rendring 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 employed, 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.

A P H. II.

‘ Upon immoderate Coition, about a Fourth Part of the Quantity usually Perspired, in a great many will be obstructed.

A P H. III.

‘ The Mischiefs arising 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,

T

depends

depends upon a due Tension and Springyness 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 *Machinulae* of these Threads, will be much injured in their Contextures, but also that animal Oil or Spirit which is bestowed 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.

A P H. IV.

‘ It may be known that Coition proves beneficial,
 ‘ 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

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 OEconomy.

A P H. V.

‘ The continual Thoughts of venerous Persons,
 ‘ renders 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 Tensions 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 Wast of the Juices, than a more relaxed State would do, and thereby therefore, must the Body be rendered lighter.

A P H. 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 Per-
 ‘ spiration of the Heart, and gives it Vigour;
 T 2 from

‘ 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 Consequences 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 indifferent Lover. How the Pleasure assists the Perspiration of the Heart, or strengthens it any further 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.

A P H. VII.

‘ They who are very eager after Venerly, if they
 ‘ check their Inclinations, a Lightsomness 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.

A P H. VIII.

‘ Immoderate Coition will expel that which is
 ‘ undigested by Perspiration, and afterwards render
 ‘ the Flesh colder.

Explanation.] In the same Manner as any violent
 Exercise, by the strong Contractions and Succussions
 of the Fibres, the perspirable Matter will be thrust
 forward and expelled faster than 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.

A P H. IX.

‘ These following are Indications that Coition
 ‘ hath not been hurtful; Urine equally digested as
 ‘ before, a Lightfomness of the Body, an easier Per-
 ‘ spiration, and the same *Standard* of Weight remain-
 ‘ ing; so that a Diet be observed the same both in
 ‘ Quantity and Qualities as before.

Explanation.] This is but the same as the IV. *Aph.*
 above, only more particularly expressed.

A P H. 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 Eye-brows and Joints,
 ‘ and then in the more noble Parts.

Explanation.] I cannot conceive how it cools the
 Stomach more than any other Part, which it does
 by weakning the Contractions of the Vessels and
 the Motions of their Fluids, as hath before been

taken Notice. A Diminution of Perspiration, *Santorius* 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 Imbecility it gives to the whole Body.

A P H. XI.

‘ Coition in Summer-time is most hurtful, not
 ‘ because the Body then Perspires more, but because
 ‘ 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.

A P H. XII.

‘ In the Act of Venery a great deal of Crudity is
 ‘ thrown off by Perspiration, and if it be long pro-
 ‘ tracted, those Crudities which are at the Centre,
 ‘ will be thrown upon the Circumference and there
 ‘ occasion Obstructions, and render the Belly cof-
 ‘ tive.

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.

A P H. XIII.

‘ The more a Person burns with a desire of Coi-
 ‘ tion, by so much the less will its immoderate Use
 ‘ prove injurious.

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.

A P H. XIV.

‘ The Injuries arising from immoderate Exercise,
 ‘ are chiefly felt after the next Sleep, for then by
 ‘ the *Ballance* it will be found, that Perspiration
 ‘ hath been obstructed, and that the Meat hath
 ‘ been ill digested, as also that the Stomach hath
 ‘ been much hurt.

Explanation.] The Injuries receiv’d, 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. Weakning the Stomach, and lessening Perspiration are Consequences of one another, whatsoever therefore does the first, will also do the other; for what Passes not sufficiently digested out of the *prima via* into the Blood, will obstruct the capillary Vessels, and prevent a due Discharge by the Skin.

A P H. XV.

‘ Coition is wont to hurt the first Concoction, first
 ‘ by checking the Expulsion of the Perspirable Mat-
 ‘ ter 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 weakning the force of the Stomach, as explained under *Apb. X.* above.

A P H. XVI.

‘ He who in Coition forbears the Emission of
 ‘ *Semen*, is by it the less weakned; nay if he repeats
 ‘ 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.

A P H. XVII.

‘ He who in Coition on purpose forbears Emission,
 ‘ will be apt to have a swelling in his Testicles,
 ‘ because the *Semen* is imperispirable.

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

ning 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.

A P H. 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.

A P H. 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.

A P H. 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.

A P H. 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 Springyness 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 destroyed, insomuch, that sometimes they stand still, and at others twitch and leap in a convulsive manner.

A P H. 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 Drink, as afford the greatest Quantities of the same Nature, and that can soonest be converted into them.

A P H. 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, be-
‘ cause the Heat has more open Passages entirely to
‘ go off by; and the natural Heat is thereby in a
‘ great Measure resolved.

A P H. XXIV.

‘ From hence by immoderate Coition arises Cho-
‘ ler in the Liver, Gravel in the Kidneys, Crudities
‘ in the Stomach, a Catarrh from the Brain, and in
‘ the Heart Palpitation and Faintness.

Ex-

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 in the Body) is Heat, the Stomach is weakened; 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.

A P H. 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 Body's 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.

A P H.

A P H. XXVI.

‘ Lean Persons are most injured by Coition, because 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 heat 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 these Consequences are rather governed by the Intenseness of the Actions at that time, than the Bulk of the Person.

A P H. 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 vital 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 expelled 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.

A P H.

A P H. 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.

A P H. XXIX.

‘ After too much Coition, Sleep attracts the Cru-
 ‘ dities to the Heart: From whence arise *Languors*,
 ‘ an obstructed Perspiration, and an Increase of
 ‘ Weight.

Explanation.] This is much the same as the XXI.
 above, only more obscurely expressed.

A P H. XXX.

‘ Old Men by immoderate Coition grow colder
 ‘ and heavier; but young Men lighter and warmer.

Explanation.] In old Men the Strength of the So-
 lids 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 Per-
 spiration. 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 encrease, in proportion to the encrease of the Velocities of the Fluids, and also must there a much greater Quantity be broke small enough to go off by Perspiration.

A P H. 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 encrease 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 is 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 Springyness, 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 it self, full of Mystery and Obscurity,

rity, and to darken Truth with a Multiplicity of unintelligible Terms; which unhappinefs even our Author is frequently apt to fall into, whensoever he leaves Experiment and Matter of Fact, and endeavours to accomodate 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. I.* 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 Distances 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.

A P H. 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,

tions, as is necessary to prevent their falling into Fermentation and Putrefaction. If therefore at such Times a Person 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.

A P H. XXXIII.

‘ Before Coition a Person should eat little or nothing; 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 overstrained, 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.

A P H. XXXIV.

‘ When there is no uneasiness felt after immoderate Coition, it is a very ill Sign, as with *Ma-naicks* 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 preternatural Contraction of the Fibres, which by being

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drawn

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 Ma-naicks 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 encreasing the Contacts of their constituent *Machinula*, as above explained in the Digression, concerning the *Elasticity of an animal Fibre*, by which they are with more Difficulty distracted, and when so, draw 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 loose 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.

APHORISMS

A P H O R I S M S *added by the*
A U T H O R.

A P H. 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 sollicitates for Ejection, 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.

A P H. XXXVI.

‘ The Weight of the Body in weak Persons is en-
‘ creased 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 encrease in Bulk and Weight; unless such a Diminution of that Evacuation be compensated by the encrease of some other; as it may very likely be by a *Diarrhœa*, according to the following.

A P H. XXXVII.

‘ Coition without satiety hinders Perspiration,
 ‘ because it abates the Strength, whence the Body
 ‘ becomes heavier, unless a *Diarrhœa* happens upon it.

A P H. XXXVIII.

‘ Coition to excess does a great Deal of Harm,
 ‘ by heating and drying the Body; but if the Heat
 ‘ be supply’d 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.

A P H. 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 Bow-
 ‘ els 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.

A P H. XL.

‘ To use Coition standing after a Meal is hurtful; 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.

A P H. XLI.

‘ Coition is injurious after Exercise; after Meat not so much; but after Sleep it is the most wholesome 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 it self 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.

A P H. XLII.

Coition heats the Liver, and cools the Stomach; from the Stomach proceeds crude Moisture; from the Liver Cholera; whence arises that kind of Cholera 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 a 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 extrem
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 Disorders 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 subtracts from the Bloods 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, occasion 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 be gone so far into preternatural Cohesions, as not easily afterwards to be broke, and continued in their due Circulations, and whereupon there might be given Rise to some untoward Disorders.





THE
 APHORISMS
 OF
 SANCTORIUS.

S E C T. VII.

Of the AFFECTIONS *of the* MIND.

A P H O R I S M. 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.

Expla. **T**HIS *Section* is attended with much more Difficulty as to its *Explnation*, than any of the former, because the *Propositions* herein contained are not demonstrable in the same Manner, as those which

which relate only to the Agency of physical Causes. For as it was before taken Notice of, under *Aporism XV. Section V.* the Operations of the Mind upon the Body, and *e 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, although 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 effect 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 affects the Mind with such particular Passions and Dispositions, it will afford very sufficient Ground of Certainty to a wary and
con-

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, encrease 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 (although 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 *Machinule* 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 encreases 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.

A P H. 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 slackned 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, although 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.

A P H. 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 Obstructions 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 Resistances, it is very likely that by the same Causes likewise, there should all these Syptoms arise which go commonly under the Name of hypochondriacal Affections, as Distensions 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.

A P H. 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 trou-
‘ bled 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.

A P H. V.

‘ The heavy part of the perspirable Matter,
‘ being 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 versa*; 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.

A P H. 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.

A P H.

A P H. VII.

‘ By Fear and Sorrow those Parts which are fullest 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 Resistances, and therefore from any Cause that weakens the Contractions 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 soonest 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 OEconomy, and therefore is it most liable to these Consequences upon any Relaxation, and Abatement of the Force of the Blood.

A P H. VIII.

‘ Sorrow and Fear hinder the Exhalation of the gross perspirable Matter; and the Obstruction of
‘ Per-

‘ 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*.

A P H. IX.

‘ If Grief continues long, it will bring on a cold-
 ‘ ness of the Flesh, because it hinders the Exhalation
 ‘ of the grossest of the perspirable Matter.

Explanation.] It has already been shewn at large under *Aph. LXVIII. Sect. I.* 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.

A P H. X.

‘ From hence it happens, that those Fevers
 ‘ which a Person falls into after much grief disco-
 ‘ ver themselves in cold Sweats, and oftentimes
 ‘ prove Mortal.

Explanation.] Grief by its continuance, keeps the Solids so long in a state of Relaxation, that the Orifices of the secretory Glands, lye so far open, as to let thorough 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 Enlargement 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.

A P H. XI.

That Acrimony of the perspirable Matter, which is obstructed by long Sorrow, may with Advantage

‘ rage be taken off by Cheerfulness: for pleasing Hu-
 ‘ mours 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 encrease the Force and Vibrations of the Solids; as Grief therefore by weakning that Force occasions this Disorder, so Cheerfulness by restoring it again, proves a Remedy. By pleasant Humours being diffused thorough 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.

A P H. 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 Physick 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,

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.

A P H. XIII.

‘ It does not imply a Contradiction, that the retained 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 overcharge of Fluids, by means of an imperfect Perspiration, as is commonly the Case in Melancholly 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 preternatural 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 to Putrefaction.

A P H. 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 overcharge 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.

A P H. 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.

A P H.

A P H. XVI.

‘ In Venerous 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 Chillness
‘ 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.

A P H. XVII.

‘ Melancholy is removed two ways, either by a
‘ free Perspiration, or by some continued Cheerful-
‘ ness 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 Cheerfulness) will appear to be little else than Repetitions, and therefore any Notes upon them will not be wanted.

A P H. 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 pre-
 ceding, 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 con-
 verted into transpirable Matter.

A P H. XIX.

‘ Cheerfulness, from whatsoever Cause, opens
 ‘ the Passages, and makes a free Perspiration.

Explanation.] This Disposition of Mind, cannot
 happen from the Constitution it self, 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 *Apbo-
 risms*. And where this Temper is introduced from
 any external Circumstance, it immediately, so much
 quickens the vibrations of the Fibres, as to accele-
 rate the Motions of the Juices, encrease their Attritions,
 and Transpiration.

A P H. 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.

Ex-

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.

A P H. XXI.

‘ As some great Pleasure is taken away by a
‘ small ejection of *Semen*; so all immoderate Passi-
‘ ons of the Mind, may be removed by some eva-
‘ cuation 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 Evacuati-
on 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 Discharge, but then again most *immoderate Pas-
sions* will be aggravated by such Increase of Motion,
which renders this Aphorism somewhat difficult to
understand.

A P H. XXII.

‘ Fear and Sorrow, as it appears from *Staticks*,
‘ are removed by a subtraction of the grosser per-
‘ spirable Matter: but Anger and Joy, by that of
‘ the thinner.

Explanation.] This confirms, what was said un-
der the former, that such are the only Passions ca-
pable of Relief from Evacuation; and in a grosser per-

spirable 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 assuage them. And in many of these Aphorisms, there happens the like Obscurity for want of due Distinction, between the Nervous Fluid it Self and the Perspirable Matter, which is its Recrement.

A P H. XXIII.

‘ If any one without manifest Cause, finds himself Cheerful, it is occasioned by an enlarged Perspiration, and that Body the following Day will be lighter.

Explanation.] How Cheerfulness 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 healthful State enjoys.

A P H. XXIV.

‘ Moderate Joy insensibly evacuates what is superfluous: 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.

A P H.

A P H. 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 assigned as a Cause, is rather the Effect, and very obscurely expressed.

A P H. 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.

A P H. 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 encreased 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
Per-

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 OEconomy, which our Author must be allowed to have been extremely defective in, notwithstanding the Excellency, Justness, and Usefulness of most of his statical Experiments.

A P H. 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.

A P H. XXIX.

‘ If any one after immoderate Joy perceives him-
‘ self 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
OEconomy

OEconomy, 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.

A P H. 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.

A P H. XXXI.

‘ Parsley, and other Openers, occasion Joy:
‘ Pulse, fat Meats, and such Things as increas-
‘ ate, and soon fill up the Passages, induce Sor-
‘ row.

A P H. XXXII.

‘ If the Passages are emptied, and then suddenly
‘ 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.

A P H. 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 encrease that ill Disposition, by still making a greater Waste of the natural Moistures, and adding to the Hardness of the Fibres.

A P H. 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.

A P H. 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 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.

A P H. 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.

A P H. 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.

A P H. 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.

Expla-

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.

A P H. XXXIX.

‘ Too much Exercise of the Mind, is more injurious 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.

A P H. 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.

A P H. 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 intently 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.

A P H. XLII.

‘ They that are covetous ought not to game ; be-
‘ cause 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 had been explained already to hinder Perspiration.

A P H. XLIII.

‘ A moderate Conquest is more healthful, than
‘ one that is more Glorious.

Explanation.] That is, if it recalls 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.

A P H. XLIV.

‘ Study which varies the Passions is better bore,
‘ than that which keeps them the same ; because it
‘ makes Perspiration more moderate and more whole-
‘ some.

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.

A P H.

A P H. XLV:

‘ Study without any one Passion will hardly en-
‘ dure 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 Loosing) it may continue Night and Day.

A P H. XLVI.

‘ In all study, continued sadness destroys the good
‘ Constitution of the Heart; and excess of Joy hin-
‘ ders Sleep, for too much of any thing is an Enemy
‘ to Nature.

A P H. XLVII.

‘ They who are sometimes merry, sometimes sad,
‘ sometimes angry, and sometimes fearful, enjoy a
‘ more healthful Perspiration, than they who con-
‘ tinue in one Affection, although a good one.

A P H. XLVIII.

‘ Joy assists the Diastole and Systole of the Heart:
‘ But Grief and Melancholy renders them more dif-
‘ ficult.

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 preceding are nothing else but some of the former in other Words, and require therefore no further Explanation.

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 Borometer. These he also digests into more general Tables of Observations, and at last into one, comprising 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*.

A P H. 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 Superfluous and Ex-
‘ crementitious.

A P H. II.

‘ The most considerable Outlets, are the Anus, Kid-
‘ neys, and Pores of the Skin; and the Quantities
‘ passing through these every Day, may be known
‘ by statical Experiments,

A P H. 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.

A P H. IV.

‘ Five Ounces is commonly ejected in one Day
‘ by Stool.

A P H. V.

‘ Two Pound and almost six Ounces of Urine is
‘ discharged in one Day, or twenty four Hours.

A P H.

A P H. VI.

‘ More than one and thirty Ounces is expended
‘ in one Day by Perspiration.

A P H. VII.

‘ All these are varied according to the Differences
‘ of Temperiment, 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. I.* he makes $\frac{1}{3}$ of what is taken in by Meat and Drink, and in the *XXI. 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 arises from the Causes here assigned, exactly agrees with the *VII. Aphorism* of *Sanctorius, Sect. I.* which see.

A P H. 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 *IX. and X.* of *Sanctorius, Sect. I.* under which the Reasons for it may be seen.

A P H. 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.

A P H. 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.*

A P H. 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 the IVth. Section especially.

A P H. 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 encreased 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 encrease will certainly diminish in the other Respect, or else a
Person

Person will soon fall away in Substance, and grow into a distempered State.

A P H. XIII.

‘ If we equally divide the Day between sleep and waking, one Day perspires thirty Ounces and $\frac{27}{16}$, or seven Drams.

A P H. XIV.

‘ If a Person lies in Bed but eight Hours, the most of one Days 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 Lensor, which often happens.

A P H. XV.

‘ If the Day be in like manner divided, the Urine will amount to thirty nine Ounces. The Quantity perspired, is *ceteris paribus*, proportionate to the Degree of Heat.

Explanation.] The former Part of this *Aphorism* agrees not well with the V. *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 governed 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.

A P H. 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 Authors 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 Liquor, that runs off very fast by Urine.

A P H. XVII.

‘ In Summer the greatest Perspiration is almost three Pound, and the least Perspiration in Winter about half a Pound.

Explanation.] This appears from the Doctors 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.

A P H. XVIII.

‘ About thirty three Ounces is the mean Quantity perspired; and therefore we have laid them down

‘ down as a Standard of one Days Perspiration, in
‘ our Tables.

A P H. 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 great-
est and least healthful Standards, which *Sanctorius*
speaks of, between which extreams Health may be
preserved, but further, the Constitution must dege-
nerate into a distempered State.

A P H. 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 thro’ 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.

A P H. 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 encrease Perspira-
tion is manifest from what hath been already said :
And the Authors own Experience hath confirmed 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.

A P H. XXII.

The greater Perspiration is made by Motion and Exercise, so much the less it is in the following Hours, when the Body is at Rest.

Explanation.] Because such Agitation forces away all that is broke small enough for Expulsion, and sometime 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.

A P H. 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* encrease Perspiration, makes it plain why *these* lessen it.

A P H. XXIV.

Perspiration is encreased 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.

A P H.

A P H. 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 encrease.

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 II. Section of *Sanctorius's Aphorisms* towards the beginning. So that the Reason why the subsequent Perspiration does not decrease, is manifest 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.

A P H. XXVI.

‘ That Perspiration which is encouraged by a
‘ Winters Fire, is not inferior to what will rise in
‘ a Summers 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.

A P H.

A P H. XXVII.

A Person perspires the less for being over wearied with Exercise.

Explanation.] This is explained already under many *Aphorisms* of the V. *Section* of *Sanctorius*, which the Reader is desired to turn to.

A P H. XXVIII.

Frequent tossing about in Bed hinders Perspiration.

Explanation.] This is also exactly the same as the LI. and LXX. *Aphorisms* of *Sanctorius*, in his I. *Section*, whereunto the Reasons for it are annexed.

A P H. 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 hinders it.

Explanation.] This again is demonstrable from many *Aphorisms* of the V. *Section*, compared with the LI. and LXX. of the I. *Section*.

A P H. XXX.

They perspire the less who sleep uncovered in an open Air; and when sleep retards the Separation 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* XXXVI. *Aphorism* of the II. *Section*; 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

tention 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 I. *Section.*

A. P. H. XXXI.

‘ The more a Person perspires in the Day Time, the less will he perspire at Night.

Explanation.] How an encreased Evacuation at one Time will lessen the same Evacuation afterwards, depends upon Circumstances that make a great Difference, for *ceteris Paribus*, it always diminishes the succeeding Evacuation in proportion to its own excess, 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 XXV. *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 preceding *Aphorisms*, and without regard to this Distinction, many Places herein may seem to contradict one another, and cannot be well understood.

A. P. H. 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 encreased 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.

A P H. 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 untill the Skin looked red, without causing any encrease of Perspiration that Night; but it is to be remarked that there is a vast deal of difference in using Friction, after a Days Exercise has thrown off all the perspirable Matter fit for Expulsion, and in a Morning, when a Nights digestion has prepared in readiness a great Quantity fit to be drawn off by any solicitation. 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 encrease the Quantity of perspirable Matter, because the Days 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 Nights Digestion. lies ready broke small enough for Transpiration. See further under *Aphorism LXXIV.* of the 1st. Section in *Sanctorius.*

A P H. 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 Tables, set forth, that on the 20th of *January* he caught Cold from having his Head shaved, upon which immediately followed a Cough, and that on the 15th of *February* he slept with his Head bare, whereupon followed a Pain of the Tonsils and a great Cough: And in both these Instances it appears that Perspiration was diminished. Now whether this Cough comes from a *Lentor* or Viscidity, which an encrease of retained perspirable Matter occasions, in the manner that every Plethora, or a Redundance of Fluid will occasion the same, or whether a set 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.

A P H. XXXV.

' The Body is in equal Times, more diminished
' 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.

A P H. 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 Pound 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 dispence with such an Addition of cold moisture, without very great and unconquerable Difficulties.

A P H. 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 Catharticks,

charticks 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 *Fallap*, 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.

A P H. XXXVIII.

‘ The Quantity of Meat and Drink, is to the
‘ Quantity perspired, as 2. 2 to 1.

A P H. XXXIX.

‘ If the 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 preceding *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.

A P H. 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 Computations

tations 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.

A P H. XLI.

That is the Proportion of Diet suitable to every one, by a diminution of which the Body would lessen, or encrease upon its Excess.

Explanation.] Where therefore a Person encreases in Bulk, or lessens, and it cannot be assigned 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.

A P H. XLII.

The proportion of daily Food, suitable to a Body in the fore-mentioned Circumstances, is about four Pound; for this Quantity commonly brings the Body every Day to the same Standard of Weight; but less sinks it, as a greater Quantity encreases 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 ones 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.

A P H. 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, nature 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

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.

A P H. XLIV.

‘ This Rule of Evacuation hath a certain Latitude,
‘ and the more every Constitution will admit 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 encrease, 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.

A P H. XLV.

‘ By how much any one exceeds the due Proportion of Food, so much he encreases the Bulk of
‘ his Body, unless some violent Evacuation follows.
‘ For since there is a certain Rule for Evacuation,

Z

not

not able to throw off every encrease 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.

A P H. XLVI.

By how much a Person abates of the due Quantity of Food, so much Strength and Bulk will be lost; and by emptying the Vessels, will Death itself at last ensue.

A P H. 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 *vitiating* and *debauched* by Excess and over Indulgence. This ought to be compared with the XLII. and XLIII. *Aphorisms* above, and the Standard of Digestion and Excretion will be easily enough understood.

A P H. 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.

Ex.

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.

A P H 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 incapable of Reduction, by the digestive Powers, to a fineness suitable for such discharge, and such as lessen Perspiration by their fitness for Lodgement 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 shew 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*.

A P H. L.

‘ That Liquor which our Countrymen call Punch,
‘ is both Diuretick and Sudoriffick.

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, where ever it is used.

A P H. LI.

‘ Drinking small Liquors promotes Urine, but
‘ very little affects Perspiration.

Explanation.] Because they very naturally, with a little Alteration, make the serious Part of the Blood, and wash off by the Kidneys, but an aqueous Fluid is too gross to be commuted 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.

A P H. LII.

‘ Perspiration is not so much affected by Meats,
‘ as Urine is by Drinks, or Urine so much affected
‘ by the Seasons of the Year as Perspiration.

Ex-

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.

A P H. LIII.

‘ There is no difference perceivable between Perspiration 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 preceding *Aphorisms*.

A P H. LIV.

‘ The Pulse is much quicker in the Evening than in the Morning, and is accelerated by eating dinner.

Explanation.] Because the Days 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 comon 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

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.

A P H. LV.

‘ There is an easy and a continual Egress and
‘ Ingress of Air through 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

A P H. 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

A P H. 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.

A P H. 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.

Ex-

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 Nights Perspiration less than that in the Day time, besides this, as appears by many Places in *Sanctorius's Medicina Statica*.

A P H. LIX.

‘ Garments of all kinds draw the Moisture of the
‘ Air; and such attraction in Garments of equal
‘ Extent is as their Weights.

A P H. LX.

‘ The Attraction of Garments of equal Weights
‘ is as their Superficies.

A P H. 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.

A P H. LXII.

‘ Those Garments which are made of Animal Sub-
‘ stances, attract more than those made from Vege-
‘ tables.

A P H. LXIII.

‘ There is the same attractive Power in Silken, as
‘ in Woolen Garments, if in all other respects they
‘ agree.

A P H. LXIV.

‘ Leather draws more than any other Garment.

A P H. LXV.

‘ Linnen draws the least of any Cloaths.

A P H.

A P H. LXVI.

Black Cloaths, *ceteris 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 assigned, 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 Exigencies of the Patient.

Thus far hath Dr. Keil had leisure to go in Statistical *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 Judgement 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 & Luna 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.

M E-

Fig. 2.

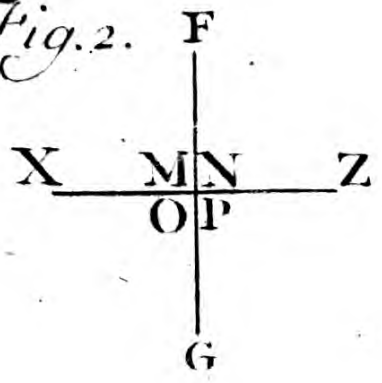


Fig. 7.

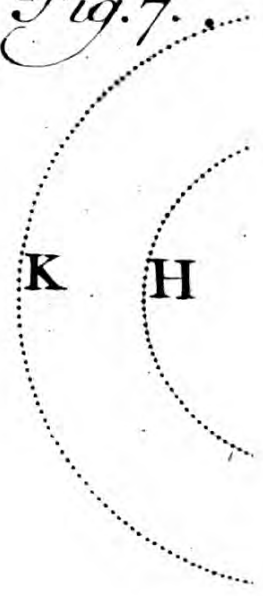


Fig. 4.

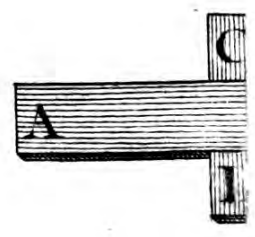
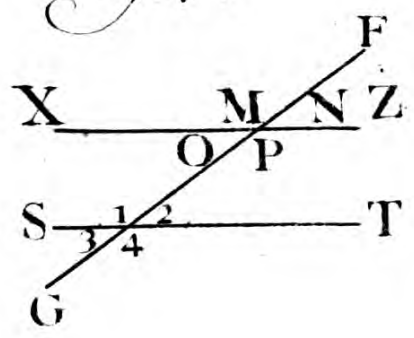
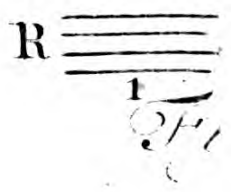
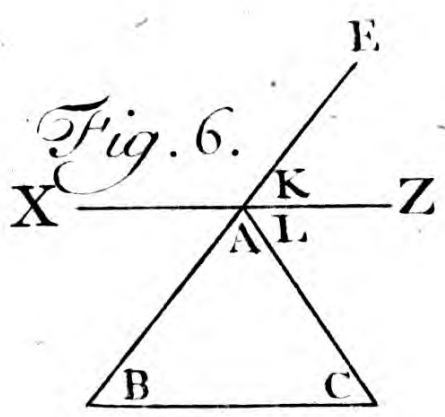
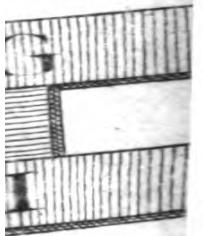
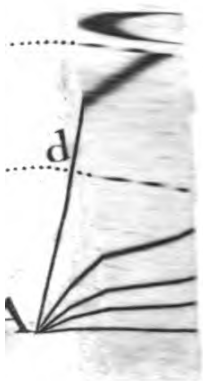


Fig. 6.






7.10



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MEDICO-PHYSICAL ESSAYS,

- | | |
|-----------------------------|-------------------------------|
| I. Of AGUES. | V. Of A LEPROSY. |
| II. Of FEVERS. | VI. Of The KINGS-
EVIL. |
| III. Of An ANIMAL
FIBRE. | VII. Of VENEREAL
DISEASES. |
| IV. Of the GOUT. | |

By JOHN QUINCY, M. D.



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T H E
P R E F A C E.



I T 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 Publick; 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.

The P R E F A C E.

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 OEconomy, and his Mechanical and demonstrative way of treating those Subjects is such as
must

The P R E F A C E.

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 inferiour 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 Conformation 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

The P R E F A C E.

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 cheerfully 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 - 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 entering into the Account of any particular Distemper that is periodical, thus much in general may be receiv'd for Truth; for if there was not a Removal of the

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 procatarctica*, 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 Encrease of its Quantity, or by subtracting from the Force of the Heart and Arteries, or by both together. An Encrease 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 Encrease, I say, of its Quantity alone in this State, will Encrease 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 extrâ*, 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 Cohæsions when brought into Contract, 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 Cohæsions, 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 weakning the motive Powers of any Body, is the same as increasing its Resistances with regard to its *Percussion*, and *vice versa*. 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 encreased, and the Solids weakned 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 Bloods encrease 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 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 wondered 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 Springyness 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 encrease the Springyness of the Nerves; by plentiful Doses of spirituous Liquors, piperine Medicines, Subastringents, brisk Exercise, sudden Frights and the like: And herein all Evacuations, unless that by insensible Transpiration, and even Sweat it self, 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 Atmospheric 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 lengthned, 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 loose 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 it self 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 Cohasions, as cannot easily be separated, and form such Substances

as are glutanous 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 consequently their Cohæfions stronger; that is, the Blood will thereby be rendred more Viscid. But still the most common Cause of the Bloods 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 Cohæfions, in such a Manner as hath already been demonstrated at large under *Aph*, XXII. *Sett*. III.

That these are the Causes of Agues or Intermittent-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 Febris intermittentibus* and *Bellini de Febris*, 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 Cohæfions

hæfions which cause its Viscidity, and as will break and divide those Cohæfions 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 forceable 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 forceable 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 forceably moved and struck one against another, by degrees they will be broke and reduced small enough to be discharged by some of the Evacuations; 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 aromattick Compositions, which by their subtilty and activity of
B b 4 Parts,

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, although 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 slackned, 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 Pound 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're 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're 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 Fits 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 reincrease of the Bloods 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 tye up the faster that viscid Matter, and thereby agrivate 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

by giving the *Bark*, or any such Remedies as answer that Intention of straightening the Fibres, before the *Lentor* of the Juices is sufficiently removed, although 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 above-mentioned, 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 *Faundies*, *Cachexies*, or *Asthma's*; or else it remains closed up in the Glands and Capillary Vessels, until by some fresh Causes the Fibres are slackned, 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 Cohæsiions, 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 forceable Actions it gives to the Muscles of the whole Body, all the *Viscera*, and even the extreamest Parts of the Body, are very
much

much thook, 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. VII.* 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
cures

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 Pallate, 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 discernable 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 Salt-upon their ChrySTALLIZATION, and when it is broke
transf.

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 before 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 dissippable, as appears by that which so easily rises and flies off upon breaking it, as likewise by that penetrating *Bitterness* which is discernable in it by the Pallate.

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 satisfy'd, may turn to Dr. *Cole's* Book *de Febris intermittenibus. 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*, encrease the Impulses of its Parts one against another, upon which Account a great many Cohæsiions will be broke, and other Parts prevented from running into such close Contacts, as occasion those Cohæsiions, 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 Encrease of the Bloods 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, hardning 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
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corrugating the Fibres, wherefoever 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 shortned 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

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 *Crafsis* 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 *Crafsis* of the Blood, and if this be neglected a lasting Cure will never be made. But where the *Crafsis* and Temperature of the Blood remains good, (although an Obstruction of the perspirable Matter hath encreased 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, it's a certain Sign also the Blood wants mending, and in such Cases after

after Vomiting, the common *Bitters* with *Aromatics*, *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 boiled; every thing high seasoned, excepting with Salt; strong stale Beer, old dry Wines in moderate Quantities, are preferable 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 *Bigotry* to the *Bark* has drawn Persons into the Use of that only. But as to *Chalybiated 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 *Faundice*, *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 to Enquire into the Reason, why an Encrease 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 Encrease 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 Encreased, 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 Encrease 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 Encrease 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 Diffuse, 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 encreases the Matter retained.

ESSAY



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 encreased Quantity of Blood, has been particularly explained under *Apb. XLVI. Sect. I.* 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 Dryness upon the Surface, and wheresoever they 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 encrease 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 encrease the celerity of the Blood, are fatal; but nothing is so destructive as

Blistering, and spirituous Juleps, as was before observed in the preceding 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 Subject in *Baglivi's* Dissertation *de Usu & Abusu Vesicantium*. 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 Quality, yet by the encrease 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 tyed 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 little Appearances of Life, besides a general Convulsion of the whole nervous System, but especially of the Stomach, where they are dispersed in greatest numbers; which occasions Hiccups, 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 fetid Stools, and sometimes also of a Urine of the same Colour. The sensory Organs frequently loose 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 encreased 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 Exercises, 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
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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 Cohasions, 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 it self; as likewise all those *Catharticks*, those Friends to Nature, with which some Enthusiasts pretend 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 Purgings, 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 Cohasions. 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 encrease 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 Colledge Ales? in the tipling 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 it in time procure such a general Imbecility 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 called *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 *Apb. XXII Sect. III.* 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 Cohæsi- ons; that is, the Force impressed upon them by the contractile Vessels, is not so great as that attractive Power by which they are drawn into mutual Con- tacts 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 Secretary Organs are naturally constituted to discern. And this is the Fever, which may justly be called Putred, 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 fatid Stools often happen after it has set in some time, or for want of them if the Patient recovers, those Abscesses which frequently
arise,

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 the 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 Putrefaction, 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 time 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 Machinula*, 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 Ketches.

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 be 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 her self 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 Recovery

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 disordered: 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 it self 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 Februm* before taken notice of, is not of so much Service as it otherwise might have been; for it can hardly be imagined that the Dr. 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 encrease of the the Bloods 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 enlargement; 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 it self cannot

not sometimes be done, and then it is that we find it collected into an Abscess.

But as the greatest Difficulty lyes 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 Alkali* 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, although at other times perhaps they might have proved very offensive and prejudicial, as Musk, Ambergrease, 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 practice 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 which

which have already run into preternatural Cohesions, are, as by the Volatile Alkali's before spoke of, the 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 thorough 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 Dependence 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 Cession of some of its Parts for that Use, depend upon its certain Degrees of Fluidity, which always are as the Contraction 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 its self, 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 open 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 *Leipsick 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,

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 looses 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 perceiv'd by the Eye: But if such a Disposition of a determinate set 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 Presumption 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 Contrivance and Properties of a *Syringe*, and the Reasons upon which that *Phenomenon*, 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 Reasons of which being well considered, it will be found, that all which is necessary for this Contrivance, is, that the *Embolus* be so exactly

D d adapted

dapted 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 Figure 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 Infiltration 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 as *G. I.* 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 Reunion. 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 Set of Particles to compose the main Substance of an animal Fibre, endowed with the Properties above mentioned, 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 *Periostium* 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 advanced

ced by Dr. *Clopton Havers* in his *Osteologia*, concerning that of the Bones and Cartilages, as well as from the abovementioned [*Apb. VIII. Sect. II.*] 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 Reunion 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 preceeding 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 *Machinule*, 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 overpowering 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 *Machinule*, 1, 2, 3, 4. will successively be moyed 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 prick'd 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 rais'd them to a certain Measure, (wherein their Endeavours of Restitution, will exceed the Force of the Impulse that rais'd or distract'd 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 Bloods 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 Distractions 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 Atritions 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 merely 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 OEconomy, 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 Seccession of some Parts, through Glands constituted for that Purpose in the Brain, which from thence are dispensed

pens'd 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 Constructions, 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 through 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 consist;

fit; 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 Digestions 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 inconceivable 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 above-mentioned, 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 *Machinulae* comes to be well considered: I cannot believe there will be found any want of those imaginary Aids, to account for the Animal Operations. Of this Fluid only then, which is in this Manner, and for

for the Purposes above-mentioned 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 Subtraction 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 OEconomy.

It

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 distempered, which I think is plain, to be one of these two ways, either by becoming too gross and siezy, 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 form viscid Cohærensions, in the same manner as it happens in the Blood in the same Case, which renders the Motions of the fibrile *Machinule* 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, when they are distracted; as it happens in a *Leucopblegmatis*, *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 Hæctick, 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 Sorts 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, 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 Machinulae* 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 Ballance, 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 subtract 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 *Machinulae* 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 *Machinulae* 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 Cohæions, 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 Distention 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 insomuch that they continue weak and painful, if not altogether without the Power of Motion, thorough a Persons 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 *Machinula* from the Lodgment and Adhesion of any foreign and superfluous Matter upon them; by which means whensoever 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 loose 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 subtracted be diminished, and consequently must every Thread which enters into the Composition of those Vessels, draw up or contract it self 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 *Machinulae*: 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 Subtraction was made, lessens its Pressure against the Fibres quite to the other End, and therefore will all the *Machinulae*, 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

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 *Apborisms*; 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*.



E S S A Y IV.

Of the GOUT.

INtroduutory 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, although useful to a right understanding thereof.

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I. There

1. *There is a nervous Fluid.*

For the demonstration of this the Reader is referred to the Writings of *Borelli*, *Bellini*, *Petcairn*, *Mead*, and all that have wrote intelligibly concerning the animal OEconomy, as also to the preceding *Essay*, of an *animal Fibre*, &c.

2. *That this Fluid, is separated chiefly, in time of Sleep.*

The aforementioned 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 a Sleep as in a State of Reparation; and every ones Experience informs him, how every thing that regards our Strength, and what 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

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 these 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 speaking of; for what is altogether of an oily or a sulphureous Nature seems impossible by its Viscidity, and Inaptitude to Motion on that Account, to be broke or comminuted into a *Fluid* of any tolerably 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 *Molecula*, 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 conceived, 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 unctious Substances, and a great part of our Liquors of spiritous 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 secreted 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 these who feed high, and use plenty of Liquors where somewhat enalogous 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 gross and ponderous Bodies may be subtilized into Volatility; and the most Volatile Bodies condensed into very gross ones.*

Monf. 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 its self 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 Dewes 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 Fruits. 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 chrystalized; and coalesced into Solid ponderous Substances. To the former, is only required such a Division and Commimution 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 anothers Attractions.

Under this Head might be distinguished between Particles specifcally 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 Judgement 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 overtakes

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 it self 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-Runner 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 a Sleep, when a Pain is first felt about the Ball of the great Toe, or the Heel, the Ankle, 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 composés 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 other 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 Patients 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 Declention and an advanced Age, it holds much longer. At first the Urine is high coloured, till after some Time it deposits a red sandy Sedement; but the Patient hardly pisses the third Part of what he Drinks, and is at first subject to be costive. At the Declention 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
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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 Hypochondriacal: 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;
be-

(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 were 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 Intenseness encrease this Complaint, by wasting over much that Stock of Spirits, which were 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 they 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
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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 Satisfy'd 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 in the OEconomy, and the many Hindrances such Discharges are liable to, with the most immediate Consequences resulting there from: which Premises may be annexed to the foregoing *Lemmata.*

6. The Offices of the Stomach, and Intestines are to break and digest the Materials for Nourishment, into a smalness sufficient to admit them through the *Lacteals* into the Blood, and what cannot be thus prepared, is detach'd quite out of the Body 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 supplied to the Matter of Excrement; and of Consequence the strongest and most robust Constitutions, *ceteris 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 sollicitations to Stool, will lessen the
Quan-

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 there 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 destined for further uses in the OEconomy; 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 OEconomy, 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 carryed 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 through the Skin in insensible Steam, are increased or diminished as this Force is intended, or remitted. What therefore cannot 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 reflux Blood, and thrown off by the opener Outlets, or it will clog the Habit, according to the Properties of the Matter so de-

tained

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 OEconomy 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 humane Constitution.

This short View of the OEconomy, I thought proper for the beter 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 Apellation of Cathariticks. 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 encrease the Discharge by Urine, and Sudorifficks, 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 Sudoriffick fails to operate by Urine for the same Reason, although in some particular Circumstances, one may accidentally, and in a lower Degree supply the Place of another. And as for Alterants their Efficacies lye 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 extrem Parts, that gathers chiefly upon the Glands of the Joints, and occasions 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 it self 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 Quality, 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, (by 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 Secretary 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 Secerted is of a Consistence like that separated in the mucelaginous Glands of the Joints.

But with a View to this Theory, let us follow the preceding Description of a Fit of the *Gout*, through 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 Hinderances 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 *Precedentia*, 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-

acquainted with such *Precognita*, 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 OEconomy, will easily be apprised of, without being lead 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 begin to be great Weight and Pains in the extream 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 last 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 a Sleep, may be understood by a Revival of *Lem.* 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 Corpufcles,

cles, and accumulates in Quantities upon the Parts most likely to lodge it: And the like Accerbatation 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 mucelaginous 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 Accerbatations of the Pain, with all the *Concomitantia*, and Attendants of the *Fit* it self, are also to be easily reconciled with this Theory by the *Bellinian* Doctrine aforementioned; and the exquisite

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 my self, 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 Perpiration, whereas in a slow and languid *Fit*, most of it is reabsorbed by the veinal 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 Vigor 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 lye 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 deposits; 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 preceeding *Fit* is manifest, because the more has the Body been cleared of the peccant Matter, and 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 lyes beyond the Blood, as a *Fever* of the Blood it self; 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 Bloods Circuit, such as Viscidities and watery Humours, which in Time would quite interupt its Circulation, and load the secretary 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 Mischiefe, 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 Bloods Circulation, and is not assimilated 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 assimilation to the Parts through which they pass, that they cannot but for the most Part be taken up into Nonnishment, 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 straitened. Here Palsies, Apoplexies, Head-achs, 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 encreasing 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 reassuming it back again, into the Blood, or drawing it to some particular Parts, to facilitate the former Intentions, what ever most conduces to these Ends, must most effectually remove the forementioned Disorders; and

and every one well acquainted with the Powers of the OEconomy 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 through 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 it self.

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 Experiments, $\frac{1}{8}$ 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, *ceteris 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 By-afs 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
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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 into the Cause of the *Gout*; as also are the Concretions and Corpuscles formed by that, when lodged upon the Joints, re-assumed by the re-fluent Blood, and washed off through the Kidneys. 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 Consequences

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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 Spirit, 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

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 Constitution, 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 affect 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 ones Experience how luxurious Living incites to such Titillations, and intense Exertions of the chief Springs of Life. As the former shake the whole Mass of Fluids, and assist their due Secretions, so the latter tye, 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 over-strains 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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Not 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 Tarter 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 tryed, can soon perceive to their Sorrow the Truth of it, a Fit being very frequently and sensibly precipitated by drinking considerable Quantities of these Liquors; 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 *Ricketts*; 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 encrease 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 mucelaginous 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 mucelaginous Glands there situated, to be the Cause of the same; tho' the manner of bringing it thither does differ in some Measure.

And with Respect to any Affinity between the
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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 intire 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

People must be from the Resistances of a yet strong Constitution to the Lodgement 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 there from, 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.

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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 surprising Alteration a Fit makes for the better; that is, where 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 Hypochondriacks 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 reflux 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 through 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 limpid, one may be assured that the Nerves will soon be disordered, and more or less of those Symptom's arise, which are charged to the Vapours and Hypo, in Proportion to the Quantities of Matter thus detained; and even the Gout it self 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
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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 Discharged, 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 *Paroxysmi*, including the whole Decumbiture.) and if for want of Strength, or through 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 solicitous 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 Tormenter, rather than pretend to prevent, or cure it. The Distemper it self, 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.

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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 there Pain there, as much as is consistent with Conveniency and Safety, to draw out as much as can be of the Matter by Transpiration, and to dilute and get it back with the reflux Blood, and thence detach it by Urine or Stool, quite 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 Patients 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 aromack 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. ā ʒj Fol. Absinth. rom.
 Flor, Centauri ā Mfs, infund. frigide in Vi-
 ni albi *Lisbonensis*, lij in vase clauso ad ter-
 tium diem, deinde Cola, & sum. Cochl. vj
 vel viij bis in de, Scil. hor. ante Prandium, &
 6^{ta} pomeridianā.

The following Electuary may likewise be given in the same Circumstance to such as it may be more agreeable.

G g 3

℞. Conf.

℞. Conf. Anth. Absinth. rom. ꝑj Specier. Diambræ ꝑj Spr. Lavend. ꝑij Syr. Gariophil; 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. ꝑij Specier. Diambræ ꝑss. Croci pulv. ꝑi in fund. in Aq. Epidem. ꝑiv Lact alex. ꝑxii spt. Lavend. ꝑij Sachar. abif. ꝑiss, in vase bene Clauso per hor. Xij dein. cola ad usum predictum, sumend. per Dos. Coch. v. vel vi.

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 threatening immediate danger to the principal Parts, these artificial Assistan-ces, 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 *Catharticks* 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

alleging 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 Expulsion only through 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 practiced, 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 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 *Crem of Tartar*, GLAUBERS Salt, and such like mixed with *Lenitives*,

but these are of very uncertain Effect, and aggravate a future Mischiefe, for a present Good.

What *Sydenham* says of *Pblebctomy*, in this first stage is of no great Consequence, and unless in very Sanguine and plethorick 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 Dialtheæ*, *oleum Palmæ*, *ol. Hyperic.* 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 straightness, of this kind may be.

R. Unguent, Horum Sambuci, Dialth. ʒi spt. sal. Armoniaci ʒiss M. ad partem affect. illinendum, cui etiam superimpon. Pannem walleum, eodem Liniment. illitum. or

R. Unguent. Dialth. ol. Rosar a ʒi ol. Palmæ ʒss, Spt. Lavend. vel Aq. Regin. *Hungaric.* ʒss, 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 breath the Part affected there are many Contrivances with the steams of hot Liquors, the application of hot Bricks wrapped

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 applyed, 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 Fits Termination, there be any threatenings of Michief, the Stomach will give the first warning, and generally soon after the taking such a Medicine, by Straightness 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 my self when the Intensity 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
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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. ꝑss Caphoræ, Croci pul. ā gr. iv, Pil. Pacific. *Mathæi* gr. vi. Syr. de Meconio q. f. ut f. Bolus quem sumat post aliquod Tempus sevierint Doleres Arthritici, Superbibendo Haust. Sequent. vel alicujus Vehiculi ejusmodi.

℞ Ap. Theriac. Lactis alex. ā ꝑss. Syr. Papav. errat. q. f. ut f. Haustus, ad usum predictum, vel

℞ Aq. Peoniæ Compt. ꝑss. Cerasor. Nigr. ꝑij. Syr. Gariph. ꝑij. f. Haustus ad usum prædictum, vel.

℞ Aq. Epidem. ꝑi. Lactis alex. ꝑij. Syr. Papaveris errat. ꝑij. f. Haustus ad usum predictum.

This Bolus likewise may be varied according to the Symptoms or Patients strength, or those who cannot take it made into a Draught in the following manner.

℞ Pil. paciff. *Mathæi* gr. vi. Croci pul. gr. v. Aq. Theriac. Lactis ā ꝑss. Syr. Papav. errat. ꝑij. m. f. Haust. Sumend. ut prescribitur de Bolo precedente.

But in this Form the *Camphrie* 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. paciffic. 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 stangnation, and giving too great an insensibility

bility to the Fibres. And common Experience teaches us that in *Asthmas*, 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 remembered what hath been said of the great subtilty of the gouty Matter, and how far it gets into the small Threads and Fibres; now by this Means it lyes out of the Reach of any but the most subtile 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 *Catbar-tick* Qualities, and changed into *Sudorificks*. *Calomel*, and even *Tubith Mineral*, (I am informed by the Tryers, and those of undoubted Veracity, tho' I never yet used it my self,) 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 Fart 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

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 sheath 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 Work-manship, 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 essential Oils indeed of Aromaick Plants bear some resemblance hereunto, but they are neither so subtile by far, nor so tollerable to the Stomach and first Passages; for altho' *this* gives a great Heat at taking, *they* are altogether intollerable, unless in the smallest Quanties imaginable. There are many other Considerations to be suggested in favour of this Remedy, or Remedies of like kind; but I must leave

leave them to the Observations and Experience of Practice, which produces abundance of Instances to its Advantage, both as a powerful Sudorifick, and useful Assilant with Opiates to assuage 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 it self 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 Fetus's are, the more the Part must be kept moistened with unctious 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 Unctious 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. Foenugrec. ℥i Ungt. Dialth. ol. Cham.
 ā ℥ss m. f. Cataplasma. Parti affect. applicandum.

Or where a Constitution is more inclined to Corpulency and Viscidity, and the Fibres can bear a stronger Stimulus, the following may be used to better Advantage.

℞. Fic. no. vj separ. in Pulp. coct. ℥i saponis Nigr. ℥ss Mellis ℥iij Camphoræ ℥i sem. Foenugrec. pulv. ℥ss Ungt. Martiat ℥ss m. f. Cataplasma. parti applicandum.

A few Grains of *Opium* may be joined with Topicks of this kind where the Pain is extreamly acute, and the *Stimulus* likely to be too sharp: But how-

however all Applications of this Nature are to be avoided unless in greivous Exigencies, where the Constitution and digestive Powers are too feeble to bring the Matter to a narrow Compass, and help it through the Skin, or attenuate it enough to wash it back with the reflux Current; and detatch it off by larger Outlets.

These Cataplasms may sometime be taken off and the part fomented with hot Flannels heated in somewhat like this.

℞ Fol. Hyperic. Mj Flor Chamæmeli, samb. a Mfs Baccar. Lauri ꝑi Coq. in aq. Fontan. q. f. ad Col. ℥ij cui adde spr. Juniper ꝑi Aq. Regin. Hungar. ꝑss, m. f. For. ad usum predict.

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 dislodgement and Extirpation 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 so 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 great Skill and Attention. For if the returning gouty Humour be disturbed too much in its natural Tendencies by Medicines, it may be diverted

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 Fitt, 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 Conjunction then; when the morbid Matter is in float with the common Mass, so much as can be detached 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* sweetned with *Syrup of Marsh-mallows*, and the Decoction for the *Syrup of Marsh-mallows* it self 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 Catharticks 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 disperse with; thence Cholicks and spasms of the worst kind do sometimes ensue: The only Guide therefore in this Affair is from the Patients 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

this way, as I have 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 intollerably 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 *Catharticks*, and therefore much better by warm *Cardiacks* and Astringents to keep such an Enemy further off, and in the Extremities, although never so tormenting there, until it has obtain'd dispositions more suitable to bring it through 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 although 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

ing, and not sufficiently settled upon a Part suited for their Lodgement 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 one Case they are carefully to be avoided, when the Tendencies of the peccant Humours, are towards the Bowels and solicit Ejection 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 Opiate and Cardiacs will turn them again into the Habit, and greatly prolong and aggravate the Fit; and this Mistake I have more than once fallen into my self; 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 through the Bowels, I have checked that Discharge and renewed the Fit, which might in all probability quite spend it self 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 Patients 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 Lodgement upon the Extremities, or its Ejection at any convenient Outlet.

Having thus gone through the general Rules of Management in a Fit of the *Gout*, it remains only to learn how to order an Arthritic 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 subtracting from that Vigour by a contrary Management, so that a Person shall not have the *Gout*, will endanger worse Inconveniencies; wherefore the Nicety in this Case is as much as can be, to keep between the Extreams, 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 OEconomy, 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 solicits the finer Matter through the Skin, and the latter

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 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 *Gallicia*, 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 mellowed by Age so that their Tarter seems to be rotten as it were in them, provided they are yet found 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 through 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 writing of both abounding with divers Instances of indurated Tu-

mours 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 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 kept 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 Extremes 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

stantly 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 subtle *Sulphur*, and how far such a Mixture with the rigid Asperities of the gouty Humours will be of service, may be easily conceived from what hath been already observed about *Campfire*; although 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-mentioned 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 *Earth-worms*, *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 Assistan-ces 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 Reaccumulation 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 through 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 Ejection by the common strainers of the Body before their Accumulation in Quantity enough either to make or require a Fit.



E S S A Y V.

Of the KINGS-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

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; tho' 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, up on the Declension of the natural strength; so this Disease seems owing to a hot sharp Humour propagated a *Semine* from the Parent, in the first Formation discovering it self 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 OEconomy 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 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 *Fetus* 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 it self in a very troublesome, if not a very mischievous manner;

manner ; as the Circumstances of Life, and strength of the Constitution encourage or obstruct its Exertion, and the peculiar Configuration of the Glands favour or resist its accumulation and Lodgement : And that in the Case immediately under Enquiry, it chiefly shews it self 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 tough 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 demonstrati- on ; 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

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 Conditions of Living, that gives to the Mass of Humours an uncommon Heat and Sharpness, which in time shall fix upon the same Parts, inflame and ulcerate them in the same Manner, as that derived from a distempred *Semex*. 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 it self, 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 of infecting others, tho' it was generated *de Novo* of it self.

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
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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 commons 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 *official Alterants*, without success, that have afterwards been conquered by means seemingly much slighter; such as the *Millepedes* and the common antiscorbutick 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 *Kings-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

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 of 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 through 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 Origen, 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 wash off with the Urine, should add to the Necessity of detaching them by some other outlet, and load some excretory

secretory 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 serious 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 Ejection; 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 crowded 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 through 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 *Optthalmia*, 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, when soon again
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the *Ophthalmia* 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 *Optalmia*, 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 Salvations 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 endeavours 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 through them, without Obstruction, Erosion, and Lodgement upon the Surface; for in a natural State even that has some Degree of sharpness. Here then the Fleth-bruth, 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 Lodgement, but

but also helps to restore and preserve the natural Texture of these Glands, so as to be afterwards better fitted for their Offices.

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 Broths, Sallads, and ordinary Food, as well as in medicinal Prescriptions.



ESSAY. VII.

Of VENERAL 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 *Gonorrhæa'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 Dablers in wickedness and *Mercury* to weaken the Effects of the original Taint, but they rather exhaust the Vessels of their natural Balsamick

Humick Moisture, and give Room for a more speedy Derivation of the distempered Matter into the Habit, besides the Damage they bring upon the Solids, by weakening and overstraining their Springs.

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 my self 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 poxed that have had no one real Symptom belonging to it, nor have never had so much as a simple *Gonorhea*.

But to return, where this Infection is just received and appears in a *Gonorrhæa* only, a patient use of *Emollients* with *Rhubarb* at proper Intervals will seldom fail: But if the infected Matter encreases much, and especially in its worst Qualities, Mercurials will then do more Good as *Alterants* than strong *Cartbarticks*, and the *Ethiops* with terebinthinous Mixtures

Mixtures will hardly ever fail; but what may most certainly be relyed 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 Poison or the distempered 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 *Specificks* 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 weakened 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 fore-mentioned 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

those which are gross and bare enough to stimulate in the larger Passages 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 *Campfire*. But besides the Advantage from *Mercurials* so managed, there will also result this Benefit from the *Campfire* it self, of softening and volatilizing the acrimonious Salts that give the Disease its Origin; and the frequent repetitions of *Campfire* with common Aromaticks, and sudorificks, without *Mercury*, at proper Intervals, hardly 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 Depredations 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 *Catharticks* 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 Tormenter; 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

riations so frequently necessary, that a careful and judicious Physician only can be trusted to suit them to the several Exigencies that may occur in Practice. And as here I would by no means be thought to encourage either Empiricks, or Patients themselves to medle 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.

E I N I S.



