

**A treatise on the powers of medicines / by the late learned Herman Boerhaave ... translated from the most correct Latin edition, by John Martyn.**

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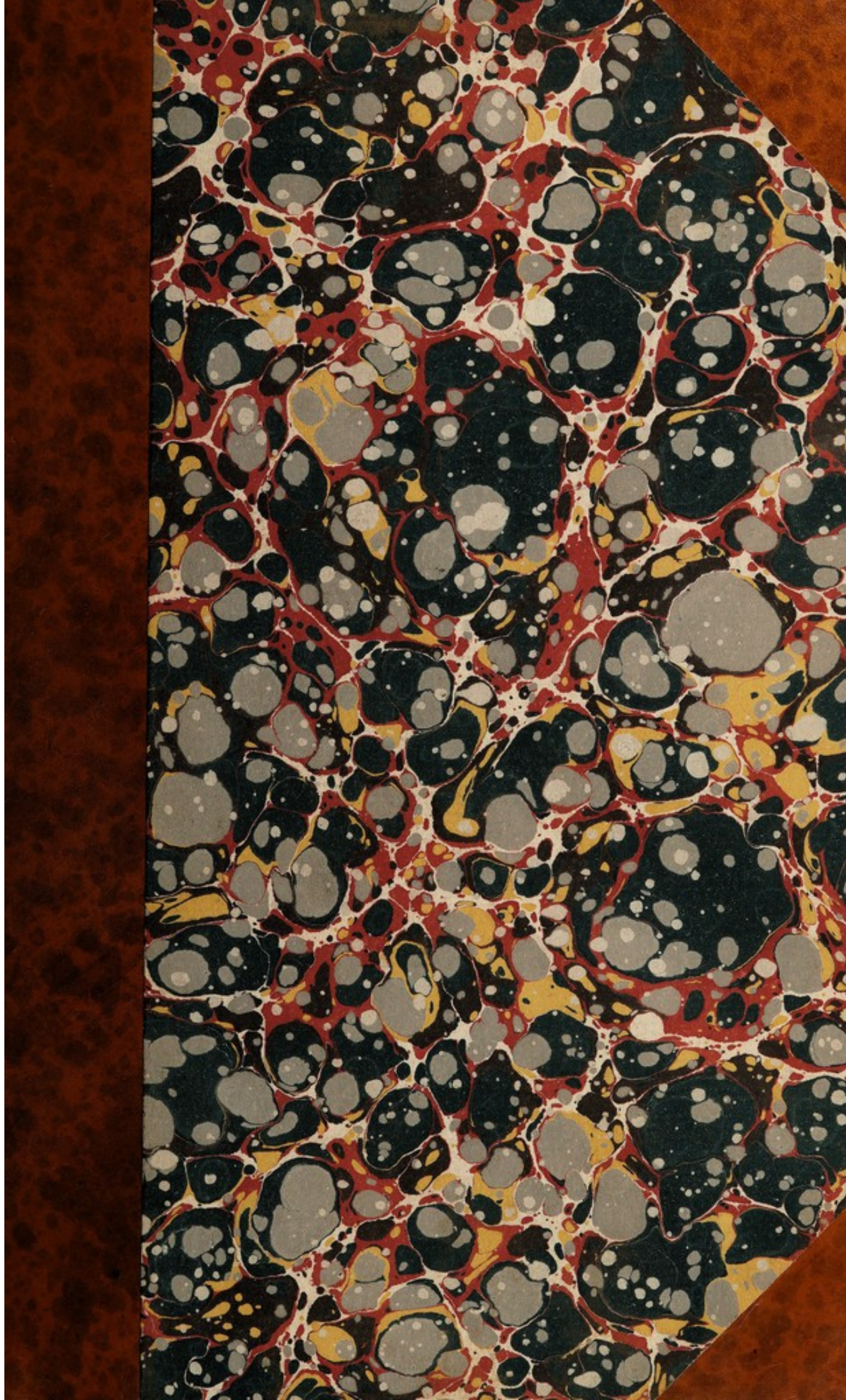
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*BOERHAAVE'S*  
TREATISE  
ON THE  
POWERS  
OF  
MEDICINES.



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John Chebwoole

42 133

A  
TREATISE  
ON THE  
POWERS  
OF  
MEDICINES,

By the late Learned

*Herman Boerhaave,*

Doctor of Philosophy and Physic,

AND

Professor of Physic, Botany, and Chemistry in the  
University of *Leyden*.

Translated from the most correct *Latin* Edition,

By *JOHN MARTYN,*

Fellow of the *Royal Society*.

AND

Professor of Botany in the University of *Cambridge*

L O N D O N:

Printed for JOHN WILCOX, at *Virgil's-Head*, opposite  
the *New-Church*, in the *Strand*, and JAMES HODGES,  
at the *Looking-Glass*, on *London-Bridge*, 1740.



THE ARTS

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# THE PREFACE.



NEED not trouble the Reader with an account of the AUTHOR of the ensuing Treatise. His extraordinary Abilities in every part of physical knowledge, are so well known, that it will be a sufficient recommendation of this Work, to inform the Public that it was dictated by the learned BOERHAAVE. Treatises on the MATERIA MEDICA are sufficiently numerous. They are generally filled with the names and reputed virtues of a great variety of Medicines: and these are handed from one to another, without ever making a strict and scrupulous inquiry into the foundation on which these characters are built. Hence the Practice of Physic has been embarrassed with a vast croud of insignificant trifles, which have been recommended from age to age, on no better authority



than the dreams of old Women, or the idle fancies of ignorant Monks.

BUT our Author has trodden in a far different path: and has not ascribed any virtues to the Medicines which he has mentioned without their being warranted by a just mechanical reasoning. He begins with explaining the Elements of all Bodies, and the Nature of both Solids and Fluids; he then proceeds to shew the structure of a Human Body in health, and the state of one that is diseased. Then he considers the Solids and Fluids of our Bodies in general, and the nature of our Vessels; in which the Reader will find, with no less surprize than pleasure, into what minute parts our Vessels are almost infinitely divided and sub-divided. Then follows the consideration of Acrid and Viscid Particles, the nature of our Fluids, especially of the Blood, the faults of the whole mass of Fluids considered together, the Gravity of the Blood and the Projectile Motion. Having laid this solid foundation, he then comes to speak of Medicines in general, where he shews the insufficiency of the distribution made by GALEN, and proves that the most natural way of dividing Medicines is into those which act on the *Solids*, those which act on the *Fluids*, and those which act on both *Solids* and *Fluids* together.

THAT the Reader may have a clearer knowledge of the Method which the learned BOERHAAVE has used in the classing of Medicines,



## The PREFACE.

dicines, I have thought proper to draw his whole method into the following SYNOPTICAL TABLE.

The Operation of the Medicines is on the

SOLIDS, and these are either

*Stimulating*

*Contracting*

*Relaxing*

*Constipating*, under which are contained,

*Emplastics,*

*Illinents,*

*Obstruents,*

*Specific Chirurgical*, such as

*Sarcotics,* and

*Cicatrifers.*

*Solvents*, which are sub-divided into

*Reddeners,*

*Vesicatories,*

*Escharotics,*

*Corroders,*

*Caustics,*

*Putrefiers,*

FLUIDS, and these are either,

*Attenuants,*

*Condensants,* or *Incrassants,*

*Causers of Acrimony,*

*Demulcents,*

*Immutants,*

*Diluents,*

*Coagulaters,*

*Movers,*

*Sistents.*



*SOLIDS* and *FLUIDS* ; and these divided  
into five Classes.

I. Of Medicines promoting some peculiar Se-  
cretion : these are,

{ *Generators of Milk,*  
{ *Generators of Seed.*

II. Of Medicines promoting Excretions in any  
part of our Body : these are,

{ *Movers of Pblegm,* under which are con-  
tained,

{ *Errhines,*  
{ *Sialogogues,*

*Expectorants,*

*Purgatives,* under which head are contain'd

{ *Eccoprotics,* which are either

{ *Lubricaters,*  
{ *Diluters,*  
{ *Lenitives,*

*Pblegmagogues,*

*Cholagogues,*

*Hydragogues,*

*Melanagogues*

*Emetics or Vomitories,*

*Diuretics,*

*Sudorifics,*

*Diaphoretics,*

*Uterines,* under which are contained

{ *Emmenagogues,*  
{ *Aristolockics,*  
{ *Ecboics.*

III. Of some other Medicines acting on the  
*Solids* and *Fluids* together ; these are,

{ *Aperients,*

*Discutients,*

*Emollients,*

*Astringents,*

*Detergens*



*Detergents,*  
*Emundants,*  
*Erodents,*  
*Heaters,*  
*Coolers,*  
*Drawers,*  
*Repellers,*  
*Suppuraters,*  
*Ripeners.*

IV. Of *Topical Medicines* : these are;

*Cephalics,*  
*Ophthalmics,*  
*Odontalgics,*  
*Otalgics,*  
*Stomatics,*  
*Arteriacs,*  
*Thoracics or Pulmonics,*  
*Cardiacs or Cordials,*  
*Carminatives,*  
*Anthelminthics,*  
*Anodynes* ; which are either

*Paregorics,*  
*Hypnotics,*  
*Narcotics,*  
*Nepenthes.*

V. Of *Antidotes*,

THIS method is not indeed so perfect as might be wished, nor is the order of the Chapters quite consistent with the disposition made in the Chapter of the Classes of Medicines, *page 87, & seq.* This little inconsistency is without doubt owing to some inaccuracy of those who have transcribed these Lectures, which however are upon the whole, far more compleat, than any of the other Pieces, which



have been published without the sanction of our learned AUTHOR's own name.

THE first edition of this Book in *Latin*, and another printed in *English* were both so full of errors, that they were quite unworthy of the great name which was prefixed to them. They were however both received by the Public in such a manner, as shews the great regard which is paid to whatsoever may be supposed to be the Off-spring of BOERHAAVE. A learned Physician, who had been the Disciple of this excellent AUTHOR, having seen with concern the injury that was done his Master, in publishing such mutilated and incoherent Discourses under his name, undertook to correct the spurious *Latin* Edition, from a more exact Copy, which he had by him in Manuscript. This corrected Edition was printed at *Paris* in 1727, and is that from which the present translation was taken. The Notes were added by the *Latin* Editor, and some few, which are distinguished by their being inclosed between Crotchets [ ], have been inserted by the Translator.

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E R R A.



# ERRATA.

- Page 59. Line 11. read *orifices.*  
 60. 15. *efficacious.*  
 67. 25. 2.  
 92. 1. *catbarteria.*  
 121. 7. *particles.*  
 135. 14, 15. *absorb.*  
 181 in the running title, read, *Of Eccoprotics,*  
 196 *Pblegmagogues.*  
 209. *Cbulagogues.*  
 245. Line 33. read *condemns.*  
 272. In the running Title, read *Emollients.*  
 288. Line antepenult. read *Pimpernel.*





# BOERHAAVE's TREATISE

ON THE  
Power of MEDICINES.

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PROLEGOMENA.

CHAP. I.

*Of the Elements of Bodies, or of the Nature of  
Solids and Fluids in general.*

I.



LEMENTS of BODIES are defined by Philosophers, to be *the most simple corpuscles of which other Bodies are composed, and into which they may again be resolved:* and thus we understand them to mean *the firm original of every Body, and the Stamina which by their conjunction constitute a Body.*

2. IF the cohesion or hardness of any Body is so great as to exceed all the known power of Motion, then it is called an *Atom, or corporeal Element.*

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WE learn from Natural Philosophy, that every Body is extended, impenetrable, figurable, moveable, and that all compound Bodies cohere with some endeavour, which more or less resists a separation; which endeavour is called *hardness*: now if that cohesion, endeavour, or *force*, which NEWTON calls attractive, is so great in those *Stamina*, of which Bodies are composed, that there is no motion in the nature of things, which is not exceeded by the resistance of the cohesion of these *Stamina*, then those Particles are called *Atoms*, from the Greek privative Particle  $\alpha$  and  $\tau\omicron\mu\eta$ , *division*: hence an *Atom* is properly a part which can be no farther divided, or is indivisible. Now these are the *Atoms*, of which DEMOCRITUS formerly asserted that all Bodies consist; who well knew that there is no Particle in Nature, which is not capable of mathematical division: but what he meant was that if a *force* uniting the parts of a Body is greater than any force which can be impressed on the Body, this union or cohesion must necessarily be insuperable, as not being to be destroyed by any force: whence he gave the name of *Atoms* to any Particles that were so constituted.

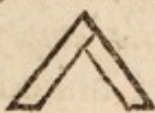
3. IT has been questioned whether there are any such corpuscles in Nature? To determine which it must be considered, first, that altho' very many Bodies are changed as to their *Form*, yet none are changed in their *Essence*; therefore those which compose the *Essence* of things, must so cohere, that there may be no *force* in Nature, which being applied to the Particles constituting the *Essence* of Bodies, may be able to exceed their cohesion; whence it manifestly follows, that this Particle or *Atom* can by no means be changed: for if these corpuscles should begin to be changed, and divided into parts, all Nature must go to ruin and be utterly destroyed; for instance, if  
the



the parts of Water were so changeable, as to be capable of becoming parts of Fire, who does not see that the whole face of things would be changed, and that all things would be destroyed by a superabundance of Fire? Therefore all Nature requires that the *Principles*, of which Bodies consist, should be immutable: for if it had not been so, they could not have remained the same for so many ages; but we see that the *Essence* of Bodies has never been changed, because the *Stamina* or *Elements* of them, as has been already observed, are immutable; not that they cannot be *mathematically* divided, for this may be done infinitely, but that no *force* can separate their parts from each other; and this makes the Stability of Nature. Now the cause of this is the very order of Nature, constituted by GOD in such a manner, that the cause of cohesion should always be the same.

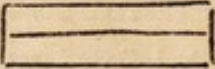
4. IF an *Atom*, and a *Body consisting of Atoms*, has it's coherent parts so united, that there be no empty Space between them, then that *Atom*, and that Body will be called a *perfect Solid*. But a *Solid is a Body, whose parts cohere in such a manner, that, one part being moved, the rest are compelled to be moved also at the same time.*

It has been a question long controverted amongst the Learned, what Idea ought to be given of a *Solid*? All the PERIPATETICKS and the CARTESIANS say, that *Extension is the Idea of a Solid*; but it may easily be shewn, that it is not so to be understood. For we have said that an *Atom* consists of other parts cohering so closely, that they cannot be separated; but that *Atom* will not yet be a *perfect Solid*, unless something farther be added to this definition; for if GOD had joined two *solid Particles* together after this manner,



both these Particles indeed, as to make



make one *Atom*, whose parts where they touch would cohere so closely, that no *force* could separate them ; but yet it would not be a *perfectly solid Atom*, because there would be a *Space* between both the parts of it : but if they had been so united, as to leave no intermediate *Void*, as thus, 

then that *Atom* would have been *perfectly solid*, as having no *Space* in it, where another Body could be received and contained. Hence therefore, a *perfectly solid Body* is that, which consists of *Atoms* or *indivisible Particles*, joined in such a manner as to have no *Void* between them. There is yet another sort of *perfectly solid Body*, which is composed of the *perfect Solids* already mentioned, without any *Space* also between the parts which constitute the whole : and if to these two sorts of *perfect Solids* we add the *Atom*, which consists of mutually united parts, without any intermediate *Space*, then we shall have three sorts of *perfectly solid Bodies*.

5. Now if any one should ask, how we are able to measure a *perfectly solid Body* ? we answer, *by the measure of the Space*. Let us suppose, for instance, that we had a *Space*, which is exactly one cubic Foot ; and that this *Space* is afterwards filled by a Body exactly of the same bulk and figure, that is, of one cubic Foot, without any *Void* at all in it, and therefore a *perfectly solid Body* : now therefore, since this Body exactly fills that *Space*, the measure of it will also be the measure of the *Space* in which it is contained ; for there will be just such a quantity of impenetrable *Matter*, as there is of *Space*.

6. If an *Atom*, or a *Body* composed of *Atoms*, has it's impenetrable parts joined in such a manner, as to leave *little empty Spaces*, or such as are not filled with other united *Matter*, between the connected Parts, then it is called a *porous Body*.

7. Now



7. Now in order to know the measure of a *porous* Body, let us suppose for instance, that a *perfectly solid* mass of Gold occupies the *Space* of one cubic Foot, and then that the Gold, the measure of which according to the hypothesis is the capacity of that cubic Foot, is taken away, and that so much Water is put in it's room, as will exactly fill the *Space*; then if two third parts of this Water are *pores*, one third Part of the cubic Foot will be the measure of the corporeal substance of that Water: for the remainder will be esteemed as so much *void Space*, and not Body, with regard to *perfectly solid* Matter. This is of great service in tracing out the *Powers* of Bodies; for the *Powers* are found out by the *quantity* of Matter, and this *quantity* is known by the number and magnitude of the *Pores*; because they are to be subtracted from the rest of the corporeal bulk; as conducing nothing to the *Powers* of Bodies, because they are only *empty Spaces*: but that alone gives the quantity of Matter contained in it, which fills a *Space* exclusive of the *Pores*: this therefore is the measure of *Corporeity*.

8. HENCE we see that, if the assertion of ARISTOTLE and DES CARTES was true, that *Extension is the Idea of a Solid*, it would follow that corporeal substance is every where the same: and this would be true indeed if there was no such thing in Nature as a *Vacuum* or *Void*; for then Water and Gold would be equally heavy, and have equal powers, as being equally *perfect Solids*, but the great NEWTON has evidently shewn this to be false by the most evident mathematical demonstrations, in his Experiments concerning *Pendulums*. We have seen already that an *Atom* may be *perfectly solid*, and *imperfectly solid*, or *porous*; and therefore that Bodies composed of them might be both *perfectly solid* and *porous*; and that Bodies may be called *porous* in two  

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senses,



senses, namely *simply porous*, when nothing is contained in the Pores, and *porous* with internal Matter fluctuating in the Pores; when, as we said, they have only Pores, or penetrable *Spaces*, not filled up, that is, are *philosophical Vacuums*. Hence also it has appeared, that when we would measure Bodies according to their Powers, not Geometrically but Physically, we must distinguish between *Moles* or *Bulk* and *corporeal Mass*: for *Bulk* is the whole Extension of a Body, which in some places may be *perfectly solid*, in others *void*. Whence it follows, that if a Body is *perfectly solid*, the measure of it's *Bulk*, and of the *Space* in which it is contained, is the measure of it's *Substance*; but if there are *void* places in the *Bulk*, that then the measure must be taken by subtracting the *Voids*: which will appear more clearly from what is to follow.

### Of the Specific Weight of Bodies.

I. THOSE two great Men NEWTON and HUYGENS, have both discovered by different ways of reasoning, that *the corporeal Matter found in any Space is in proportion to the weight of the Bulk*. Which Proposition is no less useful than elegant, in *mechanically* discovering the *Powers* of Bodies. I have already explained, what is meant by the Bulk or Mass of a Body, and what by Quantity or corporeal Substance. Now Sir ISAAC NEWTON has discovered that what is received between the *Pores*, and does not cohere, adds nothing to the *force* of a Body, but is just as if it was *void*, with regard to the acting *Powers*; which he clearly deduces from Experiments about *Pendulums*. See the beginning of his learned Treatise *de Principiis Mathematicis Philosophiæ Naturalis*, and also the third Part, where he mentions the Experiments concerning a *Box*, weighed *full* and



and empty. Consult HUYGENS also concerning this *Proposition* in his *Treatise de la Lumiere, & de la Pesanteur*. Now what these two great Men have founded on their Experiments, I shall assume for a Principle; that *the Forces or Powers of Bodies are as their Weights*: for if in one Body, the rest being equal, the *Forces* are double, there will be also double the quantity of impenetrable *Matter* in it.

2. THIS being supposed, we may know the quantity of true impenetrable Substance contained in a certain place, by weighing the Bulk, as was said before; but we do not yet know exactly how this is, because we are not acquainted with any *perfect Solid*; for if we had any such *Solid*, we might also know the *Powers* of Bodies, so far as they depend thereon: therefore *Weight* is only a relative knowledge with regard to us. But if we could know exactly that Gold contained precisely such a quantity of *perfectly solid Matter*, then we should also weigh a cubic Foot of Water, whence we should immediately know that, as Water has so much less *Weight* than Gold, there must therefore be so much more *Void* in it; and so of other Natural Bodies; and thus a true general doctrine of Hydrostaticks, as well as of Mechanicks, might be formed.

### Of the Difference of Bodies.

1. WE have already assumed as *Physical Principles* that Matter is extended, impenetrable, figurable, and infinitely divisible, as it consists of infinite *nothings* in a manner, which cohere by a certain *force*, and are called *Atoms*; and that all these divided Particles have a certain gravity which perfectly agrees with the whole Mass, or Aggregate of *Atoms*: hence therefore it follows that some of these properties may be different in Bodies. Now therefore we say


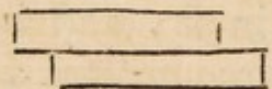


that *the difference of a Body arises from the Idea of it's Nature*, which difference is threefold.

2. THE first difference arises from the difference of the *Atom* it's self: for, 1. One *Atom* is not always of the same bigness with another, seeing this is not necessary to constitute a *Body*; 2. One *Atom* may be more or less *solid* than another; seeing one may be *perfectly solid*, and another, tho' composed of indivisible *Particles*, may have *Voids* in it, as was shewn before; 3. One *Atom* may differ from another both in size and figure.

3. THE second Variety consists in this, that one *Atom* may be united after a different manner with another, and one *Body* composed of *aggregated Atoms* with another like it, by a greater or less degree of cohesion: and this cohesion cannot be deduced from *elemented* things, for they have an essential property not depending on external causes.

4. THE third difference arises from the various manner of uniting one *Atom* with another, and one *Body* composed of *Atoms* with another like it; for example, two *Atoms* may be united after this man-

ner,  and thus,  and so

leave more or less *Space* between their parts, &c. Hence arises the difference of *Porosity* and *Density*, as we have seen already.

5. Now therefore from what has been said it appears, that in considering the Nature of *corporeal Elements*, the Natural Philosopher, and therefore the Physician, ought to be a perfect master of these *nine heads*, which are fundamental and necessary to be known.

1. THE *Extension* of a *Body*.

2. IT'S *Divisibility*.

3. IT'S *Impenetrability*.

4. IT'S



4. IT'S *Hardness*, or greater or less cohesion of it's constituent parts.

5. THE *Nature* of an *Atom*, or *Molecula*, which is indivisible by any force.

6. ABSOLUTE *Solidity* and *Density*.

7. POROSITY and *Rarity*.

8. THE *Measuring* of a *Perfect* or *Imperfect Solid*.

9. THE *Difference* of *Bodies*, which is threefold, and is deduced from the doctrine of *Elements*.

THESE are true physical Principles, and derived from the nature of things. But having now considered *solid* Bodies in general, it remains that I should say something concerning the nature of *Fluids*.

#### Of the nature of *Fluids*.

1. A *Fluid* is that whole congeries of *Bodies*, whose *Molecule* are most minute, and escape the sense, and cohere with an easily mutable endeavour, and therefore give way to the slightest touch, and rush against each other. The definition of a *Solid*, or as CELSUS calls it, a *Consistent*, being that it does not easily suffer it's constituent parts to be separated, and that, when any force is impressed on it, it suffers it's whole bulk to be moved, rather than that part to be separated on which the force is impressed. Hence the definition of a *Fluid* is exactly the contrary, denying what was affirmed in the other.

2. BUT every part of a *Fluid* is one *Body*, for that part which coheres very little or not at all with another, is *one* part; therefore what was said before of *one* Body with regard to *Solids*, is true also with regard to those Bodies which constitute *Fluids*; and therefore those general premises may be here again admitted.

3. BUT we also consider three things in these *Molecules* as they compose a *Fluid*: 1. The different  
bulk



*bulk of the parts*; for one *Fluid* has greater or smaller parts than another: 2. The *various figure*; for the parts of one *Fluid* are differently figured from those of another: 3. The *dissimilar cohesion* or *endeavour*; for the parts of one *Fluid* cohere with a greater or less endeavour than those of another.

4. ON these *three* different heads depends all the variety of *Fluids*: for hence a *thin Fluid* is that whose parts are the smallest, and scarce cohere; and a *viscous Fluid* is that whose parts cohere with a greater endeavour than in other *Fluids*, and so of the rest.


5. THIS being supposed, we see that the properties which the Mathematicians have ascribed to *Fluids*, are not such as are peculiar to Water, or to Oil, but such as are common to all. Now the Masters of *Hydrostatics*, in order to explain the nature of *Fluids*, have assumed, 1. That *Fluids* consist of some very small particles; 2. That these particles easily *slide* one over another, or flow; 3. That they are heavy: and from these *three* assumptions they have deduced the true nature of a corporeal Mass consisting of an aggregate of such *Molecule*. - This is *Hydrostatics*, a science necessary to be known, not only by Natural Philosophers, but also by Physicians; because almost all physical changes happen by the help of *Fluids*: for thus the nourishment and increase of Animals, Vegetables, and Minerals is formed by Air, Water, and dissolved Salts; all which are *fluid*.

THIS is what I thought necessary to be premised concerning the *nature of Solids and Fluids in general*; which naturally leads us to consider the *Human Body*; and from thence we shall proceed to the *Powers* which *Medicines* exert upon it.



C H A P. II.

Of the Structure of a Body in Health.

1.  OUR Body consists of two parts, *Solids* and *Fluids*.

2. THE Solids contain the Fluids, and are so united together, that the connexion of every part with the rest, either mediately or immediately, may easily be shewn. A Vein and a Lymphatick cohere to an Artery by means of a Gland, which arises from the Artery; all the Arteries grow to the *Aorta*, which is inserted into the Heart; the Heart is united to the Brain by means of the Nerves and ascending Arteries: the Brain adheres to the *Cerebellum*, and that to the spinal Marrow, &c.

3. ALL the Canals of the Body some way or other communicate with each Ventricle of the Heart.

4. THE left Ventricle of the Heart communicates with the great Artery, which is so divided and spread, that some portion of it reaches to every point of the Body: by which means there is a Cavity continued to every point of the Body from the Heart.

5. EVERY *hollow* point of the Body can transmit the liquor contained in it towards the right Ventricle of the Heart, except the *Vessels* which are called *Secretory* or rather *Excretory*; such are, ( $\alpha$ ) the *Sudorifick* Vessels, ( $\beta$ ) the Vessels for the *Sanctorian Perspiration*, ( $\gamma$ ) the Vessels which continually moisten the Eyes, ( $\delta$ ) the *Mucous* Vessels, ( $\epsilon$ ) the *Salival* Vessels, ( $\zeta$ ) the Vessels of the Gullet, *Stomach*, and *Intestines*, ( $\eta$ ) the *Urinary* Vessels, ( $\theta$ ) the *Seminal* Vessels.

6. ALL the Canals and Receptacles of the Body contain some certain Liquids, provided the Body



dy be in health: seeing therefore the Canals communicate with each other, the Liquids must also necessarily communicate: hence the agitation which is excited is one part of the Liquids, may be communicated to all the rest.

7. ALL the Liquids of the Body, except such as are excrementitious, return to the Heart.

8. As long as these Liquids are regularly moved within their Canals, so long the Man is in *health*; when that motion is irregular, or stops in any part, the Man is *sick*; but when this motion entirely ceases in every part, *death* ensues.

9. THEREFORE *Health* consists in an equal motion of the Fluids, and an equal resistance of the Solids in every part. The Fluids are said to be equally moved, when they make no greater *impetus* on one part than on another. The resistance of the Solids is said to be equal, when they press the Liquids equally on every side; so as to cause no sensation of Pain.

### C H A P. III.

#### *Of the state of an Injured, or Morbid Body.*

1. FROM what has been said it appears that a diseased or *morbid State* is that condition of the Solids and Fluids in which, by any cause, this *equal motion* is in any place disturbed, interrupted, or stopt; and that *death* is the entire cessation of that *motion* every where.

2. To heal therefore is, to take away a *disease* from the Body; that is, to remove and expell the causes which hinder the *equal motion* or transflux.

3. MEDICINES are those *mechanical* instruments, by means of which an Artist may remove the causes  
by



by which the *balance* is taken away, and restore it.

4. A MEDICINE therefore supposes a *flowing* of the Humours or Liquids, and therefore acts only on a living Body, not on one which is dead, and deprived of this *flowing*.

5. As a Medicine supposes the Body to be in Life, which depends on a passage of the Fluids thro' the Solids, it is manifest, that it acts on the Liquids, or on the Solids yet in *motion*.

6. THEREFORE a Medicine does not act on a *Carcass*.

7. EVERY Medicine produces it's effects *mechanically*, namely, by the power of its solidity, bulk, figure, and motion of it's particles.

8. THE effect of a *Mechanical* Action is the changing of the figure, motion and bulk of a Body.

9. HENCE in the cure of *diseases*, these instruments, or medicines do not act immediately, but mediately.

10. As the good or bad effect of the action depends altogether on the bulk, motion and figure of the acting particles, the destruction of the *balance* just now mentioned must be deduced from the Solids.

11. THE *equability of flowing* in the Solids may be destroyed three ways: ( $\alpha$ ) by the taking away of the Liquids contained in the Solids; ( $\beta$ ) by the *impetus* and too great force of the Liquids upon the surface of the Solids internally, from an external cause pressing them, or an internal cause obstructing them; ( $\gamma$ ) by too great an increase of the contractile force of the Solid.



## C H A P. IV.

*Of the Solids and Fluids of our Body in general.*

1. **H**IPPOCRATES (*Lib. vi. Epidem. Sect. 8.*) acknowledges three different principles constituting the whole Human Body : 1. τὰ ἰσχυρὰ, that is, the Containing and Compelling ; these parts are sometimes called *firm* or *coherent*, and most generally *Solids* : 2. τὰ ἐνισχόμενα, that is, the Contained ; and these are now called *Fluids* or *Liquids*, and in Latin *Humores* or *Liquores* : 3. τὰ ἐνρμῶντα, or, as it is in the text, simply ὀρμῶντα, that is, making an *impetus* ; by which I believe the Author meant that which is made by the Human Mind, when it designs to move any part of the Body, but how this *impetus* is made we do not know : And it does not seem probable that HIPPOCRATES meant by this word the *animal Spirits*, as the Scholiasts interpret him ; but that he only intended to signify that our Mind does not act on our Solids and Fluids, or ἰσχυρὰ, and ἐνισχόμενα, *mechanically*, but after an unknown manner. Now as those which HIPPOCRATES calls τὰ ὀρμῶντα do not make much to our purpose in this treatise, we shall therefore only consider the *nature of the Solids and Fluids of the Human Body in general.*

2. WE have given a sufficiently clear general idea of the Solid and Fluid parts in the first Chapter ; but those parts which are called *Solids* with regard to all Bodies, are properly called *firm*, as I said before, with regard to our Body : and it was ob-

served



served at the beginning, that all Bodies are composed of some *firm* and *immutable Stamina*, which by their conjunction constitute a Body; and these we have called *Elements* of *Bodies*. There are therefore some *first* and *smallest* particles which constitute the *firm* parts of a Human Body: for even the least particle in our Body that we are sensible of, is not one part, but an aggregate of several; we ought therefore to be acquainted with these *Molecule*, if we would have a just knowledge of the nature of our parts.

3. THESE particles are *small corpuscles*, sufficiently similar, very simple, terrestrial, brought by the fluid humours to every secret place, and added to all the firm parts. These are the true *Elements*, of which the Human Body is composed.

I SAY, in the first place, that they are *small corpuscles*, and this appears plainly from *Anatomy*; for every greatest part in our Body is composed of Vessels, the Vessels are composed of Membranes, which being rolled up constitute a *cavity*; these Membranes again consist of Vessels, which forming the Membranes are again composed of Membranes, and those of Vessels till we come to the *last* Vessel, which has a Membrane composed of the *most simple* Fibres, but no longer *hollow* or *vascular*; for otherwise it would not be a *last* Vessel, but those Fibres are mere *solid* filaments, which consist only of mere *solid* and *least* parts, and so united and cohering, as to make a *simple* Membrane: of which see more in the following Chapter. The *Elements* therefore of our Solids are *very small*; but I say moreover that,

2dly, They are *sufficiently similar*, or like. For the Solids of many Animals have been examined by Chemistry, and from those experiments I have plainly discovered, that if a *Bone*, for instance, was deprived of all it's Membranes and all it's Liquids,



quids, and was boiled in Water, till the last that was poured from it, was full as clear and insipid, as when it was poured on, that then the *solid* Fibres of this *Bone* always remained similar or like to each other: the same was verified by experiments on the other parts, as Muscles, &c. And thus also it will always happen, even by the greatest change that can be made in Nature; for if a Bone or Muscle be burnt, these Fibres will not therefore be destroyed but will remain strait and extended, as if they were entire, and will be every where in one and all parts the same; for they are the same, and shew the same appearance of Matter from a Bone, and from an Artery, a Vein, a Muscle, a Hair of the Head, &c. so that what constitutes the *firmness* of our Body is the same every where; which will seem strange to those who have imagined, that each part has it's peculiar firmness, or peculiar matter, according to it's peculiar firmness: for if we consider an Embryo, is not it's Artery in this sense the same as in ourselves? yes surely; for if it is burnt, it will exhibit like Fibres; and a Membrane of an Embryo will yield the same after boiling or burning as a Membrane of an Adult; and from every different part there will always be obtained the same Matter in both subjects. COROLL. I. Therefore that which is *greatest* or *firmest* in the Body is constituted of the very same matter with that which is *smallest* or *least firm*. For a Membrane composed of Lymphatic Vessels, which are the smallest, consists of the same Matter with the greatest and hardest Bone. COROLL. II. Therefore the *Firm* parts of our Body differ only in the greater or less aggestion and composition of the *smallest* corpuscles of which they consist.

HENCE we may now conclude, that the *last Stamina*, of which all our parts, whether greater  
or



Or less, are composed, are not only *very small*, but also *sufficiently similar amongst themselves*.

BUT I say, 3dly, They are *very simple*; for that which in every point of it's Bulk affords the same Matter is said to be the *most simple*, or that is so, of which one part is the same with all the rest of the mass: Now of this kind are all the parts that constitute the Human Body, as we have seen already.

THEN I say, in the fourth place, they are *Terrestrial*, for I do not know any fitter word to express the nature of this *Matter*. For the Chemists have given the name of *Terrestrial Bodies* or *Earths* to those parts which cannot be dissolved either by Fire or Water, but remain unchangeable in them: and they call those Bodies *Saline* or *Salts*, which dissolve both by Fire and Water, and unite again into a sort of stony substance: they give the name of *Oils* or *Sulphurs* to those which are dissolved by the Fire and burnt, but are not voluntarily mingled with Water: they call such *Spirits*, as are capable of being mixed with Water, and burn with Fire: they mean by *Water* a Body, which, if it is concentered, melts with the least Fire, and is caused by it to fly away without smell and taste, &c. But none of these Characters, except that of *Terrestrial* parts, agrees with any of the parts of our Body; for they cannot be dissolved either by Fire or Water: and such are the *last Stamina* of our Fibres; therefore we must necessarily call them *Terrestrial*, because they are most simple, and we find them always the same, alike, and immutable in every part. But the modern Anatomists have said that *the most simple part of the human Body is a Bone*: now in a Bone there are Membranes, Marrow, Blood, Lymph, &c. and if it is deprived of all these, there will remain only, for the *last Stamina*, the *Fibrous* and *Terrestrial* part. Now if any one should say, that



if a Bone be examined by Chemistry, it yields Water, Salt, Oil, and Earth, and therefore that this is the substance of a *Bone*, he would be greatly mistaken: for we see in burying places, that Bones being first dried by the Sun, then moistned with Dew and Rain, and then dried again by the Wind and Sun, still are Bones; but should a Chemist then exert his whole art, he would not be able to extract any Salt or Oil from them; but the substance would remain fix'd, without any Salt and Oil; and yet they were perfect Bones before this Chemical Operation. Hence appears what is the substance or matter of a *Bone*, namely Earth alone, and so of the other parts of the Body. Now if we ask the Anatomists what is a *Vessel*? they will answer, a *Vessel* is a Membrane rolled up in such a manner as to form a conic Canal, and thus is made an arterial Vessel, &c. If we ask them what is a *Membrane*? they must answer from their own *Principles*, it is a Texture of many Vessels, arterial, venal, &c. thro' which Liquids are carried and transude: but to form a just notion of a *Membrane*, we must take away all Fluids from the Definition, and thence it appears that the Matter of a *Membrane*, as well as of a *Bone*, is *Earth* also. But if we burn a *Hair* with the flame of Alchohol or Wine, to avoid any impurity, it's most liquid parts will then be dissipated; and if we afterwards carefully consider it, we shall see that it still coheres outwardly, and stiffly retains it's former figure. Hence it appears that the *last Stamina* of our Body are composed of parts, not dissolvable either by Fire or Water, and therefore merely consisting of *Earth*, joined by an *oily cement*; which alone is destroyed by the Fire, the *solid* parts remaining exactly the same and untouched.



I SAY, in the fifth and last place, that *Those most simple and terrestrial corpuscles are brought and added to the firm parts.* For we know that, how large soever the bulk of our Body may now be, it was exceeding small at it's first formation, and above a thousand times less than a grain of Sand, and has grown to it's present size from so minute an origin; and that all this was brought about by the apposition of the smallest *moleculæ* to those which were already compacted together: for if any Fibre was not to have other parts added to it, it could not become longer, and at the same time have a coherence in it's parts. By such an apposition of particles therefore has our Machine encreased; and thus have all those Vessels been prolonged, increased, and enlarged; and therefore all the other parts also. Seeing therefore all the Vessels must have thus *equally* increased, it follows that the *different* particles must have been applied to each Vessel; which could not otherwise be done, than by bringing those parts along with the Fluid which is carried through the Vessels.

4. Having now considered the *general nature* of the *firm* or *solid* parts of the Human Body, we should now say something concerning the *Fluids*; but because the *general properties* of Liquids have been already explained in the first Chapter, what may be said of our Fluids in this sense may be taken from that place: for in the definition of them we have there said that *Fluids consist of the most minute moleculæ, heaped together, and contiguous without cohesion, which yield to the lightest touch, and rush against each other.* Now these *generals* perfectly agree with all the humours of our Body, as being *common* to all Liquids.

5. BUT now as no *extravasated* Liquor is naturally found in our Machine, it is necessary, that every change of the Fluids must happen in the Vessels or



*hollow* Solids, and that after three manners; 1. By an intestine motion of the Liquids; 2. By a motion from without, or communicated by the sides of the Vessels; 3. By a new mixture of the Liquid.

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## CHAP. V.

### *Of the nature of the Vessels of a Human Body.*

1. **T**HE Solids are of two kinds, either *hollow* or *without any cavity*; the hollow Solids are called *Vessels*. But a *Vessel in general is such a Body as forms a cavity, in which another Body may be contained, and in which for the most part a Fluid is contained.*

2. WE have seen in what went before, that the *last* stable and *firm* Matter, on which the duration of the Solids depends, is merely *Terrestrial*, and also that this Matter being connected and applied constitutes Fibres: for we have seen that a *firm* part, on being burnt, at last yields *solid Fibres*, which are resolved into such *Terrestrial* parts as were just now described: whence it plainly appears, that the Fibres are composed of those parts.

3. WE have seen also, that these Fibres are not *hollow*, but solid and oblong filaments, which being applied to each other are joined and *interwoven* with the other Fibres, and after this manner constitute a Membrane; and then this Membrane being rolled up makes a Hollow, and thus we now have a *smallest* Vessel: in order therefore to gain a just knowledge of our Solids, we must first be acquainted with the Matter of which they consist, and then we must know what these Fibres are of which the  
Vessels



Vessels are composed, as appears from the burning of Solids. But I have given already a sufficiently clear idea of these Fibres, and have said in general that the Fibres united after a certain manner constitute a *simple* Membrane: now this is done in the same manner as we see the filaments of *Flax* being *interwoven* to make linnen cloth; which must therefore now be particularly examined.

4. FIBRES and Membranes which consist of Fibres rolled up, or the *least* of all the small tubes, and also the *greater* Vessels composed of them, which again constitute other Membranes, are fastned together after *three different manners*, and are in a direction either (1) *parallel*, (2) *interwoven*, or (3) *spiral*.

SINCE the *last Terrestrial* Matter, as we have seen, first constitutes Fibres, and these are applied to each other, and compose a *simple* Membrane, and of this *simple* Membrane rolled up is formed a *Vessel*, which is the *first* and *smallest*; if we now take more Vessels of this kind, these being interwoven will constitute a Membrane, not now consisting of Fibres only, but of Vessels; this Membrane being rolled up will make another Vessel; and if we take and *interweave* several Vessels of this kind composed of Membranes, not *fibrous* simply, but *vascular*, we shall form other Membranes, and of these Vessels again, and so on. These Vessels I say, are *interwoven* like linnen or wollen cloth, after *three manners*; ( $\alpha$ ) for some Vessels are *parallel*, and so adhere to each other; ( $\beta$ ) others again run in an *opposite direction* between these *parallel* ones, and cut them at various angles; ( $\gamma$ ) there are others which are *spirally* interwoven and so run among the others. By such an *interwoven* course of the Vessels are formed the *greater* Membranes, and of them the *greater* Vessels are made, of which the *Viscera*, and other parts of the Body are composed.



5. BUT now if the Fibres are applied to each other only by *parallelism*, then the Membrane is most *simple*, both with regard to the *Fibres* and their *connexion*; but if the Fibres are fastned together by the *interwoven* method, then the Membrane is not so *simple* with regard to it's *connexion* as in the former case; but if the Fibres involve each other *spirally*, then the Membrane is *most compound* in every sense. We have seen also what was the *most simple* Vessel, namely that which is composed of the *smallest* and *most simple* Membrane, and so rolled up as to form a Hollow; the substance therefore of this Vessel is the *most simple* Fibres, which are no longer *hollow*. Now this is the end of the Vessels; for they do not proceed to infinity, because then there would be no bound to our Body, and consequently no figure.

6. HAVING explained the nature of a *simple* Membrane, let us now consider what the other Membranes are: I say then that they are not composed of *simple* Fibres; suppose for instance the *last* Membrane *but one*, then it will be composed of Vessels, the Membranes of which are most simple, that is, consisting of Fibres; this *last but one* therefore will be called the *smallest vascular Membrane*; and the Vessels of it will be united according to *parallelism*, *crosswise*, and by *twisting*.

7. BUT that which follows, the *last* Membrane *but two* will consist of Vessels whose Membranes are not composed of Fibres, but of the *smallest* Vessels; The Vessels which compose this Membrane I take the liberty to call *vascular* Vessels, that is, Vessels whose Membranes are composed of other Vessels; and these two are *interwoven* after the threefold manner already mentioned. And thus we proceed to the *thickest* Membranes, which consist of much *larger* Vessels, and by their *interwoven* course compose



pose still *larger* Vessels, and Bowels also, and other parts of the Body.

8. THIS is the most accurate idea that can be formed of the nature of the *firm* parts of our Body. And from what has been now said we easily conclude that the Anatomists can never demonstrate to us the *smallest* Vessels, and *smallest* Membranes, much less the *smallest* Fibres, but only such parts as are composed of them.

9. FROM what has hitherto been said is also evidently deduced the cause of *strength* and *weakness* in Men. For *strength* arises therein from the compression and near union of the *smallest concrete* Vessels expelling their Fluid, and so making up a stronger *Fibre*; so that many *fibrillæ* or little Fibres, having thus united all the *fibrillæ* of their Canals, coalesce into one *Fibre*; which therefore will be stronger in proportion to the number of Canals, and consequently of *fibrillæ* which are *concreted*; and thus it happens in our Body: but if this *coalition* is made in the *smallest* Vessels, then the *strength* of the *Fibres* only will be increased; but if it happens in the Vessels which are a little larger, then *Callus's* will be formed. Now the cause of *weakness* is quite contrary to them as is at first sight manifest.

10. BUT now because the *smallest* Vessels of the Body are incapable of being made visible, not only by the naked Eye, but even by the assistance of the best Microscopes, we can therefore explain them only by an exact reasoning drawn from what we know of the greater Vessels: and this I shall endeavour to do after the following manner.

A

|—————|

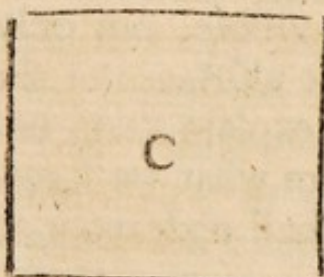
B

LET A be a *geometrical Inch*; it may be divided into 100 *geometrical* parts still conspicuous; then let us take the  $\frac{1}{100}$  part of it, and call it

C 4



it B; this being done, let us take a cubic corpuscle, whose length is only  $\frac{1}{1000}$  part of an *inch*; then, as has been done by some natural Philosophers, let us observe such a cube with a Microscope, and keep in our minds the magnitude of it being so observed: if now we would know how many vessels may be contained in this *little Space*, let us put the *red globules* of Blood also under the Microscope; by this means, if we compare the magnitude of one globule of *Blood* with the size of that *cube*, we shall find, as all who have tried this experiment have found, that the diameter of one *red globule* visible in the Blood is  $\frac{1}{100}$  times less than the diameter of such a small *cube*; which being supposed to be no more than  $\frac{1}{100}$  part of an inch in diameter, therefore the diameter of one *red globule* is no more than  $\frac{1}{100}$  part of  $\frac{1}{100}$  part of an inch; that is, if 10,000 *such* globules were placed close to each other, they would equal one geometrical inch. Moreover it has been demonstrated by EUCLID, that the *squares of surfaces* are as the *squares of their diameters*; therefore in the space of a *square inch* may be contained a *thousand times a hundred thousand* of these globules; for to make it more plain by example, according to the *hypothesis* the diameter of one *red globule* is  $\frac{1}{100}$  part of  $\frac{1}{100}$  part of an inch; but 10,000 globules are contained in the space of an inch; therefore *it is*



*evident* that 100,000,000 may be contained in the space of a *square geometrical inch*, such as the figure C.

HENCE therefore any one may easily obtain the number of Vessels which may be contained in such a *space*, of which Vessels the diameter is capable of receiving just one *red globule*.

II. Now



II. Now these are what the Eye assisted by the best Microscope is able to see in *one square inch*; and it sees them only because they are opaque. But the Eye is able to see *a thousand times a hundred thousand* Vessels in this *space*, yet any one would not barely mistake, but be guilty of the grossest error, who should imagine that such Vessels are the *smallest* and *last* of all. For these small Canals which carry the *red* globules of Blood, if they are *arterial*, give other Vessels much *smaller* than themselves, namely, the Lymphatics, which grow narrower from their beginning, and are therefore *arterial*; for seeing the Anatomists have discovered and can demonstrate the Lymphatic Veins, it is certain that they must have their little Arteries also, to furnish them with their Lymph, nay and they must necessarily receive it thence, as will be by and by demonstrated; but LEWENHOECK has shewn that the diameter of one globule of *pellucid* Serum or Lymph of the first kind is *six times* less than the diameter of a *red* globule of Blood; seeing this globule, according to the same Author's experiment, may be easily resolved into *six* other *smaller* ones, no longer *red*, but *pellucid*.

COROLL. Therefore the Serous Vessels or Lymphatics of the *first kind* are so much *less* than the last Blood-vessels.

BUT the Sanctorian Perspirable matter is still much smaller, so that, according to the same Author in his *43d Physiological Epistle to the Royal Society*, under the *space* of one *grain of Sand* may be contained at least, according to his calculation, 125,000 orifices of Vessels continually and every where exhaling this perspirable matter in a healthy Man, and therefore an incredible number of them would be contained in the space where *a thousand times a hundred thousand* blood Vessels, as has been shewn



shewn, may be contained. But what shall we say of the smallness of the *filaments* of the Brain which exceeds all belief; for which again consult LEWENHOECK, in his first Volume of *Epistles to the Royal Society*.

12. BUT now if any one should ask whether these Vessels are the least of all? we must confess that they are far, very far from it. For let us suppose, what is very probable, that one of the *Animalcules* discovered in *Semine masculino* is the rudiment and basis of a future Man, of the immense smallness of which *Animalcules* the same Author may be again consulted; if now we consider that in this *Animalcule* perhaps there are Eyes, Nose, Ears, and all the other parts which afterwards discover themselves in the Man, when he is fully formed; or if any one will not allow this, and will say that these parts are not yet there, as MALPIGHIUS imagined, but that they grow afterwards, I will not contend with him; but all will at least allow, that in this *Animalcule* the part which becomes an Eye is different from that which becomes a Finger, and so on: hence it will evidently follow, that all the *differences* of parts in this *Animalcule*, which become sensible only by time, consist of different and distinct Vessels, which in process of time are always extended, that they may increase and grow. Let us think therefore, how very small these Vessels must be, and what an infinite number of them may be contained in one square inch.

COROLL. HENCE it appears, that *anatomical injections*, how subtile soever, can never bring the *smallest* Vessels to our view; for tho' of late SWAMMERDAM, and after him RUYSCH and others, have begun to *inject* Liquids into the *greater* Vessels of the Body, with so much force as to distend them beyond their natural dimension, yet those Gentlemen, with



with all their art and industry, have never been able to go any farther than to shew these Vessels and some branches of them in a better manner; and it is manifest that those Vessels cannot be very small, since they may be filled with so gross a substance as wax or any other opaque Liquid used in *anatomical injections*: for the *wax* which is generally used for this purpose can seldom reach even to the *smallest blood Vessels*; for an *injection* made into the *Arteries*, scarce comes *once* in a *thousand times* into the Veins, how then should it reach the very *smallest* Vessels of all? Nor would it succeed much better, if we were to use *Quicksilver* or any thing else.

13. WE properly give the name of Vessels of our Body to those Canals, (1) which bring the humours received from the Heart to any inward or outward point of the Body, and these are called *Arteries*; (2) which bring the Liquors back again from these points towards the Heart, and these are named Veins; (3) which contain the humours stagnating in them for some time, after they are brought thither and secreted, as *Sinus's*, *Vesiculæ*, *Folliculi*, *Glands*, *Cryptæ*, or by what other name soever like these they are called. Therefore under the name of Vessels we may properly comprehend every kind, both of Arteries and Veins, and also of Vesicles, Follicles, Sinus's, &c.

14. BUT the Canals of our Body which bring down the Lymph are of various *kinds*, and of different *decreasing series*, and just so many as there are *decreasing series* of globules which constitute our humours. Four kinds of Vessels therefore may be properly thus distinguished; namely, (1.) *Blood Vessels*, (2) *Serous Vessels*, or *Lymphatics of the first kind*; (3) *Lymphatics of the second kind*, which contain under them many unknown and even *decreasing series*, till at last (4) they come to the Vessels



Vessels carrying the *Nervous Liquid*; which are to be considered as the *last* Vessels of our Body.

BUT here perhaps it may not be amiss to stay a little to *examine* the Lymphatic Vessels, as I have something to offer on this Subject, which has been not at all, or but slightly handled by other Authors.

15. I SAY therefore in the first place, that all the Lymphatic Vessels, which have hitherto been described and demonstrated by Anatomists are only mere Veins, which I shall prove in the following manner. ( $\alpha$ ) Every Canal in the Body, which grows broader from a narrow beginning is a Vein: but such are all the Lymphatic Vessels hitherto described; for they carry their Liquids from smaller branches into greater ones. Besides ( $\beta$ ) a Vein is a Canal into which other smaller Canals empty themselves; but if we survey the Lymphatics, we shall see that all of them arise from invisible roots, that they are very slender, and that they gradually grow larger and larger, by the accession of *lateral* Canals; but that nothing at all can be derived from their greater trunk into the *lateral* Vessels. ( $\gamma$ ) All such Lymphatic Canals have Valves, which is peculiar to Veins, as is well known to all Anatomists; for the Valves discovered at the beginning of the Aorta and Pulmonary Artery do not properly belong to these Arteries, but to the substance of the Heart. ( $\delta$ ) A Vein is a Vessel which returns the Liquid towards the Heart, but an Artery is the contrary; now if we consider all the Lymphatics which have been discovered by LOWER, VIEUSSENS and RIDLEY in the Head, we shall find that they bring their Lymph into the Jugular Veins: the Lymphatics also of the *Thorax* empty themselves both into the *Ductus Pecquetianus*, and into the



the greater Veins of the *Thorax*: if also we consult HEMSTERHUYS, GLISSON, LOWER, MALPIGHIUS, and NUCK concerning the Lymphatics of the *Abdomen*, and *lower parts*, we shall see that all these Authors, and HEISTER also, and other later Anatomists, teach us, that these Vessels empty themselves into several of the greater Veins, especially into the *Vena cava*, *Vena Portæ*, &c. or into the *Cisterna Lumbaris*, and from thence into the Chyliferous Duct. Thus therefore it will manifestly appear, that the Lymphatics which have hitherto been described by Anatomists return their fluid to the Heart by means of the *greater* Vessels; hence also we may conclude that those Vessels are only mere Veins.

16. BUT every Vein in our Body must have it's own Artery, that is, there is no Vessel that carries it's own humour towards the Heart, without having first received it from another Vessel, except the *Venule absorbentes*, of which I shall speak hereafter; whence it manifestly follows, that as we have discovered Lymphatic Veins in the Body, so there must be Arteries also of the same kind. The Veins which carry to the Heart the Lymph that they have received, draw it from the Lymphaticks just now described, as has been already observed; but it has been proved that these Vessels are mere Veins, therefore they must draw the Lymph from some Arteries that are of the same kind, that is, from Lymphatic Arteries; because these channels cannot be Sanguiferous Arteries: for where the Eye has discovered the beginning of one Lymphatic Vessel we must not immediately imagine that to be the origin of it; for Microscopes discover that there are others infinitely less, and the proportion may easily be settled between the last Lymphatic Vein visible to the naked Eye, and the *last* that is to be seen



seen only by the assistance of a Microscope. But yet even this is not the very *last*; therefore the Lymphatic Vein must arise from an invisible Vessel: but that it does not arise from the trunk of a Sanguiferous Artery, is proved from hence, that if it did, the Blood globules, which are shewn by the Microscope to be always red, must be carried into this Vein; but as no such thing happens, it hence appears as clear as the light at noon-day, that the Vessel from which the Lymphatic Vein first arises, must necessarily be much less than a Sanguiferous Artery, seeing it receives from such an Artery a Liquor much finer than the *red* Blood; and therefore that it is a Lymphatic Artery of the *first kind*: but now as that first is not *conspicuous* where it ends, much less can the latter offer itself to our *sight*; nay it cannot be discovered even by the assistance of the very best Microscope, as being *transparent*, just as in a *Louse*, the vessels of which are *transparent*, tho' we certainly know, *à posteriori*, that it has innumerable Vessels, yet their being transparent, hinders us from discovering them by the Microscope.

17. THIS therefore is our opinion a little more clearly explained. At every place where the *red* Blood is transmitted from the Artery to the Vein, there arise innumerable little Canals and at least *six times* less than the diameter of the small Sanguiferous Arteries from which they proceed: and that it is thus we learn from the globules of Liquids viewed by Microscopes; for the *red* globules which do not enter into those *lateral* Vessels, if compared with *Lymphatic* globules, will appear *six times* larger, as was observed before. And thus, whilst the Blood brought through the small Sanguiferous Artery, is applied to these *lateral* Canals, then the *clearest* part of the Blood is pressed thitherward, of *which* (as it is at the same time propelled



pelled and caused to enter into *these lateral Vessels*) the *red globules* being deprived pass directly into the Sanguiferous Vein, which is joined to this Artery. Moreover these little *lateral Canals*, into which only the clearest part of the Blood passes, we call *Serous Arteries*, or *Lymphatics of the first kind*; because they carry the *Serum* or *Lymph* of the *first kind* after the manner of Arteries, that is from a broader beginning growing more and more narrow. But afterwards the little Arteries being prolonged and gradually diminished, end each of them in a Vein of *it's own kind*; which at first indeed cannot be *conspicuous*, on account of it's exceeding smallness, but when several of them are aggregated, and by their concurrence and joining have formed a much larger trunk, then at last *that Vessel*, which we have shewn to be a *Lymphatic Vein*, comes into sight.

18. BESIDES it is to be imagined, that the Lymphatic Arteries, where they pass into Veins of *their own kind*, form also *lateral Canals*, which are so much *less* than these Lymphatic Arteries, as they themselves are *less* than the *last* Sanguiferous Arteries from which they arose, as was said before; and these Vessels we call *Lymphatics of the second kind*, and so on: we do not know however how many *decreasing Series* there are of these little Canals but we may certainly think they reach so far, that the Vessels which *carry the Nervous Fluid*, are the least of all. Now as the *red Blood* returns from the Sanguiferous Arteries into the Sanguiferous Veins, so the Lymph of the first kind returns into a Lymphatic Vein of the first kind, and the Lymph of the second kind into a Lymphatic Vein of the second kind, and so on. By this means therefore, according to that Law all the humours are derived from



from the Heart thro' the Arteries into the Veins, and from thence return to the Heart.

19. THAT it should be thus in our Body, and that such *smallest* Vessels should be in a very great number, seems altogether necessary, if we consider the Skin, Tendons, Membranes, Bones, &c. for we find but very little and scarce any *red* Blood in these parts, and yet they are nourished and grow as well as the rest, where the *red* Blood abounds; now it could not be so in those parts, unless their Lymphatic Vessels were filled, and unless so much as has been wasted, was applied and added from the *Lymphatic* Liquor to proper places; to perform which this Liquid must be applied to all the points of the Body. Besides, at the beginning of the formation of an *Embryo* there is not found any *red* Blood, and yet the human Body never increases so quick and so much at any other time. Nay indeed if we examine carefully with Microscopes, we shall find that the greatest part of an *adult* human Body is void of *red* Blood, and is therefore composed of Lymphatic and Nervous Vessels. Lastly, It is to be observed, that the Body could neither *bend* itself, nor remain *flexible*, if it did not consist of infinitely small parts; now the Blood Vessels are not of this sort, but those rather which carry a much finer Liquid than the Blood: and this indeed evidently appears in the Skin, which is the most *flexible* of all the parts of our Body; for in it, as has been said, there are hardly found any Blood Vessels, but only *smaller* ones, namely Lymphatics: for, as is self-evident, the smaller the Vessels are, the more easily can we bend any part composed of such Vessels; now the whole human Body almost entirely consists of such; for the *greater* Membranes are *flexible* only because they are composed of the *smallest* Canals; and so of the rest.

20. BUT



20. BUT though we do not know, how many kinds of Lymphatic Vessels there are, yet we believe that the *subdivision* of them proceeds much farther, nay and farther than is commonly thought, and that the different *series* of them *decrease* in the same manner, and by the same law: and we must think, that, as the diameter of a Lymphatic Artery of the *first kind* is *six times* less than the diameter of a *last* Sanguiferous Artery, as I observed before was proved by LEWENHOECK, so the diameter of a Lymphatic of the *second kind* is also *six times* less than the diameter of a Lymphatic of the *first kind*, and consequently *six and thirty times* less than the diameter of a Sanguiferous one: nay I believe that such a *subdivision* proceeds, till all the Vessels are *equally* small, and all the Liquids are also *equally* divided, so that, as was said before, all of them *end at last* in Vessels as small as the *origines of the Nerves*; but I do not think there are any Liquids in our Body finer than the *nervous Fluid*, or any Vessels smaller than the *Tubes that convey it*.

COROLL. THUS therefore it is manifest that there are *Nerves* in this sense every where, which arise not only from the Brain and Spinal Marrow, but also from the *last* Lymphatic Arteries every where.

BUT when we say there are *Nerves* every where, and therefore that the whole human Body consists of them, we should add, whether those little Tubes still continue to carry their Liquor, or whether they are joined together and consolidated; and that is to be understood in this sense, that an *Embryo*, whilst it begins to be formed in the Womb, is at that time composed only of mere *Nerves*, or *smallest* Vessels carrying Liquids; but afterwards many of these *Tubes* are bound together, united and consolidated. In process of time, 1. *Membranes* are formed of *Vessels*, 2. *Cartilages* are made of *Membranes*, and 3. *Bones*

D

are



are formed of *Cartilages*. But in what manner the *smallest*, *greater*, and *greatest* Membranes are composed of Vessels, has been abundantly explained already; for that the very *smallest* Membrane of all is composed of merely *terrestrial*, solid and oblong Fibres, &c. has been clearly demonstrated. Now in this place, I add, that a Fibre is also made of a Vessel, whether that Vessel consists only of Fibres, or of *vascular* Membranes, and that after *three different ways*; 1. If the Liquid, which kept the sides of the Vessel asunder, be squeezed out; 2. If the sides of this Vessel be pressed together; 3. If the sides meet and grow together. Hence therefore, where these *three* conditions meet, a Vessel may become a Fibre, which is so much the more *elastic*, as it is thicker than the *first* Fibre, which composed that Vessel together with the other united Fibres. Thus for example, let us suppose that the *least* Vessel in an *Embryo* consists of 1000 *Fibrous* Filaments; if now all the Liquid is squeezed out, and the sides are compressed, and being compressed coalesce, then of this Vessel is made *one* Fibre; therefore of a *thousand* Fibres only *one* will be composed: but the *elasticity* always remains in *each* of these Fibres; *each* of them therefore must act by it's own *force*; hence that Fibre will be a *thousand times* more *elastic*, and more tenacious of it's position, as being composed of 1000 others, and so on. Hence therefore we see, that if any Membrane consists of a texture of such Vessels, so that very many Vessels become Fibres, then it will become more solid, more hard, more white, more elastic, and so will be a Cartilage; for a Cartilage is made, when many Vessels, which by their texture constituted a Membrane, no longer remain Vessels, but grow together and consolidate: concerning which consult MALPIGHIUS, who shews how the *white*

*Star*



*Star* is formed in Bones, whilst they are yet *membranous*. But in this Cartilage, it is both formed of a Membrane after this manner, and there are also some *Strata* made of compressed Vessels, and there are also other *Strata* of Vessels not yet compressed, and of others which compress those already compressed; for thro' them Liquids flow exciting a pulsation in these Vessels: thus therefore a Cartilage is formed *lamellatim*, so that there are always Vessels which carry a Liquid between those *lamellæ*. But now if these *cartilagineous Strata* are more and more compressed together, they become at last a very hard, compact, dry body, which is called a *Bone*. We have seen therefore that a *Bone* is united and composed first of many Membranes, which lay in *lamellæ* one over another, and of which some were already consolidated, and after this manner formed hard *lamellæ*, between which however there were some *spaces*, where some Vessels which convey their own Liquid were safely repositied: seeing now that between these *lamellæ* there run sometimes *smaller* and sometimes *larger* Vessels, therefore they consolidate sometimes sooner and sometimes later. For in those *spaces*, where the *greater Arteries* pass, there being a more copious and swifter passage of the Liquid, there arises also a *greater distension* of the parts between which they run, than elsewhere; whence it comes to pass that these *Strata*, between which those *greater Arteries* pass, are farther removed from each other; after this manner therefore some *Sinus's* are hollowed, which at first were not in the Bone, but are found in it, a long time after the formation of the Bone. Moreover the Bones are more solid *in the middle*, than at the *apophyses*, because they always begin to *harden* first *in the middle*; for CLOPTON HAVERS has demonstrated that in that place the *greatest Artery* passes, whence there is the *greatest*



pulsation there, and the *greatest* compression also of the neighbouring *Strata*: thus therefore in that place first of all the Membrane begins to become a Cartilage. But as the *same Artery* afterwards continues it's pressure, the Bones therefore become most compact and hard also *in the middle*; they are also the thinnest, because they are there immediately consolidated, and cease to grow in *Infants*, whilst the other parts of the Bones still continue to be extended. If any one desires to know more of these things, let him consult KERKRINGIUS in his *Osteogenia Fœtuum*, and the same Author's *Anthropogeniæ Ichnographia*; also MALPIGHIIUS in his *Posthumous Works*, and in his *first Epistle to SPON*, and in his Treatise *de Ovo incubato, & de formatione pulli in Ovo*; also LE CLERC in his Book intitl'd *l'Osteologie exacte & complete, &c.* where there are some excellent observations concerning the *formation of the Bones in a Fœtus*, which were taken however from the *Lectures* of that incomparable Parisian Anatomist, and Regius Professor, JOS. DU VERNEY. Let thus much suffice to be said on this Subject, and let us now return to the path from which we have digressed.

21. It is to be observed in the last place, that the *last* Lymphatic Arteries end with *open orifices* in two different situations in the Body; 1. *partly without the Body*, namely *at the Skin*; 2. *partly in Cavities within the Body*. But this Lymph which is poured into the Cavities of the Body, *partly* also exhales thro' the Mouth, Nose, &c. and vanishes into Air; *partly* is received by the *Absorbing Veins*, which the diligent inquirers into the Animal Œconomy, and principally BELLINI and VIEUSSENS have shewn by their experiments to arise not only at the Skin, but in all the internal Cavities, and returns into the Veins and to the Heart, that it may again perform the offices of Circulation and Secretion:



tion: for as, according to the doctrine of HIPPOCRATES and the experiments of SANCTORIUS, the whole human Body is both *expirable* and *inspirable*, therefore not only the Skin, but all the Membranes also that form Cavities in the Body, every where and at all times, as long as the Man is in health, *both expire and inspire the finest Liquids*.

22. FROM what has been said above it has evidently been shewn, that there is no point in the Body, that is not *vascular*, as may be proved by experiments. ( $\alpha$ ) For there is no part of the Body, out of which there does not flow a *Liquor*, upon the smallest wound made by the point of a needle or the sting of a fly. ( $\beta$ ) It is shewn by Microscopes that those Pustules full of *Fluid*, which are wont to be raised in any part of the Body, by the application of Cantharides, are only a congeries of very many small Vessels at that time running out together, as is sufficiently proved also by acid and alkaline Salts, and burning with Fire. ( $\gamma$ ) It appears also from the Sanctorian Perspiration, which tho' it is so subtile as to escape the sight of our Eyes armed with Microscopes, yet may be observed by means of a *looking glass moist* with the perspirable Humidity.

23. NAY the very Bones consist of a congeries of many Vessels filled with a *Liquid*, which is conveyed to them from minute Arteries: for if wax is injected into the Subclavian Artery, the Bones of the Arm immediately *redden*; for the wax being injected propels the Blood in a large quantity into the Periosteum, and thence on the surface of the Bones, which, as it swells with Blood, must necessarily *redden*: in like manner it is found that the white of the Eye is *vascular* and *sanguiferous*; the same structure also is discovered by the help of the Microscope in the smallest Membranes, and in the roots also of Nails and Horns, and in all the mi-



nute parts : but if it is so in the smallest parts, and in those which are most remote from the Heart, how much more is the same to be expected in those which lie nearest to it ?

24. EVERY Vessel has a cavity and sides composed of the structure of the *smaller* ones cohering with each other, the sides of which are again composed of *smaller* ones, and so on, as was said before, till they come to the *smallest* and *last* Vessels ; the cavities of which are so small, as not to admit the entrance of any, except the very *finest*, Liquids, and in truth seem to be the next degree to none at all. That the sides of the *greater* Vessels are composed of *smaller* Vessels is confirmed, 1. By the experiments of RUYSCH, for if *red* wax is injected with great force into an Artery, it's whole surface will grow *red*. 2. In Animals that are strangled, the Blood which flows thro' the Carotid Arteries, it's passage thro' the Veins being obstructed, turns back, and stagnating in the *smallest* Vessels, inflates them and makes them *red*. 3. The same will appear in the Artery of a living Animal if it is bound hard.

25. THE *least* Vessels have a determinate bigness, for otherwise they might be infinitely divided ; and thus they determine all the parts of our Body, and ourselves also, as was observed before.

26. THE determination of the Vessels arises from the continual *pressure* of the Air on our Machine, for if it exceeds the *power* of resistance with which the contained Fluid is endued, the sides of the Vessels will immediately collapse ; whence *Solidity* ensues : thus some of the larger Vessels, as those which are called Umbilical, the *Foramen Ovale*, the *Urachus*, &c. turn to Ligaments in a few days after the birth ; thus the Nails and Horns arise from the consolidated extremities of the small Arteries ; a *Callus* also owes it's origine to several Vessels being compacted ; now  
if



if this is done in the *larger* Vessels, how much more easily may it happen in the least?

27. THE *last* sides of the Vessels of all Canals, whether they are Arteries, Veins, Lymphatic Vessels, or Adipose Ducts, or by what other name soever they are called, are *nervous*, and like to *Nerves*, and in them the true Nutrition of Solids is made.

28. HENCE also the *last* of all the Solids in our Body are mere nervous *Stamina*, for they are composed of *Nerves* compacted and consolidated by concretion, except those parts which are formed by coagulated Liquids, such as *polypose*, *stony*, and other concretions: and this may be fully proved. For according to the discovery of MALPIGHIUS, and afterwards of LEWENHOECK, the first *principle* of our Body is only a *Worm*, which at it's first being in the *Uterus*, constitutes a Spinal Marrow; then are added to it five limpid *Bulle*, which become the Lobes of the Brain, to which grow the Globes of the Eyes; then from the middle of that *carina*, as MALPIGHIUS calls it, arises a *crooked tube*, which afterwards acquires four inequalities, and these are gradually bent and become the Heart; then the Integuments of the *Thorax* and Bones are formed, and afterwards appear the Liver, Spleen, &c. and at last arise the *mucuous Stamina*, which involve the whole Body. Hence it appears that all these *solid Stamina* proceed from the Spinal Marrow: nor is it wonderful that such hard Bodies should arise from so soft a *principle* as the Spinal Marrow; for thus the Horns, Nails, &c. harden from soft Nerves; and if the bulk of the Brain and Spinal Marrow be compared with the bulk of all the other Solids, it will not appear too large to have risen from the Brain and Spinal Marrow. Now as all the Vessels, whether they contain any Liquid, or being already united contain none, arise from the Tendons of the



Heart, and these consist of *nervous* Filaments, and all the Integuments also of the Glands and Bowels are composed of Integuments of Blood Vessels; and as the Bones are made of Membranes, gradually hardening into Cartilages, and then into a bony substance, and a Membrane by a coalition of the *smallest Vessels*, which arise from *Nerves*, as has already been particularly explained, it is therefore manifest, that every part of our Body is *nervous*, whence follow two COROLLARIES.

I. EVERY Body acts on the *solid parts* of our Body, and therefore impinges either on the *nervous Tubuli*, or on parts composed of *consolidated Nerves*.

II. EVERY *power* therefore of any Medicine, so far as it *acts* on the Solids, *acts* as being applied to *Nerves*, or to parts formed by a coalition of *Nerves*.

### *Properties of the N E R V E S.*

#### T H E O R E M S.

1. IN the *smallest* Vessels the proportion of Solid to the Fluid contained in it *increases* as the Vessels become *finer*; hence the exterior parts are more solid, because they consist of more and finer Vessels.

2. THE *smaller* the Vessels in our Body are, the more the points of *contact* between the *sides* of the Vessel and the *surface* of the Fluids passing through them are multiplied; for in the *smallest* the *surface* of almost every globule impinges on the *sides* of the Vessels.

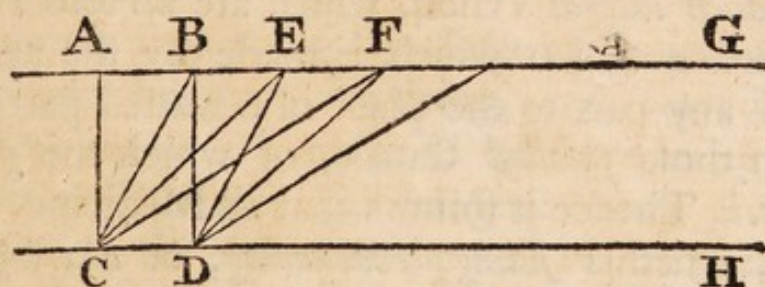
COROLL. HENCE in the *largest* Vessels their intercourse is *less*, and on the contrary, in the *smallest* Vessels it is *greater*.

3. THE *smaller* the Vessels are, the more the *power* of the Solid on the Fluid increases, and the  
greater



greater they are, the more that *power* is diminished : by *power* I understand in this place the faculty of communicating motion. The demonstration is thus : It appears from *Mechanics* that, the rest being equal, the *power* or *force* of any solid Bulk or Mass is as Bulk is to Bulk ; now as the *force*, so is the *resistance* of one Body to another, as Bulk to Bulk, the rest being equal : since therefore, by this *Theorem*, the proportion of a Solid to the contained Fluid *increases* as the Vessels grow *smaller*, the truth of this *Theorem* is manifest.

4. THE *power* of a *last* Solid on the contained Fluid is no other than the *endeavour* to *contract* it's *self*, for by that *endeavour* the motion of the Fluid is promoted ; for the more the Vessels are *prolonged*, the more they exert their *force* on the Fluids ; and that, because the more they are *prolonged*, the more is their diameter contracted : which is thus demonstrated. Let AG and CH be two parallel



lines infinitely extended, and let AC, BD be also parallel to each other, and likewise CE, DF, then from the point C to B draw the line CB, and from the point D to E the line DE ; it is manifest from EUCLID \*, that the parallelogram ABCD is equal to the parallelogram CDEF, and that the triangle BCD, is equal to the triangle CDE, notwithstanding the sides of the parallelogram ABCD, and the sides of the triangle BCD are less than the sides of the parallelogram CDEF,

\* Book I. Prop. 35.

and



and the sides of the triangle CDE, and so on. The same is demonstrated also of cylinders and cones, which are generated by turning those planes about their homogeneous sides: now since all the Vessels of the Body are either *cylindrical* or *conical*, it is manifest, that those Vessels are more *contracted*, the more they are prolonged. All the *force* therefore of the smallest Solids on their Fluids depends on the *force* which contracts those Vessels or Solids.

5. THE *force* of all the *greater* Vessels arises from the aggregated *force* of the *smallest*; for every Artery has it's *force* from it's *sides*, which are composed of the *smallest* Vessels.

6. ALL nutrition or restitution of what is wasted, all accretion or augmentation of a solid Fibre is made only in the *smallest nervous* Vessels, and not in the *greater*, as in the Arteries, Veins, Glands, Lymphatic and Adipose Vessels; because the augmentation and accretion of the *greater* intirely depends on the extension of the *smallest lateral* Vessels, which are *nervous Tubuli*; therefore nutrition which is made by the application of any part to the place of a wasted part, happens in those *smallest* Canals, of which the *greater* consist. Thence it follows that all Medicines whatsoever, whether *filling*, *evacuating*, or *altering*, act only on those *smallest* parts.

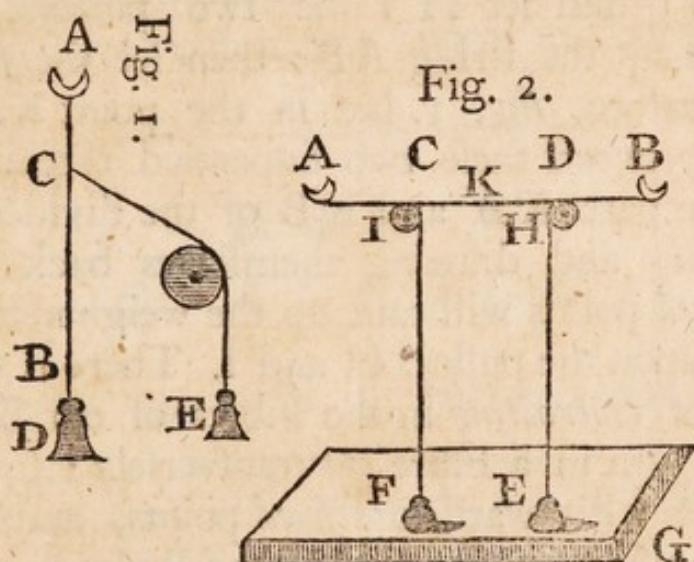
7. EVERY change of the Fluids is made in the *smallest* Vessels, and is owing to the *force* of them; it also in some measure depends on the nature of the Liquids themselves, which flow through those Vessels.

8. THERE is a *force* in all the sides of flexible Canals, by which the parts endeavour to *approach* each other, that they may be shorter than the *line of direction* which is appropriated to the Fibre: and that *force* is found in every *point* of the Fibre.



9. THAT *force* by which the parts endeavour to *contract* themselves, is restrained and withheld by the *points* to which the Fibre is applied, namely, by the distending Liquid.

10. THIS *force acts* truly and physically at that time in which the Fibre seems to be at rest: for example, in *Fig. 1.* let A be some *fixed* point, to which



let the music string A B be suspended, and let D be a weight hung to the string, and very much distending it; at the point C let there be applied another small weight E, hanging from another *string* fixed to the former at the point C, and passing over a pulley fastened to a fixed point, and so sustaining this weight, which is to be hung in such a manner, that the *force* of the former *string* may exceed the *force* of this weight, so as to be not at all or but very little bent by it: these being so placed, let the former *string* be cut between the points B and C, near the point C, with a very sharp knife, so as not to impress any motion on the *string*; then the upper part A C will immediately *contract* itself and raise up the weight E a very little upon the pulley. It is manifest therefore that the *string* before the division, exercises it's *contractile* power, though it cannot



cannot actually contract it's self because of the *weight* hung to it. In *Fig. 2.* let A B be two fixed points, between which let there be a string greatly stretched; to this string at the points C D let there be fastened two threads C F and D E, to the extremities of which let there be annexed the weights F and E, which may be sustained by the table G; and let H I be two pulleys, lightly touched by the string A B: then let the *string* be cut as before, *Fig. 1.* but in the point K, in the *middle* between these two suspended threads; then both the parts K A and K B of the divided *string*, *contracting* and drawing themselves back towards their *fixed* points will raise up the weights E and F a little upon the pulleys H and I. There is the same power of *contracting* in the Fibres of our Body, as may be seen in a Fibre cut transversely; for it *contracts* it's self towards it's *fixed* points, and this is it which causes wounds made in the Body to *gape*.

11. THAT *force*, by which any part of the Body endeavours to *contract* themselves, is *balanced* by that *antagonistic force*; for all the parts have that contractile power, and when they draw towards the *opposite points*, they are antagonists to each other.

12. THE *balance* of this *contractile force* in our Body depends upon the *equal influx* of the Liquid, and it's impulse on all parts, so as to distend them *equally*.

13. WHATSOEVER therefore any where changes the *momentum* of the *influx* of a Liquid, so that it does not *equally* flow into all the Canals; and whatsoever takes away the *balance of the resistance* in the Canals, takes it away in the whole Body: whence there are two causes of this *balance*, the *resistance of the Canals*, and the *influx of the Fluid*.

14. As soon as the *balance* in any part of the Body is taken away, the *oscillatory motions*, or those  
*motions*



*motions* which are made whilst some Canals being unufually extended contract themselves, undergo a change alfo in that place ; and this depends on the *prevalence of the refiftance* upon the *force of the influx* of the Liquid ; and is destroyed whensoever the *force of the influx* exceeds the *force of the refiftance*.

COROLL. THEREFORE the *fum* of all the *forces* may be derived into *one* part, and thus it is manifelt that fome new motion may appear in that part.

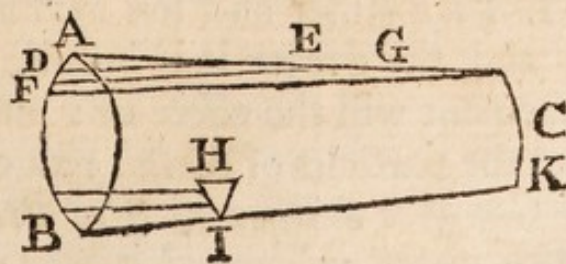
## C H A P. VI.

### Of A C R I D S.

1. **T**HE *balance of the oscillatory motion* in the Body is never more taken away, than when fome *Acrid* infinuates it's felf into the cavity of a *smallelt Veffel*, and *sticks* in it's fides, and remains fixed.

2. It is fhewn by Microscopes that *Acrids* confift of feveral ftyles ending in a *point*, or forming an *edge* like a *knife*, or fword ; whence they are able to gnaw, prick, and cut like fo many little *wedges* in the fmall *points of refiftance*.

3. **I**F an *Acrid* is infixed into the *side* of any Veffel, then the whole *force* of the Liquid flowing in, which ufed to act on the various *points* of the fide, is now determined to that *point*, in which the *Acrid* is fixed : and hence arifes a *convulfion* of that Canal : which is thus demonftrated. A B C is a portion of any Veffel, in which the *lines* defcribed determine the *flowing* of the Liquid thro' the Canal : the line



drawn



drawn from D impinges upon E, and that which is drawn from F impinges upon G, and so on, and all these *lines* are put here, as Liquids flowing in with *equal force*, and impelling the *points* on which they impinge and distending them *equally*; and as the Canal is *contractile*, those *points contract* themselves *equally*, and resist the impulse, and so the *oscillatory motion* is preserved. But if we suppose any *acrid* Body, as H I, to be *fixed* into the side, in the point I, it cannot be moved from this *point* by the Liquid flowing in, because the pressure from the part H C is equal to that from the part B H: hence all the Fluid that is contained between B H will rush on the surface H I, which will sustain the whole *force* which ought to be sustained by the whole length from I to K, and all its points; now all the *force* which is impressed on the surface H I, is communicated to the point I, which, as the Canal is flexible, must give way, as being more pressed than the other *points* of the same side; and as the Canal is elastic, the more it is prest, with the greater *force* it restores itself; whence it comes to pass that the *balance* of the *oscillatory motion* is destroyed, and the Vessel driven into *convulsive* motions. Bodies which can produce this effect, are chiefly *volatile and fix'd acrid Salts*, and the *corrosive particles of Metals* which hurt because of their figure being like the wedge H I, and *affect* the Body as being Solids, not as being Fluids.

FROM this demonstration the following truths and COROLLARIES are drawn.

I. THE stiffer and less flexible the *infix'd* particle is, and the deeper it is *infix'd*, the worse and more vehement will the effect be: and thence it happens, that the particles of *Metals* reduced to an *acute* figure, as *Corrosive Sublimate*, *Red Precipitate*, &c. have much more vehement effects on our Bodies, than  
any



any particles taken from Vegetables or Animals ; for they are much more *rigid*, and having more *gravity*, are more deeply *infix*ed into the sides of the Vessels.

II. THE *heavier* any particle is, the more *vehement* is the effect of it, and the *longer* will it remain, for the reason just now alledged.

III. THE rest being equal, the *greater* the *force* of the Fluid is in the part BH, the more *vehement* is the effect of the *infix*ed particle, and the deeper it is *infix*ed ; whence it follows, that the *force* of the Heart very much contributes to excite this *Acrid* to a *stimulating motion*.

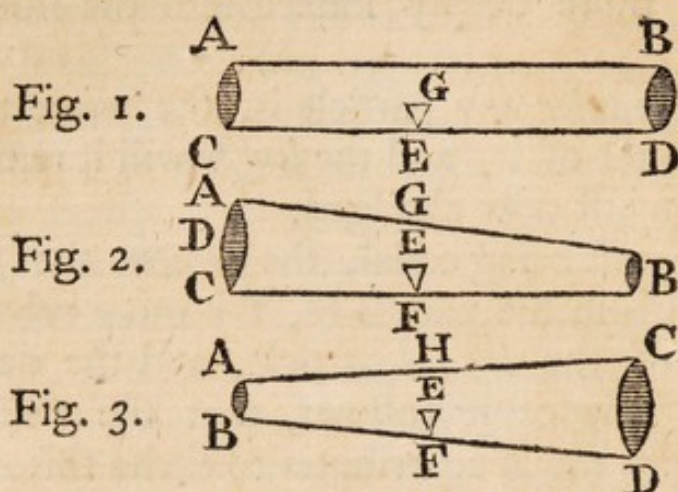
IV. WHERESOEVER the *influx* of the humours into the Vessels ceases, there also is lost the whole *force*, both of *Medicines* and *Poisons* ; hence it follows, that a *Caustic* being *applied* to sick Persons reduced to extremity and almost at the point of *death*, in whom the circulation of the humours continues only in the parts near the Heart, can hardly *act* at all ; when the very same application being made to a *sound* and vigorous Body, *operates* in a very short time.

V. IN a *Carcass* therefore, where every thing is *at rest*, the *infix*ed particle has no sort of effect.

VI. LIQUIDS are carried on in *parallel* lines in *cylindrical* as well as in *conical* Bodies ; and therefore the *Acrid* particle *infix*ed has the same effect in the *cylindrical* as in the *conical*, but milder in the former than in the latter. For the *force* of the Liquid on the particle *infix*ed at F, as in *Fig. 1.* if it is a little pressed towards G, which may easily be, because the Liquids do not resist on the other side, as in the *conical* Vessels, will pass towards BD where it will find a Space equal to the former AC. But it is otherways in the *conical* Vessels, for in *Fig. 2.* the Fluid which runs from the part ADC on the particle



ticle E F *infix*ed into the point F, after passing between G E, finds a *space* of less capacity than that

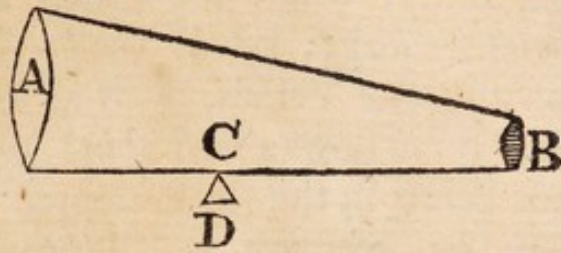


from which it flowed; and therefore here is a greater *endeavour* and *pressure* of the Liquid, in flowing towards B, than was in the *cylinder*. Let us suppose in *Fig. 3.* that the Liquids flow with a contrary and inverted motion in the *conical* Vessel A B C D, which shall here be considered only as a Vein. The Liquor flowing from A B impinges only in a few particles on the particle E F *infix*ed into the point F, and will indeed *impel* it a little towards D, the Liquid not resisting on that side, and will easily enough pass thro' it, because the space H E has as much, nay more capacity than A B. The *force* therefore *impressed* on the particle by the Fluid running in, is in this case almost none: whence *Acrids* never *act* less on the Solids, than when they are applied to a *cavity* which grows broader from a narrow beginning; and such are all the Venal Vessels.

VII. IF any *Acrid* sticks *externally* to the side of a Vessel, the same effect will follow, as if it adhered *internally*; for the point C in the following *Fig.* must necessarily be distended by the Liquid flowing in and *equally* pressing the Canal A B; and therefore it will press the adhering *Acrid* particle D, and strive against it: and when from the pressure  
of



of the Atmosphere or any other cause it cannot give way, it must necessarily penetrate the side of the Vessel, and hinder the *equal* motion of the Fluids: of this sort is the *action* of Plasters and all stimulating Medicines applied *externally*: hence we infer



that the *action* of Medicines consists in removing impediments to the *equal motion* of the Fluids.

VIII. By this *position* alone of one particle, all the rest remaining in their natural state, can the Secretions be *altered* or *disturbed*, the Canals dilated, the concussive *force* of the sides *increased*, and the *oscillatory motion* destroyed.

IX. *SECRETION* is the derivation and separation of one Liquid from another; every Liquid consists of minute *solid* particles; and the mass of Liquids is very greatly *mixed* as appears by *Chemistry*; for the various species of Solids, which being *mixed* constitute a Liquid, may be confounded, and turned to Solids again. There are three things necessary to Secretion; 1. An application of the Liquid to the orifices of the Canals, 2. A determinate magnitude of the said orifices, 3. A sufficient force to impel the Liquid within the Canals: but now if an *acrid* particle *infix*ed should cause the Canals, for example, those of the *Kidneys*, to be wider or narrower than usual, then the particles of Fluids that are *greater* or *less* than *usual*, would pass thro' them: hence the *variation* of the secreted Urine, for sometimes it appears *limpid*, and sometimes thick. But if the *acrid* Particle should be so far pressed, as to *perforate* the side of the Canal, then a wound would be made in the Canal, equal in bigness to the *acrid* Particle; which indeed might be so far opened by the *contraction* of the Fibres, as to let out the Fluid

E

contained



contained in the Canal ; hence also happen *droppings*, *salivations*, and many other *unnatural* evacuations in our Body, where the *wound* is made in Vessels sufficiently *large* ; but if the *perforation* is made in any very *minute* Vessels, such as some are in the Lungs, then there flows a *most thin* Liquor from such a *wound*, not being in the least degree *red*, because the *rupture* or *aperture* is seldom made so large, as to be able to transmit the *red Blood* globules, and we suppose that there are such *Acrids* as can in no wise *dissolve* those globules.

X. HENCE a Tumour and Inflammation may arise in the place and neighbouring parts ; for the Liquid being *pressed* by the Heart, and *forced* into the *sides* of the Vessel, will urge thro' it all it's particles, which answer to the aperture, and these parts pressing the *neighbouring ones* will excite a Tumour and Inflammation in them : thus we observe in several Diseases, 1. That *pain* arises from a *puncture* of *acid* particles ; for *pain* is nothing else than a *separation of the parts of a nervous fibrilla*, caused by the force of an *acid particle* ; and this separation is immediately followed by a Tumour, on the rising of which, or, which is the same thing, on the flowing out of the Liquid, the *pain* ceases ; as may be observed in the Gout, Tooth-ach, &c.

XI. THE Liquids which stay there and *stagnate*, follow their own nature, that is, putrify by *stagnating*, become *acid*, and afford a *volatile alkali* : and that *Acrimony* of the Liquids renders them fit to *dissolve* our Vessels. Now this *law* obtains in the Urine, Blood, Serum of the Blood, but not in the Lymph ; for we see that *hydropic* Persons have their Belly filled with a *Liquid* distilling from the Lymphatic Vessels, but yet without any *gangrene* arising in the contents of the Abdomen.

XII. Lastly it appears from what has been said, that *acid* Medicines produce their effects on our Bodies



Bodies, *partly* by the force of their own *acrid* substance and figure, and *partly* by the force of the Fluids rushing against the *acrid* particle: for when the Liquid is *at rest*, there follows no effect, how fit soever the Medicine may be to produce any effects; for a *knife* applied to the Finger, tho' it be fit to cut, yet will do nothing unless it be impelled and excited to act: and thus an *Acrid* is brought into *action* by the tremulous motion of the Liquids. Hence therefore Medicines *act*, both by the efficacy of their own substance, and by the effect of the vital Liquid; which effect depends first on some Medicines.

## C H A P. VII.

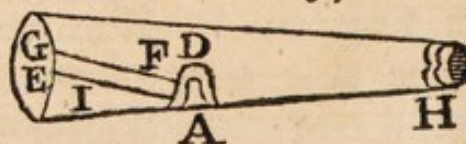
## Of V I S C I D S.

1. A *VISCID* is that which *tenaciously* adheres to the sides of a Vessel, but so as not to be able to *penetrate* it, on account of the breadth of it's surface; for if it was of so small a surface as to be able to *perforate* the sides of the Vessel, it would be reckoned amongst the *Acrids*.

2. A *Viscid* may adhere to the sides of the Vessels *two ways*, 1. it either touches the sides only in one *part*, as A; 2. or it touches the sides *all round*, as the particle H. The effect of this *Viscid* in *both* cases is shewn in the annexed *figure*: let A D be a *viscid* particle so *tenaciously* adhering to the side of a Vessel, at A, as not to be thence removed by a Liquid pressing *behind*, and running according to the lines E I and G F, it will sustain the whole *force* of the Liquid flowing in, that was to be sustained by the part of the side contained between A H, and therefore the part of the side, to which the particle sticks, will *recede* toward the outward parts, as being more *pressed* than the other parts of the same side, and the more it *recedes*, with the



greater force will it restore it's self; whence the *harmony* or *balance* of the *oscillatory motion* is taken away in that Vessel: hence arises an *obtuse pain*, which is perceived in almost all diseases arising from a *Viscid*, for it arises from pressure. Let us suppose now in the second place, that the *viscid* particle H adheres in such a manner, as to touch the sides of the Vessel *all round*: it's effects may be considered, either with regard to the Vessel to which it sticks, or with regard to the *lateral* Vessels; with regard to the former, it's effect will be the *total obstruction* of that Vessel, and at the same time the *distension* of the *sides*; for the particle will be propelled by the Fluid urging behind till there is a *balance* between the *force* of the Liquid, and the *power of resistance* in the sides of the Vessel; *which* being once *effected*, the particle will remain *unmoved*, quite *stopping up* the cavity of the Vessel, and at the same time *distending* it's sides: but that there will at last be a *balance* between the *force* of the Fluid and the *resistance* of the sides, appears from hence, that the *force* of the Fluid is continually diminished, and the *resistance* increases; and that the *force* of the Fluid is diminished appears from this, that the *farther* it recedes from the Heart, the *slower* it is moved; but that the *resistance* of the sides is increased, is manifest from the cavity of the Vessel being always more and more diminished in it's progress, or the distance of the sides being always made less: for the narrower part of a *conical* Vessel cannot be *extended* to the same amplitude as the larger portion, unless a greater force is applied.

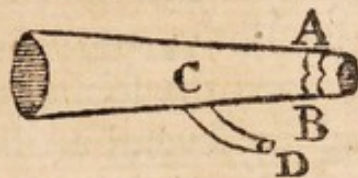


3. THUS much of the effect, which a *viscid* particle has on the Vessel it's self to which it is fastned; let us see now what it will do with regard to the *lateral*



*lateral Vessels.* A *viscid* particle A B *fastened* to a Vessel, and *stopping it up*, hinders the Fluid from passing thro' it; wherefore the Fluid verges towards the lateral Canal

C D; but it can by no means *enter* it, without *dilatating* it at the same time; from it's *dilatation* therefore the *contractile power* of the



sides is augmented, and consequently the *oscillatory motion* becomes more vehement, and thence the *course* of the Fluid more swift: and hence it is, that in Fevers, the *heat* immediately succeeds the *cold*.

4. FROM what has been said it appears, that the greatest *changes* in the Body arise from the Fluids, so far as they *impinge* upon the Solids, and destroy them; but not from the Solids, as the *first* cause affecting the Fluids.

## C H A P. VIII.

*Of the nature of our Fluids, and especially of the Blood.*

1. **A**LL the humours in our Body derive their original from the Blood; we must therefore first investigate the nature of it, before we can pretend to understand it.

2. ALL the Liquids that flow in our Body, are subject to this law, that being *moved* from one part to another they at length return to the Heart. Now that Liquid which remains for a moment in the Heart, is called the Blood, which is thence distribu-



ted into all the parts of the Body, where it is received in order to perform the different Secretions; for the Blood consists in *heterogeneous* parts, as *Fat*, *Bile*, *Water*, &c. which are only separated and changed: whatsoever therefore is to be separated in the Vessels of the Body, must be separated from the Blood. Moreover the substance of the Blood may be discovered by several artifices; but because those which are *simple* are more easily understood, I shall begin with them.

3. WE perceive by our sense, that the Blood in all Animals, Men, Quadrupeds, Fishes, Volatiles and Reptiles is the same, and that it consists of these *three parts*; 1. Of an almost insipid *Water*, with a very little scent, which being exposed to the Fire flies off in vapours, yielding a fetid odour, colouring, and dissolving all simple and compound Salts, as also muriatic Acids: whence it follows that it is not *spirituoso-saline*, as some Chemists would have it, for *Spirits* dissolve *Oils* only and not *Salts*; besides all *Spirits* are produced, either by Fermentation, as the *inflammable*, or by Putrefaction, as the *saline*; lastly this *Water* of the *Blood*, as well as *common Water*, freezes into *Ice* by the power of cold, and is again resolved into a very pure *Water* by Heat; but *Spirits* elude the most intense power of cold, as we see in the most *spirituous* Liquors; 2. Of that part which is called the *serum* of the Blood, and is a Liquor, that is not *red* in it's *natural* state, but *transparent* and *yellowish* when disturbed; and is not easily congealed by the power of cold, but being exposed to the heat *hardens* like the white of an Egg, the more watry part flying away; 3. Of that part which gives a *redness* to the whole, and which is reduced by the power of heat no less than of cold into a red, firm, tenacious mass, called the *insula*, if the Blood drawn out of the Body



is suffered to rest for some time in any Vessel, first the *watry* part flies off, as being the most subtil, and then the *Serum* is separated; and the more plentifully this is done, the *insula* becomes the smaller, and in three or four days the *red* part quite disappears, being turned into *Serum*: and that *Serum*, if the Blood be taken from diseased Bodies, is sometimes of a *black*, *yellow*, or other unnatural colour. These things are observed by the naked Eye, but by the assistance of Microscopes we farther discover, that the Blood consists of *spherical* particles swimming in a limpid Fluid, which in the greater Vessels retain their *spherical* figure, and appear *red*, but towards the *narrow* parts of the Vessels become oval, and turn from *redness* to *yellowness*; besides it is found, that every *globule* consists of *six other smaller ones*, and each of these of *six other*, and so on; which being separated from each other, their *red* colour immediately vanishes. That separation is made only in the *smallest* Vessels, and seems to be instituted for this purpose, that the nervous Juice, and most subtil Lymph may thence arise: now this separation of the *globules*, which is followed by the disappearance of the *redness*, may be procured by *vehement* Medicines.

4. FROM what has been said it appears, that heat is not the cause preserving the *equal fluidity* of the Blood: for heat thickens the extravasated Blood; and besides it remains *fluid* in Fishes, whose Bodies are cold; and yet it grows *grumous* when extravasated, no less than human Blood. Hence the Cause preserving the *fluidity* of the Blood is not any thing peculiar to the Blood; for if it arose from the nature of the Blood, its *fluidity* would then be greatest, where the greatest *quantity* of Blood is, that is, in the *greater* Vessels; but in *them* the *fluidity* is less than the *motion*; for in those the greatest Coagu-



lations are wont to happen, as is manifest in the Veins of Carcasses. For our Liquids concrete when the heat is *absent*, but this *defect* of heat happens from the *motion* of the Fluids being at the same time *deficient*. Therefore the *action* of the Solids thro' which the Blood *flows*, is the cause of it's fluidity; but when the *action* of the Solids ceases, the *motion* also of the Blood ceases: and this is confirmed by the following experiment, if in the winter season, the Arteries of a torpid *Frog* or *Bat* be viewed thro' a Microscope, their Blood will plainly appear concreted into *grumes*; and tho' the *Animal* be brought near the Fire to be warmed, yet that *grumous* Blood will not be resolved or removed, 'till the Heart begins to *contract* it's self; but when that is put into motion, the Blood also will be moved, and at length after several pulsations of the Heart will recover it's former *fluidity*, see LEWENHOECK. Hence we must conclude, that *heat* is a *concurrent* cause of the *motion* of the Blood, but not the *primary*, because on the ceasing of the *action* of the Solids, the *motion* and *heat* cease also. This examination being made, let us now consider the properties of the Blood.

5. THE properties of the Blood are either *general*, that is, such as agree with other Liquids; or *special*, which agree only with some, and are therefore to be sought from the nature of every *special* Liquid. All the properties that agree with a *general* Liquid, are found also in the *special*: and these two depend on mathematical rules. The *general* properties are, 1. That the Blood like every other Liquid, more easily suffers some parts to be *taken* from it, than the whole mass to be *moved*. 2. That it has those conditions, which are necessary to *fluidity*; namely ( $\alpha$ ) the greatest fineness of parts with relation to our senses, that is, that the parts  
are



are so small, that any *one* of them escapes our touch and sight; (6) the cohesion between the parts is so *slight*, that they may most easily be separated. (7) An *equal* gravity of all the parts. Now from that gravity of *each* of the parts results the gravity of the *whole* common *matter*: hence because all the particles are *heavy*, they *sustain* themselves equally; for the pressure and gravity of the whole matter arises as well from an endeavour to descend, as from an *equable* gravity of the particles. (8) The *projectile* motion; by which a Fluid is carried by the pressing side of the Vessels towards any point. And these are the *general* properties of Liquids.

6. ALL the Liquids circulating in our Body proceed from the Heart, in which they are much more *spirituous* and *aqueous* than in the rest of the Vessels; for from *ten ounces* of Blood taken immediately out of the Heart, more than five ounces of simple *Water* may be separated; whence it is manifest that the Blood is in the greatest proportion compounded of *Water*. This *aqueous* part suffers a change proceeding from three causes, namely, from *two* sorts of Salts, Animal and Vegetable, from the *serous* and spirituous part, and from the *red* part increasing by heat. The bulk of the last and smallest particles of Water cannot be determined; for they are as *pellucid* as Air; and therefore escape our observation by Microscopes; and they are so *small*, as to pass even thro' the *invisible* pores of Plants; nay the *machina Boyleana*, or Air-pump, shews that they can pass thro' pores that are *impervious* even to the Air: whence we infer that the greatest part of the Blood is most fit for motion on account of it's *fluidity* and *fineness*. The gravity of Water with respect to Air is about as 1000 to 1; but before we explain it's *proper* faculties, we must shew what are the properties *peculiar*



to our Liquids ; and these are comprehended in the four following *heads*, or rather depend upon them and are inferred from them. 1. Every particle of our Fluid has it's own *proper* and *determinate* Bulk, Figure, and Solidity. 2. Every particle has it's own *determinate* force or *momentum*, by which it resists it's own separation from the particles to which it adheres, and tends toward Concretion. 3. Every particle has it's own *specific* gravity. 4. There are various degrees in our Liquids, of the *projectile motion*, by which they are urged to flow in a right line. Moreover as to the properties of Water, it is to be observed, that the *volatile Salts* of Animals swimming in Water are lighter than the Water ; for when they are drawn out, the Water becomes *heavier*, with regard to it's bulk : but on the contrary, when it is mixed with *other Salts* it grows *heavier* ; and the more of *these Salts* is mixed, the more is it's *fluidity* diminished, and at last it *concretes* with them. Thence it appears, that Water, which is the greatest part of our Blood, is *changed*, as to it's *gravity*, chiefly by *saline* particles swimming in it ; for thus the more rigid and solid those parts are, the *heavier* is the Water made and the fitter for motion : hence also from the *Salts mixed* with the Water of our Blood arise various changes in it.

7. WITH regard to the *four just mentioned heads*, the Fluids of our Body may *variously offend*. And therefore, as to the *first head*, 1. with regard to the *Bulk*, and that *two ways* ; for they may be either too *thick* or too *thin* : therefore Medicines which are proper in either of these states of the Blood, are such as are *resolvent* and *coagulating*. If any *healthy* Body becomes *diseased* because the particles of Blood are too *thick*, the cause which produces the *disease*, will be necessarily *internal*, and not *external* ;



*ternal*; for whatsoever enters into the Heart, is carried thither from the Veins; and what goes out passes by the Arteries; but whatsoever enters the Veins, flows into them either from the Lacteal or Lymphatic or Absorbent Vessels: but the orifices of those Vessels are less *open*, than the *confines* of the Artery and Vein, or the *plexus reticularis*, thro' which the Blood passes out of the Arteries into the Veins, as we see by the Microscope; and therefore the particles brought into the Veins thro' the orifices of the Lacteal and Absorbent Vessels, and from thence into the Heart, are so *small*, that they cannot hinder the *fluidity* of the Blood by their bulk: and LEWENHOECK has observed, that the particles of Chyle and of Lymph are much *smaller*, than the *red* parts of the Blood: in this respect therefore there is no sort of food that can of it's self be hurtful to a sound Body; seeing the too *thick* parts of it can by no means enter the Lacteal and Absorbent Vessels: and therefore this *fault* arises from a mere *internal* cause. Moreover as the bulk of the particles is too much *increased*, the fault being in our Body, when they come to the *last* Vessels, they cannot *go through*; this therefore would continually happen, if the Lungs, by their *pressure* made by the Air, did not *break* those adhering particles, till they were able to pass thro' the *finest* Vessels. Thus there are *two* effects of particles too much *increased*, 1. An obstruction of the circulation of the Liquids, 2. A destruction of the secretion of those humours which ought to be secreted: all the cure therefore of the *bulk* being increased regards the secretion and circulation. Therefore, as the Vessels arise *two ways* from the Arteries, either *directly*, as the Veins, or *obliquely* or *laterally*, as the Glands or secretory Vessels, which are less than the Arteries and Veins, if the particles

of



of Blood become *thicker than usual*, then those which ought to be separated can by no means enter the *orifices* of the Glands, but go directly into the Veins; and so the secretion is lost, and the secretory Vessels, because of the defect of the distending Liquid, collapse: but if the *thickness* of the particles be so great, that they cannot enter even into the Veins, then the circulation is hindered; whence arise various *diseases*, and at last *death* it's self. Every Medicine therefore, which is applied to cure the *increased* bulk of the particles, must be *such* as can divide the *molecule* of the Blood in the small Arteries near the secretory Vessels: wherefore if there are any that diminish the globules of Blood, the most efficacious are *Mercurials*, and *Salts*. The principal diseases, which arise from this fault, are the *Dropsy*, and all *inflammatory* diseases.

THE particles of Blood are said to be too much divided, when they are reduced to such a *smallness*, as to be quite unable to support life and health. The causes of this *fault* are *two*, one *external*, the other *internal*, which may be any too dissolving Liquid. It's effects may be of *two* sorts, the *acceleration* of the circulation, and the *withering* of the secretory Vessels. For, 1. the Blood when it is too much *divided* as to the bulk of it's particles, can pass more easily out of the Arteries in the Veins, than it can into the *lateral* Vessels; and therefore throws it's self into them in greater plenty: but thence the Veins are more *dilated*, and the more they are *dilated*, the more vehemently they *contract* themselves; whence follow an *acceleration* of the circulation, a greater *attrition* and *heat* of the parts, a *subtilising* of the Blood, and an *eruption* of it out of it's Vessels. 2. When in *this state* of the Blood none, or at least very few particles enter the *lateral* Vessels, they are no longer extended, but are dried, coalesce,



coalesce, and at last become *fibrous stamina*; whence follow a *Phtisis*, *Leanness*, and various *chronical* diseases: therefore the fittest remedies to correct this *fault* of the Blood are *coagulating* Medicines, such as the *terrestrial*, also *absorbents*, &c.

8. THE *fault* may be, 2. in our humours with regard to their *figure*, and in this manner the particles of the Blood are said to offend *two ways*; for either they are too *acrid*, or too *viscid* and *obtuse*; tho' indeed their *obtuse figure* produces no ill effects, and therefore ought not to be esteemed a *fault*. The *figure* indeed alone *determines* a Body; and the Body may be said to be *moved* more and more as it can perform it's effects in *one point*: the *figure* also ought to be considered, with regard to *Solidity*, so a Body *as to it's figure*, acts only on the Solids; but an *obtuse figure* falls upon them as we have already demonstrated; whence the above-mentioned effects arise. But now *obtuse figures* are, 1. Bodies taken in, 2. Such as are made so in us, as a *long piece of Wax* by being pressed by our Fingers becomes *round*: now these *obtuse Bodies* in us are not very rigid, but rather mild. the *acrid* particles in our Blood proceed from two *origines*, for either they are derived into our Blood *from without*, or are generated *in it*. Those which come *from without* either enter by the Lungs, or by the Gullet, or else are let in by the outer Skin, or by the Absorbent Vessels, as *Cantharides*, *Mercurials*, &c. Those which enter by the Lungs are very *hurtful*, as being the most subtle, the most *solid*, and almost *immutable*, on account of the structure of the Lungs: those which enter by the Gullet, are either contained in our *food*, or are *venemous Minerals* taken in, which are the *worse* as they are *harder*; for then they cannot be altered in the Body: but all parts that pass thro' the Skin are very *hurtful*, and are indued with greater *subtilty*,



as we learn from Cantharides and Mercury. The *acrid* particles which are generated in the Blood, are those which because of their too vehement *attrition*, from *obtuse* and *viscid* become *acrid*: but that *attrition* happens from *two* causes, 1. From the Liquids *stagnating*, and thence contracting a *putrid* state; 2. From the Liquids being too vehemently *circulated*, without the mixture of any milder Liquid. The *first* appears from various experiments, for if the Blood of a healthy Man be kept some days, as five for instance, in a Vessel, it becomes *fetid*, very *acrid*, and quite *urinous*; whence it is manifest that the Blood *putrifies by stagnating* in the same manner as Water: this *putrefaction* is promoted by the application of *heat* or *warmth*; for by this means the particles are put in motion, whence it comes to pass, that by acting on each other they become *acrid*: but if the motion be too *violent*, then the more *aqueous* particles being exhaled, those which remain *coalesce*, as if they were condensed by *cold*. Hence *Schirrhuses* arise from too much *heat* as well as *cold*; but *Putrefactions* arise in our Body from too *violent* a motion. But that the particles of Blood contract an *Acrimony* from too violent a circulation, is manifest even from this, that if a *healthy* Man, who takes no food but such as is *mild*, whose Evacuations and Retentions have nothing of *Acrimony* in them, but are quite *insipid*, is seized by a *burning Fever*, his Blood suffering a great *pressure* and *attrition* by the *accelerated* motion of his Heart, and by the passage of it thro' the *smallest* Vessels being *obstructed*, will become more and more *acrid*, especially if *diluting* Medicines are not administered; 'till at last it comes to that degree of *Acrimony*, as to *eat* thro' the Vessels, and produce *Aphthæ* and internal inflammations, not to be cured without a great quantity of *Diluents*. Hence the

same



same evils flow from too *accelerated* a circulation, as use to arise from *acrid Poisons* taken in: but the ancients being ignorant of the circulation, and therefore not being able to explain this cause of Diseases, called it τὸ Θεῖον, that is, something *Divine*.

9. A *Fault* may arise, *thirdly*, in our Liquids with regard to *Solidity*, and in this respect the particles of Blood *offend two ways*, either by *excess* or *defect*; but before I treat of these, I must say something of *Solidity* in general. By *Solidity* I understand that property of the Body, which is properly opposed to *Vacuity*, and every Body is thought to be the more *solid*, the smaller and fewer *pores* it has that are intercepted between it's particles. For it is found by experience, that the *gravity* of the same Bodies is always proportional to their *Solidity*, so that, if two Bodies are equal in *magnitude*, but different in *weight* there must necessarily be more void *pores* in one than in the other. Besides it must be observed that no Body can be *mathematically solid*. The more solid Bodies preserve their motion longer, than those which are less *solid*; the cause of which is, that the *force* resisting their motion, and arising from the ambient *Fluid*, the rest being equal, always answers their surfaces; wherefore, as in a more *solid* Body, there are more particles of matter under the same surface, than in a less *solid* Body, it plainly follows that the more *solid* Bodies are more difficult to be *stopped*, than those which are less so. But what has been said concerning *Solidity in general* may be sufficient at this time; considering what has been said in

CHAP. I.

THE effects of particles that are too *solid* on the Blood are *two*; the too great *subtilising* of the Blood, and the *disturbing* of the *oscillatory motion*. For 1. The too *solid* particles when driven from the Heart, acquire



acquire a greater motion than the rest; for the *quantity* of motion of any Body arises from the *velocity* drawn into the bulk; wherefore they forsake those particles, in the company of which they were driven out, and *impinge* upon others, and by this *Impetus* dissolve them and render them too subtile.

2. Our Fluid when driven from the Heart *impinges*, in lines with very acute angles, against the *sides* of the Vessels: but if this is done every where *equally*, then the Vessels are distended equally. But if one line *impinges* with *greater* force than another, then the *oscillatory motion* is disturbed (see the *last THEOREMS* of CHAP. V.): but this will necessarily happen, if the particles contained in any line are too *solid*; for hence the Vessels will be extended and enlarged, and the course of the Liquid will be disordered: whence often *Polypuses* and other *obstructions* are wont to arise. But the origine of these particles is external, or particles that are too *solid* come from without. The remedies of *heavy* or *solid* particles must consist of *molecule* as *heavy* as the particles of our Fluid: and as the particles of Animals and Vegetables, to the last degree *resolved*, are almost of the same *gravity* with our Fluid, or as 5 to 6, so by the use of them a Body will be preserved in a *healthy* state, and recover it again, if it is once lost: but those which are *more heavy*, as *Phosphorus*, and *thick Oils* drawn from Animals, *fixed Salts* extracted from Vegetables, *metallic Acids*, and also some of the *heavier Sulphurs*, produce the above-mentioned effects of Solidity, namely *Corrosion* and *Extravasation*, whence *inflammatory* diseases arise: and therefore they are to be avoided in that state of *disease*. The other *fault* of the Particles of Blood with regard to *Solidity*, is, that they are not so *solid* as they ought to be, and this depends on *Diminution*, which is an  
increase



increase of the *surface*, and an aggregate of the *smallest* particles, by which the *points of contact* are multiplied. The effect of this *fault* is *sluggishness*, or an inaptitude to motion, or an incapacity in those particles of moving others that are more *solid*: whence follow *Lentors* and *Cohesions*. For *sluggish* Bodies have a *less* motion and a *greater* resistance, and are therefore incapable of moving other *more solid* Bodies. But the effect of *sluggishness* in our Body, is a *less action* of the Fluid upon the Solid, and of the Solid upon the Fluid. Now the Liquids in our Body preserve their *Fluidity* after *two* different manners; 1. on account of some *diluting* liquid Body, 2. by an external cause *dividing* the parts. But the causes which produce this *sluggishness*, or impotence and inaptitude to motion, whence *Cohesions* and *Lentors* arise, are not so many as is commonly imagined; for our Body is so constituted, and it's Vessels are so *small*, that they admit none but the *most minute Molecule*; but the *most minute* Bodies are always the most *solid*, nor can they be any farther *divided*, without using the greatest labour; hence they long retain the *bulk* they have received, and do not easily *coalesce*, because of the narrowness of their surface.

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## C H A P. IX.

*Of the Faults in the whole Mass of Liquids, considered together.*

1. **H**AVING now finished the *History* of the particles of our Fluid, let us apply ourselves to the consideration of the whole Mass. For any Body to obtain the name of a Fluid, it is required,



quired, 1. That it be divided into very *minute* particles, 2. That those particles may be with the greatest ease *separated* from each other, and that no *cohesion* remain. Moreover our Fluid may offend two ways ; namely, 1. by too great a *cohesion* of it's particles, 2. by too great a *dissolution* of them. Too great a *cohesion*, which is otherwise called a *Lentor*, may arise either from too great a *magnitude* of each particle, or from too great an endeavour in the particles to cohere. If this *lentor* happens in the *greater* Vessels, in the Auricles of the Heart, or in the Ventricles of the Brain, a *Polypus* is soon formed ; which is a solid Mass resembling Leather ; and the more *solid* the *longer* it has continued : there is often found a *polypose* substance in the *Heads* of those who have been *hanged* ; for in them the Blood, having it's reflux thro' the jugular Veins obstructed, regurgitates into the *lateral* Canals ; and these are too *narrow* to transmit the whole *Mass* ; whence it happens, that only the *finer* part passes, the *thicker* being repulsed, which as new Blood arrives, *obstructs* those Canals. If there happens a *lentor* in the *smaller* arterial Vessels, there arises an *inflammation* ; which is accompanied by *pulsation* and pain : the *pulsation* arises from the *thickening* Blood, which stops in the little Arteries, being *protruded* by the Blood that presses behind : and the *pain* arises from the sides of the Vessels being very much *distended*, which gives a sensation of *pain* : in this case the *finer* part of the Blood stopping in the small Arteries sometimes exhales thro' the *smallest* *lateral* Vessels, that is, if they be not obstructed ; for otherwise this *more liquid* part of the Blood *putrifies*, whence *Pustules*, *Gangrenes*, &c. but if the *lentor* is in the broad or first Orifice of the Lymphatics, a kind of *gypseous* or hard Matter is there collected, for the reason just now mentioned, namely,  
because



because the *more liquid* part flows thro' the *lateral* branches, which here are in plenty; hence the *Polypus* becomes *white*: but if it be protruded to the extremity of the Lymphatics, a *Dropſy* and *Œdema* ariſe, the Veſſels being diſtended by their own pellucid liquor; and if they burſt, then comes a *Leucophlegmatia* or *Anaſarca*; and as the humours alſo frequently ſtop and ſtagnate, and ſo contract an *Acrimony*, there ariſe *Impoſthumes* and *Gangrenes*: but if this *lentor* remains in the extremities of the Veſſels, there is a muddy and turbid *Maſs* ſecreted, which by *putrifying* diſſolves the Veſſels, and produces a *Conſumption* and it's effects. But if the *lentor* is in the nervous Veſſels, then ariſe thoſe diſeaſes which are *peculiar* to the Nerves; and perhaps alſo an *Apoplexy*, and deprivation of the *Senſes*: but that ſeldom happens, becauſe the Spirits or Liquid of the Nerves can never be concreted by the power either of *heat* or *cold*, on account of their almoſt immutable Solidity: but the *external* Nerves are affected, when they are preſſed by the Arterial Veſſels being too much diſtended; whence ariſes an *inſenſibility*, and often an *immobility*.

2. THERE are various cauſes of a *lentor* in our Liquid. The firſt is the *exhaling* of the *more fluid* part, hence the Blood remains *fluid* in the Veins, ſo long as the Lymphatic Veſſels are diſcharged into them. Now the remedy for this diſorder is the reſtitution of the Liquid *flown off*. The ſecond cauſe is any degree of *heat* exceeding the *natural heat* of our Body; the quantity of which may be known by the help of the Thermometer: this *heat* *thickens* the Blood by evaporating the *finer* and *ſpirituſous* parts; and indeed ſuch a *lentor* can by no art be removed, ſo long as the *heat* remains, not by *Spirit of Salt*, nor by *Oils*, nor by any thing



else of that kind ; for the *heat* carries off the *finer* parts, even tho' the Vessels remain *shut*, as appears in the *digestion* of Blood ; thence we see that the *effect* of all too *hot* causes in the Blood, within the Body, is inspissation. Hence in all *inflammatory* diseases, as in the *Small Pox*, &c. too great heat is to be carefully avoided. The same effect of *heat*, namely *inspissation*, obtains in all our Liquids, except the *excretory*, as Urine, Sweat, &c. and some that are *secretory*, as the Pancreatic Juice, Bile, Spittle, Mucus ; which indeed in some measure *coalesce*, but are easily *dissolved* again. The third cause is immense *cold*, by which Water, and also our Liquid may be congealed : for if the Blood of a *healthy* Man be exposed to the *coldest* Air, the *thick* part will be separated into an *Insula*, and the *aqueous* or *serous* will be turned to *Ice*, as is seen in Men who have perished by *cold* ; but yet it is not easy to congeal all the *secretions* of the Blood, for the aqueous humour of the Eyes is *never congealed* ; and the Bile and Serum not without *difficulty*, but the Spittle may be *easily congealed* ; and the Urine preserves it's *spirituoso saline* part *fluid* in the middle, whilst the *aqueous* part is congealed. Surprising diseases depend on this cold : thus we observe, that *frozen* flesh grows *putrid*, when thawed by *heat* ; for by this means the natural *connexion* is dissolved, and the Liquid becomes a *volatile alkaline* by this *obstruction* ; nay in *Norway*, Men are sometimes seized in such a manner by the *cold*, that their Noses fall off when they go to blow them : and this Disease proceeding from *cold*, is principally called the Scurvy. The fourth cause is a rest brought upon the humours, which produces a *coagulum* in all of them, especially those which are *Arterial* : for if a Man in the most perfect state of *Health* is seized with a sudden *fear*, a *pale ness* and *coldness* will immediately



immediately arise, and if the passion is vehement, and endures a long time, then a *Stupor*, a *defect* of Liquid in the Brain, and a *privation* of motion; whence come *obstructions* or *coagulations* of the humours in some of the Bowels, which if they happen in the Heart, cause a *palpitation*; and this is wont to happen in those who are subject to frequent *faintings*; for after they have lain for some time, perhaps a quarter of an hour, deprived of *sense* and *motion*, when they begin to recover, they generally perceive *anxieties* about the region of the Heart, and for the most part at the Pulmonary Artery; for the Heart at that time, having it's motion *accelerated*, and as it were *reduplicated*, endeavours to throw out a great *quantity* of Blood that *stagnates* in it's Ventricles, and neighbouring Vessels, and hence arises the *palpitation*; because of the plenty of Blood that *comes*, and the *difficulty* of throwing it all out: but if it cannot get rid of that Mass of Blood, then a *Polypus* arises, and at length *Death* itself. The fifth cause is the admission of many particles that *coagulate* the Blood: thus all *Acids*, *distilled* from Minerals by a violent Fire, *coagulate* the Blood on a sudden; *Spirit of Salt* more slowly, *Spirit of Vitriol*, of *Nitre*, and of *Allum*, most quickly and strongly, which, if they are injected into the Veins, immediately *coagulate* the Blood, which, on account of the laxity and amplitude of the Veins, being carried into the Heart and Pulmonary Artery, soon suffocates the Animal (a). But it must be observed, that all *Acids* do not *thicken* the Blood; for *Nitre*, and *Marine Salt*,

F 3

*dilute*


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(a) On this occasion it is worth the Reader's while to consult the late learned Dr FRIEND's Experiments, in his *Emmenologia*, cap. 14.



*dilute* it, and Vinegar also, (*b*) and other *acid* Spirits of Vegetables; but *Alkaline Salts* sometimes thicken it, sometimes dilute it; but of these Spirits some coagulate it, as *Spirit of Wine*, which, tho' it is accounted by some a very fine *diluter*, yet being *injected* into the Veins, *coagulates* all the Vital Liquid. The sixth and last cause is too great a *motion*, and also an *obstruction* in the *smallest* Vessels: for in every obstruction of an Artery, the Vessel is *distended*, and at length *bursten*, if the obstruction continues; whence follows an *extravasation* of the more *liquid* part of the Blood. This aptitude, or proclivity to form a *coagulum*, is not any thing *morbid*, but a property inherent in the Blood in a *healthy* state: for experience shews, that the more healthy a Man is, the more quickly and easily does his extravasated Blood acquire a *lentor*; when on the contrary, most *diseased* Persons have their Blood very *fluid*, especially those who are *leucophlegmatic*; nay the Blood of some Men does not *coalesce*, even in the agonies of Death. Every cause which *acts* most vehemently upon the Blood, promotes that *concretion*. For those who use violent exercise, and move their *Muscles* very much, have *thick* Blood. Moreover too great *Excretions* and *Evacuations* *thicken* the Blood in the *greater* Vessels, whence there happens a *Subsidence* in the *smaller* ones, and hence an *Atrophy*; because the Liquid does not enter into the *lateral* Lymphatics: but when any such thing happens in all immoderate *evacuations*,  
it

(*b*) But this must be understood only of their being taken by the Mouth in a *moderate* dose, and of such *Spirits*, not *concentrated*, but *diluted* and *simple* (compare CHAP. vii. § 3); for otherwise they *inspissate*, nay and *coagulate* the Blood; as is proved by Dr FRIEND's Experiments, concerning *Vinegar* injected into the jugular Vein of a Dog, &c. See his *Emmenagoga*, cap. 14. *sub finem*.



it is no wonder that those ill consequences should follow.

3. THUS far of the too great *Tenacity* of the Blood, in the next place we must consider it's too great *Fluidity*; but as this depends on the too great *fineness* of it's parts, which was spoken of before, it is not necessary to spend much time in explaining it: it may be sufficient to observe, that *Fluidity* may be induced into our Blood, if there be occasion, by the power of *volatile Salts*, extracted from Nails, Horns, Marrow, and other parts of Animals; nay and *Water* taken in a sufficient quantity excellently *resolves*, *attenuates*, and *dilutes*; as also the acrid *Woods* of *Guaiacum*, *Sassafras*, &c. and all *fixed Salts* of Vegetables and Minerals, especially Metals, which are *better* as they are *heavier*; hence if *Gold* could be rendered *fluid*, without any diminution of it's *weight*, or increase of it's *bulk*, it would be the best *dissolvent*, and this is what is extolled under the name of *Oleum* TH. PARACELSI (c).

## CHAP. X.

### Of the Gravity of the Blood.

THE Gravity of Bodies is nothing else than their *endeavour* to descend toward the centre of the Earth; and it is always *proportional* to the *Solidity* of Bodies. Whilst the Blood is circulated in the Body, it is *warm* and *rarified*; but when it is drawn out of the Body, it grows *cold* and *thick*;

F 4

and

(c) Compare IOAN. ERNEST. *Tract. de Oleis Chym. de Jill. apud* HARTMANN. *Prax. Chymiatr.* p. m. 538.



and therefore we cannot exactly discover it's *Gravity*, with regard to it's *bulk*. But in various Regions both cold and hot, the Blood being *weighed* as soon as drawn out of the Body, has been found to be to *salt Water* as 26 to 25: but the Serum is to the *same Water*, as 300 to 253, therefore the Serum is *heavier* than the Blood by about *one sixth* part; which indeed seems to be contrary to experience, seeing the Serum swims above the *Insula*: but this proceeds from the parts composing the *Insula* *coalescing* into a more solid and compact Mass by the power of *cold*, joined to their *mutual Attraction*; and this appears from the *Insula* and Serum together not occupying so much *space*, as they did before their separation. Thus therefore a *Levity* in the Blood, with respect to *salt Water* has not yet been discovered, for whensoever it has been weighed, it has been found to exceed the weight of *salt Water* by about *one twenty sixth* part; but if there is any such thing, it may arise from all *aqueous, oily* and *spirituous* things, for they are *lighter* than *salt Water*. But the Blood grows heavier by the *Mineral* and consolidated *Vegetable* particles: which is best seen in a *viscid Scurvy*; for in that case the Blood is compacted and for the most part saline; but the Urine the *heaviest* with respect to a Man in health: and this arises from an abundance of *muriatic Salt*, which in a due quantity is of great use, and altogether necessary to life; but if it exceeds in quantity, it produces the worst effects: and therefore those Bodies which are *heavier* than the Blood, as *fixed Salts*, are entirely excreted by Urine; thus *Marine Salt* comes out *unchanged* in the Urine; and it's use is to dilute the Blood. Moreover *heavy Medicines* becomes *poisonous*, so far as they destroy the Vessels and increase the Secretions too much.



## C H A P. XI.

## Of the Projectile Motion.

1. **B**Y the *projectile motion* is understood the *circulatory motion* of the Liquids thro' the Vessels : and as very many diseases, and life and health and old age depend upon it, it will be worth the while to see what *increases*, and what *diminishes* or *depraves* this *motion*.

2. IN the first place that *motion* is increased by the *motion* of the Body it's self being *increased*, for thus it *increases* greatly when a Man *runs* ; for at such a time he has a *frequent pulse*, *sweat*, *thirst*, and *panting*, and all the *symptoms* of a Fever ; which soon disappear, on the Man's being *at rest* : but if he continues running beyond his strength, then all these Symptoms will be more *vehement*, and a sort of *inflammation* will seize the whole Body ; and his Urine, if viewed by a Physician, will appear to be that of a Man in a *high Fever* : and if this exercise continues much longer, a real disease will arise. Therefore by the sole *increase of the projectile motion*, without any *internal* change of the Fluids, a disease may arise. Thus also Diseases often arise from a *diminution* of the same *motion* ; and the cause of such a *diminution* is generally *sadness* : thus, for example, if a Man sitting *cheerful* at table receives the news of some great misfortune, being struck with grief on a sudden, or affrighted, he acquires a stagnation in his Liquids ; whence a disease will immediately arise, unless it be prevented by drinking a large quantity of some *diluting* Liquid. In like manner we shall find that the *increase*  
or



or *diminution* of the *projectile motion* of the Fluids is the cause of very many Diseases.

3. THE *primary* cause of this *projectile motion* is the Heart. If our Liquids were never to be stopped by the Canals thro' which they flow, or the continuity of the Canals was never to be interrupted, then being once put in *motion*, they would always continue to be moved : but there is a resistance in the Canals, and their continuity is interrupted ; for near the Heart the Liquids enter into the *Sinus Venosus* and *Auriculae*, where for some time the force and continuation of flowing *rests* ; but as no Body can *move* it's self, of it's self alone, it is necessary that our Liquids, should receive a *new* motion from some *external cause*, that exerts it's power where they have lost their *motion* ; now this cause is the Heart, which is a very *solid* Muscle, in it's figure resembling a *screw*, by the help of which, as we learn from Mechanics, a weak force may exceed an incredible resistance : so that the Heart is the *sole* and *sufficient* cause of all *motion*.

4. BESIDES this *primary* cause, there is another also, namely, the *elasticity* of the Vessels, or that *force* by which their *sides* being *distended* by the Liquor flowing in, *restore* themselves, and that into their *former* state : for the Fluid being driven with great *force* from the Heart into the Ateries, *distends* them immediately ; and they being *elastic*, when the *force* of the Heart ceases, immediately restore themselves, and with a greater *force*, the more they were *distended*.

5. THE departure of the Blood out of the Heart, or it's *projectile motion* is not owing to an *intestine motion* of the Blood, as some have imagined, but to the *action* of the Heart it's self. The Liquids, which being contained and *confined* in a narrow place, and thence by the *intestine motion* of their



their parts, *burst* thro' an aperture, and are thrown into a *projectile motion*, obtain their effect *three ways* ;

1. If the parts are thrown into a sufficiently violent *motion* by the force of *heat* : but there is no *heat* *sufficient* to produce that motion in our Body ; for tho' Blood when *drawn* out of the Body, be brought to the same degree of *heat* which it may have when *contained* in our Vessels, yet the only consequence of that will be it's *putrefaction* : Fishes moreover have a *cold* Blood, which nevertheless *circulates* ; and if it is *heated*, they die.
2. A Liquid supposed to be in the before-mentioned circumstances, may be thrown into a *projectile motion* by the *elastic force* of it's own parts ; namely, if any elastic Liquid were to be condensed in a Vessel *close* on all sides, some part of it would get out immediately on the making of any *aperture* : but it cannot be so in the Blood ; because the *elasticity* is compensated by the weight of the Atmosphere *encompassing* the Body, so that it can by no means *expand* it's self, to produce the *projectile motion* : besides the Blood *contained* in the Vessels cannot *expand* it's self by the same *power* of it's *elasticity*, because of the *pressure* of the *incumbent* external Air ; therefore as it is *elastic*, it exerts it's *force*, according to the nature of *elastic Bodies*, where there is the *least* resistance, that is, it *presses* towards the Heart, wherein is contained a portion of the same Fluid, which acts with *equal force* ; and therefore no effect can follow.
3. The *projectile motion* of a Liquid may be procured by the force of Fermentation : but there is never observed any *Ebullition* of the Blood, which is called Fermentation, in the Heart.

6. BUT the circulation of the Blood in general is accelerated *three ways* ;

1. By frequent strokes of the Heart,
2. By an increase of it's strength,
3. By an increase of the mass of Blood, the strokes

of



of the Heart remaining the same; because then the *whole* mass performs the *same* circulation in the *same* space of time, that a *less* quantity ought: but the *velocity* depends on the *pressure* of one particle on another.

7. BUT this circulation is *retarded*, 1. By a diminution of the force of the Heart, 2. By the Vessels being lax and less elastic, 3. By an unfitness for motion in the Liquids themselves.

8. THEREFORE what increase the *velocity* of the Heart are, 1. All that increase it's force; which is done ( $\alpha$ ) by giving it strength, and ( $\beta$ ) by making the Liquids at the same time fit for *motion*: but no cause increases the *velocity* of the Blood, unless it forces the Heart to *contract*; now this *contraction* is caused and augmented by whatsoever strongly *affects* the *Nerves*; as *Aromatic Oils*, and *Metallic Bodies*, *Caustic Alkalines*, *Salts*, and also *Crystals*, &c. which promote the circulation, not by causing a Ferment in the Blood, but by stimulating the Vessels and Nerves, and increasing the *oscillatory motions*. 2. Violent and heating *affections* of the Mind, as *anger*, *fury*, &c. 3. A *continual* exercise of the Muscles; for by the *frequent* action of the Muscles, the *motion* of the Blood in the Vessels between the Muscles is greatly promoted. 4. An *increase* of respiration, which if it be often repeated, greatly conduces to accelerate the *motion* of the Blood. The causes that *retard* the circulation are directly opposite to these.



## CHAP. XII.

## Of MEDICINES.

1. **A**S various Medicines are required, according to the nature and diseases of the various parts; we must examine into their *names, classes, nature, powers and actions*: in treating of which *two* different orders may be observed; 1. By enumerating in an *alphabetical* order *each* simple, with its *virtues, uses, &c.* but this method is to be rejected as useless: 2. By enumerating together all those Medicines, with which it is manifest from natural history that the *same* attributes and the *same* effects agree. This method was *first* used by GALEN, (and after him by many others, as ORIBASIUS, ÆGINETA, and in short by all the *Botanists*) who reduced all Medicines to certain Classes; and so made *four* sorts of Powers of all Medicines; 1. *Elementary* medical Powers, 2. *Material*, 3. *Singular* or *special*, 4. *Substantial unknown*, and to be known only by experience. But what he meant in the first place by *elementary* Powers or Virtues, will presently appear, when we know his mind: for he says that, what *distinguishes* one body from another in the nature of things, is called a *Quality*; therefore there would be as many *Qualities*, as *different* Bodies; they are but four however according to GALEN, Moist, Dry, Hot, and Cold: wherefore he has reduced all Bodies to these four Classes. But as those *Qualities* are seldom found *separately* and *singly*, he has added therefore four combinations of them, called *Temperaments*, namely Hot and Moist, Hot and Dry, Cold and Moist, and Cold and Dry. Those Bodies, which enjoyed but one of the four  
*simple*



*simple Qualities*, he called Elements ; which also he thought to be four, namely Air, because dry ; Water, because *moist* ; Fire, because hot ; Earth, because *cold*. Of these he thought that all Bodies were *compounded* ; and that they acted according to those *Qualities* ; he affirmed the same of Medicines, and therefore divided their power into four Classes. Those which were composed of these four, mixed in equal quantities, he called *elementary*, and our Body *elementated* ; and asserted that diseases arose from the *predomination* of some of these *Elements*. He would have four degrees also ; according to which this or that *Element predominated* : those Medicines which being applied to a Body in *health* produced no *alteration*, he said were of the *first degree* ; for example, Violets and Roses were said to be *cold* and *moist* in the *first degree* ; but they may be hurtful in a *cold* disease. The *second degree* is, when Medicines may *affect* or *change* a Body in *health*, but not *hurt* it. The *third degree* is, when the power is such, as not to *destroy* a *healthy* Body, but to *injure* it and render it *morbid* : and these Medicines he thought were to be applied, when 'a disease, in the *same degree* seizes the Patient. The *fourth degree* is *destructive* ; as in Euphorbium, and other Poisons, which when applied to the Body, affect it in such a manner, as to cause Death.

IN the second place, by material Powers GALEN meant those, which depend on some *proportion* between themselves and the matter : and hence he distinguished *material* Powers from *elementary*, as being *proper* to the Body ; and he called them *manifest*, because they are *compound*, and *compounds* are more conspicuous than *simples* ; for matter is compounded of two *Elements* at least ; and therefore is more conspicuous than mere *Elements* : according to this Exposition, an *emollient* herb is said to be *relaxing*.



*laxing* and *emollient* at the same time, by *material* powers; but to *heat* by an *elementary* power or heat.

IN the third place, he made the *specific* power to depend on the two preceeding, combined after various manners, and those Medicines to be endued with *this* power, which are *proper* to any peculiar part, or are destined to any *peculiar* operation; such as *Purges* which carry off any specific Liquor, as Serum, Bile, the Menfes, &c. and those which *cicatrise*, and *generate Flesh*, &c. all these he would have to act on account of their *specific* virtues.

IN the fourth place, by *substantial unknown* he meant those, which cannot be investigated by any other method than by *experience*; such is the *soporific* power of Opium which is not discovered by it's *humidity*, or *heat*, or *dryness*, or *cold*, but only by *experience*. It appears now from what has been said, that GALEN was in an error, when he endeavoured to explain the *effects* of all Medicines by *qualities alone*; which not being able to do in Antidotes, Alexipharmics, Topics, &c. he called them *divine* and *unknown*: besides he was mistaken in admitting only four *qualities*; when many others may be enumerated.

2. A MEDICINE is a Body, which being applied to our *living* Body takes away it's *morbid* state: now every Medicine may be considered, either 1. As it *acts* upon the Solids, or 2. As it acts upon the Liquids *only*, or 3. As it exerts it's *power* upon *both* together; and therefore all may be reduced to these three general Classes.

MOREOVER those which *act* on the Solids, *act* either, 1. By resolving and destroying their texture and cohesion, or 2. By obstructing and dilating the Canals, and by changing the figure of their sides.

THOSE



THOSE which act on the Fluids *only*, act either 1. By *altering* their properties, or 2. By *bringing* them out of the Body : but almost all Medicines act as well upon the Solids, as upon the Fluids ; for the Fluids can scarce be *altered*, without the Solids being in some degree *affected*, and on the contrary : but the *actions* of Medicines, so far as they *regard* the Fluids, may be considered, without considering the Fluids, so far as they *affect* the Solids, and on the contrary : just as the Mathematicians consider *length only*, without any regard to *surface*, or *solidity* ; tho' they do not exist separately. But that what follows may be the more clearly understood, I shall premise some THEOREMS.

I. THE slightest *external motion* alone, which is merely *mechanical*, may produce every kind of *changes* in our Body, that any Medicine has ever yet produced : let us suppose any Man to be in perfect *health*, and let his Nostrils be gently tickled with a *Feather* ; he will not be able to hold himself still one moment, without a *convulsive* motion of the Body, *bending*, *sneezing*, &c. but if we consider, by what a number of Muscles, with what force, and straining *sneezing* is produced, we shall wonder at the *slightness* of the cause ; for this action is performed by a violent *motion* of the Muscles of the *Scapula*, *Abdomen*, *Diaphragm*, *Thorax*, *Lungs*, &c. besides if the action *continues*, there will arise an *universal expulsion* of the Liquids, a *pressing* out of Tears, Mucus, and *Saliva* of the Mouth, *Palate*, and *Aspera Arteria* ; also an *excretion* of Urine, Sweat, &c. and thus without any Moist, Dry, Hot, Cold, Sulphur, Salt, and *such like*, a *motion* of all the Solids and Fluids in our Body may be caused only by the application of a *Feather* to the *inside* of our Nostrils : but if such a *sneezing continues* a long time, as it will by taking  $\frac{1}{16}$  part of a grain of Euphorbium.



Euphorbium up the Nose, grievous *Convulsions*, lasting a long time, will arise, *Head-achs*, involuntary *excretions* of Urine and Stools, *Vomitings*, *febrile Heats*, and other dreadful *symptoms*, and at last Death it's self will ensue.

II. IF now *so great* a change can be made in our Body by a *slight* and *external motion*, what may not happen, if the Nerves are *affected* internally? and hence it appears that the *slightest* Bodies can make the *greatest change* in our Body. But tho' there is no Body that can *act* on the Solids, without *affecting* the Fluids at the same time, and on the contrary; yet Medicines may be distinguished, into those which *immediately* or *primarily affect* the Solids, but the Fluids only *mediately* and *secondarily*, and the contrary.

III. IT is manifest that all our Liquids may be *changed*, by this *mechanical motion*, there being nothing done to them *internally*; as appears from the case just now mentioned.

IV. THE *motion* only of the Animal Spirits being *changed*, without any *impression* from any Body either *external* or *internal*, communicated by means of contact, all the effects, which any Physician can ascribe to a Medicine, may arise: for let us suppose a Man otherwise *healthy*, to be *subject* to an Irritation of the *Nerves* or the Hypochondriac Passion; in his best *health*, let an occasion be given him of *anger*, *fear*, or *sadness*, and there will immediately arise a very great *alteration* in his *condition*: for what before used to *perspire* thro' the *pores* of the Skin to the weight of about *five pound* in four and twenty hours, now *changes* it's course, and makes way thro' the Kidneys; nay, and the *trajectory*, *secretory*, and *excretory* Vessels are also *disturbed*: now who knows any *Diuretic* that is capable of exerting such powers? besides the excreted



*Liquor* just now mentioned is not *Urine*, but mere *Lymph*, the *Salt*, *Spirit*, *Scent*, and *Colour* of *Urine* being left behind in the *Body*. In like manner we are sometimes thrown into *Purgings* by *fear*; whence arises a vulgar reproach to *timorous* Persons. By *anger* also a quantity of *Bile* is sometimes thrown off. *Sweats* also often arise from *fear*. *Vomiting* is caused in some Men by the sight of a *nauseous* object, or by the telling of a *nauseous* story; for hence arise, first *eruētations*, then a *nausea*, *spitting*, *convulsion* of the *Stomach*, *vomiting*, and sometimes an *evacuation* by stool and sweat. Every kind also of *evacuation* may be excited only by an *unusual motion* of the *Body*; thus the *first time* any one goes upon the *Sea*, whether his *Stomach* be full or empty, he first grows *pale* and *anxious*, then *nods*, grows *giddy*, and at last vomits. Thence it appears that our *Machine* is so formed, that tho' nothing is done to it by any sort of *Body*, yet by the *mechanical motion* of the *Spirits* being *perverted*, it may be subject to all the *effects*, which are wont to be produced by *Medicines*.

V. THIS so wonderful motion may be excited in us, by the application of *insensible particles* of *Bodies* to our *Machine*; thus some, as soon as they enter a room, where there is a *Cat*, a *Mouse*, or *Cheese*, tho' they are not in sight, fall into *sweats* and sometimes *faint*, and some *drop down*, and *hysterical* Women immediately fall into an *agony* by the smell of *musk*.

VI. MEDICINES may be divided into such *minute* parts, as to escape almost the power of *imagination*; each of which however will retain the *powers* which before were *proper* to the whole mass: of which I shall give *three* examples, taken from the *three Kingdoms*, the *Mineral*, *Animal* and *Vegetable*.



1. IT is manifest from experiments often made by inquirers into Metals, that if *one grain* of gold be exactly mixed by *fusion* with a *pound* of Silver, each grain of Silver will *partake* of the Gold; the same will also happen, if a thousandth part of a *grain* of Gold be mixed with the said *weight* of Silver: but the Gold, tho' reduced into such *minute* parts, retains the *virtues* and *properties* that are *peculiar* to Gold; and it appears from hence, that those *minute* parts may again be gathered into *one Body* truly *Gold*. This is also proved another way; for if *gr. i.* of Gold be *dissolved* in *℥x.* of Aqua Regia, there will not be a single *drop* of the Liquor without a *particle* of Gold in it, as will be manifest by the taste; and therefore as, in that case, there is no proportion between the Liquid and the Metal, it is necessary, that the Metal must be divided into most *subtile* parts; but in the mean time it remains *unchanged*, as appears by it's *precipitation*, and *reduction* into the form of Gold. But if Copper be taken instead of Gold, the thing becomes still clearer; for the Copper will tinge the whole *menstruum* with a *green* colour. From what has been said it appears, why *metallic* Bodies being *dissolved*, and *reduced* into the form of Liquids, produce such lasting effects: namely, because *every* particle preserves it's own figure, remaining *rigid* and *immutable*; but it is not so in Vegetables.

2. BUT that we may know into what *minute* parts Bodies taken from the Animal Kingdom may be divided, I shall mention an experiment instituted by BOYLE for this purpose: he unrolled the *bag* of a *Silk-worm*, and found it to be 300 yards long; and LEWENHOECK has discovered that it consists of a *double thread*: it was therefore 600 yards long, and weighed but *two grains*: and so strong as to sustain a weight of *two grains*. But if



we add, that Mechanics can divide an *inch* into I know not how many *millions* of parts, before it's *figure*, with regard to it's principal, is lost, we may thence easily gather the great *divisibility* of the parts of Animals: which all *odoriferous* Bodies prove, and especially *Castor*; which being put into a pair of *scales* for *four days* lost none of it's *weight*, and yet spread continual exhalations and a notable *scent* all the time, within the compass of about three *feet*, and being exposed to fresh *Air*, gave that a *scent* also, in *two minutes*, without any sensible loss of weight.

3. WITH regard to Vegetables, if you take gr. i. of *Extract of Saffron*, and put it into ℥x. of *Spirit of Wine*, it will tinge the whole Spirit, and every drop will have the *smell* and *taste* of *Saffron*. It is manifest therefore from what has been already said, that the parts of Medicines may be so far *comminuted*, as to escape our observation; and indeed tho' these parts are *transparent*, and escape our Senses, yet they produce notable *effects* in our Body: I shall give an instance in the *glass of Antimony*, of which if ℥i be infused in ℥viii of *Wine*, and they be digested together, the *Wine* becomes so powerfully *emetic*, that ℥iv of it being *drank* will throw the Stomach into such *convulsive* motions, as almost to invert it; when at the same time the *glass of Antimony*, which remains *undissolved* at the bottom of the Vessel, seems to have *lost* nothing at all: it is the same in the *crocus of Antimony*, &c. (a).

## VII. THE

(a) It is manifest therefore, that there is a *ruling Spirit* in every Medicine; on which *alone* depends the whole *force* and *energy* of the Medicine: and this *Spirit* is in so *small* a quantity with regard to it's *bulk*, that it exceeds all belief; for which it is worth while to consult our AUTHOR'S *Elementa Chemie*, Tom II. page 124, and seq. Besides it may be proper to observe, that our celebrated AUTHOR spake about the *ruling Spirit*



VII. THE particles of Medicines, as they are applied to *various* Nerves, produce *various* effects : I shall give the *turbith Mineral* for an example, which is made of *Oil of Vitriol* and *Mercury*, for if *half a grain* of it be put up the Nostrils, it makes all the Secretions *violent* ; if it be given internally, it will excite a *faintness* and *anguish* ; but if it be taken in a greater quantity, as *viii. gr.* it will work by *stool, vomit, and sweat*, and cause a very great irritation of the *Nerves* : to this purpose is a remarkable case related by BOYLE, of a certain Colonel who was troubled with a *Cataract*, and was cured by *gr. i.* of this *Turbith*, given him in form of a *Sternutatory* ; which first caused a *swelling* in his Head, *purging, sweat, &c.* See his *Treatise of the usefulness of experimental natural Philosophy. (b).*

G 3

VIII. Various

*Spirit* to his Auditors, when he dictated to them this course of lectures concerning the *Power of Medicines*, tho' it was omitted in the *former edition* of these lectures ; and that SENDIVOGIUS, commonly known by the name of COSMOPOLITA, has observed this truth, asserting, " that in every Body there is a *centre* and " certain *place*, in which the *Seed* is, and where there is al- " ways a sort of *point*, that is, about an *eight thousand and* " *two hundredth part* of the Body, be it ever so little, nay even " in *one grain* of Corn : and that cannot be any otherwise, &c." See COSMOPOLITA *Novum Lumen Chymicum, Tract 3. of the true and first matter of Metals*, French edition, page 15.

(b) [As this case is not related by the noble Author here quoted, as from his own experience, and as it is not delivered by him without some cautions, it may not be improper to insert his own words. " A Chymist of the *French King* told me, " that there is yet living a Person of quality, by name *M. de* " *Vatteville*, well known by the command he had of a regi- " ment of *Switzers* in *France*, who fell into a violent distemper " of his Eyes, which in spite of what Physicians and Chyrur- " geons could do, did in a few Months so increase, that he lost " the use of both his Eyes, and languished long in a confirmed " blindness ; which continued 'till he heard of a certain Em- " peric at *Amsterdam*, commonly known by the name of " *Adrian Glasemaker*, (for indeed he was a *Glasier*) who being " cry'd up for prodigious cures he had done with a certain " Powder



VIII. VARIOUS effects therefore follow, according to the *various* application of a Medicine, which we know only *a posteriori*; but if we may be allowed to conjecture, perhaps the following *considerations* will not be contemptible, 1. A *greater* or *less nakedness* of any Nerve helps to produce *greater* or *less*, and also *different* effects that are so violent: for the *coat* which lines the Nostrils, is a *nervous expansion*, and has hardly any coverings; and every Nerve, when it is going to become *sensible*, turns into a *soft* and *mucous* substance; which here happens in the highest degree. 2. The nearer the Nerves are to their *origin*, the more *sensible* they become; and hence they are more easily irritated by

“ Powder, this Colonel resorted to him, and the Emperic having discoursed with him, undertook his recovery, if he would undergo the torment of the cure; which the Colonel having undertaken to do, the Chyrurgeon made him snuff up into each Nostril about a grain of a certain *Mercurial* powder, which in a strangely violent manner quickly wrought with him almost all imaginable ways, as by Vomit, Siege, Sweat, Urine, Spitting, and Tears, within ten or twelve hours that this Operation lasted, making his Head also to swell very much: but within three or four days after this single taking of the Drafftic Medicine had done working, he began to recover some degree of sight, and within a fortnight attained to such a one, that he himself assured the relater, he never was so sharp-sighted before his blindness. And the relater assured me that he had taken pleasure to observe, that this Gentleman, who is his familiar acquaintance, would discern objects farther and clearer than most other Men. The preparation of it, which a Chymist did me the favour to tell me by word of Mouth, as a thing himself had also made, was in short this: that the Remedy was made by precipitating Quicksilver with good Oil of Vitriol, and so making a *Turbith*, which is afterwards to be dulcified, by abstracting twenty or twenty-five times from it pure Spirit of Wine, of which fresh must be taken at every abstraction. But I would not advise you to recommend so *furious* a powder to any, that is not a very skilful Chymist, and Physician too, till you know the exact preparation, and particular uses of it.”]



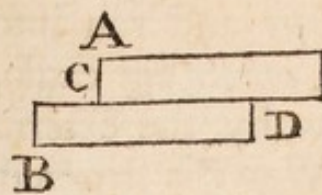
by *remoter* Bodies : thus for example, the Olfactory Nerves are strongly irritated by the application of *Turbitb*, as a *Sternutatory* ; when the same being *elsewhere* applied to the Nerves is sometimes scarce perceived by them. 3. The communication of one Nerve with others may *vary* the effects of a Medicine : for some Nerves, arising from a different *origin*, often meet together, and are tied in a *common* knot ; but as the same meetings are not in all, the *same* Medicines act *differently* in *different* Men. 4. As the Nerve to which any Medicine is applied tends towards *Glands*, *Emissaries*, or *Emunctories*, the effect of the Medicine is *varied*.

## CHAP. XIII.

*Classes of Medicines.*

ACCORDING to what has been said a little before, all Medicines, from their first division, are divided into three Classes.

I. THE first Class is of those which act on the Solids : by Solids I understand these *last* parts of our Body explained CHAP IV. Now Medicines act on these, by *moving* them strongly, without destroying their *cohesion*. For example, let AB be two *last* parts, cohering at CD, they may be *moved* without separation or solution. Medicines of this Class are 1. *Stimulating*, 2. *Contracting*, that is such as cause the Solids to have *less* length, and *greater* thickness ; but so that their cohesion is not destroyed ; and so *contracting* Medicines *thicken* Bodies, and *connect* them more firmly





firmly together. 3. *Relaxing*, which make the parts cohere more *laxly*, so as to become moveable, flexible, dilatable and thinner. 4. *Constipating*, which diminish the capacity of the Canals. And to these are to be referred ( $\alpha$ ) *Emplastics*, or all that stick to the Canals; ( $\beta$ ) *Illinents*, which are more fluid than *Emplastics*; ( $\gamma$ ) *Obstruents*, which not only make the Canals narrower, but also fill them up. 5. *Specific Chirurgical Medicines*, as *Sarcotics*, or generators of flesh, *Cicatrising Medicines*, and such like. 6. *Solvents*, which may be divided into six Classes; namely ( $\alpha$ ) *Reddening*, which produce a slight inflammation; ( $\beta$ ) *Vesicatories*, which by their action destroy the Lymphatic Vessels, ( $\gamma$ ) *Escharotics*, which not only destroy the *smallest* Vessels, but even the Skin it's self; ( $\delta$ ) *Corroding*, which consume every thing to which they are applied; ( $\epsilon$ ) *Caustics*, which consume the parts by *burning* them; ( $\zeta$ ) *Putrifying*, which turn all our parts into a putrid Fluid.

II. THE second Class contains Medicines which act upon the Fluids; either by *affecting* the whole mass of the Fluid, or by *changing* the bulk or figure of some of it's particles: such are, 1. *Attenuants*, which diminish the bulk of the particles: 2. *Condensants* or *Incrassants*, which increase the bulk of the particles: and these may be distinguished according to their *manner of operating*, for *Condensation* is performed by a Body pressing the parts which were before at liberty, which therefore *coalesce* and run into greater *molecule*; this is done by a *condensing* cause, and an external *compressing* one, as by the external *pressure* of cold Air; and thus Water is frozen in *Winter*: but *Incrassation* is, when this combination of parts happens by a privation of the more *liquid* part dissipated by *heat*. 3. *Causers*  
of



of *Acrimony*, namely, by *changing* the figure of the *molecule*. But those are *acrid*, which communicate their motion by a few points; and those *most acrid*, which by one only: now the nature of these was considered before; and it was observed, that all the particles of our Fluids have an *obtuse figure*. To this place therefore belong those which *putrify* our Liquids: and a *putrefaction* of the Liquids happens, when they are made *acrid* and too *swift* by a mutual *attrition* of their parts, and from sweet are rendred *fætid*; which *Fætor* usual proceeds from a *volatile Oil* made *acrid* by *Salt*: so that any *smoak* ascending with *Salt* strikes the Nose with an *ungrateful* odour. 4. *Demulcents*, which are contrary to the foregoing, which are temperating also, by *obtunding* their Spicula. 5. *Immutants*, which *change* the Liquids in such a manner, that we do not know the manner of their *change*: this is a *doubtful* kind, to which all are to be referred, of whose *manner of operating* we are ignorant. 6. *Diluents*; these regard the *whole Mass* of the Liquid, whereas those which went before act *pecially* on it's particles: and these are they, which being committed to our Fluids, remove their *coherent* parts from their *contact*, and interpose other particles that hinder their *cohesion*. 7. *Coagulaters*, which cause the fluid parts to *coalesce*, either by exhaling the *diluting* part, or by adding a *glutinating* one, or by *compinging* the parts with each other. 8. *Movers*, which impress a *motion* on the particles. 9. *Sistents*, which *diminish* their motion, and cause *rest* to the whole Mass.

III. THE third Class is of those which *act* on both Solids and Fluids together. And these may be divided into *five* Classes, in which is contained all that the Antients have written, reasoning *a posteriori*.



1. THE first Class contains the preceeding Classes, so far as the Medicines contained under them *aēt* by combined actions, and either promote, or weaken and retard the Circulation of the Blood and the Secretions in general. In this Class also we place such Medicines as provoke peculiar Secretions, as *Milk*, *Semen*, &c.

2. THE second Class contains those which promote Excretions in any part of our Body. But as *various* Liquors are excreted in different places, there are also *various* Classes of those which promote Excretions; namely, (1) *Movers of Tears*, (2) *Movers of Pblegm*, such as draw out the Mucus of the Nostrils: to which are referred *Sternutatories*, which properly draw the Serum out of the Nostrils. (3) Such as draw forth the *Saliva*; and these are either *external*, as *Masticatories*, or *internals*, as *Mercurials* and *Emetics*. (4) *Expectorants*, which promote the excretion of Phlegm from the Lungs. (5) *Purgatives*, which contain, (α) such as *lubricate* the coats of the Intestines; (β) *Laxatives*, or such as expel the contents of the Intestines, by relaxing their rigid Fibres; (γ) *Eccoprotics*, which draw out the *Fæces*, by lightly increasing the motion of the Intestines; (δ) *Pblegmagogues*, which evacuate the pituitous Lymph; (ε) *Cholagogues*, which throw out the Bile; (ζ) *Melanagogues*, which expel the *atra Bilis*; (η) *Hydragogues*, which dissolve the Blood into Serum, and move it more swiftly being dissolved, so that it comes in greater plenty to the Intestinal Glands, and then throw it off: now these are the seven *Species of purging Medicines*. In this second Class are contained moreover (6) *Emetics* or *Vomitories*, by the power of which the contents of the Stomach are thrown upwards thro<sup>u</sup> the Gullet and Mouth. (7) *Diuretics*, which promote Urine. (8) *Sudorifics*, which sensibly expel the  
the



the Liquids thro' the sudoriferous Tubes of the Skin. (9) *Diaphoretics*, which promote Perspiration. (10) *Uterines*, or Medicines appropriated to the *Uterus*, and these are divided again into three Classes. ( $\alpha$ ) *Emmenagogues*, which force the Menfes; ( $\beta$ ) *Aristolochica*, which promote the *Lochia*; ( $\gamma$ ) *Ecbolica*, which procure Abortion, and facilitate Delivery.

3. THE third Class contains many which were confusedly delivered by the Antients; as (1) *Attractives*, which derive the Liquids from one place to another. (2) *Repercutients*, which drive inwards the Liquid stopping in any external part. (3) *Coolers*, which take away preternatural heat. (4) *Heating Medicines*, which cause heat. (5) *Emollients*, which render the rigid parts more flexible, that is, relax the Solids. (6) *Suppuratives*, which dissolve the *concreted* humour, and dispose it for expulsion. (7) *Ripeners*, which render the *resolved* Liquor equal and homogeneous, so that it may the more easily be brought out. (8) *Indurating*, which increase the strength and rigidity of the Fibres, and render their lax parts more firm. (9) *Resolvents*, which divide the coagulated parts of a Liquid, and make them fit for Circulation. (10) *Discussants*, which resolve a Liquid that is extravasated, or stagnates within a Vessel, and dispose it to flow, and stimulate the Solids to propel the Liquid: hence therefore every *discussant* is *resolvent*. (11) *Aperients*, which attenuate a Liquid, and expel it when attenuated. (12) *Astringents*, which cause the sides of the Vessels, to approach nearer to each other. (13) *Styptics*, which close the apertures of Vessels. (14) *Expurgants*, which resolve what is concreted in the Vessels, and expel it. (15) *Detergents*, which cause indurated *Sordes* to melt, and draw them out, and take away dead Fibres also, without any sense of pain.



pain. (16) *Catherteria* or *Mundificatives*, which deterge with greater force, penetrate more to the inward parts, and even carry off sound Flesh. (17) *Erodents*, which are also *deterfive* and *mundificative*, but most powerful; for they hardly fail of carrying away living and sound parts.

4. THE fourth Class in like manner contains various sorts; namely *Topics*, which exert their powers, so far as they are applied to a particular place of the Body, and serve that alone. Now these are divided, according to the different parts of the Body, into the following kinds. (1) *Cephalics*, which are good for the diseases of the Head: of which all the painful diseases depend on an imminent *Rupture*, because of the *tension* of the Membranes of the Brain, which it's self also depends on *distension*, arising from too great a quantity of Blood, or some other humour, or an *obstruction*: and therefore all that are *relaxing*, *temperating*, *refrigerating*, and *comminuting* are of service on this occasion, being therefore *cephalic*. (2) *Ophthalmics*, which cure the disorders of the Eyes, and such are *hot* and *cold*. (3) *Odontalgics*, which relieve the Tooth-ach; such are *Caustics*, *Erodents*, &c. applied to the Nerve itself. (4) *Otalgics*, which ease the pains of the Ears, and relax the greatly *distended* Fibres; for no Membranes are more apt to be *distended* than the *Tympanum* or *Drum* of the Ear, and that which invests the *Meatus Auditorius*: on this occasion it is usual to apply *hot* things, as *warm Water* or *Milk*; or sometimes *cold* things, which heal the disorders of the Ears arising from their *bitter Oil* or *Wax*. (5) *Stomatics*, which regard the Inflammations of the Mouth, Gums, Palate and *Fauces*: and these indeed are to be subdued after the same manner with other Inflammations, but if there is a *Gangrene*, it is healed with *Oil of Tartar*; but in other respects  
*Alkalines*



*Alkalines* are injurious, because they corrode the Teeth. (6) *Arteriacs*, which immediately heal the *asperity* of the Pulmonary Pipe, by softening and smoothing it; and this is performed by *Oil of Almonds* and *Linctuses* or *Lambatives*; which are not always of service however, because this *asperity* often arises from an *obstruction* of the internal Glands; in which case more benefit is received from the *steam* of warm Water taken into the Mouth, and various *emolient Decoctions*, of Barley, Liquorice, Mallow, and such like. (7) *Thoracics* or *Pulmonics*, which obtund the *acrid* matter thrown upon the Lungs, and relax the passages: and these are of real service in a *thinness* of the Humours; but do harm in a *pituitous* Peripneumony, which neither yields to *Sulphur* nor it's *Balsam*, but is in some sort helped by *Spirit of Sulphur by the Bell*. (8) *Cardiacs*, or *Cordials*, which are either *cold* or *hot*: for when there is too great a heat and ebullition, *cold Acids*, of the *Juice of Citrons*, *Rhenish Wine*, &c. are given to refresh the Spirits; but in a *cold* state, all *Aromatics*, which, making a sudden repletion, supply the place of the parts that are flown off, and stimulate the parts. (9) *Stomachics*, which also are either *cold* or *hot*: for in the *hot* affections of the Stomach, *Citrons*, *Juice of Lemons*, *Vinegar*, and such like are of service; but in the *cold* affections, *hot* things. (10) *Splanchnics*, which open *obstructions* of the Bowels: amongst which the *chalybeate mineral Waters* obtain the first place; also all that are composed of *Iron* and *Mercury*; *Dissolvents* also and *Aromatics*. (11) *Intestinals*, which are of two kin; ( $\alpha$ ) *Carminatives*, which expel *Flatuses*. Now *Flatuses* are *elastic* parts of Air, intercepted between two extremities, that are contracted and shut up by a *Spasm*; for there the Air *rarefies* and *expands* itself; and from this *distension* arises pain:  
for



for the removing of which it is principally required, that the Air should be freed from it's prison ; lest Inflammations, Mortifications, Gangrenes, Ruptures, &c. should arise from too great a *distension* of the parts. Therefore every *Carminative* acts only by *opening* those extremities, tho' the Antients thought that *Carminatives* dissipated bubbles of Air, when in reality they only remove the *spasmodic* action ; and those terrible symptoms are not to be ascribed to a *poisonous Acrimony*, but only to *Distension* and *Spasm*: hence perhaps there is no better *Carminative* than *Opium* it's self, and those Medicines which destroy the causes of *Spasms*, by quieting the Animal Spirits, or sheathing the *Acids* : for suppose a Man has taken *Arsenic*, in that case his Belly will swell, till it is ready to burst ; but this swelling is immediately brought down, by taking some sort of *Oil*, which may sheath the *Acid*, that occasions this *Spasm*, for example, *Oil of Tartar per deliquium* diluted with a good quantity of *Water* : and thus when *spasmodic Cholics* attack *hysterical* Women, who are very subject to them ; and sometimes have their *Anus* so closed by them, as to be incapable of admitting a Clyster-pipe ; and sometimes also have the Orifice of their Stomach closed up ; in such a case, I say, the best remedy is *Opium*, *Castor*, or *Galbanum*, taken in *warm Water*. (8) *Anthelmintics* or *Vermifuges*, which kill the *Worms* that lie hid in the Stomach and Intestines: such are the stronger *Purges* and *Emetics* ; also *rough Bodies*, as the *prickly heads of Eels* with *Butter*, taken fasting ; also *Shells* grossly powdered, as *Oyster-shells*, which vellicate, kill, and drive away the *Worms*. (12) *Hepatics*, which are nothing but *Aperients* : such are all *Salts* not *acrid*, but *attenuating*, as *Sal Tartari*, *Sal Polychrestus*, &c. (13) *Cystics*, which purge the Gall-bladder : such are *Cathartics* and *Emetics*. (14) *Splenics*, which are appropriated



appropriated to the Spleen, as all *Aperients* are. (15) *Mesenterics*, which are suited to the parts of the Mesentery; and are either *saline*, or *saponaceous*, or *aromatic*, or *stimulating*. (16) *Nephritics*, which either break the Stone, being therefore called *Lithontriptics*, or expel it: but whether there are any such as the former, is justly doubted. (17) *Hysterics*, which are appropriated to the *Uterus*; and are either *Stimulating*, or *Topics*, or *Antispasmodics*. (18) *Arthritics* or *Neurotics*, which are said *specifically* to *aēt* upon the Nerves, and on the Membranes of the Bones and Ligaments of the Joints. (19) *Anodynes*, which take away pain, and contain *Paregorics*, *Hypnotics*, and *Narcotics*: of each of which I shall speak in it's proper place.

5. THE fifth Class contains *Antidotes*, or *Alexipharmics*, which are said *specifically* to resist Poison: now as Poisons *aēt* in *three* different manners, namely, 1. By bringing a *Spasm* upon the Solids, 2. By attenuating the Liquids, or too much coagulating them. 3. By bursting the Vessels, and causing the Liquids to stagnate; therefore *Antidotes* are of *three* sorts also; those which *aēt* on the Solids, or on the Fluids, or on both together. But most Poisons *aēt* by the power of their *Acrimony*; for if  $\frac{3}{4}$  of *Vitriol* be given to a Dog, an *intense heat*, *Erosion* and *Spasm* are immediately excited in his Stomach; and these symptoms are removed by *Antidotes* destroying *Acrimony*: such are *Water*, *Oil*, or any *gelatinous Body*, &c. for there are no *Antidotes*, that destroy Poisons *specifically*, or that *aēt* any other way than *mechanically*.






PART I.  
OF  
MEDICINES  
THAT  
OPERATE  
ON THE  
SOLIDS.

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CHAP. I.

*Of Stimulating Medicines.*

1.  HUS far I have treated of the various Classes of Medicines, now I come to a more particular History of each *title*: and first I must treat of those which *affect* upon the Solids; amongst which the *Stimulating* hold the first place. A *Stimulating Medicine* is that, which increases the oscillatory Motions of an elastic Fibre. To increase the oscillation



*oscillation* of a *Fibre* it is required, that the increase of *motion* should be given to the *Fibre* at the very *point*, whence the increase of *oscillation* begins : now the cause of the increase of *motion* may be *twofold* ;

1. A free *particle* not fixed to the Vessel, *rushing* by it's own *impetus* on that *point*, for it drives the *point* beyond it's natural *situation* ; but as soon as the impulse of the *particle* ceases, the *Fibre* immediately *contracts* it's self, that the *point*, which was *driven* out of it's place, may be again restored ; and indeed the farther this *point* was removed from it's *situation*, the more the *Fibre contracts* it's self : but the causes of such an *effect* do not endure long, but soon disappear.
2. The other cause, whose *effects* are more durable, may be a *particle* fixed to the sides of a Vessel, either *internally* by the contained Fluid, or *externally* by external causes : but how the *particles* fixed to the *Fibres* stimulate them, was explained, when I treated of *Acrids*.

2. THE Conditions required to constitute a *Stimulating* Medicine are, 1. That it be *fine* enough to get into the smallest Canals ; and fix it's self in their smallest *Pores*. 2. That it have a sufficient *Acrimony* in it, to make it's self an *aperture* in the sides of the Canals, into which it may insinuate it's self. 3. That this *fine* and *acid* Body be long enough to *appear* beyond the surface, when it is fixed, for otherwise it becomes a *nutritive* particle. Hence therefore we may gather, that every *Stimulating* particle is *acid* ; but yet it does not follow, that all that are *minute* and *acid* are *Stimulating* ; because they may be so *small* as to have no part of them appear above the *plane*, to which they are fixed. 4. That it be so *tenacious*, as to remain a long time in the place where it is fixed.



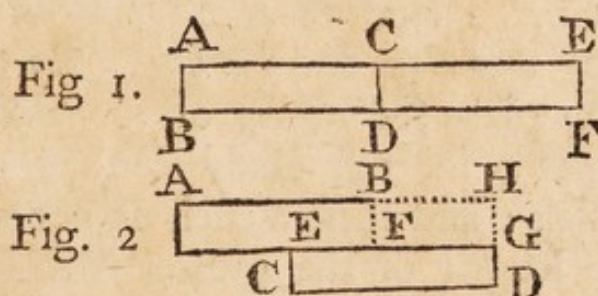
3. THE efficient causes of *Stimulation* are,  
 1. All causes of Wounds : for to wound is to make a solution of continuity by some hard and sharp thing, that is, which applies the *momentum* of it's motion to a few points. Hence, 2. *Nettles*, and other herbs that are called *stinging*, produce a *Stimulation*.  
 3. All kinds of *Salts*. 4. All *Oils* : which may stimulate two ways ; ( $\alpha$ ) so far as they fix themselves into the *Orifices* of the Pores, and obstruct them ; whence the *impetus* of the Liquids is made on the extreme *points* of the Vessels : thus *Olive Oil* rubbed upon the Body, causes to swell and redden ; nay and sometimes brings on a Fever, by hindring the Perspiration : ( $\beta$ ) so far as they are *acrid*, either by nature or art. 5. *Soaps* excite *Stimulation*, whether they are *artificial*, or *native* : as all Juices of Vegetables, so far as they contain a mixture of Oil and Salt. 6. All *Spirits*. 7. All *sharp* Earths. 8. Any *Heat* frequently applied : under which head may be comprehended *Sulphurs*, and *metallic Salts* ; for every *Metal*, how *mild* and *gentle* soever it may be in it's own nature, as we find in Gold and Silver undissolved, which are not in any degree hurtful, yet if they be dissolved in *Salts*, or *strong Waters*, become *caustic* and highly *stimulating*.  
 9. All external *Motions*. 10. Vehement *Cold*, which first of all *acts* indeed by giving a sensation of *cold*, but afterwards excites a violent *heat* : and this we see principally in *Fevers*, which commonly begin, with *cold*, *shivering*, *trembling*, &c. but these *Symptoms* are immediately succeeded by a great *heat*.



## C H A P. II.

## Of Contracting Medicines.

1. **C**ONTRACTING Medicines are those which draw two distant points of an elastic Fibre into a nearer contact, and more firm cohesion. Which that we may more easily conceive, let us suppose that A B in Fig. 1. is a last smallest



*Solid*; and that E F, which is also a *Solid* of the same nature, adheres at C D; in such a manner that these *two Solids* are *directly* opposite: this being supposed. I say they cannot be contracted; for the particle A B being solid and compact, cannot *enter* the particle E F being also solid and compact, to which it is connected; and therefore that it does not make the line A E more *short*, that is, they cannot *contract* themselves. But if we suppose, in Fig. 2. that the particle A B adheres to another C D, at the points between E F; this being supposed, we may easily conceive, that the particle may change it's situation, so as from A B to become E H; whence it comes to pass that it now adheres to the particle C D by the points between E G: and thus the *length* which those *two* particles had, becomes less, that is, there is a *contraction* of the



particles. Whence it follows that our *least Solids* cannot be contracted *by themselves*, or *singly*; and consequently that *contraction* is made only in respect of two or more *Solids of the same kind*, placed near each other.

2. Now the causes that promote *contraction* may be reduced to these four THEOREMS.

THEOREM I. Whatsoever dissolves the *continuity* of any Fibre, promotes it's natural *contraction*; as was before demonstrated; thus therefore our Arteries, Veins and Fibres being *wounded* and *cut* *contract* themselves; hence also *Fire*, *Corrosives*, and *Vulnerants* are causes of *contraction*.

COROLL. Therefore most *contracting* Medicines act by *wounding* and *hurting*. By *hurting*, I mean in this place the *cutting* of the *smallest* Vessels by any force: for our Body consists of infinite *smallest* Vessels; and these Vessels do not run according to the length of the greater Vessels, but are *compounded* between themselves, and *twisted* like *ropes*; of which you may see more in CHAP. V. so that a *great* Vessel can hardly be hurt, without some of the *smallest* being torn to pieces; as the Arteries and Veins *contract* themselves when *cut*, so also do those *smallest* Vessels: therefore *hurting* is the cause of *contraction* of the Vessels; and Medicines which *hurt* these Vessels, produce *contraction*; and such are all kinds of *Acrids*. But the effect of the *contraction* of the Vessels thus procured, is the *extravasation* of the Liquids.

THEOREM II. *Contraction* is promoted by all those, which by their strong *endeavour* so dilate the Canals, that their *longitudinal* diameter becomes less, and their *latitudinal* greater: and these are of *two* sorts, namely *repleting* and *stimulating*; and this is to be understood of excavated Fibres; hence also the lips of *wounds* become dry and *chapped*.

THEOREM



**THEOREM III.** *Contraction* is promoted by whatsoever takes away the causes of the *distension* of the Vessels: and this is done by any *depletions*; as we plainly see in those which act upon the *nervous System*, producing a *Salivation*, and thence a *Marasmus*; for the Vessels being too much emptied, *contract* themselves, which makes the Body grow *lean*: the same is done also by all *hot* things, which are wont to dissipate the *most liquid* parts.

**THEOREM IV.** *Contraction* is caused by the *insinuation* of small particles between the surfaces of the *smallest Stamina*; for thus if any Liquid *insinuates* it's self between two contiguous *Fibrillæ*, then they are contracted in proportion to the quantity of the insinuated Liquid; for as this *inserted* Liquor moves these *Fibrillæ* from each other, and therefore changes them from *right* to *curve* lines, it must necessarily *shorten* the whole length of the Fibre. Hence therefore arise wonderful effects; for *dry cords* being put into Water *contract* and grow *tight*, as the strings of musical Instruments; and so our Nerves also, and the Heart it's self, which is very much *contracted* and grows *solid* in *Spirit of Wine*: now such a *Contraction* is made by *Spirit of Wine* and *Oil of Turpentine*, which, when they have insinuated themselves, *remain* there, and grow *solid*; whence so many different symptoms follow from the abuse of them: and from thence it is manifest how dangerous all *Contracters* are in the *smallest* Vessels, because they are *concreted* with them.

**C O R. I.** Hence the *solidity* of any Fibre, may be increased; for the *insinuating* particle applies it's self to the sides, and there *concreting* or uniting with it, gives a greater *solidity* to the Fibre.



C O R. II. Therefore, the rest being equal, the *Contraction* of the Fibres increases their power on the Fluids contained within the Canals.

C O R. III. Therefore the *strength* of the Body is increased by the *contraction* of the Fibres; hence all Men whose Fibres are thus contracted, have also greater *strength*.

### C H A P. III.

#### Of Relaxing Medicines.

1. **B**Y Relaxation is meant, *such a change in the Solids, as may make them longer than they were before, without any Rupture*; thus *Flexibility* and *Dilatation* are comprehended in this definition: since there can be no *flexure*, no *dilatation*, unless the Body be in some measure *prolonged*.

2. Now this *prolongation* may be considered, either with regard to all the *smallest Fibrillæ*, or with regard to the Vessels composed of those *Fibrillæ*: moreover this *prolongation* cannot be conceived in the *smallest Fibrillæ*; for that the *smallest Fibrillæ* be set at a greater distance from each other, it is necessary that some *lubricating* particles must *insinuate* themselves between those parts; but this cannot happen in these that are the *very smallest*, without a *solution of continuity*.

3. A MEDICAL therefore and proper *Relaxation* obtains only in the *last* of our Canals, which are composed of those *Fibrillæ*; which, if they become *rigid*, and are deprived of their Liquids, so that their sides *cokere*, lose their *laxity*, which cannot be restored by any art, unless by supplying the *lost* Liquids, by which they are *lubricated*, and rendered more fit for the motion of *flexion*.

4. WHEREFORE



4. WHEREFORE *Relaxing Medicines* are those, which by entering the Canals, remove their sides from each other, and render them soft by *lubricating* them : such are, 1. *Warm Water*, either taken *inwardly*, or applied *outwardly*, as in *Baths, Fomentations, &c.* 2. All *Vegetable Oils* pressed from mild, not acrid ripe seeds ; as *Oil of sweet Almonds, Olives, Linseed, &c.* 3. Of the Animal Kingdom, the *Marrow of Bones*, which is most subtle, as having been derived thro' exceeding small passages into the Cavities of the Bones ; also *Sewet and Fat*, especially that of the Cawl. 4. *Glutinous farinaceous Decoctions* in the form of an Emulsion ; such are usually made of *Barley, Linseed*, and other seeds, that yield *Oil* when they are pressed ; and of *oily, lactescent herbs*, that are not acrid ; also of those herbs that are called emollient. 5. All *saponaceous Bodies*, especially the *Bile of Animals*, which is greatly emollient.

C O R. HENCE that PROBLEM is solved, why *Water* first *relaxes*, and then *stiffens* ; as a *Hide* by being steeped in *Water* becomes very *soft and flexible*, but when dried again, becomes more *hard and more inflexible* than before : for when the *Water* first penetrates it, it has the nature of a *Fluid*, and therefore makes the parts *soft* by moistening them ; but the *most subtle* part of it being *expelled* by the power of *heat*, what remains approaches to the nature of a *Solid*, and *unites* with the *Fibres*, and increases their firmness. Moreover the effects of *Relaxing Medicines* are two ; 1. A Dilatation of the smallest Canals ; 2. A more free Circulation of the humours, thence proceeding.



## C H A P. IV.

## Of Constipating Medicines.

1. **C**ONSTIPATING Medicines are those which so obstruct the out-lets of the Vessels, as to intercept their vital Flux; and therefore every Constipater acts, either so far as it adheres externally to a Canal, and compresses it; or so far as it sticks internally to the sides of the Canals, and stuffs them up: but whether any Medicine *constipates* in the latter sense, we have reason to doubt; and that for these reasons. 1. Because the Lacteal Vessels are so small, that it does not seem possible for any thing to enter by them, that is able to create the *obstruction* just mentioned in the other Vessels. 2. If any such *Obstruent* did enter the Lacteals, it would fall first upon the Lungs, and there it's effects would be perceived; because from it's entrance into the Lacteal Vessels, to the very entrance into the Lungs, it is continually moved from a *narrower* into a *wider* Canal, as is manifest from *Anatomy*; but as soon as it is carried into the Pulmonary Artery, it begins to be moved from a *wider* into a *narrower* space; and at last is carried into the most *strait* Vessels of the Lungs, in which, as they are the least of the whole Body, it will either beget an obstruction or no where. 3. The Blood is very much *broken* and *divided* in the Lungs, by the *compressing* force of the external Air, and is therefore rendered less capable of producing such an *obstruction*. Besides it must be observed, that it is the nature of our Blood to *concrete* as soon as it is *at rest*; but it is never *at rest*, unless the motion of the Heart and Arteries is *diminished*: and therefore those



those may be called *internal Obstruents*, which *weaken* the *force* of the Heart and Arteries; which is generally perceived *equally thro'* the whole Body, but first in the Lungs. Thus therefore there is an *obstruction* caused in a particular part, when for some cause, the Liquid is at rest in that part; and thus such *Obstruents act* only by *coagulating* our humours.

2. *CONSTIPATING* Medicines are of *two* sorts; *Illinents* and *Emplastics*. The *Illinents* are,  
 1. All *expressed Oils*, applied either externally or internally; for as they do not mix with *Water*, they hinder it's *flowing thro'* the Canals, as appears in *oiled Paper*.  
 2. *Mucilaginous farinaceous seeds*, as those of *Poppy, Lettuce, &c.* boiled with *Water* to a Gelly; also the *four Colds seeds*. 3. *Compound Oils* of Vegetables and Oil boiled together. 4. *Oils distilled* from Vegetables. 5. All *native liquid Balsams* whatsoever.

*EMPLASTICS* are such as *stop the Pores externally, like Glue*: and these have *two* effects; for, 1. They smear and stop up several Vessels together; 2. They cause the Liquid to stagnate, and putrify. But the *Classes of Emplastics* are *five*. 1. All *Meals* consisting of Oil and Earth, reduced into a *Paste* with a small quantity of *Water*. 2. Every tenacious and agglutinant *Liquor*, that flows from Vegetables: now Plants afford *three* sorts of Liquid of this kind; ( $\alpha$ ) that which may be *dissolved* only in *Spirit of Wine*, and is called *Oil*; ( $\beta$ ) that which is thicker, and *dissolves* in *Water*, and is called *Balsam*, consisting of *Oil* and *Mucilage*; ( $\gamma$ ) that which is composed of the former *two*, combined with *Earth*, and is called *Gum*; and this, if it becomes more solid, by the flying away of the finer part, is called *Resin*. 3. All *Resinous Bodies*. 4. All *Glues*, or *Decoctions* inspissated by long boiling, made of the *solid* parts of Animals;



Animals, ; as *Icthyocolla* of Fishes, which is the best glue; for the Author of nature, that Fishes might not continually be injured by the *Salt Water* with which they are surrounded, has placed innumerable *Glands* in their Skin ; which separate an *Oil* ; whence the *Skin* of Fishes is very *balsamic*, and the *glue*, called *Icthyocolla*, *Isinglass* or *Fish-glue* is made by boiling it to a gelly. 5. Compositions of these four, as *Cataplasms*, &c.

3. BUT the effects of all *Illinent*, *Obstruent*, and *Constipating* Medicines are ; 1. The hindering the passage of the Liquids, so as to make them *stagnate* in the Vessels : for thus we are wont to preserve *dead Bodies* by smearing them with any thing *unctuous* to hinder the entrance of Fluids : 2. The producing all those things, which are wont to be produced by the *power of life* on any obstructed Vessel. For the *stagnating* Liquids are by the *power of life* pressed from behind, altered, and increased in quantity ; whence arise *tumours*, which, if they are about Arterial Vessels, become *inflammations* : if the tumour is about the Lymphatic Vessels, it becomes a *white vesicular tumour*, or *œdema* : if about the *smallest* of all the Vessels, a *flatulent tumour* ; as is usual in the Gout, from the application of a Plaster ; for thereby the passage of the Liquid is obstructed, and therefore that part appears as it were distended with *flatules*. Moreover if the *obstruction* and *inflammation* remain, and the *power of life* is not lost, there arises an *Aposteme* : if the *power of life* is much, and the *obstruction* great, there arises a *Gangrene* : if all the *Liquid* is squeezed out, and the *thick* matter unites, there is produced a *Schirrus* : if that matter is moved, it becomes a *Cancer* : if a great quantity of Vessels are destroyed by the *vital power* and an obstinate obstruction, there arises a *Sphacelus* or *mortification of the part*.

But



But if these *Illinents* and *Obstruents* are applied to a *Carcass*, in which there is no *power of life*, they will have no other effect, than the preserving of it from *corruption*.

## CHAP. V.

### Of Specific Chirurgical Medicines.

I. **S**PECIFIC Chirurgical Medicines are distinguished into *Sarcotics*, or *Generators of the Flesh*; *Cicatrifers*, and *Generators of Callus*; none of which act on a *Carcass*, but suppose a *vital flux* of the Liquid. *Sarcotics* are those, which take away that which hindered the concretion and exsiccation of the Vessels. *Generators of Callus* are those which take away the impediment of nutrition or accretion in the *smallest* bony or cartilagineous Vessels.

2. BUT now that these Medicines may have their effect, there are some *conditions* required in our Fluids, and some in the Solids. In the Fluids it is required, 1. That they be mild or smooth, 2. That they be moveable thro' the smallest Vessels, 3. That they be something *glutinous*: for the actions of these Medicines are in the *smallest* and *most tender* Vessels, which scarce differ from a Fluid; and therefore, the Fluids which pass thro' these, ought to be void of all *Acrimony*, that they may not destroy the Vessels; they ought to be such also, as to flow easily thro' them; but not so *thin*, as to flow quite out, but of such a consistence, as to adhere to the Vessels. But it is required in the Solids or Vessels, 1. That they be *fit* to receive the Fluid, 2. That



2. That they be *flexible* and *dilatable*, so that sometimes they may be easily *distended*.

3. THESE being supposed, the following must consequently be the effects of these Medicines,  
 1. The disjointed Canals are united after the manner of an *Anastomosis*. 2. The ends of the Canals are only so far *distended* by the *impetus* of the Liquid, as to be open only to Insensible Transpiration, or so far as to emit Sweat also : and this *last* is the best method of healing without a *cicatrix* ; but it seldom is done, because a *wound* is more quickly and easily consolidated after the common manner ; but then that part is not fit for Perspiration. 3. There is an *accretion* and *withering* of the Vessels, when their resistance is such, that the Liquids cannot enter ; whence is formed a *cicatrix*, a *stagnation of the nutritious juice* in the last Vessels, and a *concretion* and *agglutination* of it : for indeed every Liquid *stagnating* in it's Vessel *concretes* with it ; whence the part is covered with a *cicatrix*, and exceeds the other parts in *solidity*, *hardness*, *insensibility*, *whiteness*, and also a more difficult and spare Perspirability. Hence because of the pressure of the Atmosphere, sometimes *pains* are felt in those parts which were *wounded* : to avoid which, in the cure of wounds, the Vessels ought to be preserved so soft, as to be capable of *distension* ; but most Surgeons by hastening the cure so increase the *strength* of the Vessels, that their *resistance* is greater than the *pressure* of the Liquids, which therefore cannot enter ; and so the Vessels are *pressed* together and there is formed a *Callus*.

4. FROM what has been said it appears therefore that the Medicines of which I am now speaking must exert their *powers* on the Fluids as well as on the Solids ; and therefore are either *external* or *internal*. The *internal* are those which afford a *mild Chyle*, which does not abound with any Salts, acrid  
 aromatic



aromatic Oil, or terrestrial Acrids; and which also yield a *thin Chyle*, but yet a little *viscid*; for it must not be so thin as to cause a *Fluidity* in the wound: such are 1. *Decoctions of Flesh and Broths*. 2. *Decoctions of soft meals*, as *Barley, Oats, Wheat, Rice*. 3. All emulsions made of the same. 4. Such things as take away the *predominating Acid*. Now *Acrids* are either *Alkalines* or *Acids*, or *Oils* or *Earths*, or such as are combined of these *four*. But there are proper Medicines to temperate every sort of *Acid*: for every *Acid* may be subdued by being sheathed with *Oil* or diluted with *Water*, or blunted with *Mucilages*, or destroyed by *opposite Salts*, that is, *alkaline Salts*. But *Alkalines* are subdued by *Water, Oil, Mucilage* and *Acids*. *Acrid Oils* are composed either of *aromatic* or *alliated Oils*, or of *expressed Oils* which are grown *rancid*: and therefore are not easily taken away, because the *Oils* adhere very pertinaciously, and do not easily yield to *diluting Water*, unless some *acid Salt* and a little *Mucilage* be added to it. *Terrestrial Acrids* are hard and cutting Bodies, as *powdered Glass, crystals, Metals, Semi-metals*, and all *solid Bodies* so far comminuted, as to be able to enter into the Canals, and penetrate their sides: but these cannot be mattered, or got out, if they are deeply stuck into the sides of the Canals; and the only attempt we can make to remove them, is relaxing the Vessels with a great deal of *Oil* and *Water*. 5. Such as attenuate what is *thick*; for if the *matter* is too thick, the *wound* cannot be consolidated: the best Medicine for this, is *fair Water warm*, to which may be added *fixed alkaline Salts*; for the *volatile* fly away too soon, and if they are taken in great quantity, stimulate too much. 6. Such as give an *equable motion* to the Liquids: of which kind are those which keep the Liquids *equally lax*; as *Water* moderately warm. Now these are the  
*internal*



*internal Medicines* which are required to the cure of *wounds*.

THE *Externals* are those, by whose help the *balance* is preserved between the *resistance* of the Vessels and the *power* of the Liquids flowing in; so that the Vessels *resist* neither more nor less than they ought: but if the Vessels are so disposed, as to remain in *equilibrio* with their Liquids, then the *wound* will be cured without any *cicatrix*. Hither also conduce, 1. What *relax* the Vessels; and amongst these the best is *warm Water*. 2. What *resist putrefaction*; as all *spirituous* Liquors, which are said to cleanse; also all *Salts*, except the *alkaline*; all *Oils* and *Balsams*, as *Turpentine*, *Balsam of Capivi*, of *Peru*, &c. and then all *Tinctures* made with *Spirit of Wine* and *Balsams*, as *Wormwood*, *Scoridium*, and all other *resinous* and *oily Bodies*; also *natural Balsams*, and *Ointments* and *Balsams* prepared with *Aromatics*; for all *Spices* contain a *Balsam*, which proceeds from their *Oil*, and may be extracted with *Spirit of Wine*; lastly all *cerates*, *oily*, but mild *Unguent*s, and *Plasters*; of which one may be sufficient, if made with *Wax*, *Turpentine*, and *Oil*. 3. Those which *dry* the too *moist* Vessels: for if the *Flesh* is too *luxuriant*, *excrecent*, and *fungous*, then it plainly indicates that the Vessels are too much distended and dilated: and therefore *exsiccation*, or *eating the proud Flesh away*, as the Surgeons call it, is required. Now *Exsiccants* are, the *Bones of Fishes* calcined in a slow Fire, and powdered; as the *mandibles of a Pike*, which absorb the *acid acid*, but if too long applied, *exsiccate*, and form a *cicatrix*: also all *stones of Fishes*, as *Crab's Eyes*, *Pearls*, &c. *Colophony* also, which is made of *Turpentine* boiled in *Water*, and dried 'till it can be powdered, is of the greatest service; and is the last remedy in *drying up Fistulas*: also all *Earths*,  
as



as Chalks, Boles, red Ocre, Osteocolla, &c. and lastly Earths of Metals, as calx of Vitriol, well edulcorated, Blood-stone, Saffron of Iron, both the aperient and astringent, Ceruse, red Lead, calx of Tin, which absorb all Liquids. 4. Those which by contracting the Vessels, give them solidity and strength; such are Alcohol of Wine, Oil of Turpentine, almost boiling hot, &c.

## CHAP. VI.

### Of Solvents, or Causes of Pain.

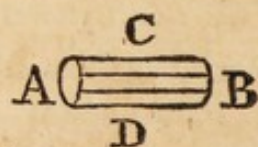
1. **P**AIN is an uneasy sensation, which accompanies the distension of a nervous Fibre: for there can be no tension in any nervous part of our Body, without causing pain, tho' there be no acrid or corrosive there; as is plain from the tortures of an executioner. But if any part is bound tight, is too much pressed, bruised, corroded, or cut, or destroyed by Fire, then all Sense of pain is lost in it: for if you cut the Nerve belonging to a Dog's Leg, the Dog will afterwards feel no pain in that Limb, tho' you handle it ever so roughly. We can therefore feel no corporeal pain, unless a Nerve be hurt, and hence according to the different degrees of that injury, different pains are excited in us.

2. BUT from thence arise three degrees of distraction of a nervous part, and of sensation of pain. The first degree is the slightest of all, when a Nerve is so stretched, that the mind may perceive that the force of the Fibres still exceeds the force used; whence arises an Itching or Titillation, that is, something between pleasure and pain. Whatsoever therefore causes the



the irritated part by a *slight tension* to remain in the *same* state, will excite joy : for the mind then perceives, that the *force of the Fibres* still exceeds the *force* that is used to the *Nerve*. The *second* degree is, when the *nervous Fibres* are so *distracted*, that some perception of *pain* arises, which is greater or less, according to the degree of *distraction*. *Lastly*, The *third* degree is, when the *continuity* is *dissolved*; for then the *Titillation* as well as *pain* ceases in the *dissolved* parts.

3. Too much *tension* or *distraction* causes *pain*, *two* ways, 1. On account of what preceded the *solution* of the *nervous Fibrillæ*; such as *inflammation*, *erosion*, &c. whence arises a *distraction* of them : 2. On account of those which follow this *solution*, namely the *destruction* of the tenor of *Fibres*; so that what before was sustained by *five* *Fibres* for example, is sustained after the *dissolution*, only by *one*. Let A B C D, in the *figure* adjoined, be a *Nerve*, consisting of some *Fibres*; if now any cause *dissolves* the *Fibres* contained between C D, which ought *all* to sustain the *impetus* or *force* of the points A B, in such a manner that *one* only remains uninjured, then this will be obliged to sustain the whole *force* of those points; and thence a *pain* will arise : but if that also be *broken*, then all *sensation* and *pain* will be lost in that part.



4. PAIN may be produced, 1. By all things which *distend* the *Vessels internally*; because sometimes a *rupture* of the most tender *Vessels* follows from that distension : 2. By whatsoever presses the *Vessels* externally, for the same reason. 3. By whatsoever too much distends the *Fibres* in any manner; as *distortion* or *luxation* : 4. By whatsoever *dissolves* some *Fibres*, leaving the *rest* untouched :



touched : but *continuity* may be *dissolved* either by a *mechanical* instrument, as a *Sword*, or by *acrid* Medicines, or by the action of *Fire*.

5. MOREOVER *Itching* or *Titillation* is excited,  
1. By *Reddening* Medicines, which are so called, because it is observed, that a *red* colour arises in the Body from *Titillation* : 2. By whatsoever causes a very *slight* inflammation, for thence is caused the first degree of *pain*, which is *Titillation* : thus every *red* pimple *itches*, and if too much handled, gives *pain* ; thus also the Genitals of all Animals, when they are excited by *lust*, *redden*, and the *Penis*, merely by thinking, with which it's little Nerves are irritated, *reddens*, and is *extended* : and thus every is a sort of inflammation. Now an inflammation arises from the passage of the Blood out of the Arteries into the *first* Veins being obstructed ; whence the *thicker* part is stopped in them, whilst the *thinner* flows thro' the *lateral* Vessels : and thus a *redness* arises.

THE causes of *redness* are, 1. All *Frictions*, that is, *reciprocal* compressions and remissions, so that the Canals are sometimes closed, and sometimes distended ; and from this *reciprocation* arises an agreeable sensation. 2. All *Fomentations*, or warm applications of *emollient* and *washing* Medicines, either *internally* or *externally* : for a *Fomentation*, by it's *warmth* lessens the *pressure* of the Air, and *relaxes* the Vessels by it's *moistness* : and therefore the Blood enters them copiously : whence arises *redness*. 3. All *thick* *Plasters*, which are *not* *acrid*, but *tenacious* and *glutinous* : for these by obstructing the *pores*, hinder perspiration, and thence the *humours* are accumulated. 4. *Cataplasms* of the same kind, that is, Bodies wrought with *Water*, and boiled to a *tenacious* consistence, being a *medium* between *Plasters* and *Water* ; hence they act with regard to *Water*,



as *Fomentations*, and with regard to *tenaciousness* as *Plasters*. 5. All *Suétions*, whether by *Leeches*, *cupping Glasses*, or by any other means; for by taking away the *pressure* of the Air, they draw the Blood into the parts where they are applied. 6. Any *heat* that exceeds the *heat* of our Body; for that increases the motion of the Fluids. 7. All *stimulating Acrids*, which penetrating through the *Fibres* of the external parts, that is, of the *Epidermis*, *Cuticle*, or *Scarf-skin*, and insinuating themselves into the pores that lie nearest under it, *fix* themselves into the *sides* of the Vessels; and being driven by the *vital motion* of the Liquids, so *aét* upon the Vessels, as to place them in the first degree of distribution.

SUCH are, 1. All *aromatic Plants*, which *Salt* and *Oil* predominate: as *Rue*, *Mint*, *Water* and *garden Cresses*, *Scurvy-grass*, *Radish*, *Nettles*, &c. all which being examined by the *chymical Analysis* are found to contain a great deal of *thin Oil* and *Salt*, besides *Nettles*, being examined by the *Microscope*, appear to have *bifid Darts*, which entering into our Body cause *tremblings* and *inflammation*; whence they are of great service if applied to *paralytic*, *languid*, or *benumbed Limbs*. 2. Animals of the same nature; for *Ants*, which afford a great deal of *Salt* and *Oil*, produce the same effect in our Body; thus also *rotten Flesh* and *Skins* afford a *volatile alkaline Salt*, which by it's *vellication* produces a slight inflammation; and *Pigeons* also fresh killed, and applied warm to the Body, and left there 'till they putrify, produce a slight inflammation or itching. 3. All natural things, in which there is any sort of *alkaline Salt*, either *fixed*, or *volatile*, or *muriatic*; also all *Acids* that are not too *acrid*; all *Oils*, or *Salts* also obtained either by *fermentation*, *distillation*, or *expression*; provided they



they be not too acrid. Now this inflammation, or *itching*, or first degree of *pain*, has two effects; ( $\alpha$ ) the attrition of the Solids, ( $\beta$ ) the derivation of a greater quantity of Liquid into the lateral and secretory Vessels.

6. THE *second* degree of *pain* is excited by all *Epispastics*, that is, Medicines which derive the Liquid into the part to which they are applied, with such force as to *burst* the most tender Vessels. This *extravasated* Liquor is retained by the *unbroken* Cuticle, which is elevated into *blisters*: and therefore *epispastic* Medicines must consist of *acrid* and *subtile* parts, which passing thro' the *unhurt* Cuticle, can *fix* themselves into the sides of the Vessels appropriated to *Sweat*, *perspirable matter* and *Lymph*, and *burst* them, but not destroy the Cuticle, because it has but *few*, if *any* Vessels; and therefore the *vital power* in it must be very *weak*.

THE Medicines which produce the said effect are 1. All *Phænigmi*, or *reddening* Medicines applied for a long time; for thus *Mustard-seed* at first causes a *redness*, but if it remains for two hours, raises a *blister*. 2. Whatsoever abound with an *acrid volatile Salt* and *penetrating Oil*, as *Ranunculus* or *Crow-foot*, *Roots of Thapsia* or *deadly Carrot*, of *Horse-radish*, of *Spearwort*, of *Sow-bread*; also *Onions*, *Garlic*, *juices of Euphorbium*, *Spurge*, *Thorn-apple*, and such like *acrid purging juices*; also *Saponaceous Lyes*, applied for a long time; *acrid Ferments*; *dung of Pigeons*, especially those which feed much on *Beans*; for hence *Pigeons dung* obtains the greater quantity of *acrid Salt*: lastly, *Cantharides*, and also some *Poisons*; the stings of *Bees*, *Wasps*, &c. 3. *Fire*, which when it is *slow*, only causes a *redness*, but if *increased* excites a *blister*; and that even on *dead Bodies*, because it has a motion in it's self; whereas other *Vesicatories* are *sluggish* on this occasion, and are drawn



into *action* from another cause. 4. All *alkaline Salts*, whether *volatile* or *fixed*; all *acrid aromatic Oils*; also *putrified Urine*, *rotten Flesh*, &c. These therefore are to be applied, where greater motion is required, to *dissolve* the *obstructions* of the Vessels, and drive them out by stimulation.

COR. I. ALL these Medicines, except Fire, perform the office of an *instrumental* cause.

COR. II. BUT they act only on the *solid* parts.

7. THE *third* degree of *pain* is excited by *Escharotics*: but an *Eschar* was called by the Ancients *focus Deorum*, or the *fire of the Gods*, and thence it came to signify the *crust* made by the force of Fire. They differ therefore from *Vesicatories* in degree only, as they lacerate the Cuticle, and corrode the Flesh. Of this Class are, 1. *Escharotics* properly so called, which destroy the Vessels, so as to cause the Liquids to be poured out: and the finest part of them being *fled away*, there follows an *inspissation*, then an *exsiccation*, and lastly a *crust*, which hinders the evaporation of the Liquor bursting out of the broken Vessels; whence the Liquor by stagnating becomes *acrid*, and by corroding penetrates farther, and destroys every thing, as if it was *Fire*. 2. All *vegetable*, *animal*, and *fossil* Bodies, in which there is such a *force*, as may destroy the Vessels, and expel the Liquids, and by inspissating the finest part of the Liquid bring on a *crust*: after this manner act *Vitriol*, *Arsenic*, *Aqua Fortis*, *Lapis infernalis*, and such like. Hither also the ancients referred the following; (α) *Caustics* of which actual *Fire* is the principal; whence those things, which act after the manner of *Fire*, are called *Caustics*, and are (1) *acid fossil Spirits* from *Salts*, for example, from *Sea-salt*, *Nitre*, *Vitriol*, and also from *Sulphur* distilled by the force of a very strong Fire; (2) *Metals* dissolved in those *saline acid Spirits*; and reduced  
into



into *Crystals*; as *Crystals* of *Gold* and *Silver*, and *Mercurials*. (3) *Semi-metals* dissolved in the same *Spirits*; as *Cobaltum*, *Antimony*, &c. (4) *Alkaline Spirits* of *Animals*, which may be drawn from all parts of *Animals*, except *Chyle* and *Milk*: for in distillation, after the *Water* or *Pblegm* which comes off first, the *volatile Salt* ascends, and then a *stinking Liquor* which is the *Spirit*, and which being applied to the *Body* is an immediate *Caustic*. (6) *Acid Spirits* prepared in like manner from *Vegetables*. (7) *Juices* of the most acrid *Vegetables*, as of *Crow-foot*, *Spurge-laurel*, *Euphorbium*, &c. (β) *Septics*, which cause such a change in the *Flesh* of a *living Body*, as is wont to happen to a *Carcass* exposed to a *moist* and *warm Air*, namely *Putrefaction*. For the humours of a *Carcass* being agitated by the power of *heat* are moved, and a way is opened for them to *evaporate* by the *Liquid softening* the *Fibres*; wherefore the *aqueous*, *balsamic* parts of the humours, being *subtile*, presently fly off; which being removed, a most stinking and acrid *volatile Salt* breaks forth; whence it comes to pass, that the *Solids* and *Liquids* which remain, turn into one dissolved and *putrid* mass, that is, the *Carcass* putrifies; a like *Putrefaction* is caused by *Arsenic*, being mixed with roasted *Onions*, that preserve their moisture; also by *corrosive sublimate Mercury* being mixed with moist farinaceous substances, and *Cataplasms*.

COR. I. ALL Medicines whatsoever, that excite pain, from the first degree of *titillation*, to the last of *destruction*, differ only in degree, as some operate more and others less violently.

COR. II. NONE of these Medicines, except *Fire*, act by their own power; for if they are applied to a *dry Skin*, and there remain unmoved, they do nothing; but if they are mixed with the



Liquids in the Body, which is always in motion, they produce vehement effects ; thus the strongest Oil of *Vitriol* congealed has no effect, if applied to a dry part ; but has a violent one, if mixed with the Liquids of a *living* Body.

COR. III. *HEAT* is the *exciting* and *stimulating* cause of all these Medicines, so far as it increases the velocity of their motion ; for *Septics* applied *hot* are wont to operate with the greater effect. These Medicines therefore will be, according to their *different* degrees of *heat*, either *stimulating*, *attenuating*, or *putrifying*.

COR. IV. THE causes lastly which excite these Medicines into *complete action*, are *heat* and *moisture* together ; for it is not sufficient, that they be dissolved in the *moisture*, unless *heat* is added for a *Stimulus* ; whence they act best of all on our Body, because of it's *heat* and *moisture*.

THUS far concerning Medicines which *operate* on the Solids ; now let us pass to those which *act* on the Fluids.







## P A R T II.

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## M E D I C I N E S

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## F L U I D S.



H A V E said already, that our Fluid may be considered, either with regard to the particles of it's *last Solids* taken separately, or so far as it is a *mass*, composed of those particles. Being considered in the *former Sense*, it may undergo four changes; 1. Any particle may be augmented or diminished in it's own bulk only; 2. It may receive this or that Figure; 3. It may be rendered more or less solid; 4. It may be moved one way or another. But being taken in the *latter sense*, it may be carried either by a quicker or slower *projectile motion*.



## C H A P. I.

## Of Attenuants or Resolvents.

**A**TTENUANTS are those, which have the power of reducing each of the *Moleculæ* of a Liquid into smaller ones ; and they are called also *Resolvents*, as they resolve the *Moleculæ* of the Liquids which preternaturally coalesce into a natural state : both of them therefore always act by dividing.

2. *DIVISION* may be brought about *two ways* ; 1. When the *dividing* Body insinuates it's self into the pores of that which is to be *divided*, and separates it's parts from each other ; 2. By the external *attrition* of different Bodies. The *first* is not brought about by the *Fluids*, or by those which have the nature of Fluids ; the *latter* obtains in all those, which can excite a motion in our Liquids.

3. *MOREOVER* it is to be observed, that the *powers* of Medicines are to be determined not only by reason but by experience ; that we may not fall into errors, as those are wont, who gather from the *fluidity* of Spirit of Wine, that it is endued with an *attenuating power* ; whereas it quickly *coagulates* the Blood, as we learn from experience. This caution being given, *Attenuants* therefore are all those natural Bodies, which take away from particles their *endeavour to cohere*.

4. *THAT endeavour* may arise from *two causes* ; 1. From the *Attractive Power* of the particles, which seems to be in every particle of matter, but is not yet sufficiently known and explained ; 2. From a cause pressing *externally* ; thus two mirrors perfectly



fectly polished, and laid upon one another, are so vehemently urged toward each other by the pressure of the Air, that they cannot be separated without great force. But in this place I shall consider the *endeavour* of particles toward each other, as proceeding only from a *posterior* cause ; and therefore the *Seccession* of the particle from each other, which is called Attenuation, is caused only by *taking away* the *pressing* weight ; but in our Body the *weight* is nothing else but the *amassing* of a great quantity of Liquid in some narrow place, whence the parts are pressed upon each other.

5. THE best *Attenuants* therefore in this case are, 1. *Evacuations* ; such are *Depletion* of the Sanguiferous Vessels, *Salivation*, *Diuresis*, *purging by Stool*, &c. for part of the Fluids being taken away, that part which remains in the Body has a greater liberty of motion, and an admission also is prepared for other *Attenuants*. But it is to be observed, that tho' a *due Depletion* of the Blood-vessels conduces to the *Attenuation* of the Blood, yet *too great* an one hinders it ; because in this case the Vessels cannot contract themselves so far, as to propel the contained Blood : whence the Blood stagnates, and is coagulated. 2. All *Diluters*, which, by the interposition of particles, disjoin Bodies from each other : such are, (α) *Water*, which is the best *Diluter* of all. (β) All *volatile* and *mild alkaline Salts* ; as those of *Hart's-horn*, *Blood*, *Urine*, and such like, which are prepared from the parts of Animals. (γ) All *fixed alkaline Salts*, of incinerated plants, but such as are not very acrid, for fear they should corrode. (δ) All *volatile ammoniac Salts* ; which consist of a *volatile Salt* and *Acid* united, but in such a manner that not the *Acid* but the *Alkali* predominates ; for otherwise they would coagulate. (ε) All *acrid oily volatile Salts*, composed of a *volatile Salt* and *Oil*. (ζ) All *fossil*



*fossil Salts*, as *Sea-salt*, *Nitre*, *Borax*: but not *metallic Salts*, for they thicken, because they consist of Earth dissolved in *Acids*. (n) All *artificial Soaps*, which, without exception, always resolve and attenuate: also the *natural Soaps of plants*, that is, their aromatic juices. (o) *Extracts* made of them. (p) All *Wines*, provided the *Acid* does not predominate in them. 3. All that comminute the parts of the Liquids by attrition: and this may be done *two* ways; ( $\alpha$ ) by increasing the intestine motion of the Fluids, and ( $\beta$ ) by increasing the force of the Solids.

6. THE *intestine motion* of the Fluids is increased after *four* manners. 1. By heat: but in truth this has very little effect here; because our *natural heat* is not the *cause*, but the *effect* of the attrition of the flowing Liquid: but *artificial heat* dries, if it is great, and has no effect if it is small: and indeed a *warm moisture* only can be of use in this place, as *fomentations*, *baths*, &c. in the use of which however it often happens, that tho' they are well tempered, yet the condition of the Patient causes them to coagulate instead of attenuating. 2. By *effervescence*: but this, as it is defined by the Chemists, to be a *fight of opposite Salts with one another, with great heat and motion*, cannot happen in our Bodies; nor can that which is between *acid Spirits* and *Oils*, as between Spirit of Wine and Spirit of Nitre; nor that which is between *terrestrial Bodies* and *Acids*. 3. By *fermentation*; but neither can this happen in our Bodies; because the requisites to *fermentation* are wanting; wherefore neither can the *effect* of this, that is, the production of *ardent Spirits* be ever found in our Liquids. 4. From *putrefaction*; but as this obtains only in Liquids that are corrupted, or just ready to be corrupted, if it was to happen in our Body, we must in a short time be destroyed



destroyed. And thus none of these *four* causes, except the *warm moisture*, conduce at all to the *attenuation* of the Liquids in our Body.

7. THE *motion* of the Solids is augmented in us after *two* manners, 1. By those things, which excite great *oscillations* by their *external force*; 2. By *internal stimulators*: to this belong *frictions*, which by *alternately* compressing and relaxing the surfaces of the Vessels, increase their *motion* and *attrition*.

COR. I. IT is manifest therefore from what has been said, that the action of *Attenuants* and *Resolvents* cannot be so easily conceived and determined, as some imagine: for thus we often wonder, why a *slight* inflammation cannot be dissipated without great difficulty, as also why the Blood extravasated and coagulated by a contusion should remain long; when the reason of this is, that Medicines ought to act rather on the affected part than on the *whole* Body: but how shall they receive a *determination* to that part? For let us suppose that any one, to attenuate the Blood coagulated in any part of the Body, should take *six grains* of some *volatile Salt*; this quantity will be mixed with the whole mass of Blood; which is at least *thirty pound*: how little a part then will come to the affected part, by the laws of circulation.

COR. II. IT is the part therefore of a prudent Physician, to be careful rather, that the Blood do not coagulate, than to endeavour to *resolve* it when coagulated.



## C H A P. II.

*Of Incrassating or Condensing Medicines.*

1. **A**N *Incrassating or Condensing Medicine* is that, which expelling the finer particles of the Liquids binds the thicker more strongly together. It appears by experiments made in England, that Bodies have, besides their *solid* parts, many *Pores*, which may *physically* be taken for *Vacuums*, and do not resist the entrance of another Body: an *Incrassating Medicine* therefore *acts* by lessening those *Pores*; which is brought about by the *compression* of the *solid* parts, so as to make them approach nearer to each other: but this cannot be done without the expression of the *more liquid* and *finer* particles.

2. *INCRASSATING Medicines* are, 1. All vehement heat, whether it arises from *Fire*, the *Sun*, or from *Friction*: the effects of this are, to move the Liquids, and therefore to increase their *attrition* against the Vessels; whence follows an *expulsion* of the *most Liquid*, the thicker and less moveable being left, which then *unite*: and therefore there is no Liquid in our Body, which is not *thickened* by the *Fire*; therefore *heat thickens* the Liquids: and if it sometimes *dissolves* them, it does that by *acting* on the Solids, and *stimulating* them; but it never attenuates the Fluids *immediately* by it's self: nay when the *Stimulation* is ended, there begins an *Inspissation*. 2. All *muscular motion*, that is too vehement, for it first increases the Sanctorian Perspiration, and then expels the Lymph under the form of Sweat, and that which cannot be pressed out is *inspissated*, or thickened: the same *motion* sometimes attenuates,



*attenuates*, provided it be not too vehement ; which it does by increasing the *contractile power* of the Solids, and promoting their *action* on the Fluids : but if this *muscular motion* is too much exercised, then, as HIPPOCRATES observes, the Blood is in a manner boiled, and there arises a *burning Fever*, unless it be prevented by drinking *Water*. 3. A too vehement *circulatory motion* of the Blood ; for this increases the applications of the particles to the surface of the Vessels ; for the velocity of one Fluid is to that of another, as this application is to the application of the other ; therefore if the velocity of the *projectile motion* be double, the rest being equal, the derivation also toward the *lateral Vessels* will be double ; and as these are less than *strait* ones, they will admit only the *most liquid*, and that in sufficient plenty : whence the particles which are carried *strait* forwards will be *thickened*, and become in a manner *solid* by the *vital power* pressing behind. Moreover this *motion* also sometimes *attenuates*, but not unless a great quantity of Liquor be *drank* in the mean time, to restore the *lost Liquid*. 4. Every *excretory motion* too much increased ; because the *most liquid* are too much drawn out of the Body, as happens in too great Sweats, Purgings, a Diabetes, &c. 5. Any Cause compressing the Vessels *externally* ; for this expels the *most liquid* parts : as appears in those who enter *Mines*, where the *pressure* of the Air is great ; for first they grow *cold*, because the transflux thro' the *most small, extreme* Vessels is hindered a little ; but soon afterwards they *sweat*, not from the *heat* of the place, as we find by the Thermometer, but because the *force* of the Heart remains, while the *capacity* of the Vessels is diminished : wherefore the same quantity of Liquid is carried thro' the Canals now made *narrower* ; whence there is a greater *motion* and *attrition*, and consequently



consequently a *Sweat*. 6. All kinds of Medicines, that can either excite or increase the *preceding* : such are all Medicines that are *Stimulating*, *Sudorific*, *Emetic*, &c. the abuse of which thickens the Liquids. Hence in such *Diseases* as depend on the *thickness* of the Humours, it is of ill consequence to give *Sudorifics*, when on the contrary *Diluters* are indicated.

C O R. I. ALL Remedies which *thicken* the Blood to a due degree, *strengthen* our Bodies and dispose them to *long Life*. For if a *due thickness* of the Blood is wanting, the Liquids are derived in too great plenty into the *lateral Vessels*, and separate from the Body : whence the *strength* perishes ; which consists in the *magnitude* of the Veins and Arteries, and *due thickness* and *firmness* of the Blood flowing thro' them ; as plainly appears in the Blood of strong labouring Men, when it is drawn out of their *Veins*.

C O R. II. WHEN the Blood is too *thin*, it may again be *thickened* by a strong *motion* of the Muscles : as may be observed in *Consumptive Persons*.

### C H A P. III.

#### *Of Medicines causing Acrimony.*

I. **B**Y *Acrimony* I understand that *Figure* of a Body, by the help of which it may apply it's mechanical force to another Body according to a small surface. But now *acid* Bodies may be infinite with regard to their figure ; for they may be either *conical*, or *pyramidal*, &c. Thus a Sword, a Knife, an Inclined Plane, a Wedge, &c. are *acid* Bodies. But the Force or rather the *Momentum* of them,

as



as well as of all Bodies, may be considered *two* different ways; either *absolutely* or *specifically*: an *absolute Momentum* is that which is had from the Velocity of a Body multiplied by it's Weight; the *Specific* is taken from the Resistance considered with the *absolute Momentum*. For example, if there are *two* Bodies, *one* of which has *one* degree of Weight, and *one* of Velocity; and the other has *two* degrees of Weight, and *two* of Velocity, then the *absolute Momentum* of the first will be to the *absolute Momentum* of the second, as the Velocity of the first multiplied by it's own Weight, to the Velocity of the second multiplied by it's own Weight, that is, as 1 to 4. If now we suppose, that these Bodies in another Resistance, are *impinged* by this law, that the Resistance which the second finds, is *four* times greater than that which the first finds; their *specific Momenta* will be equal: but if the Resistance of the second exceeds *that* of the first in a still *greater* proportion, then the *specific Momentum* of the first will exceed the *specific Momentum* of the second. Hence also the *smaller* the *resisting* Superficies is, on which any *acrid* particle *impinges*, and the more Weight and Velocity this particle has, the *greater* will be it's effect.

2. EVERY *mild* Body is capable of becoming *acrid*, and so on the contrary: but the *Acrids* in us may be of *two* sorts; those which *spring* there, and those which are brought from without. Those Bodies also which are *mild*, become *acrid* two ways; 1. By changing their Figure; 2. By removing the Sheaths, with which the *Acrids* were covered: but in a *healthy state*, there are hardly any *Acrids* in us; for if there are any, they are presently drawn out of the Body, as Bile and Urine. Therefore there are no *innate Acrids*, except these two: for the *aqueous* part, which constitutes the greatest part of  
the



the Liquids in us, never becomes *acid* ; as appears in the distillation of Blood. Our *terrestrial* parts are hardly ever changed into *acid*, at least it does not yet appear by experiments; sometimes indeed, as in the Stone and Gravel, there are *acid* particles; but these are *saline* particles mixed with the *terrestrial* ; and therefore the *Acrids* are to be sought for in other parts. Our Oil is a *most mild* substance, for when dropped into wounds it lenifies them; but yet it is easily changed into an *Acrid*, for if any one shall have taken much Oil, he will soon throw up *nidorous Eructations*, and this Oil will be changed into a *most acid* substance, burning and exulcerating the very Bones. Salts will also become *very acid*, if they suffer *attrition* by too much motion and heat; and they have *three* causes for becoming *acid*.

1. Every thing that increases the *Velocity* of the Blood, and consequently it's attrition, wonderfully produces *acid Salts* in us. 2. Whatsoever *attenuates* the Liquids, makes the *Salts* for the most part *acid* ; for thereby the *Angles* are multiplied, on which *Acrimony* depends. 3. Every manner of *resolving* does the same ; for the parts which had concreted, being *resolved* and freed from their globose texture, become *acid*. Moreover *Acrimony* is produced in us by *Putrefaction*, which follows *Stagnation*; for by the heat and motion of the neighbouring Vessels, there is formed an *attrition* in the *stagnating* humour, and thence a change of it's *Figures*.

3. THERE are *three* kinds of *Acrimony* produced in our Bodies; 1. An *acid Acrid* ; which is caused by the stagnation of Vegetable food ; for if it remains long in the Stomach, it grows very *acid*, unless some *animal* substance be mixed with it; But *Milk*, tho' it is an *animal* humour, is not to be excepted ; for that often turns *acid* in the Stomach. 2. An *oily Acrid* ; for all the Liquids of our Body,  
if



if they are exposed to any *heat* which is equal to the *heat* of our Body, are presently dissolved, and raise a great *stink*, that is, *putrify*: which *putrefaction* proceeds from the *volatile Salt* and *Oil*; for if you distill the *Salt* and *Oil* from them, what remains will have neither smell nor taste: but if the *Oil* is freed from the *Salt*, it no longer *stinks*; whence it appears, the *Oil* has it's *putrescence* from the *Salt*, which must however be dissolved, to excite a *stink*. 3. An *alkaline Acid*.

4. THE *Acrids* which are brought into our Bodies from without, are diverse; 1. *Fossils* and *Minerals*, which enter the Body with their powers entire, and are not easily changed; as *Sal Gemmae*, *Borax*, *Sal Ammoniac*, *Vitriol*, *Nitre*, and also all *metallic Salts*: hither also belong *terrestrial Bodies*, as *Alum*; and *Oils* falsely so called, as *Petroleum*. 2. *Acid Acrids*, which are either *volatile*, or *natural*; as all *Juices of seasonable fruits*, as *Cherries*, *Apples*, &c. or *made by art*, namely by *Fermentation*, for thus of *Must* is made *Wine*, and of *Wine* is made *Vinegar*, which indeed are the slightest *Acrids*: but the *fixed* are more ponderous, and therefore *more acrid*; for the heavier any *Acid* is, the more *acid* it is, as appears by *Vinegar* and *Oil of Vitriol*, for the Weight of the former is to that of the latter, as 1 to 3: the *fixed Acids* are all *fossil Salts* brought to flow into a Liquid, as *Oil of Vitriol*, &c. 3. *Alkaline Acrids*, which are either *volatile* or *fixed*; and these last have an *Earth* added to them, from which the *volatile* are free; hence also the *fixed* are more *acrid* because more heavy. 4. *Oily Acrids*; and these are either *expressed* or *distilled*; the *first* are always *mild* of themselves, but in time become *acrid*: but the *latter* are almost always *acrid*; and if they are not digested in us, and subdued by the *vital powers*, become *most acrid*, so as even to burn like



*Fire*: and these are at the same time acrid and tenacious. Hither must be referred the *spirituous*; such as all *fermented Spirits*, which are most acrid, as appears from *Spirits of Wine*. 5. *Salts of Vegetables*; which are either *essential*, as *Honey, Manna, Sugar*; or *artificial*, which are turned by the force of cold, from the *expressed juices* of ripe succulent Plants *inspissated* by heat, into *Crystals* dissolvable in *Water*; and all these are more sluggish: or else are produced by *fermentation*, as *Tartar*, which after the depuration of *Wine*, adheres to the sides of the Vessels. 6. All *aromatic Acrids*, which abound with Oil and acrid Salt conjoined; for these are *hot, odorous*, and of an *acrid taste*; as *Pepper, Ginger, Onion, Garlic, Cinnamon, Cassia Lignea, Cloves, Nutmegs, Mace, Cardamoms, Galangal*; and also all our *Aromatics*, which grow in *Europe*. For all these act by *stimulating*, but if they are taken in too great quantities, *burn* the Stomach, and the other Bowels. 7. All that *excite pain*: concerning which compare the CHAPTER of Solvents.

## C H A P. IV.

## Of D E M U L C E N T S.

1. **D**E M U L C E N T S, or *assuaging Medicines* are those, which obtund the acrid particles of our morbid humours; which they do, not by changing their *Figures*, but only by involving them, and inclosing them as it were in a *capsule*: and in this sense a *Sheath* containing a *Knife, Needle*, or any other *acrid* or sharp cutting instrument, may be said to *assuage* their *Acrimony*.

2. Now



2. Now *Demulcents* are of *two* sorts, either *general*, which *involve* all kinds of *Acrids*, of whatsoever nature they are, indiscriminately and equally ; or *specific*, which *obtain* only a certain species of *Acrids*.

THE *Classes* of *general Demulcents* are the following.

1. ALL *oily* Bodies, contained under these four heads ; 1. Oils recently expressed or fresh drawn, from *Almonds*, *Filberts*, the four greater and less *Cold seeds*, *Poppy seeds*, &c. 2. Any aqueous Infusions from farinaceous seeds reduced into a tenacious *Mucilage* ; as of *St John's Wort*, *white Lilies*, *Nightshade*, *Violets*, *sweet Trefoil*, *Mullen*, *Quinces*, &c. 3. The only distilled Oil that is not *acrid*, namely, *Oil of Wax*. 4. The native Oils of Animals, as fresh *Butter*, *Cream*, *Fat* secreted and collected, especially the *Marrow* of Animals ; also the *Fat* about the *Bones*, especially that gathered about the *Mesentery* and *Kidneys* ; also the *Fat* of *Hens*, *Geese*, *Ducks*, &c. Now these *Demulcents* are of most excellent use, where there is a sign of much *Acrimony*, nay the most *acrid* Poisons may be enervated by them : they are also taken *internally*, and are of great service, when the *Blood* abounds with *acrid* particles ; thus in the worst sort of *Scurvy*, if the *Patient*, tho' ever so languid, takes several times fasting, *Cream*, *fresh Butter*, or what is best of all, the *Marrow* of Animals, he will be wonderfully cured ; thus also *Marrow* is of very great service to those, whose *Bones* are so dry, that they cannot be moved without making a noise ; nay in the *wandering Gout*, which is called *Rheumatism*, nothing is of more service, than to take ʒij. of *Linseed Oil* every morning.

2. ALL *insipid*, *inodorous* and *ripe Plants*, which yield no *Oil*, whether taken in the form of *Emulsion*, *Infusion*, *Decoction*, or any sort of *Paste* :



those who cannot bear the *Crude Oils* contained in CLASS I. N<sup>o</sup> 1. may take these ; for in these the *oily* parts *lie hid* involved in others. They operate also partly by means of their *Glew*, which invest the *Acrids* in our Body, and partly by means of their own *covered Oil* : such are, Decoctions of *Marsh Mallow*, *Borrage*, *Mallow*, all sorts of *Grass*, *Acanthus*, or *Brank Ursine*, *Mercury*, *Pellitory*, *Violets*, *Mullen*, *white Lilies*, *Cucumbers*, *Pompions*, *Melons*, *Citrulls* or *water Melons*, *Lettuce*, *Poppy*, *Comfrey*, and *Water Lilly* ; also the *seeds of Quinces*, the *juice of Strawberries*, &c. For all the preparations of these are *demulcent*, and it signifies but little of what sort they are ; thus a *Consumption* may sometimes be cured only by the taking of *Lettuce* : but it must be observed that these are of no service, where the *acrid* is *tough* and *thick*, but are of great benefit in a *hot acrid* ; whence the Ancients prescribed *Lettuces*, *Mallows*, *Cucumbers*, &c. against Poisons.

3. ALL *Seeds*, out of which Oil may be expressed, and of which *Pultes* or Emulsions may be made : such are *Almonds*, *Pistachio Nuts*, *Barley*, *Oats*, *Wheat*, *Rie*, *Rice*, *Millet*, *Walnuts*, *Filberds*, *seeds of Pompions*, *Water-Melons*, *Lilies*, *Water-Lilies*, *Flax*, &c.

4. VISCIOUS and insipid Gums ; especially *Gum Tragacanth*, the *Gum of Cherry*, *Apple*, *Pear-trees*, &c. dissolved in *Water* : for these operate best of all, and even cure the making of bloody *Urine* in the *Small-pox*.

5. ALL the *succulent* and *concreſcent* parts of sound Animals, except the *Bile* and *Urine*, for any of them may be applied either to the *Eye* or a *Wound* without any sense of *pain* : also all *Gellies*, which may be obtained by boiling parts of Animals, are in this case of service, thus *Eggs*, *Flesh*, and all our *Solids*, except the *Fat*, may be reduced to a *Gelly*;



*Gelly* ; for *Gellies* are nothing but the *nutritious juices* that are *separated* out of the *Solids* by the force of boiling ; as appears from *Harts-horn*, for after boiling, there remains nothing but a *caput mortuum* ; thus *Flesh* also boiled to the consumption of the moisture, if it is distilled, yields only an *empyreumatic Oil* : thus also *Gellies* and *Decoctions* of *Tendons*, *Membranes*, *Intestines* and *Bowels* are *Demulcents* : wherefore innumerable *Diseases* that arise only from *Acrimony*, are easily cured by a *Diet* of such *Broths*.

THE *Classes* of *specifical Demulcents* are the following.

I. ALL *terrestrial Absorbents* : of which some, tho' on account of their figure they may be thought to wound and injure, yet are *demulcent* ; for if they meet with an *acid Acrid*, they enervate it by *absorbing* : thus the *filings of Steel*, have *acrid spicula*, yet they enervate *Oil of Vitriol*. The *Absorbents* of an *Acid* are, *Crab's-eyes*, *calcined Shells*, *Corals*, all *Pearls*, all *Shells* of the *Oyster* kind, *Mother of Pearl*, all *Bones of Fishes*, all sorts of *Calx* remaining from the burnt parts of *Animals* : all these I say *absorb* an *Acid*, and being united with it form a third kind of *Body* which is sweet. Hither also belong some *stones* ; as *Bezoar*, *Lapis Hystricinus*, called also *Pedro del Porco* (a) ; but these stones,

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if

(a) This *Stone* is brought to us chiefly from *Malaca*, a Country in the *East Indies*, and is called by the *Natives Mastica de Sobo*, by the *Portuguese* and *Spaniards*, *Pedro de Vassar*, and *Piedra de Puerco*, and by the *Dutch* generally *Pedro del Porco*, and in the *Shops Lapis Porcinus* : for it grows in the *Gall-bladder* of a sort of *Hog* or *Porcupine* ; whence it is called *Hystricinus*, and by some thro' mistake *Lapis Hystericus* : whereas this latter is different from it, and is found in *New Spain*, and is not a sort of *Bezoar*, as the former is. But as to the *virtues* of the *Lapis Porcinus*, so much cried up by *Empirics*, as it is of a *saponaceous* nature, being formed of indurated



if they are *insipid*, have no other power, than that of *assuaging*; and if they have any *taste*, then they may *act* after some other manner; thus the *Lapis Hystricinus*, which is of a *saponaceous* nature, may *act* by stimulating; but it has nothing *specific* in it's nature beyond other *Stimulators*. *Acids* also are *absorbed* by all *native Earths*, as *Tobacco-pipe-clay*, *Chalk*, *Armenian*, and other *Boles*, &c. also by some *Calx's* of *Metals*, and by *Marcasites*, *Steel*, *Lead*, *Tin*, reduced to powder. These are chiefly opposite to *Acids*; and by these the *most acrid* and strongest *Poisons* may be *assuaged*: thus *corrosive Mercury*, if well rubbed with *filings of Steel*, becomes *harmless*; and *Vitriol*, which is saturated with *Steel*, is an *innocent* Medicine; thus also the *Lapis Infernalis* may be deprived of all it's *caustic* power by *filings of Steel*, or such like, nay if it be only rubbed with *Crab's Eyes*.

2. ALL *Acids*, with regard to *Alkalines*, are *demulcent*, tho' being considered by themselves they may be *most acrid*: such are, 1. The *fresh juices* of ripe and acid *Fruits*; as of *Cherries*, *Medlars*, *Grapes*, *Pears*, *Apples*, *Currants*, *Mulberries*, &c. which are the most excellent *Medicines* in those *Diseases*, where it appears that an *Alkali* predominates; as in the *Plague*, *Small Pox*, *Measles*, *burning Fevers*, &c. *subacid Whey*, *Butter-milk*, and *Milk* it's self beginning to turn *sower*: for these are able to *obtund* any *Alkali*, either *fixed* or *volatile*; thus TULPIUS observed a very bad *Diarrhœa*, arising from the predominating *Alkali* of the *Bile*, to be healed only by the use of *Butter-milk*; it has  
been

rated and concreted *Bile*, it may be thought a good Medicine in many cases; but yet it does not seem worthy of such high esteem, as it meets with amongst many, and perhaps is of no more value, than other *stones* found in the *Gall-bladder* of almost any *Animals* whatsoever.



been observed also that a *tertian Fever* has been cured by the frequent drinking of this Liquor.

3. All *fermented Acids*, prepared of all sorts of *seasonable Fruits* or *Meals*, which are called *acetose*; and these rather dissolve than coagulate: hence *Moselle* and *Rhenish Wines* are the best, especially if a little *Spirit of Sal Ammoniac* be added, in those Diseases, in which the *Thirst* is intense, and the *Bile* very much vitiated: to this place also belong *distilled* and *fermented Acids*, also crude *Tartar*, which is a *dry Vinegar*: of this Class also are *Pultes* kept warm for some days, and thence growing *sour*.

4. All *Acids* from the more ponderous Fossils; for these *absorb* the *Alkali* very much, but before they *absorb*, make the greatest corrosion: and these are either *native* as *Petroleum*; or *made by art*, namely, being distilled, as the *Spirits of Sea Salt*, *Sulphur*, *Vitriol* and *Nitre*; but the *Alkalies* being saturated constitute a *mild Body*, as is manifest from *vitriolated Tartar*.

3. ALL *Alkalies* with regard to all *Acids*; but by *Alkalies* are generally understood *three* kinds of *Salts*; namely, 1. All *fixed Salts* extracted from burnt Vegetables; and these are highly *corroding*, but opposite to all *Acids*; and after their *conflict* with them constitute a *most mild Body*. 2. All *volatile Alkaline Salts* prepared from Vegetables by distillation, after the putrefaction of the Plants. 3. *Volatile Alkaline Salts*, drawn from Animals by distillation, and called *Urinous*; moreover all putrefied parts of Animals afford such a fetid *Alkaline Salt*.

4. ALL *ardent Spirits*, with regard to *Acids*: thus *rectified Spirit of Wine*, digested or distilled with some *acid Spirit*, as that of *Nitre*, or *Vitriol*, or *Salt*, or with *Aqua Fortis*, destroys their too great *Acidity*, and *dulcifies* them.



COR. THESE things being now considered, it appears what are the Antidotes of mechanical or chemical Poisons ; by this I understand all those which produce their effects by means of their *figure* and *motion* ; as are all *contused Glasses, Crystals, Metals, &c.* of which the Antidotes are those, which shew themselves to be fit to involve those Poisons. But other Poisons act by coagulating ; of which I shall speak afterwards.

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## C H A P V.

Of *IMMUTANTS*.

1. *IMMUTANTS* are those, by the help of which the figures of the particles which compose the Fluid are so changed, that they thence become more or less pungent. There are thought to be many *Immutants*, whereas they are very few : for in truth the *Attrition* of the Solids on the contained Fluids seems to be the sole and only *efficient* cause of the immediate change of figure in the particles of these Fluids ; for the changes which use to be made in the Fluids by *Effervescence* or *Fermentation*, have no place in our Body, as was shewn before.

2. MOREOVER from the above-mentioned *Attrition* arise the following effects ; 1. The more flow, dull and thick particles are impinged on the points of other parts ; whence it comes to pass, that the more *rigid* particles are involved by the most *flexible*. Hence appears the reason, why *Salts* are so changed in us, that after twenty four hours they lay aside all their *Acrimony*. 2. The most *flexible* parts of all are also greatly changed : for such have the



the greatest *surface*, and the least *solidity*; and therefore have the least *resistance*. 3. The *angular* particles are very much changed: for their *angles* are abraded, whence from being *angular* they become *globose* and *obtuse*.

3. THIS Attrition also is *varied*, according to the *various* quickness of the Circulation of the Fluids in our Body: and therefore to change the Liquids is to *change* the degree of the quickness of the Circulation. But now we must inquire, what *degree* of quickness may suffice to produce this or that change. To solve this, let us suppose that any one has taken *various* kinds of Meats and Drinks; as *salted* Flesh, *acid* things, &c. if the *circulatory* motion is regular, it will render all these *mild* and *innocent*; but if that motion is *increased* by any cause, as by a Fever, then this food will become a thick, depraved *mass*, tending to Putrefaction.

4. HENCE therefore we conclude, 1. That a *gentle* and *equable* motion makes every thing *mild*. 2. That a less motion than *usual* converts the Fluids, especially the Chyle, into an *acid* substance: thus in Infants and Children, and also in *phlegmatic* Women, and those who indulge themselves in too much rest, *diseases* often arise from an *Acid*; and therefore they are helped by *volatile* Salts, *Chalybeates*, *Absorbents*, &c. 3. That all the particles acquire an *Acrimony*, and that which is called a *volatile Alkali*, from *too great an increase* of the *velocity* or *quickness* of the Blood.



C H A P. VI.  
Of D I L U E N T S.

1. **D**ILUENTS are those which being mixed with a Fluid render it's parts more fluid, but so as not to changethem. A Fluid is that mass, of which the smallest particles are continuous to each other, but yet may easily be separated. (See CHAP. I.) Therefore to render any thing more fluid, is to make the parts separable from each other with less force.

2. T H I S may be done two ways; 1. By dividing each particle into smaller ones; which does not belong to this place. 2. By diluting, or mixing with it something else, which ought to have the three following conditions; ( $\alpha$ ) whatsoever dilutes must be fluid; ( $\beta$ ) it must be more fluid than the humour that is to be diluted; ( $\gamma$ ) after mixing it must retain it's fluidity.

3. T H E R E is no Body, except Water, that is endued with these three conditions; Wine indeed is said to dilute, but it's diluting power depends on it's aquosity joined with it's stimulating power: but Oils render the Mass rather impenetrable; fermented Spirits for the most part coagulate the mass instead of diluting it; and Salts are solid, and therefore have not the conditions of Diluters, but attenuate by stimulating; Earth also is solid and sluggish. Therefore if we would dilute, we must use Water.

T H E O R E M I. Water if it is assisted by heat, dilutes the more; therefore warm Water is the fittest for this purpose.

T H E O R E M II. Saline particles very much promote the operation of warm Water by stimulating; therefore if we take Sea Salt, Sal Polychrestum, Sal Ammoniac,



*Ammoniac*, or *Borax* with *Water*, we shall obtain the best effect of *Dilution*.

THEOREM III. THE *increase* of the motion of Respiration, and that also which is voluntary, are great helps to *diluting*: hence where there is quick need of *diluting*, as in a Pleurisy, Peripneumony, &c. the Persons affected should respire as much as they can; for besides the effect *peculiar* to the motion of the Lungs, namely the *attenuation* of the humours, the Stomach also and Intestines are compressed by the same means; and thus there is a quicker *expulsion* of the *diluting Water*, and a *Derivation* of it into the Lacteal Vessels; hence also the Chyliferous Duct is more pressed *by turns*, whence the *flux* of *Water* thro' it is accelerated; thus also by a *voluntary* motion of the Muscles the *passage* of the Liquids is increased: which is of the greatest use in *Chronical Diseases*; where it is manifest, that the Liquids are *incrassated*: wherefore those who are afflicted with such *Diseases*, should *walk, run, leap*, and use all vehement *motions*, frequently drinking *Water* in the mean time; for by this means they will find themselves much better, as also by *riding on horse-back, in a coach*, and such like.

## CH A P. VII.

### Of COAGULATERS.

- I. COAGULATERS are those which change the parts constituting a Fluid into a strait and conerescent mass, so that many particles are moved under one surface. This may be done two ways; 1. By expelling the most fluid particles which lie among the rest. 2. By uniting the parts together, by interposing something between the parts of the Fluid, which may knit them together, so



so as to make them run into *greater bulks*, and not be able to *flow* any longer. Now those which *coagulate* the Blood after this manner are always *pernicious*, and can hardly be admitted within the Body, without bringing sudden *death*.

2. THE Classes of Medicines, which coagulate our Fluid after the *first manner* are *two*; namely, 1. Those which are properly called *Expriments* or Expellents. 2. *Absorbents*, which receive the *more thin* intermediate *Liquid* within their pores, whence the remainder becomes *thicker*. The *first* diminish the plenty of our humours; and the *latter increase* it: but these do not operate so easily in us, as some imagine; for they cannot enter into the Lacteal Vessels.

3. COAGULATORS of the *first* Class are, 1. Among Vegetables, all those which being mixed with *Copperas*, are wont to produce a black and foul tincture; as *Galls*, which being mixed with our Liquids, or with Milk, the white of an Egg, or Spittle, *coagulate* them; thus also the *juice of red Roses* recently expressed; thus also almost all *unripe juices*; and *Walnuts*, especially their *rinds*; also the *rinds* and *flowers* of *Pomegranates*; the *unripe juices* of *Acacia*, *Medlars*, *sour Grapes*, *Currants*, *Quinces*, and many such like juices held in the Mouth *coagulate* the Spittle: but if any of them touch the Blood, as by injection into the Veins, they *coagulate* it, and produce *Polypuses* in the Heart and Pulmonary Artery. Some also of the same *juices*, when ripe, *attenuate* a little. 2. *Fermented acid Spirits*, especially if their *powers* be very much concentrated, that is, if they are brought to their *highest degree of Acidity*; for *simple* or *diluted Acids*, as *simple Vinegar*, do not *coagulate*, but rather *dilute*. 3. All *ardent fermented Spirits*, brought to that degree of subtilty,



subtilty, as to deserve the name of *Alcohol*, or to set fire to the *Pulvis Pyrius*: and these may be obtained from all Vegetables, by the help of Fermentation, first leading to *vinosity*, and then to the nature of *Vinegar*; for if they are distilled before they grow *acid*, then there is an *inflammable Spirit* obtained from them, which *coagulates* the Spittle it's self: hence those *Practitioners* greatly err, who recommend these *Spirits* in too great a *tenacity* of the humours.

THOSE Fossils which *coagulate* are, 1. *Vitriolic Salts*: as *Vitriols of Steel, Lead, Silver, Copper, Mercury*; also *Alum*, and *sublimate Mercury*, if they are taken in so small a quantity, as only to *stimulate*, and not dissolve; thus *Lapis Infernalis* in a smaller quantity *coagulates*, but in a greater *dissolves*. 2. All *acid Spirits* drawn from Fossils by a violent Fire: as *Spirit of Sulphur*; which if it *opens*, does it only as it *stimulates* the Solids, but in this place it is considered as immediately *acting* on the Liquids, and *coagulating* them when mixed with them; the same is effected also by *Spirit of Sal Gem, Sea Salt, Alum, Vitriol, and Nitre*; also *Aqua Fortis* whether made of *Vitriol* and *Nitre* only, or of *Alum* with the addition of both these: but amongst these the greatest Coagulaters are *Spirit of Nitre* and *Aqua Fortis*.

MOREOVER all these exercise a *double* power in us; namely, 1. They *act* on the Solids, and *corroborate* them, that is, *stimulate* them into contraction; and therefore more resist a greater *distension*, and consequently the *action* of the Heart: hence their *mutual motion* is increased, and their *action* on our Liquids becomes *greater*; whence follows an *attenuation* of the Liquids, a *dissipation* of the most fluid parts, and thence at last a *Coagulum*. 2. Being mixed in a sufficient quantity with our Liquids,



Liquids, they immediately *coagulate* them. Hence therefore we see, how the same Medicine may be *solvent* and *coagulating* at the same time.

4. To the *second* Class of *Coagulaters*, that is, *Absorbents*, belong the following.

1. ALL *Earths*, both *burnt* and *unburnt*, that is, *native* and *fat* : as *Chalks* and *Boles*, also all *Potters Earths* and *Clays* ; which however the more they are *burnt*, and the *finer* they are, the more they absorb. 2. All *Shells* of *Fishes* reduced to ashes : as *Conchs*, and especially *Crabs claws*, *Oysters*, *Cora's*, *Mother of Pearl*, &c. 3. All *solid* and *fluid* parts of *Animals* *burnt* : as *Bones*, *Horns*, *Flesh*, *Membranes*, &c. which being reduced to ashes are *styptic* and *coagulate* : as *roasted Liver*, *burnt Blood*, &c. and all things that may be reduced to insipid ashes. 4. *Calx's* of *Metals* *burnt* with a strong fire : as *Colcothar of Vitriol*, which being taken into the Mouth *coagulates* the very Spittle ; thus also *Copperas calcined* with a very strong Fire, if it be applied *warm* to the Blood, makes it as hard as a Stone.

## CH A P. VIII.

### Of M O V E R S.

1. THERE may *two* sorts of *motion* be considered in our Liquids ; *one* is the *intestine* motion of the particles, which we do not consider in this place ; the *other* is that by which our Fluids are circulated thro' the Vessels, whilst *life* remains. The *Movers* therefore, of which we speak in this place, are *those which accelerate the motion of the Liquids thro' the Vessels*.

2. THERE



2. THERE are *four* conditions required to the *circulatory motion* of the Fluid : 1. The *force* of the Heart upon a Fluid, as being that on which the principle of *motion* depends : now as that is not continual, but interrupted, there is required to preserve this motion, 2. The *Contraction* of the Arteries : which being supposed, there is still required, 3. A *fluidity* of the *matter* to be *transmitted* ; which is nothing else, but an easiness of *separation* of the parts, from each other without any notable resistance : 4. A *laxity* or *freedom* of the Vessels, that is, the least resistance towards the extremities, so that the Vessels may freely *unfold* and *distend* themselves. Whatsoever therefore increases the *force* of the Heart and Arteries, or the *fluidity* of the Liquid, or the *dilatability* of the Vessels ; is also a *Mover* ; but especially that which increases the *force* of the Heart : by the increase of the *motion* of the Heart, there is made a greater *secretion* of all the humours, and therefore of the Nervous Liquid ; which *flowing* more copiously into the *muscular villi* of the Heart, adds *new strength* to it, whence the *circulation* is still more promoted and accelerated.

3. THE Classes of *Movers* are the *three* which follow.

1. THE first Class contains 1. All *Stimulators*, which by *affecting* the Nerves, promote a more plentiful *secretion* and *flow* of Spirits ; whence the Heart obtains a greater *force* : and thus in *languid* and *apoplectic* disorders, &c. where the circulatory motion flags, we are wont to *irritate* the Nerves, either by *stimulating* them with something offensive, or by plucking out the *Hairs*. 2. All *relaxing Stimulators*, that is, those which make the Vessels so *dilatable*, as to admit the Liquids easily. 3. Whatsoever attenuate the Blood. 4. All that generate *Acrimony* in the Liquids. 5. All *Diluters*, but of these



these five Heads I have spoken already in their proper place.

THE second Class contains whatsoever accelerate the *motion* of the Blood thro' the Veins : amongst which the principal is the *compression* of the Veins ; which may be done *two* ways ; 1. By *rubbing* the parts, from the extremities towards the Heart : hither belong *Frictions*, *Baths*, and *warm Fomentations*. (Compare the CHAPTER of *Solvents*, sect. 5.) 2. By *moving* the Muscles very much : which indeed is of much greater service in the *Dropsy*, *hysteric Passion*, *Green-sickness*, &c. than most *internal Medicines* ; for by *increasing* the respiration, the velocity of the Blood is much augmented, the Pulmonary Vein being frequently compressed and emptied by the *Air* in the Lungs. Hence also *sneezing*, *singing*, *coughing*, and *laughing* are of great service to Leucophlegmatic Persons.

III. THE third Class contains those Medicines which remove the *faults* of the Fluids, Now a Liquid may either be *deficient* in *quantity* or *offend* by too much *thickness* : and if there be so great a *deficiency* of Liquid, as to take away it's *continuity* in the Vessels, it's motion must necessarily be stopped ; for the antecedent part ought always to be *impelled* by the subsequent ; and we suppose *this* to be *wanting*. Therefore on this occasion the *lost* Liquid ought to be restored : and therefore Men of a *hot constitution*, as well as those who are emaciated with too much *sweating*, are greatly relieved by *whey*, that is, by repairing the *deficiency* of the lost Liquid. But now if the Liquid *offends* by it's *thickness*, then such as *incide*, *dilute*, and *attenuate*, ought to be administered.



## CHAP. IX.

## Of S I S T E N T S.

**S**I S T E N T S are those, which take away, or diminish, the causes of acceleration just now mentioned: as are those which appease the stimulus of the Nerves, take away the laxity of the Vessels toward the extreme parts, give a thickness to the Blood, and absorb the thinner Liquids; also those which hinder the motion of the Muscles and of Respiration: there are some also, which specifically destroy the stimulus of the Nerves, as *Opium*; thus also, in intermitting Fevers, the *Peruvian Bark*, &c.







## P A R T III.

OF

## M E D I C I N E S

*Which act on the SOLIDS and FLUIDS together.*



EDICINES which *act* on the Solids and Fluids together often obtain *various* names and *different* effects, according as they are applied to this or that part of the Body: thus, for example, the *root* of *Jalap* applied to the Skin acts as a *Vesicatory*; and yet being applied to the intestinal Glands, becomes a mere *Hydragogue*; if it be given with *Treacle* and *Opium* it becomes a *Sudorific*, for it is driven to the *inner* parts; if it is mixed with the *yolk* of an *Egg*, and applied *externally* to a wound, it becomes a *Detergent*, and *excites pain*: thus also if about the *Fauces* any Vessel is too open, so that the Liquid drops from them, *China* reduced to powder relieves it.

MEDICINES therefore which *exert* their *powers* both on the Solids and Fluids, may be conveniently enough reduced to *two* Classes.

THE *first* Class contains all those which promote the circulation of the Blood, and the Secretions, and those also which produce the *contrary* effect, that is, which retard and debilitate the Circulation and Secretions.

BUT the *latter* contains all those which promote Excretions from any part of the Body whatsoever.

*The*



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## The First CLASS

Of MEDICINES which act on the  
SOLIDS and FLUIDS together.

NOTWITHSTANDING that these Medicines may *in general* be divided only into two Classes, as we have seen just now; yet as we have before, in the PROLEGOMENA, CHAP. xiii. distributed them into five Classes (for which consult the *said chapter*, page 89, & *seq.*) we shall follow the same order here also.

MOREOVER because, according to the division there laid down, all the Medicines which we have treated of in PART I and II, are to be referred to the *first* Class, so far as they *operate* by combined actions, therefore we shall not repeat them at present: but because we have referred to this Class also the Medicines which promote *peculiar* Secretions, we will now begin with it: but *hereunder* are contained in the first place the *Generators* of Milk and Seed; of which therefore we will treat now.

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### CHAP. I.

#### *Of Generators of Milk.*

1. **M**ILK, in Greek Γάλα, is the very substance of the *chyle elaborated* in the Stomach, farther *subdued* in the Intestines, *absorbed* by the *Lacteal*



*Veins*, carried thro' the Thoracic Duct into the Subclavian Vein, and there *mixed* with the Blood, hence it is *carried* to the right Ventricle of the Heart, and then to the Lungs, and being there *comminuted* and more accurately *mixed* with the Blood, it comes to the left Ventricle of the Heart, and is thence *distributed* thro' the *Aorta* and it's Branches; which in four or five hours or more, after a plentiful *meal*, is found to *swim* in great quantity, on the Blood taken out of any Vein or Artery, as LOWER (a) testifies; and then agrees in every thing with Milk: but after that time, by a continued *circulation* in the Body, it is gradually *changed* into Blood: but part of this *laetescens* Chyle, being separated from the rest, comes to the Breasts, and there obtains it's proper name of *Milk*; which therefore is not different from the other *Chyle*, but sometimes becomes more *ropy*, if the Woman endures *thirst*.

2. Now the Medicines which produce this Liquid are called *Galactophora*, or *Generaters of Milk*: That *Milk* is immediately secreted from the Chyle, is manifest from this, that if a Nurse drinks any thing *coloured* or *odorous* upon an empty Stomach, her *Milk* will in a short time be infected with the very same colour and smell: (b) moreover if a Nurse

(a) See LOWER *Traët. de Corde*, cap. v. p. 238.

(b) Hence any *Medicine* given to the Nurse, especially if it be pretty strong, is found by *experience* to tend towards her *Breasts*, and affect her *Milk*. Also if a Child be put to the Breasts as soon as the Nurse has taken a *purge*, and continues sucking till they are emptied, it will be *purged*, and the Nurse will not be affected by it; as we find by *experience*, and as HIPPOCRATES also long ago affirmed. *Lib. vi. Epidem. Sect. 5. vers. 51. Edit. Lind.* where he says as follows. *Τυνή αἵμα, ἐλατήριον* (or perhaps as some read it, *ἐλλέβορον*) ἢ σικκὸν ἀγειὸν βεβρακνῆαι, καὶ παιδίῳσι γάλακτις: that is, *If a Woman that suckles takes Hellebore or Elaterium, the Child will*



Nurse abstains from *meat* and *drink* twelve hours, her *Milk* will be rendered so *serous* or *urinous*, thro' defect of new *Chyle*, that the Child will quite nau-seate it : the same thing happens in the *Fevers* of Nurses.

3. HENCE we find what things produce *Milk* in our Body ; namely, 1. All that produce plenty of *Chyle*. The aliments of this kind are such as in their nature most resemble *Chyle*: as ( $\alpha$ ) *Milk* sweet and fresh ; especially if it be improved with a little *Salt* and *Sugar*, for it affords the best matter of all for *Chyle* : for it has often happened, especially among those that live high, that Mothers who have not been able to *suckle* their Children, for want of *Milk*, occasioned by eating too much *flesh*, have become good Nurses to their Children by the *prescription* of a *Milk* diet ; which has been confirmed by frequent experience. ( $\beta$ ) *Cream* sweet and fresh ; especially if the *Milk* of the Nurses be too watry. ( $\gamma$ ) All thick *Ptisans*, made of *Barley* or rather of *Oatmeal* boiled with *Milk*. ( $\delta$ ) All sorts of *Caudle*, whether made with *Wine* or *Ale*. ( $\epsilon$ ) *Rice* gruels with *Pistachios*, and such like *fari-nacious substances*, or *Emulsions* made of the same. ( $\zeta$ ) *Flesh Broths* not made too thick ; which almost immediately go to the Breasts. ( $\eta$ ) *New laid Eggs* prepared after various manners. ( $\vartheta$ ) *New Ale*

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not

*be purged*. See the explanation of this sentence in PROSP. MARTIANUS, the best Interpreter of HIPPOCRATES Commentar. page 353, Edit. Rom. who also in another place, namely in Comment. in Libr. de Natura Pueri, page 43, relates this extraordinary Story, which is very much to our purpose ; “ A certain Woman having taken a *purging* Medicine, and put “ a Girl of a Year old to her Breast, the Child was *purged* so “ vehemently, that it was in danger of losing it's life. whereas “ the Mother had not so much as *one* motion : an evident sign, “ that the Medicine was immediately drawn to the Breasts by “ the power of *suction*, &c.”



not long fermented, thick and sweet. For from all these *Milk* is soon secreted, which may be properly taken by the Child after a quarter of an hour.

2. All things that derive the generated *Chyle* into the Breasts; and these are all such as promote *chy-lification*: as ( $\alpha$ ) *Stomachics*, which increase the *strength* of the Stomach so that it may *contract* it's self effectually to expel the *Liquid*: hence we must observe whether the Nurse has a *depraved* Stomach. ( $\beta$ ) *Splanchnicks*; which excite the *flux* of the Bile, pancreatic Juice, and that of the Intestines. ( $\gamma$ ) All motions of the Muscles; as *walking*, *domestic labour*, &c. all these, by promoting *chy-lification*, derive plenty of *Milk* to the Breasts.

3. Whatsoever excite the *efflux* or *drawing* of the *Milk* out of the *Breasts*: for the more they are drawn, the more is derived into them. Now there are some things which promote the *Milk*, by drawing it out; such are all those which diminish the *resistance* of the Lactiferous Vessels: as ( $\alpha$ ) The application of *Glasses*. ( $\beta$ ) *Emollient Fomentations* often applied. ( $\gamma$ ) *Frictions*. ( $\delta$ ) *Suctions*. All which, if Women were to make use of them, would be of use to tender Infants, which are not able to draw the *Milk* out themselves by *sucking*: thus also young *Puppies* may be advantageously applied to the *Nipple* rubbed over with *Butter*. But *hot Medicines*, which are usually thought to belong to this Class, act only by *stimulating*, and therefore are not properly to be treated of here.

COR. FROM what has been said it appears, that those Nurses are the best, who have a *lax flesh*; for they generate as laudable *Chyle*, as those which are *stronger*, and besides yield it in greater plenty.



## CHAP. II.

## Of Spirmatopæa or Generators of Seed.

THERE are *three* sorts of Liquid required to the generation of *Seed*; 1. The Liquid of the *prostatæ*. 2. That of the *Vesiculæ Seminales*. 3. That of the Testicles; which alone is *prolific*, as appears by Eunuchs: wherefore a Medicine generating *Seed* is that which promotes the *elaboration* of this Liquid in the Testicles: such are,

1. ALL that increase a mild *Chyle*, and consequently increase *Milk* and *Blood*: hence also Animals that feed most on Milk, are the most *salacious*.

2. ALL *relaxing* Medicines, and such as take away the *resistance* in the Testicles: as *Fomentations* and *warm Baths*; all *oily* Medicines, as *Oil of Rue*, &c. and *preparations* in form of *Balsams* or *Cataplasms* applied to the *Scrotum*. The following are thought to be *specifically Generators of Seed*: various *preparations* of *Southernwood*, *Marum Syriacum*, *Birth-wort*, *Calamintb*, *Hedge-mustard*, *Eryngo*, *water* and *garden Cresses*, *Dittany*, *Lovage*, *Cretic origany*, whence the Men are so *salacious* in *Crete*, *Cat-mint*, *Parsley*, *Savin*, *Mother of Thyme*, *Thyme*. These being *externally* applied, draw the Liquid that way.

3. WHATSOEVER being taken *inwardly*, greatly stimulate the *nervous Liquid*, and are wont to cause *Priapisms*: such as *Garlic*, *Onions*, *Leaks*; also all that are enumerated in the *second Class*; thus also all *aromatic Gums*, as *Myrrh*, *Aloes*, *Galbanum*, *Sagapenum*, *Gum Ammoniac*, *Bdellium*, *Elemi*, *Tacamahacca*;



*camabacca*; also the *Balsams* of *Peru*, *Tolu*, *Mecha*, *Capivi*, *Opobalsamum*; also all *provocative aliments*, which being taken in too large a quantity cause an *erection*. The *seminific* power of all these appears from this; that if they are given to Men who are recovering from a *Gonorrhæa* they excite a dropping of *Seed*.

To this Class also are to be referred all *Salts*, except *Vitriol* and *Nitre*, as *Borax*, *Alum*, *Sea-salt*; all *volatile Salts*, and especially the *oily*; also all *Soaps* and *Diuretics*, except only *Water*, also the *Oils* of *Animals*, as *Castor*; *aromatic Oils* of *Vegetables*. But it must be observed, that these do not properly generate *Seed*, but only promote the *Secretion* of it, by stimulating the *Nerves*: hence they are not fit to be given to old Men, in whom the *Seed* and *Nervous humour* is deficient. To all these may be added *Lascivious thoughts*, whence frequently arise nocturnal pollutions, &c.

4. *SPECIFICS* recommended by the Ancients: such as *Dill*, *Fennel*, *Rocket*, *Chiches*, *Satyriion*, which all operate after the manner just now mentioned; as also the *Testicles* of *salacious Animals*, those of *Goats*, *Horses*, *Cocks*, and the *Brains* of *Sparrows* are commended by the Ancients; but these are doubtful, and perhaps vain.



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## The Second C L A S S.

Of MEDICINES *which promote the Excretions.*

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### C H A P. I.

#### *Of Dischargers of Phlegm.*

1. **B**Y *Phlegm* is meant that tough and whitish *pituitous* substance, which is separated in the *pituitary* Membrane, that *invests* the two great *Sinuses* of the *Os Frontis*, the Cheek Bones, the *Os Cribiforme*, the *Crista Calli*, the *Sella Turcica*, all the little Bones of the Nostrils, and the Nostrils themselves ; concerning which see SCHNEIDER'S *Traëtatus de Catarrhis*. But it is to be observed, that there is no part of the Body, in which the Blood Vessels are more *naked*, or the Nerves less *covered*, than in this Membrane ; nay and from the very situation of this Membrane it plainly appears, that the power of *Dischargers of Phlegm* extends it's self into the *cavities* of the *Os Frontis* on every side : hence these Medicines were said by the Ancients to *purge the Brain*, as if they related to the Brain it's self ; but SCHNEIDER has demonstrated, that nothing flows from the Brain it's self to the *Glands* of the said Membrane, but that there is a certain substance secreted in them from the *arterial* Blood, before it is carried to the Brain ;



Brain; whence it becomes more pure and free from dross : and in reality when this substance is first secreted, it is *thin* and *ichorous* ; but in a short time, by the power of heat, it is inspissated into a *thick* matter called *mucus*.

2. THE Medicines therefore, which belong to this Class, are all *Detergents*, *Diluters* and *Stimulaters* ; as *Waters*, *Salts*, *Soaps*, *Spirits*, *Aromatics*, and *Aromatic Decoctions*, whether made with *Water*, *Wine*, or *Spirit of Wine* : and these are applied,

1. In form of an *Errhine*, which draws out the matter by the Nostrils ; and this is of most service, when any morbid matter sticks in the Nostrils, from a *Canker*, or the *Veneral Disease* :
2. In form of a *Gargarism*, which draw the matter out of the *Fauces* ; and this is always *Liquid* ;
3. In form of a *Masticatory*, which brings out the *Phlegm* by the Mouth ; and generally consists of a mixture of Wax and Aromatics :
4. In form of a *Collutory*, whether it is performed by means of a *Syringe*, a *Linnen-cloth*, or any other way :
5. In form of a *Linctus*, which being swallowed slowly *stimulates* the *Fauces* ; and is of service on that account :
6. In form of *smoak*, which is taken from all *aromatic Herbs*, by means of a pipe, or any other artifice. Now as the *first* species *purges* only by the Nostrils, and the other *five* by the Mouth, all *Dischargers of Phlegm* may be conveniently enough reduced to *Ptermics*, or *Errhines*, and *Sialogogues*, or *Movers of Spittle*.

3. *P T A R M I C S*, *Errhines*, or *Sternutatories* are those which by provoking one to *sneeze*, draw the *Mucus* from the Glands of the *Membrana SCHNEIDERIANA*. Now *sneezing* is performed after the following manner ; first the Thorax is greatly dilated, which causes the Air to enter the Lungs in a great quantity ; which after sometime  
being



being rarified by the heat, is driven from thence with great force thro' the straits of the Nostrils, and is there divided into six parts formed by the Bones in the Nose; and whilst it is driven thro' those straits, it rushes violently on the Membrane, and moves the *Mucus* contained in the Glands, and carries it away with it: These therefore are the effects of *sneezing*. 1. The clearing of all the *foramina* and caverns of the Nostrils. 2. The clearing also of the Lungs. 3. A very strong shaking of the Body. Hence it is of the greatest service in those *diseases*, where the *nervous Liquids* ought to be moved: as in the Apoplexy, slow Scurvy, and difficult labour, where the strength of the *Mother* is deficient. *Sneezing* also, if it continues too long, brings on Convulsions and Death it's self; whence arises the custom of saluting those who *sneeze*.

4. THERE are two Classes of Errhines. The *first* contains all those which can *vellicate* the *Membrana SCHNEIDERIANA* mechanically: as *Dust*, *Feathers*, *Animalcules*, or *Blood* accumulated there, either on account of obstruction or inflammation; whence it happens, that at the beginning of a heaviness, the *Mucus* of the Nostrils is wont to come out in great plenty. The *latter* contains all *thin, volatile Acrids*: each of which, the more *acrid* it is, operates the more *violently*; thus *Hysop* excites a gentle *sneezing*, *savory* a little stronger, *Pepper* a still greater, *Euphorbium* a much greater, *corrosive sublimate* a most vehement one, which keeps Persons in the act of *sneezing* for several hours, tho' it be taken in a very small quantity.

5. SIALOGOGUES or *Salivaters* are Medicines, which move the *Saliva* or Spittle. There are many Glands which supply the Spittle. 1. The *Glandulae salivales stenorianaë*, or *Parotids*. 2. The WHARTONIANÆ, situated



situated at the greater angle of the lower jaw. 3. The BARTHOLINIANÆ placed under the very Tongue. 4. The SCHNEIDERIANÆ, or those of the Palate; hither belong also those of the Tonsils and Uvula. 5. The Lingual Glands of MALPIGHIIUS. 6. The NUCKIANÆ Oculares, which are placed by the Eye, and have their *Duct* opening into the Mouth (a). But the *Sialogogues* are reduced to three Classes.

THE *first* contains those, which act on the Glands just mentioned: such as, 1. *Fomentation*, *Friction*, and *Suction* either *internal* or *external* of these parts; hence Cataplasms applied to the *Parotides*, and the *smoaking of Tobacco* make the Mouth moist. 2. All the *Dischargers of Phlegm* just mentioned. But here it must be diligently observed, that these Medicines never cure diseases by *salivation*, as many think, for it is not *salivation* that cures the Venereal Disease, but *salivation* follows, because the *disease* begins to be cured.

## THE

(a) See a more accurate description of all these Glands in our celebrated AUTHOR's *Institut. Med. Cap. de Salivâ*, paragr. 65. also in NUCK's *Sialograph.* pag. 8 to 23. Moreover in this place it is to be noted, that the *Glandulæ Oculares* NUCKIANÆ may be expunged from that Catalogue as being found indeed in Dogs, but being always wanting in Men. But to the salival Glands here *enumerated*, a new *Glandulous Expansion* also with it's *Duct*, was some years ago added by ABRAH. VATER professor of Physic at *Wittemberg*; which he affirmed that he had discovered, by means of *injection*, in the *Tongue* of a Girl; and in the *Programma*, which he published in 1720, he called it *A new Salival Duct*, and a *principal excretory of a remarkable Gland in the Tongue*, situated at the sides of the *Tongue*, and under it, expanded also over the Root of the *Tongue*, *Epiglottis*, about the *Glottis*, upon the *Arytænoides* even within the *Oesophagus*. But the *foramen* of this Gland has been discovered and delineated by COLLINS, *Anatom. Tab. 2.* and by MORGAGNI *Adversar. Anatom. 1. Sect. 8. Tab. 1.* and by HEISTER, *Compend. Anat. Tab. 4. Fig. 20.*



THE *second* Class contains all those which derive the *moisture* into the Mouth, by intercepting the flux of it into the other parts of the Body: for it is observed, that if some Bowels are *obstructed*, as the Liver, Spleen, Pancreas, Kidnies, or Intestinal Ducts, then the Mouth is always *moist*; whence Hypochondriacal and Hysterical Persons *spit* much: and therefore whatsoever hinders the Secretion of the *Lymph* in those places, is to be accounted a *Sialogogue*, but whether this is of service or disservice, is not here inquired.

THE *third* contains those which dissolve the Mass of Blood, and derive a great plenty of it being so *dissolved* into the Mouth: such as, 1. *Antimony*, so far fixed by Nitre, as not to be able to cause either *Vomiting* or *Purging*, but only a *Nausea*; for hence it derives a plenty of Spittle into the Mouth: for it is manifest, that all *Vomitories*, before they move the Stomach to contraction, produce a *Nausea*, which however is always accompanied by an unusual *moistness* of the *Fauces*. 2. *Mercury*, which may be used after various manners; (a) Crude *Mercury* applied to the Body excites a *Salivation*: and it may be applied (1) in form of a *Liniment*, as in the *Unguentum Neapolitanum*: (2) In form of *Smoak*; for if twelve grains of *Quicksilver* be laid on the Fire, they will emit a *Smoak*, which, if it be received up the Nostrils, will excite a *Salivation* in two or three days: (3) It may be taken *internally*, as in the *Pilule Barbarossæ*, to excite a *Salivation*, but only in a small quantity, for otherwise it will seek a passage thro' the *Anus*: (4) If it be much *handed* for a great while, a *Salivation* may arise, as we find by experience; for Goldsmiths, who make much use of it, often fall into a Spitting. (b) *Mercury* united with *Salts* by Sublimation produces a *Salivation*; (1) If it be taken



taken inwardly in a small dose, (2) If it be externally applied to Wounds or Ulcers; (3) If it be snuffed up the Nostrils.

FROM what has been said therefore it appears, that after what manner soever *Mercury* is applied to the Body, it will excite a Salivation; and produce the same effect in us, after what manner soever it is prepared, unless it be taken with something else, which may hinder it's *dissolution* in the Stomach and Intestines, and consequently it's *passage* thro' the Lacteal Vessels: for then it will not cause a Spitting, but pass out of the Body thro' the *Anus*; as may be observed in *Cinnabar*, and *Æthiops Mineral*, which consist of *Sulphur* and *Mercury* united and mixed. Moreover *Mercury* is the most ponderous of all *Liquids*: for it is the most divided and divisible; as appears by it's *penetrating power*, which passes thro' all Bodies except *Glass*: each of it's particles also, how *minute* soever, retains it's specific Gravity, which is greater than that of any other Fluid, and proportional to the *weight* of it's whole bulk, as is demonstrated by NEWTON. Hence if *Mercury* is mixed with other Liquids, and a *motion* is impressed on both of them from the same cause, the *Mercury* will be carried much more *swiftly*, and will keep it's *motion longer* than the other Liquids: wherefore it's particles impinging on the less moved particles of the *Fluids*, will penetrate, divide and comminute them by a certain *force* arising from the excess of it's *velocity*, and will impress a greater *motion* upon them. But tho' this action of *Mercury* on other *Fluids* depends on it's *solidity*, as the only cause, yet it may be *increased*, by reducing it into *Minutiae*: for then every particle will receive a proportional power of *acting* from the *increase* of it's surface. But *Mercury* being received into our Body does not act on the Fluids, except in the  
*smallest*



*smallest* Vessels; for so long as it is moved in the *greater* Vessels, it runs into *drops*, and is not there *internally* mixed with our Liquids; but being brought into the *smallest* Vessels, it is divided into *Minutiae*, because of the straitness of the passages, and is perfectly mixed with our Liquids. Whence it is manifest, that it does not *act immediately* on the Blood, but on the Lymph, as being contained in the *smallest* Vessels. Hence the reason may appear, why in *obstructed* Bodies, as in those which labour under the Venereal Disease, Dropsy, Scurvy, &c. it operates with *greater effect*, than where all the Vessels are *open*: of which I lately saw a notable *example* in a certain Man, who *twice* had the Venereal Disease, and had been as often cured; but when he fell a *third time* into it, the *cure* was attempted with *aperient Decoctions*, because of the *Caries* of the Bones; and these failing of success, *Mercury* was applied, which however did not excite a *Salivation*: but *half a year* afterwards, his Body, being obstructed by a *Leucophlegmatia*, presently felt the power of *Mercury*, tho' applied in a very small quantity; whence he fell into a most violent *Salivation*.

FROM what has been said may be gathered, that the *power* of *Mercury* taken into our Bodies consists in dividing and dissolving the *Molecule* of our Fluids, that are too much compacted, and consequently in taking away *Obstructions*: for by whatsoever *mechanism* our Liquids suffer attrition and comminution, and are broken so as to be reduced into very *minute* parts, by the same they are rendered fit and ready for an easy and copious *Flux*, into the *lateral* Lymphatic Vessels, and therefore for *Salivation*: but that the effect of *Mercury* is such as has been already described, is manifest from hence, that if the Spittle or Urine be divided into *minute* parts without *attrition*, or the *heat* of the Sun  
or



or Fire, it will emit the same *stink* as Spittle moved by *Mercury*. The *force* also of *Mercury* is much promoted, if any *Stimulus* be added to it, as a *Caustic* or any *Acid*; for then it produces horrid *Salivations* and intolerable Purgings. Lastly, it must be observed, that some without reason assert that the parts of *Mercury* adhere to the sides of the Vessels, whereas it is a very moveable Body.

## CHAP. II.

### Of EXPECTORANTS.

1. **EXPECTORANTS** are those which expel the morbid matter, sticking in the *Bronchia*, thro' the *Larynx* or *Windpipe*. To perform this, four things are required; 1. That the matter there contained be rendred *moveable* and *penetrable*, so that it's most fluid parts may not be dissipated, and the matter that remains become viscid, tenacious, and inextricable: hence therefore those things which are *hot* and *stimulating* are *injurious*. 2. That the *passages* be opened, deterged, and lubricated. 3. That the matter be provoked to *excretion*: which is best performed by *coughing*; to which a *Stimulus* and sufficient strength are required. 4. That the stuffed Vessels may be at rest, in order to Relaxation; for if they were continually irritated, the *moisture* would be thrown out perpetually from the *Glands* of the *Aspera Arteria*, with a sense of pain.

2. **EXPECTORATING** Medicines therefore, so far as they have relation to these *four Requisites*, may be divided into *four Classes*.

THE



THE *first* contains all *Stimulators*, that are *aromatic* and *bitter*, and at the same time *oily* and *mild*: such are *Wormwood*, *Carduus benedictus*, *Hore-bound*, *Hyssop*, *Marjoram*, *Elecampane*, *Penny-royal*, *Valerian*, &c. hither also belong *Sulphurs* mixed with *Alkalies*; all fixed *saponaceous Bodies*, as *Venice Soap* in *Pills*, or taken with *Milk*; all *oily volatile Soaps*, and *volatile* and *fixed Salts*; and in general, all that are *stimulating* and *diluting* at the same time.

THE *second* contains *Aperitives* and *Detergents*; as the *mild Oils* of *Poppy*, *Almonds*, *Olives*, &c. also *Honey*, which opens, cuts, attenuates, deterges, and lubricates: hither also belong *Emulsions*, *Soaps*, *Yolks of Eggs* with *Oils*, and *Sugar*, at least in a small dose; for tho' it is condemned by some, yet it is certainly a *rectified Salt*, and not so pernicious to our *natural Balsam*, as some imagine: hither also belongs *Manna*, which is an excellent *Lubricater*; and *Balsams* also, as *Turpentine*, *Balsam of Peru* and *Mecha*, *Gum Elemi*, &c. which act by an *aromatic Stimulus*, and *lubricating Oil*: lastly, hither also belong all *relaxing* and *emolient Decoctions*.

THE *third* Class contains those which excite a *Cough*; as *Wine*, *Vinegar*, *acrid Spirits*, and *Errhines*: hence appears the reason, why *Hippocrates* gave either *Wine* or *Vinegar* or *Oxymel* mixed with *Pepper*, in a *Vomica*, when the *critical* day was approaching.

THE *fourth* Class includes *Demulcents*, *Anodynes* and *Narcotics*; of which the chief is *Opium*: for when the *Aspera Arteria* is once excoriated, it is easily moved into a violent *Cough*, and *Spasms*, unless they be restrained by *Opium*.



## C H A P. III.

## Of Purgers by Stool.

1. **PURGERS** by Stool are those Medicines, which being applied either externally or internally to a living Body, evacuate the morbid matter by the *Intestinum Rectum*. The Physicians in all times have called those Purging Medicines which drive out the *impure* matter thro' the last Intestine, by *impure* they understood whatsoever was hurtful to Nature; and by Nature all that is necessary to Life and Health; that is, a good Constitution of the *vital, natural* and *animal Functions*: therefore what they called the *impure* matter, was whatsoever injures these *Functions*.

2. **PURGATION** is an Excretion by the Anus of all those things which can flow from any part of the Body thro' the Intestines. It must be considered therefore, 1. Of what sorts and of how many kinds the Matter is, that is found in the Intestines. 2. From what places it comes. 3. Of how many sorts it's nature is. 4. In what plenty it may flow to the Intestines from the other parts of the Body. Whence we shall see, that almost the whole Body may be purged by the Intestines.

3. **THE** Classes of those things which may be contained in the Intestines, and purged thence, are the seven following.

I. **THE** first Class includes all those which are swallowed down: such are, 1. The Air; which mixes it's self with the Spittle, the Liquor of the Gullet, and especially with the Mucus of the Palate, which inviscates it: but that it is mixed with these, we find from their froth, and the same is shewn by the Air-pump; and that it is swallowed down, appears also from



from the *gripings*, which are often excited by it in Intestines. 2. All *Spittle*, *Mucus*, and other *humours* secreted from the *Nostrils*, *Fauces*, *Palate*, and *Membrana SCHNEIDERIANA*, &c. of which there is such great plenty, that sometimes they cause a *purging*; as in the *Diarrhœa Catarrhalis*, in which case they sometimes flow to the quantity of some pounds, in twenty four hours. 3. All kinds of Meat and Drink.

II. THE *second* contains *all* the *reliquiæ* of Meat and Drink, for there is no Drink swallowed, except perhaps the purest *Water*, but it leaves some *Fæces*, as appears in Infants, that live entirely upon *Milk*, and in sick Persons who take nothing but *Broths*, and in some Persons who drink only *Spirit of Wine*: for the *last Solids* of all Things, as appears from Chemistry, are scarce *separable*; hence they cannot be reduced by the Bowels into such *Minutiæ*, as to be able to enter the *Lacteal Vessels*; these particles therefore being heaped together in the Intestines constitute *dung*: besides *Fæces* are generated from the *fluid* parts of what we take in; as the *force* of the Bowels cannot so subdue what is taken in, as to compel the *Solids* to part with their whole Liquid, or to subdue and divide the Liquid so, that the whole of it may be received into the Lacteals. Hence also that PROBLEM is solved, why *two* Men using the same Food, sometimes differ so much, as to their *evacuations by stool*; that *one* has an *evacuation* every day, and the other but once in two days; tho' both of them seem to be in health, and really are so.

III. THE *third* contains *both* sorts of Bile, the *Hepatic* and the *Cystic*. These continually flow into the Intestines, especially the *Hepatic*, for the *Cystic* cannot always flow because of the situation and inactivity of it's receptacle, unless it be pressed by



a full Stomach, or a stronger motion of the Viscera. And this continual flowing will be easily understood by any one, who does but consider that the Excrements are always *yellow*, except in the Jaundice; for then they grow *white*, because of the obstruction of the *Ducts* of the Bile: but how so great a quantity can be *excreted* in twenty four hours, as sometimes to amount to three pounds, can appear only from the following considerations.

1. The greater the *velocity* is of a Liquid driven to a Gland, the greater also is the *secretion*. 2. As the *bulk* of one Gland is to the *bulk* of another, so the rest being equal, is the *secretion* also: but how great the Hepatic Gland is, where the Bile is secreted, may be seen in GLISSON'S *Traët. de Hepate*, and in WHARTON *de Glandulis*. Whence we may gather, that the *secretion* of the Liver is to the *secretion* of the Parotid, as 3 to 1. 3. The *Out-let* of the Liver is large and open. 4. There is nothing to hinder this *Out-let*.

IV. THE *fourth* contains the *Pancreatic Juice*, which very much resembles the Spittle in tenacity, taste, smell, &c. The Pancreas also, which is the Gland that *secretes* it, differs only in bigness from the *salival* Glands: for this Gland has a pretty large *Out-let*; whence it manifestly lets down a great plenty of it's Liquid into the Intestines; and thus, a comparison being made between this Gland and the *Salival*, which, in their natural state, separate the Spittle to the quantity of twelve *ounces* in twenty four hours, and if stimulated by *Mercury*, *two pounds*: also a comparison being made between the Carotid and Coeliac Arteries, of which the latter is to the former as 2 to 1, which proportion the *pancreatic* Duct bears to the *salival* Glands; it may be gathered, that the Pancreas, in it's natural state, emits it's *Juice* to the quantity of twenty seven *ounces* in the



the space of twenty four hours ; but, if stimulated, *four pounds*. Now the *secretion* of a Gland may be increased *three* ways : 1. When the magnitude of the Gland is increased ; for which see WHARTON. 2. When there is a greater proclivity in the Liquid towards *secretion*. 3. When the resistance in the Cavity of a Gland is diminished by the continual squeezing out of the Liquid ; whence follows a more plentiful *influx* of the Liquid into it, as appears in the Breasts of *suckling* Women. Hence a reason may easily be given, why so great a quantity of Liquids is sometimes *excreted* by the Intestines in a *Diarrhoea* ; because, amongst the rest, the *Pancreatic Juice*, which in it's *sound* state returns into the Blood by the Lacteal Vessels and Meseraic Veins, must necessarily be thrown off by the *Anus*, when those Canals are *obstructed*.

V. THE *fifth* contains the *Juice* of the Intestinal Glands : the continuity of which thro' the whole series of the Intestines was demonstrated by PEYERUS ; and what a quantity of them there is, may easily be conceived from the *length* of the Intestines, which at least *six times* exceeds the height of the Man.

VI. THE *sixth* contains all that are *preternaturally* in the Intestines ; which are either *fluid* or *solid*. The *preternatural Fluids* in the Intestines are these : 1. All *Pus*, which is always the effect of an Inflammation : now this is a *stagnation* of the Arterial Blood in the *smallest capillary* Vessels, the Blood pressing behind ; the effect of which is a *contrition* of the *smallest* Vessels, and a *change* of the *red* Matter, and of the Vessels themselves into a *white* Matter called *Pus* : now that *Pus* of which I am speaking may be generated in the Spleen, Liver, Pancreas, Intestines, and other parts. Hence we may answer this *question*, why so great a quantity



of *Pus* is dejected, and whence? for it may proceed from the Spleen thro' the Epiploic Vessels leading to the Liver, whence it may be carried thro' the *corroded hepatic* Duct to the Intestines, of which sort of *Pus* HIPPOCRATES wrote; or from the Liver or Pancreas thro' the *proper* Ducts; or lastly from the Intestines themselves. Hence also is solved that most famous PROBLEM, how an *Empyema* may be discharged by stool? namely, because the *Pus*, lying on the Diaphragm, affects the neighbouring places, eats thro' and perforates the Diaphragm, and then corrodes and enters the Liver or the *Colon*. 2. The Blood which often flows out in great quantity, and that many times after *Purges* ill applied, and in a Dysentery, may proceed from various *Out-lets*, two of which are principally to be noted; ( $\alpha$ ) the *common* Duct of the Liver, which receives five branches from the Liver, and one from the Gall Bladder: if therefore the structure of the Liver is so injured internally, as to have a *real wound*, and if that wound gapes in any of the *Biliary* Ducts, then the Blood will flow in great quantity into the Intestines, and thence sometimes a Dysentery will proceed: ( $\beta$ ) the *Pancreatic* Duct, thro' which the texture of the Pancreas being injured, the Blood may be *excreted*; and this often happens upon a *Cathartic* being administered to one who has a *schirrous* Pancreas; for the Circulation is increased by the *Cathartic*, and thence the Vessels situated near the *Schirrus* are greatly pressed, and at last bursten; whence dreadful *Hæmorrhages* proceed, as is well known to the Surgeons. Beside these two Ducts of the Intestines, which supply Blood to the *Cavity*, there are others also sometimes, thro' which the Blood may flow into the Intestines; as ( $\gamma$ ) the Gullet and Stomach being injured: ( $\delta$ ) the Spleen it's self; whence, if it becomes *schirrous* and

is



is *inflamed*, after three or four days, Blood is either vomited up or thrown down by stool; which indeed was the *opinion* of the ancients, but that Blood passes from the Spleen thro' the Liver. Moreover *grumous* Blood coming from the Stomach is a sign of an *old Ulcer*, especially if those *Grumes* have a convex surface on one side, which arises from the figure of the Stomach: for the Stomach can retain *Liquids* and *Solids* a long time, as appears from *food* swallowed in too large a quantity, which are *putrified* after twelve hours. 3. *Ichor* may proceed from a Rupture of the Lymphatic Vessels; for it is manifest from *Anatomy*, that these Vessels disperse their branches into a *conical* form; whence Inflammations may arise in them, and tho' not *red*, yet with *pain*; but the *finer* part of the stagnating Lymph may easily pass thro' whilst the *thicker* becomes *acrid* by stagnating, and obtains the name of *Ichor*, which is the cause of *Pimples* and *Scabs*. Hence it appears that a pretty large quantity of *Ichor*, may be carried down from the great quantity of Lymphatic Vessels in the Abdomen. 4. The Lymph it's self is extravasated from wounds inflicted on the Lymphatic Vessels.

THE *preternatural Solids* contained in the Intestines are, 1. *Fats* cut like Lard, which proceed from stuffed Aliments, and concreted by a mucous Glue. 2. *Filaments*, *Caruncles*, and as it were *small glandules* of the inner Coat of the Intestines; for such loose Fibres arise from the inner coat of the Intestines, being eaten, loosened, and abraded by *acrid* and *venemous* particles. 3. It is to be observed, that all our Vessels, which are not yet made cartilaginous, have an *indeterminate* dimension; as we see in *Varices*, *Aneurisms*, &c. and therefore, if there is a sufficient cause, the Hepatic, Pancreatic and other Ducts may be exceedingly *dilated*: hence



therefore, if any thing sticks in the Bowels, from which those Ducts proceed, which has remained there after a *Gangrene*, or *Ulcer*, it may be carried thro' them to the Intestines: for example, if the Liver be gangrened, it's *dissolved* parts may pass thro' the Hepatic Duct being *dilated*; but that the Liver may be inflamed, and then that this Inflammation may turn to an *Imposthume* or *Gangrene*, is testified by FORESTUS and TULPIUS. 4. The *Intestines* also themselves being greatly inflamed may perish by a *Gangrene*, and be expelled by *piece-meals*. 5. The *Aphthæ* are often also purged downwards. 6. *Worms* and other Animals sometimes also come out that way.

VII. THE *seventh* contains the *Lymph* and other Liquors, which being extravasated form *Receptacles* for themselves, or are somewhere collected unnaturally: for these are sometimes by the power of *Cathartics* discharged from the Body by stool; but how that is done, can hardly be said, tho' it is certain that it is done; for in a Dropsy a large quantity of *Lymph* is sometimes expelled by a *Cathartic*, which is followed by a *sinking* of the Belly.

FROM what has been said, the following COROLLARIES may be deduced.

I. THRO' the Intestines may be expelled very *different* Bodies, and from *any* part of our Machine: for all *Purges* diminish the *resistance* in the Vessels which are *nearest* to the Intestines; whence more Liquid is drawn thither by the *force* of the Atmosphere; which is done also by the *contraction* or *elasticity* of the Vessels: but if the *resistance* is greatly diminished in the Intestines by a repetition of violent *Purgatives*, all the *Lymph* will be drawn down to their *emptied* Vessels; and thence will arise an *excretion* of it. Wherefore the *Lymph* may be expelled



expelled from every part of the Body by *Cathartics*.

II. THE quantity of this may sometimes be so great, as even to exceed belief.

III. THE Liquids which were wont to be *naturally carried* into the Intestines, and thence into the Veins by the Lacteal Vessels and Meseraic Veins, if they are carried *directly* to the *Anus*, may be *excreted* to the quantity of *four pounds* or more, in twelve hours. For example, suppose we swallow in twelve hours, all our *Spittle*, *Mucus*, and *Liquor* of the Oesophagus, and these come to the middle of the Stomach, they will make there about  $\frac{3}{4}$ x, and the Stomach will supply about  $\frac{3}{4}$ xi of it's *Liquid*, and the intestinal Glands  $\frac{1}{4}$ bi, the Pancreas  $\frac{3}{4}$ xi, and the Liver also will supply it's *Liquor*: from all which taken together we shall have above  $\frac{1}{4}$ iv. Whence we see that the whole Man may in a short time be *purged* by the *Anus*.

IV. THE *seven* kinds of *Secretions* and *Excretions* already mentioned may be so *changed* either by stagnation or mixing, that they can by no means be distinguished; thus the *Mucus* of the Nostrils, when it is first *excreted*, is a *thin* Lymph; but in a short time it is so inspissated, as to become a hard *crust*, and almost *cartilaginous*.

V. SOME of these are driven out of the Body with a much *less force* than others: for the *Fæces* that are left by *food*, are easily thrown off by the *peristaltic* motion of the Intestines, and are therefore expelled by the natural *force* of the Bowels without the help of any *Stimulus*. But now to bring out an *extravasated* Liquid, there is more required, than the *peristaltic motion*; namely, 1. That it be *drawn* into the Intestines: to which is required, 2. That the neighbouring Vessels *receive* it: to which again is required, 3. That the *resistance* of those



those Vessels be less, than the *force*, which impels the Liquid into them. Whatsoever therefore can sufficiently diminish the *resistance* of the Vessels, will cause the Liquid to be received into them; but *resistance* is sufficiently diminished by any cause, that *clears* and *empties* the Vessels: but the *force* of this cause ought to be greater than the *natural force* of the Bowels; that it may *stimulate* the Vessels strongly, and bring them to *secretion*. Therefore a greater or less easiness of *expulsion* depends entirely on the *various distance* from the Intestines of the matter to be expelled: thus the *dung* is more easily moved than the *pancreatic Liquor*, and this more easily than the extravasated Lymph.

VI. THE *expelling forces*, which, as appears from the *preceeding* COROLLARY, are *various* according to the *various distance* of the matter to be expelled, depend entirely on some *Stimuli*: and these *Stimuli* are such, as may create some uneasiness by their *figure* and *solidity*; thus a grain of *Sand* immediately excites a *Convulsion* in the Eye, by which motion the Glands are compressed, and by that compression evacuated; whence also an easy entrance is granted to new *Liquid*. It is the same with regard to *Purging*: for example, if any one, who eats only the *whitest Bread*, and is accustomed to go to *stool* only *once* in a day, should eat the *coarsest*, he would then have *two* or *three stools* in a day, and sometimes attended with gripings; because the particles of *Bran*, which are indissolvable on account of their *bulk* and *figure*, would *vellicate* the Bowels, and throw them into *contractions*. In the same manner other things operate also, as *Grapes*, &c.

4. HAVING now considered what things are *naturally* and *preternaturally* carried down into the Intestines, let us consider what is required in *general* that they may be *expelled*.

THESE



THERE are *six* things required to the *expulsion* of the matter. For, 1. It is required that the *passage* be *open*; by the *passage* I understand the *continued Cavity* from the Mouth to the *Anus*: which may be *closed* *two* different ways; ( $\alpha$ ) by it's own *figure* being *changed*: which may be done, if one part is drawn within another, as in the *Iliac Passion*; or if the *Mesentery* be separated by an *Inflammation* from any part of the *Intestines*; or lastly by a *spasmodic* motion of the *Intestines*: ( $\beta$ ) by any matter *stopping* in the *Intestines*; as when the *Excrements* are indurated, by means of some glutinous matter, into a hard and almost stony substance, as sometimes happens in Women, especially when they are *big with Child*; or when any thing *hard* stops in the *Cæcum*, *closing* the Valve there; or when a *Schirrus* arises in the *Intestines*. 2. It is required that the *passage* be *smooth*: for it has pleased GOD to provide thro' the whole *Intestinal Tube* a sort of *Soap*, that the *Fæces*, being *dried* by the squeezing out of the more liquid part, may easily slide through, and not remain immoveable and stop any where: but if that *Soap* is wanting, then the *Body* is *costive*; whence a far greater *force* is required to detrude the *Fæces*: therefore in this case should be taken *Honey*, *Manna*, *Oil*, *Sugar*, &c. hence in the *Aphthæ*, the *Belly*, which at that time is *most bound*, is rendred *lax*, by glutinous *Clysters*, of *Honey*, *Sugar*, and such like. 3. A *Contraction* of the *spiral muscular* Fibres, which encompass the *Intestines* thro' their whole *course*, and when they *act*, urge the sides of the *Vessels* towards the *centre*; also the contraction of the *Longitudinal* Fibres: for no *purging Medicine* can act, without increasing, accelerating, and strengthening these *motions* by *stimulating* them; which appears from the *pains* arising from *Purges*. 4. An  
increase



*increase* of the *motion* of all the parts serving to Respiration ; I call this an *increase*, because neither the *Fæces* nor *Urine* are naturally expelled without some Respiration : for this is manifest from Infants, while they are yet in their Mother's Womb, which, if the Membranes are broken in a difficult birth, draw in the *Air*, discharge their *Fæces*, and *defile* their Mothers ; we may observe also, that when any Person goes to *stool*, he draws in a great quantity of *Air*, and immediately closes the *Glottis*, and then the *Air* being rarefied distends the Lungs, and they drive the Diaphragm downwards, in the mean time the *ten Muscles* of the Abdomen contract themselves, whence the Intestines being pressed drive out the *Fæces* ; but as soon as the Lungs are released, the Abdomen is released also, and the defection of the *Excrement* ceases. Hence we see it is in vain to expect the effect of *Purgation* in *dying* Persons ; for the Respiration also fails at that time. 5. The *presence* of some matter in the Intestines themselves. 6. The *meability* of this matter, that is, a disposition to be easily expelled. Now these are always required for a *Purgation* to meet with success ; but if the *Purgation* does not succeed because of the defect of one of them, that defect may be remedied by *proper* Medicines. Therefore ( $\alpha$ ) if the *passage* be *obstructed* either by a *Schirrus* or an Inflammation, a *Vein* is to be opened : ( $\beta$ ) if the proper *Slipperiness* is wanting, it is to be remedied by Honey, or Oil, or *glutinous* Clysters : ( $\gamma$ ) if the *contraction* of the Muscles is deficient, it is to be restored by a light *Stimulus* of seasonable Fruits : but if that defect arises from a faintness of the Spirits, then *Cordials* are of service : ( $\delta$ ) if the transflux is hindered by *Crusts* grown to the Intestines, then a Bath of *cold Water* is to be applied : and thus what uses to be excreted by the cutaneous,



cutaneous Pores, will be determined towards the Intestines, whence the *Crusts* will be dissolved and the *Purgation* will go on well. (ε) If there is nothing in the Intestines, there cannot be any thing drawn out of them; therefore a *Purge* ought not to be given to any one after two or three days *fasting*; because in this case it would have no effect, on account of the *weakness* of Respiration, and *deficiency* of matter. (ζ) If the matter is so hard, that it cannot be moved, it may be resolved by a long continuance of drinking *Water* and *Oil*.

5. W E have seen now what matter is *naturally* contained in the Intestines themselves, and uses to stop *preternaturally* in them, and what may be derived towards them, and as this is *manifold*, it thence easily appears, that the *names* of the Medicines destined to *expel* it, must be *various*. And thus, 1. Those which expel only the *Fæces Alvi*, that is, the *natural remains* of what is taken into the Stomach and Intestines, and derive nothing else from the other parts of the Body into the Intestines, are called *Eccoprotics*; such are those which open the *passages*: hither therefore belong *Oils*, *Diluents*, and *Clysters*; it is required however that some *slight Stimulus* be added to them, such as *Salts*, and *mild Aromatics*. 2. *Pblegmagogues* are those which draw out the *pituitous* matter or *Pblegm* by *stool*: now the Ancients called every Liquid that is thicker than *Serum*, such as the *Mucus* of the Nostrils, by the name of *Pblegm* or *pituita Vitrea*; therefore if it be described according to appearance, every whitish, limpid and tenacious matter like the white of an Egg, which the Antients more strictly called *pituita Vitrea*, will be *Pblegm*: which consists of *three* sorts of matter, (α) Of a *foul morbid* matter of the Stomach, and this arises from some *glutinous* substances sticking in the Stomach, or from the emi-

nent



nent *Villi* being *abraded* by that *mucous Liquid* of the Stomach, by means of *Acrimony* and a vehement *Stimulus*: ( $\beta$ ) From *Mucus* swallowed down, the presence of which in the Intestines no one is ignorant of: ( $\gamma$ ) From a like substance *produced* by stagnation or mixture: for by stagnation and mixture surprising masses may be produced; as may be seen in B O N E T U S's *Sepulchretum Anatomicum*, Cap. de morbis Intestinorum. Hence there is need of various *Stimuli* to purge *Phlegm*: for if only the *natural Mucus* is to be purged out, it may be easily performed by means of *Eccoprotics*; but if our Bowels are weak, then we stand in need of a greater *Stimulus*, such as *Phlegmagogues* supply. 3. *Cholagogues* are those which *stimulate* with so much force, as not only to expel the *Mucus*, but also being received by the *Mesenteric Vessels*, to increase the *solution* and *motion* of the Blood in the Liver, or by *stimulating* the Vessels to promote a more plentiful *flux* of the Blood towards the Liver: such are *Semi-Caustics*, as *Scammony*, *Jalap*, *Mercury*, &c. which carry the *Bile* down from the Liver into the Intestines, and thence expel it. 4. *Hydragogues* are those which expel not only the *Bile*, but also the Intestinal *Mucus*, and even the *pancreatic Juice*: and that ( $\alpha$ ) by hindring any thing from entering the Lacteals, which used to return into them; and this is sometimes produced by a *very slight* cause; for let any one walk in a *cold Air*, so that his Feet be *cold*; then presently his whole Body, and the Intestinal Glands, and the Abdomen will be constricted by the *cold*, the Excretory Ducts will be squeezed, and the Ducts which carry the Liquids into the Blood will be closed; hence therefore the *reflux* will be hindered, and *Gripes*, that is, *spasmodic Contractions* will arise, and now the passage of the Liquids thro' the Intestines will



will be promoted, whence at length *serous* evacuations will follow : ( $\beta$ ) by increasing the *secretion* of the Liquids, and especially of the pancreatic Juice and Intestinal Glands : which is done by diminishing the *resistance* of the Secretory Vessels, and increasing the motion of the Liquid both *special* and *general* thro' the whole Body. Those which effect this, are *Caustics* and *Poisons* ; as *black* and *white Hellebore*, *Euphorbium*, *Lapis Infernalis*, BOYLE'S *Pilulæ Lunares*, &c. ( $\alpha$ ) 5. In the last place, *Melanagogues* are those which draw down the *black matter* by the Intestines. This *black matter* has a various smell, taste, acrimony and tenacity, resembling Glue ; and this is what the Ancients called *Atra Bilis* ; for when they observed *such* a matter to be dejected by Persons afflicted with *Melancholy* and a *swelling* of the Spleen, on taking a strong *Purge* ; they concluded that matter to be collected from *adust* Blood, and deposited in the Spleen as in a *sink* ; whence they imagined it to be carried into the *Cavity* of the Intestines by Vessels proper for this work, but unknown : but it is well known that the Spleen remits whatsoever it receives, thro' the *Gastro-epiploic* Vessels into the *Vena Porta* and Liver ; moreover if the *efflux* of the Blood from the Spleen is hindered by the Vessels being *obstructed* by any cause, it is *coagulated* and becomes *black*, and if it is then moved by vehement *Purges*, it is driven towards the Liver, and there making an *Impetus*, being assisted by a strong succussion of the whole Body and of the Abdominal Muscles, which arises from the violent *stimulus* of the *Purge*, it *dilates* the Biliary Vessels or *bursts* them ; and thus makes a way for it's self into the Intestines. Therefore to  
move

[ ( $\alpha$ ) See the Noble Author's Description of these *Pills*, in his Treatise of the *Usefulness of Experimental Natural Philosophy*, Part II. page 308.]



*move such* a substance, there is need of a very great and *caustic* power, which may *disturb* both the Solids and Fluids of the Body, and excite *spasmodic* motions. Now this *black Matter* may proceed not only from the Spleen, but also from other places in the Body, and is wont so to do: for *such* a Matter may be gathered in the Liver it's self from *burst* Vessels; and also in the Pancreas; such a *Mass* also may be constituted by the Blood, *extravasated* any where in the Intestines, and *coalescing* in the same place with the *Pblegm*: but this *last* sort may sometimes be excreted only by the *natural* motion of the Intestines, or by some *eccoprotic* Medicine a very little *augmented*: the *Atra Bilis* also collected in the Liver may be expelled by a mere *shaking* of the Body, occasioned by bending or being carried in a coach. And hence we may conclude, that the *Atra Bilis* may sometimes be *brought out* by a gentle *Cathartic*, and sometimes only by a *strong* one, according as it is more or less remote from the Intestines.

6. BUT now before I enter upon the History of *Purging* Medicines, I shall premise some OBSERVATIONS that greatly relate to them.

I. Some *Purges* act only by *irritating* the Fibres and muscular parts of the Intestines; and *others* do not act, 'till they enter the Blood Vessels, and are mixed with the *Mass* of Blood.

II. SOME produce *various* violent effects, as *nausea*, *fainting*, &c. before they purge; and these seem to *disperse* themselves over the whole Body: but others do not produce these effects, and therefore do not seem to be so universally *dispersed*, as the former; such are *Crystals of Tartar*. Whence it appears, that a *nausea* is not necessarily produced by all *Purges*, before they *work*.



III. ALL *Purges* are naturally *Vomitories*, and necessarily become so, if they are given in too *large a dose*; nay the most mild *Purge*, if taken in too large a quantity, becomes a *Vomitory*: and thus Oil newly expressed, which is the most gentle of all *Purges*, if taken too liberally, provokes a *Vomiting*.

IV. THE *passions* of the Mind alone will no less efficaciously *purge* both *upwards* and *downwards*, than Medicines; which is observed in Persons stirred by *anger*, or struck vehemently with *fear*: and this depends on the *motion* of the humours and spirits being disturbed by the *passions*.

V. MOST Persons may be *purged* by the mere *smelling* of a Medicine; and if such fall into those distempers, which destroy the *Smelling*, they are not then *purged*, tho' the Medicines be even applied to their Nostrils. The Examples of *Purgation* being produced by the smell *alone* are not a few; as in the *History of the Royal Academy of Sciences at Paris*, for the *first year* (a), and in BOYLE of *Effluvia* (b). Nay and sometimes a *Purgine* is

N

excited

(a) *Amsterdam Edition*, page 69, where a notable Example is related of a most violent *Purging*, both *upwards* and *downwards*, arising only from the *smell* of Damask Roses. See also an account of a like *Purgation* in PECKLIN, *Exercitat. de Purgantibus*, cap. 10. pag. 115, where there are Examples out of CARDAN, FALLOPIUS, and SALMUTH. See also TH. ERASTUS, *Disputat. de Propr. Medic.* cap. 60.

(b) [“ I know a Doctor of Physic, that is usually purged  
“ by the Odours or Exhalations of a certain Electuary, whose  
“ Cathartic Operation, when it is taken in substance, is wont  
“ to be but languid. And another Doctor of my acquaintance,  
“ causing good store of the root of black Hellebore to be pounded  
“ in a mortar, most of those that were in the room, and  
“ especially the party that pounded it, were thereby purged,  
“ and some of them strongly enough. And the learned SEN-  
“ NERTUS somewhere affirms, that some will be purged  
“ by the very Odour of *Colocynthis*.” BOYLE of *Efflu-  
vium*, page 62.]



excited merely by the *sight* of Medicines in some Persons; as may be seen in BARTHOLIN, *Histor. Anat. & Med. Centur. V. Observ. 64. (c)*: also in PECKLIN (*d*).

VI. SOME are moved by the sole *external* application of *Purges*; as may be seen in the *German Ephemerides, Decur. 2. Anno 10. n. 43.* and is proved by that well known plaster of Oxes Gall, Coliquintida, &c. which goes by the name of *Unguentum de Artanita majus*.

VII. SOME are vehemently purged, only by the *hindrance* or *diminution* of the Sanctorian Perspiration: and this is generally caused by *moist*, especially *foggy Air*; whence HIPPOCRATES said that *the South Wind produces a looseness of the Belly, Diarrhæas, Colliquations; but the North Wind costiveness and dryness of the Belly (e)*.

VIII. IT sometimes happens, that *Purgation* is excited merely by *external motion*; which is sufficiently known to happen to those who first go to sea, and to some when *carried in a coach*.

COR. I. A very small *bulk* of Body oftentimes is sufficient to produce the *greatest* effects.

COR. II. THE Body which *acts* is generally very *fine*; as appears from *purging Plasters*, for the *bulk* of them is hardly diminished, when the operation is over.

COR. III. THE *acting* Body is often very *volatile*; as appears from *Aloës*, the fume of which *purges*,  
but

(c) Where there is an Example of a very strong *Purgation* by the *sight* of *Antimony*. To this we may add what the same AUTHOR relates in the *Acta Hafniensia, Vol. 5. Observ. 49. pag. 136.* from the Observation of OLAUS BORRICHIIUS, of a plentiful *Purgation* only by the *sight* of some Cathartic Pills. Consult also MARCELLUS DONATUS, *de Histor. Med. mirab. Lib. 2. cap. 1. pag. m. 91.*

(d) *Exercitat. de Purgant. cap. 30. pag. 409.*

(e) *Apborism. Sect. 3. Aph. 17.*



but when it's *subtile* parts are flown off, that which remains is quite *unactive*.

COR. IV. THE *cathartic* part of a Body is the *least* with regard to the whole *bulk* (f); as appears from Euphorbium and Coloquintida, which being dissolved in *Water*, and gently evaporated, become *unactive* masses; whereas the part evaporated was very *small*, and scarce *preceptible*.

(f) See the *Note* annexed to page 84 and 85.

## CHAP. IV.

### OF ECCOPROTICS.

1. **ECCOPROTICS**, as was said before, are those *purging* Medicines, which do not much *disturb* the Body in their *operation*, and which *expel* nothing, or at least very little from our Body, beside the *contents* of the Stomach and Intestines; for it is impossible to find any *Eccoprotic* absolutely so called, which does not *draw* any thing out of the Intestinal Glands; for as the purest, that is, *Rain-water*, when put into the Eye to get out sand, forces out tears, by slightly *stimulating* it; so also an *Eccoprotic*, tho' ever so *mild*, yet always *expels* something together with the *Fæces*, by *moving* the Intestinal Glands.

2. Now all *Eccoprotics* may be reduced to *three* general Classes.

I. THE *first* Class contains whatsoever act by *lubricating* the *Membranes* of the Intestines, and their contents; such as *recent* Oils of Animals; I say *recent*, for if they are not such, but on the contrary are *kept* too long, they become *acrid*, and



must be referred to the Class of *acid Purges*; but as long as they are *fresh*, so long they *lubricate* by their oiliness: hither therefore belong, 1. *Butter*, that is, the fat and oily parts of the *Chyle*, separated by a vehement concussion from the aqueous and saline parts. 2. *Cream*, but it must be *fresh*, as was said before. 3. All *fat Broths* prepared of Animals, especially the *Broths* of those parts which are about the *Mesentery*; hence also *Decoctions* of the *Intestines* and *Mesentery* are esteemed by the *Italians*, as the best remedy for indurated *Fæces*. 4. *Marrow* and *marrowy* parts of Animals. 5. All their *recent Fats*. 6. Their *Bile*, which tho' it *acts* by it's *saponaceous* and *stimulating* virtue, yet so far as it is *oily*, is to be accounted *lubricating*. 7. All *Oils* expressed from Vegetables, as of *Olives*, *Almonds*, *Pistachios*, &c. moreover it is to be observed, (a) That the Fruits and Seeds from which they are expressed be *ripe*; for otherwise they *astringe*: (β) That they be also *fresh*; for otherwise they become *acid* and very *purgative*: (γ) That they be *mild*; by which mark they are distinguished from the *Oils* of *Esula*, *Euphorbium*, *Spurge*, *Tobacco*, and such like *acid* Plants. It is sometimes disputed, whether these mild *Oils* *bind* or *relax*; because, if they are taken in a *Dysentery*, they *bind the Belly*, but in *Hypochondriacal Affections* *relax* it: but if we consider that the cause of a *Dysentery* is something *acid*, *vellicating* the *Fibres* of the *Intestines*, and that the property of *mild Bodies* consists in *obtunding Acrids* by sheathing them, we shall easily perceive why they are of service in a *Dysentery*: besides in *Hypochondriacal Affections*, the *passages* of the *Intestines* are very dry and crisp, and their surfaces unequal and rough; hence *mild Oils* being applied to them take away their crispness and corrugations, by *lubricating* them, and thence

*relax*



*relax* them. 8. All *mild, ripe and fat Fruits*: as *sweet Almonds, Filberts, Walnuts, Coco, Pistachios, Figs, Linseed, &c.* and all *farinaceous Bodies* which are *viscous*: all these *Fruits* are called *lenitive*; and if they be chewed in a morning, swallowing the juice, and spitting out the residue, they gently *relax* the *Belly*. 9. All *Decoctions* called *emollient*, that is, which draw a fat, fine and mild *juice* from *Vegetables*: such as *Decoctions of Mallow, Marshmallow, Pellitory, Barley, Oats, Gromwel, Buckwheat, &c.* for these being *boiled* make a sort of lubricating *Emulsion*. 10. The *saponaceous* parts of *Vegetables*: now *Soap* is a *Body* consisting of *Oil* and *Salt* so combined together, as to be *dissolvable in Water*, by an *equable solution*, that is, that the *Oil* does not swim above the *Water*, but is mixed with it. Moreover *Soaps* are of two kinds; either *natural* or *artificial*: the *natural Soaps* are the *juices* of *Vegetables*; of which there are *six* sorts, which gently *lubricate*. ( $\alpha$ ) *Manna*, which is nothing else than a *juice*, exuding from the *Ash*, *concreted* and *endued* with an *absterfive* and *saponaceous* taste; hence it's *saponaceous* part *lubricates* and the other *stimulates*. ( $\beta$ ) *Cassia* which is a *Fruit* endued with a *viscosity*, almost like *Honey*; whence it gently *lubricates*. ( $\gamma$ ) *Honey*, which is nothing but a *saline* and *oily juice* extracted and boiled out of the *flowers* of *Plants* by the power of the *Sun*, then *concreted* by *cold*, and gathered into little drops, in which condition it is gathered by the *Bees*. ( $\delta$ ) *Sugar*, which *lubricates* by it's *viscosity*. ( $\epsilon$ ) *Syrups* made of the former *four*, and other *juices* of *Vegetables*. ( $\zeta$ ) *Mulsum*, which is called also *Hydromel* and *Mellicratum*, and is nothing but *Honey* dissolved in *Water* and boiled. In this *Class* of *Eccoprotics* are contained also, 11. *Artificial Soaps*, that is, those



which are made by *Art* of Salts and Oils mix'd : and of these there are *two* sorts ; the first contains ( $\alpha$ ) a *Soap* made of an alkaline fix'd Salt and expressed Oil ; thus *Venice Soap* is made of Salt of Tartar and Oil of Olives ; ( $\beta$ ) a *Soap* made of an alkaline fix'd Salt and distilled Oil, which is called *chemical Soap* ; ( $\gamma$ ) a *Soap* made of a volatile alkaline Salt of Animals with distilled Oil ; which is commonly called *sal volatile oleosum*. The second sort includes *Soaps* made of Acids and Oils ; as of *Vinegar*, and Oil boiled a long time together, and of Oil of *Vitriol* with three or four times it's quantity of *common Oil*. To this Class of *Eccoprotics* may be referred also, 12. All that have been *mentioned* already applied *externally*, either after the manner of a *Balsam*, a *Friktion*, or a *Fomentation*. 13. The same *thrown up* in form of a *Clyster* ; which oftentimes are of more Service, than if they are *taken in* at the Mouth, especially if the *disorder* is seated in the *great Guts*.

BUT in order to see, when these Medicines do *harm*, and when they do *good*, or to determine the *use* of these *Eccoprotics*, the following COROLLARIES must be observed.

COR. I. THE *use* of these *lubricating* Medicines is beneficial to those Bodies that are dry, hot, atrabilious, troubled with the Piles, that enjoy a plentiful Perspiration, and have very strong Bowels ; in which therefore every Liquid contained in the Intestines, is taken into the Lacteal Vessels and *absorbed* by them ; as SANCTORIUS demonstrates : now this *dryness* of the Vessels very often happens to the Inhabitants of *hot* countries ; for whatsoever sticks on the *outside* of the Body is always *absorbed* and deterged by the *external heat* ; now it is known, that the *more* the Secretory Vessels are drained,  
the



the *greater* is the *influx* of Liquid into them; whence it comes to pass that the *inner* parts dry; and thus the Inhabitants of such countries become so obnoxious to the *Atra bilis* and *Piles*. The *Atrabilious* are those who, for the reason just mentioned, have a *dry* and *lean* habit of body: because the *most liquid* part of the Blood is exhausted, so that their Blood, when taken out of the Body, appears *blackish*; and in such Persons the *excrements* grow as hard as a stone, thro' want of moisture. Those who are subject to the *Piles*, are such as thro' want of Liquid in their Intestines have hard *Excrements*; which then *stop* at that *acute* angle, which is formed by the *Colon* and *Rectum*; whence it comes to pass, that the Veins of the Intestines there situated, namely near that weight are strongly pressed and straitened; wherefore the Blood not being able to ascend, so *inflates* and *distends* these Vessels, that they *burst* in the places where there is the least *resistance*, namely about the orifice of the *Anus*; but sometimes they burst *within*, and then they are called the *inward Piles*; and sometimes *without*, and then they are called *outward*. To such Persons *lubricating* Medicines are of most service.

COR. II. THE *lubricating* Medicines mentioned above often conduce more to promote *Purgation*, than the strongest *Purges*; especially in such Persons as are described in the *preceding* COROLLARY: for the *Italian* and *Spanish* Physicians know that if such Persons were to be *purged*, and *acrid Purges* were to be given them, Anxieties, Sweats, Vomiting, and other dreadful symptoms would arise, without any *Purgation*; but if any thing *lubricating*, as *Oil*, &c. were given them, they are not ignorant that a *relaxation* of the Belly would immediately follow. But the reason, why *acrid* and *strong*, things are hurtful to such Persons, is obvious; because the



force of *acrid Purges* consists in the most thin and volatile part; those therefore, whose Bowels are very *strong*, drive all these *purging* parts *inward* and *absorb* them; whence the whole Body is *stimulated* and *disordered*; and by this means those become *Diaphoretics* and *Sudorifics*, which ought to perform the office of *Purges*. But in the *colder* regions it is quite the *contrary*: where the *stronger* agree, such as *Hydragogues* and *Cholagogues*.

COR. III. THE *Belly* being *moved* by means of these Medicines, does not become *bound* afterwards; as is usual upon the operation of other *Purges*: the reason is, because the Vessels and Glands of the Intestines are not so much *emptied* and exhausted by these, as by the *stronger Cathartics*; therefore when their operation is *finished*, a *sufficient* quantity of Liquid is ready in the Glands, to *lubricate* the Intestines: but in Men whose Bowels are *strong* it is quite otherwise.

COR. IV. THE best *use* of those *Lubricaters* is when the *Fæces* remain stuffed and hardened in the *Colon*; which happens to such as are described in the *first Corollary*, and *new-born Infants*, whose *Bellies* ought to be *loosened* by a *Suppository of Soap*; for if the expulsion of the *Fæces* is attempted by a *Cathartic* taken by the *mouth*, they die in *Convulsions*.

COR. V. THESE Medicines are hurtful to such as are either *bilious*, or *lax*, or *aqueous*. The *bilious* are properly those, who have *too great* a quantity of *bile* carried thro' the Intestines, it's *reflux* toward the Liver being hindered; since therefore the *bile* flowing thro' the Intestines, *lubricates* them abundantly, other *Lubricaters* ought not to be administered. I call those *lax*, the *passages* of whose Stomach and Intestines are too *smooth* and thence become *flaccid*. The *aqueous* are those, in whom the *aqueous* part of the Blood is accumulated in every  
part



part of the Body: such moreover are those whose expelling heat and perspiration are deficient, and therefore every thing is *lax* in them; such therefore ought not to be moved by *Purges* that are *lubricating*, but by the most *acrid*.

II. THE second Class of *Eccoprotics* are those which move the too much cohering *excrements* by diluting them: such as 1. *Common water*, which if it be *drank* so as to go to the Intestines, and not to the circumference of the Body, becomes a *purgative Diluent*; but it will go to the Intestines, provided the *four following* rules be observed, which indeed ought to be observed also in the use of all *Eccoprotics*; ( $\alpha$ ) Let it be drank in the Morning upon an empty Stomach; ( $\beta$ ) Let it be drank in the cool Air; ( $\gamma$ ) Let sweating be avoided; ( $\delta$ ) Let the *water* be determined towards the Intestines by gentle walking in the cool Air. 2. The *mineral Waters*, whether *Acidulæ*, as the *Sparw*; or *Semi-mercurials*, as those of *Aix-la-Chapelle*; or *sulphureous* or *vitriolic*, as those of *England*, [*Bath, Tunbridge, &c.*] 3. *Waters* of Animals: such as, ( $\alpha$ ) *Milk*, which being drank *fresh*, the above-mentioned conditions being at the same time observed, dilutes the *Fæces*, and loosens the Belly; ( $\beta$ ) *Whey* taken after the same manner; but if the Body is *moved*, it becomes *diaphoretic* or *diuretic*. ( $\gamma$ ) *Butter-milk*; ( $\delta$ ) *Broths* prepared of the parts of Animals; ( $\epsilon$ ) All that are *compounded* of these; ( $\zeta$ ) *Fomentations* and *Clysters* prepared of the same.

COR. I. ALL these agree with such Persons as are described in the *first COROLLARY* of the Class of *Lubricaters*: therefore they are injurious to the *bilious*, *lax*, and *aqueous*, but most to the *lax*; they are less hurtful to the *bilious*, than the *Lubricaters*, as being more *watry* than those: and thus if *mineral Waters*



*waters* are drank in a Dropfy arising from the laxness of the Vessels, they most certainly bring *Death*.

COR. II. THESE are the best *helps* in all burning Fevers, and in all Inflammatory Diseases, whether they be taken by the *Mouth*, or by the *Anus*, or in form of a *Fomentation*, or by any other means.

III. THE third Class of *Eccoprotics* contains those which by lightly stimulating the Intestines, expel the *Fæces* thence, without *disturbing* the rest of the Body: these are now called *Lenitives*; but the Ancients called them *Minoratives*, that is, which do not *draw out* a quantity of the *Fæces to be expelled*, all at once, but by degrees. Hither therefore belong all Medicines whatsoever, that are able to stir the *villi* of the Stomach and Intestines into *excretory* motions: but this ought to be done without *disturbing* the rest of the Body; and therefore the *two* following conditions are altogether necessary; 1. that these Medicines be something *acrid*; or, 2. so *thick*, as not to be able to *enter* the Lacteal Vessels, or to be *determined* toward the Intestines, or to be received into the mass of *Blood*; for it is manifest that some *Purges* work downward, if they are *hindred* from being *mixed* with the Blood; but if they are not *hindred*, then they operate upon the *other passages*, as is manifest from the use of *Whey*.

( $\alpha$ ) Some of those Medicines are taken from Animals; and are, 1. The *acrid* juices of Animals, as ( $\alpha$ ) *Urine*, which being drank in the cool Air; and thereby determined *downward*, is able to *purge*; the same is sometimes evaporated to a *Soap*, of which Pills are made, which loosen the *Belly*, provided the Perspiration be hindered. ( $\beta$ ) *Bile* which acts by it's own *Acrimony*; but it ought to be a little *inspissated*, that it may be like *Soap*, with which it has a great affinity; and so from this *inspissated Bile* may be formed *stimulating* and *cathartic* Pills,



Pills, which should be gilded, if you intend to conceal the *kind* of this remedy; ( $\gamma$ ) *Milk*, which sometimes by growing *acid* in the Stomach, becomes a *purgative* also by it's own *Acrimony*: whence we see that all the best Practitioners give *Sheeps*, *Goats*, or *Asses Milk* to Phthifical Persons, to keep their *Bellies open*; ( $\delta$ ) *Whey*, which has a *saponeous* taste: but if it turns *acid*, it then becomes *acrid*, and therefore *purges* by stimulating after slight *gripings*; which happens, because the *Fibres* are irritated by such an *Acrimony*, and being once irritated *contract* themselves, and by this means the Air, and other things are then *included* between the *contracted* parts; but that Air thus *included* is expanded by it's *own elastic* force, and presses the *Fibres*, and greatly distends them: thence these *Gripes* arise, which presently cease when the *contraction is dissolved*; and then we generally perceive that the *excrements* immediately descend towards the *Anus*, from the place where the *Spasm* was, which soon after are expelled. ( $\epsilon$ ) *Acid Milk*. ( $\zeta$ ) *New Cheese*; for when that is not well *digested* in our Bodies, or justly subdued by the *Bile*, whilst it remains in the Stomach, it there turns *acid*; as often happens in Infants. ( $\eta$ ) The *Curd of Milk*, which is found in the *Stomachs* of Calves; for this sometimes will move the *Belly* with a *shivering*. ( $\theta$ ) *Rotten Eggs*, which sometimes only being *smelt*, will make the Stomach work both upward and downward; and if they are taken in ever so small a quantity, *purge* vehemently. 2. There are some *Eccoprotics*, taken from the *solid* parts of Animals: as ( $\alpha$ ) *Salts* which are contained in all these *Solids*, as in the *Bones*, *Nails*, *Flesh*, &c. for these parts if they are *fresh*, and boil'd into a pure Liquid, become *saline*; and this *Salt* is not perfectly *volatile*, but, like Sal Ammoniac, *semi-volatile*.



*latile* and *semi-fix'd*; which property is required in this place. ( $\beta$ ) The *semi-putrid* parts of all Animals: for thus *Flesh half putrified* looffens the *Belly*; if it is more *putrid*, it produces a *Diarrhæa*, but if it acquires a still greater degree of *putrefaction*, then it excites a *Dysentery*, and the same often happens to *oily* and *fat* Men: the same may be said of *Lard*, *Fat* and *Marrow half putrid*. ( $\gamma$ ) Some *entire* Animals, swallowed *crude*; as *Oysters*, which have an *alkaline* nature, as appears from that most agreeable *saltish liquor* contained in their shells: thus also some *little Fishes*, which are armed with *prickles*, whose *laxative power* however is not owing to any *specific* quality, but only to those stimulating prickles. ( $\delta$ ) The *Juices*, *Flesh*, *Fats*, *Eggs*, and all other parts of Animals, if preserved with *pickle*, or *marine Salt*; for from their *oily Soap* and *Salt* a third sort of compound, in a manner *saponaceous*, arises: **hither** also belong all *salted Food*, by the continual use of which in the Navy, *Diarrhæas* frequently arise. ( $\epsilon$ ) The *Dungs* of Animals, which contain a *Salt* approaching to the nature of *Nitre*; and thus the *Italians* make use of the *Dung* of Peacocks, Pigeons, &c. to *loosen* their *Bellies*: the best are those which are taken from Animals feeding only on Vegetables; because they are something *acid*. But that *Salts* extracted from *Dungs* are *nitrous*, is manifest from hence, that if such *Dungs* being gathered into heaps, and sprinkled with the *Ashes* of burnt Plants, are suffered to *rot*, the *Salt*, which is gathered from them by dissolving, evaporating, and crystallising, concretes into *Crystals* which are plainly *nitrous*; and this obtains chiefly in Animals that do not use *Sea Salt*. **Hither** also are to be referred the *juices* expressed from the *Dung* of Animals, hence in Fevers and other *acute* diseases, as in the Small Pox, Measles,



Measles, &c. in which the *Belly* ought to be *loosened* gently, and without much *disturbance*, the juices of the Dung of *Goats*, *Sheep*, *Horses*, and such like are commended. (a)

(β) THERE are also many *Eccoprotic* Medicines from Vegetables, that are gently *stimulating*; such as 1. all seasonable Fruits, whether crude, ripe, acrid, rough, acid, or sweet; as *Apples*, *Pears*, *Plumbs*,

(a) Consult ETMULLER, *Schroder. Dilucidat. P. 1. Sect. 3. pag. m. 223*, who prefers *Sheeps dung* in the Small Pox, and *Goats* in the Measles, and commends *Horse dung* in both of them. But concerning this sort of Remedies especially *Horse dung*, the juice of which is the most common of all, the following judgment is given by JUNCKER, *Conspect. Therap. General. pag. 345. and 346.* “(1) It is thought to gain a *discutient* quality from “the feeding on Oates, and is commonly much extolled in “the Spasmodic Colic, Hysteric Passion, Jaundice, Measles, and “Small Pox, which is said to be thrown out by the juice of it “also in the Quinsey, and above all in the Pleurisy; whence “some affirm, that the *Syrupus B. LUTHERI* which is so highly celebrated in the Colick and Hysteric Passion, is prepared “of these *Excrements*, (Compare ETMULLER): but they are “generally boiled with malt liquor, and this *decoction* is drank “by some with great pleasure in Defluctions of the Breast. “and is commonly called *das Pferde-Bier*. (2.) It is also commended *externally* in the Quinsey and Strangury. But this “remedy is not always equal to the commendations bestowed “upon it, for it is nauseous to many; and therefore may be “left for such, as find a pleasure in the *use* of it.” So far JUNCKER. Concerning these Medicines also, DAN. LUDOVICI, the most sagacious Writer of *Pharmacy*, had long ago pronounced that, these are filthy, and fitter for the whims of Quacks, old Women, and Dotards, than for the elegant *practise* of Physicians. See his *Pharmacia Mod. Sac. Applic. Dissert. 1. Cap. de Purgantibus Vomit. pag. m. 85.* and in his Chapter *de Aperientibus &c. pag. 227.* he says, it was commendable in the *Dutch* Soldiers to drive off with *dung* the *Indians* in *Java* that assaulted them; but it is not so in a Physician of character. Hence therefore a little afterwards he leaves this *magma* to be gathered by the *Egyptians* and dried for fuel. But if any one desires to know more of these *filthy Medicines*, he may consult that *Treatise*, published in *Germany*, if I do not mistake, under the title of *Medicina Stercoraria*.



*Plumbs*, &c. and *Berries* also, without any exception; all which use to excite *Flatuses*, tho' some more and others less: their *eccoprotic* power also depends on an *acrid* Salt, which lightly and successively stimulates the Intestines. 2. The expressed juices of those *Fruits*, whether crude, or boiled into a Syrup. 3. The parts of those *Fruits* which are not dissolvable; as *Rinds*, *Stones*, &c. which being retained in the Stomach, contract a notable *Acor*, whence from mild they become in a manner, *epispastic* or stimulating and purge with Gripings: and thus oftentimes in tender Infants, whose Stomachs are not able to dissolve and digest those Bodies, they cause a dangerous purging; which sometimes also arises from dried *Currants*, *Prunes* and such like, for these *Fruits* are not dissolved in the Stomach, but are thrown out whole, together with the other *Fæces*; therefore unless they are soon enough expelled, they contract a vehement *Acor*, and violently stimulate the Intestines; whence a *Diarrhæa* arises.

4. THE *Flowers* of some Plants, as of *Violets*, *damask* or *pale red Roses*, and *Peaches*, either taken in Powder, or in a Conserve. 5. *Native Soaps*; such as ( $\alpha$ ) *Honey*; the *Acrimony* of which appears from hence, that it deterges Ulcers and Wounds: hither belong also the *Liquors* made of *Honey*. ( $\beta$ ) *Sugar*; for this being a sort of Salt gathered from the Sugar Canes, must therefore stimulate from it's own nature. ( $\gamma$ ) *Manna*; which, as was said before, is the juice of the *Ash*, exuding from the tree at the time when the Salt and Oil are intimately united. ( $\delta$ ) All *Sapæ*, or *Robs*, that is, *Inspissations* of ripe juices boiled: hither also are referred the juices of ripe *Fruits* newly expressed; as of *Cassia* and *Tamarinds*; also that excellent *Sapa* or *inspissated* juice called *Aloës*: to these also may be added *acrid aromatic*



*aromatic Gums*; as *Gum Ammoniac*, the *stimulating* power of which is manifested not only by the *acrid* taste, but by it's promoting *Perpiration* by *stimulating*, on being applied to the *Skin*; also *Bdellium*, *Sagapenum*, *Opopanax*, *Myrrh*, and all things of this kind, which by their *viscid* parts *lubricate* the *Intestines*, and *stimulate* by their *acrid* parts.

( $\gamma$ ) THERE are some *Eccoprotics* consisting of *Salts* only: such as, 1. *Native fixed Salts* of *Vegetables*: and these are of *two* sorts, ( $\alpha$ ) Those which are extracted from the *crude juices* of *Plants*, by means of *Crystallisation*: and these are drawn either (1) from the *juices* of *Plants* that are *not at all acid*; and those *Salts* are sometimes *alkaline*, sometimes *nitrous*, and all of them may be *dissolved* in the *Air* into a *liquamen*, and flow: or (2) from the *juices* of *acid* *Plants*; and these are more *terrestrial*, and almost of a *tartareous* nature: the *Dose* of them is from  $\text{ʒjv}$  to  $\text{ʒvj}$  in *Broth*. It must be observed also that the greatest *power* of *Plants* consists in these *Salts*; whence they are called *Essential*. ( $\beta$ ) The *Salt* which uses to adhere to the sides of the *Vessels*, in which the *juices* of *Plants* *ferment*, and is called *Tartar*: and this is an *acid Salt*, not flowing in the *Air*; and it's *Crytals* are called *Cremor Tartari*, the *Dose* of which is from  $\text{ʒ}^{\beta}$  to  $\text{ʒj}$  in *broth*; moreover that *essential Salt* of *Wine* operates by the power of it's own *Acor*, namely by *stimulating* the *Intestines*; but it never enters the *Lacteal Vessels*, for it cannot be *dissolved*, but by some very strong *Alkali*, a vehement *ebullition*, and plenty of *Water*; as experience shews: therefore it can neither be dissolved by our *Lymph*, nor by our *Heat*, so as to enter the *Vessels*; nay and the difficult *solution* of this *Salt* appears from this, that if we suffer the *Water* when it has *boiled*, to be cooled, and a little evaporated, the  
Cream



*cream* will swim at top, and the rest which is more *fix'd* will gradually subside, till all the *Salt* has forsaken the *Water*. 2. *Artificial fix'd Salts* of Vegetables; and these are extracted from the ashes of burnt Plants; and are of *two* sorts, namely, ( $\alpha$ ) Those which are obtained from Plants burnt with a *slow Fire*; and they are not very *acrid* or *burning*, because they have a little mixture of *Oil*: moreover they are easily dissolved, and so will enter the *Lacteal Vessels*, unless they are hindered by the above-mentioned *regimen*: the *Dose* of them is from  $\mathfrak{zj}$  to  $\mathfrak{ss}$ . ( $\epsilon$ ) Those which are extracted from Plants burnt with a *strong Fire*: and these are all *corrosive*; and therefore ought to be taken in a large quantity of *Water*; their *Dose* is from *gr. jv.* to  $\mathfrak{z}\mathfrak{ss}$ . 3. All *native fossil Salts*: for thus *marine Salt* taken to the quantity of  $\mathfrak{z}\mathfrak{ij}$  performs the office of an *Eccoprotic*, provided the before-mentioned *regimen* be observed; for otherwise, if it be taken in a *warm Bed*, or in *Air warmed* to the same degree of *heat* with a *Bed*, it becomes *diuretic*, and in a still greater *heat*, excites a *diaphoresis*; for it is easily dissolved by our humours, and enters the *Lacteals*: the same may be said of *Borax*, *Sal Gem*, and *Sal Ammoniac*, which are taken to  $\mathfrak{z}\mathfrak{ss}$ ; also of *Nitre* and *Alum*, the *Dose* of which is  $\mathfrak{zj}$ , and of *Vitriol*, which being taken to  $\mathfrak{zj}$  provokes *vomiting*; but if you take *gr. vj*, it is *cathartic*, especially if it be calcined to *whiteness*.

( $\delta$ ) ALL *hard, sharp* and *rigid* Bodies also, which cannot be digested, are to be accounted *Eccoprotic* Medicines which act by stimulating: such as *filings* of *Steel*, &c. also *Antimony*; for this consists of *stimulating* and *rigid* parts, whose *stimulating* power and *rigidity* cannot be destroyed by any *Menstruum*; and thus they draw out the *Liquid* from the *Intestinal Glands* by their *Gravity* and *Figure*: hither also belong all *rough Bodies*, as *Bones* and



and *prickles* of Animals; and thus *Eels* boiled with their *spines* are swallowed by some to cause a *Purgation*: also all *Stones* of Vegetables, as of *Grapes*, *Elder-Berries*, &c. *purge* by stimulating; also the *Cadavera*, as they are called, of *boiled* Vegetables, as any *Pot Herbs* boiled, such as *Spinage*, *Lettuce*, *Endive*, &c. of which as the *last* Solids cannot be *dissolved*, they become *stimulating* by their *rigidity*.

(e) LASTLY to this Class of *Eccoprotics* must be referred all *Soaps*, both *natural* and *artificial*; so far as they *act* by *stimulating*, whether they are taken by the *Mouth*, or applied *below* in form of a Suppository, Clyster or Fume; and indeed of these *Fumes*, the best is that which is made of *Tobacco*, *Coloquintida*, or both together, for example,

℞ *Fol. Tabaci Brasil.* ʒj vel ʒjβ.

*Colocynth. gr.* jv.

*Comburentur simul, & fumus per idoneam Fistulam in Rectum Intestinum injiciatur.*

TAKE of the *Leaves* of *Brasilian Tobacco*, a *Dram* or a *Dram and half*, of *Coloquintida*, *four Grains*. Burn them together, and let the *Fume* be thrown up the *Fundament*, thro' a convenient *Pipe* (a).

COR. I. THE Medicines of this third Class, that is, the *stimulating*, are of service or disservice to all those, to whom the Remedies of the first and second Class are *beneficial*, or *hurtful*.

COR. II. MOST of the Medicines which are described in the *first*, *second* and *third* article of this third Class, are good in all *Inflammatory Diseases*.

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(a) Consult TH. BARTHOLIN. *Histor. Anatom. & Med. Centur.* 6 *Histor.* 66. where also there is a *Scheme* of a *Pipe* proper for this operation. See also SYDENHAM *Sched. Monitor. de nova febr. Ingr. p. m.* 502. [See also STISSER *de Machinis Fumiductoriis curiosis*, where the Reader will find descriptions and figures of Instruments proper for this purpose.]



A GENERAL COROLLARY belonging to the three Classes together.

ALL these *Eccoprotics* agree only in a *stuffing* and *infarction* of the great Guts, especially of the *Colon*. Moreover it is to be observed in this place, that Women of a *spare* and *lean* habit of Body, who are apt to be *costive*, especially after Delivery, often become *languid* and *melancholy*, labouring under a most obstinate and miserable *obstruction* from an *indurated* matter in the *Colon*: and this *hardness* in that Place is sufficiently evident to the touch, and by the unskilful is sometimes taken for the *Placenta*, and sometimes for the Spleen; when in reality it is only the *obstructed* matter stopping in the large Guts: whence it cannot be moved by any Medicines except *Eccoprotics*: for if *stronger Purges* are given to Women in this case, dreadful Symptoms are immediately excited, as *Vomitings*, *Colic*, and *hysterick Passion*: Wherefore at that time *Eccoprotics* are to be thrown up in form of a Clyster, to remove and expel the *infarction*. These Medicines also are of service to some *melancholy* Artificers, as also to all studious Persons, whose Abdomen is usually much and frequently compressed (a). Lastly *Eccoprotics* are of the greatest service in removing all *Diseases* of the Liver and Spleen, &c. arising from *obstruction*.

## C H A P.

(a) Because whilst they are intent on their Studies, they usually sit with their *Bodies bent*, and so *compress* the contents of the Abdomen. Consult also *Rammazini de Morb. Artificum, Cap. de Literat. Morb.* and also Dr CHEYNEY's *Treatise of Health and Long Life, pag. 221. Edit. Nov.*



## CHAP. V.

## Of Phlegmagogues.

1. **P**HLEGMAGOGUES are those which expel the pituitous Lymph out of the Body by the Anus. Now the Pituita is a certain *tenacious* and *viscid* Matter, like that *Mucus* which flows out of the Nostrils of a healthy Man in the morning.

2. THE origine of this *Pituita* is *twofold*. 1. It oftentimes arises in the *first Passages*, namely from a *viscid Food*, in those whose Bowels are so *weak*, that they cannot contract themselves with sufficient force, or in whom the Bile and Pancreatic Juice have contracted a *fault*, so that they cannot perform their Office of attenuating, and preserving the *Chyle* from coagulating. 2. The *Pituita* often arises from a Liquid that is not *pituitous*; as from the *Spittle*, and *Mucus* of the Palate, Gullet, Stomach and Intestines; all which *Liquids* are *aqueous*, but yet have some parts that easily *coalesce*. The *Pituita* moreover arises from these Liquids *two* ways. (α) If those humours are deprived of their *most liquid* part by the power of *heat*; thus, for example, our Liquids are inspissated in burning Fevers; for experience teaches us, that if our Liquids are exposed to the same *degree* of *heat*, as *that* of a Body infected with a burning Fever, they will soon be inspissated. (β) The Fluids also of our Body are inspissated by *stagnating*; for unless these Liquids are moved and agitated, they soon *run together*, the *most liquid* part of them being flown off, whence Inspissation arises.



3. As it appears from the *mechanical* structure of the human Body, that the Secretory Vessels are far *less* than the Blood Vessels, (concerning which see CHAP. V. PROLEG.) therefore the *most fine* Liquids only can be separated by them, and indeed much *finer* than the Blood: therefore the *Pituita* which is *tenacious* and *thick* is not immediately *secreted* from the Blood: for what the ignorant believe and say of the *thick Mucus*, that it is *secreted* from the *Glands* of the *Pituitary Membrane*, such as it appears, is not at all true; for if this Membrane, being *contracted* by cold, is inflamed, as happens in a *Coryza*, then it will *secrete* an *aqueous* and *limpid* humour, which the next morning after the Man has slept, and the Nerves have been at rest, will become a *thick Mucus*, being rendered such by *stagnating*. There are not therefore any Vessels, which secrete such a *Pituita*, præ-existing in the Blood; whence indeed it follows, that there are not any such Medicines, as may draw down from the Secretory Vessels this *Pituita*, præ-existing so *thick* in the Blood; therefore it remains to enquire, what are true *Pblegmagogues*.

4. THE Medicines which ought to be distinguished by the Name of *Pblegmagogues*, are *twofold*.  
 1. Those which draw down the Matter apt in it's own nature to *coalesce*, from the Blood by the Intestines.  
 2. Whatsoever expel the *viscid Matter* contained in the Intestines. Every *Pblegmagogue* therefore acts either upon the Intestines, or upon the *Pituita* itself; but that this may be drawn out, it must be rendered fit to *flow*; and this is obtained either by dividing the *Pituita* by some *acrid* Body, and at the same time by adding some *more fluid Liquid*; or by increasing the *Motion* of the Solids by means of some *Stimulus*, so that the *Pituita* may be ground by them.

#### I. THE



I. THE first Class of *Phlegmagogues* contains those which draw out the *Pituita* by *diluting* it : such are, 1. *Fair Water* drank warm, or thrown up in form of a Clyster, provided the Air be *cool*, and the Patient walk gently, for he must take care not to *sweat*, and if it be taken at the Mouth, the Stomach should be *empty*. 2. Water with *saponaceous* Bodies ; as Water mixed with *Honey*, drank warm with the above-mentioned *regimen* ; and this greatly *resolves*, for if there is a *coagulum* of the Blood, *fair* warm *Water* gently *dissolves* it, but that mixed with *Honey* does it *sooner* ; the same also is *done* by Water mixed with *Cassia* and *Manna*, also with *Venice Soap*, that which is called *Soap* of the Philosophers, and the natural *Soap* of Animals, that is the *Bile*. 3. *Saponaceous Gums* ; that is, *viscid* Bodies, which are *soluble* in Water, and in some measure *acrid* : such are, *Aloës*, *Gum Ammoniac*, *Assa Fœtida*, *Bdellium*, *Galbanum*, *Myrrh*, *Opopanax*, *Sagapenum*, *Native Turpentine*, &c. But these are taken *dissolved* in warm *Water* ; for by this means they *operate* much better. 4. *Warm Water* with all the *vegetable* Salts which are enumerated in the *third* Class of *Eccoprotics*, except the *acid* Salts, as *Tartar* and such like. 5. Whatsoever are contained in the *second* and *third* Class of these Medicines.

II. THE second Class of *Phlegmagogues* includes those which operate so far as they *excite* the intestinal *Fibres* into *motions*, by the help of which the *Pituita* being *pressed* and *ground*, is divided into various parts, and being divided is at last squeezed out : such are all *viscid Acrids*, that are not too *volatile* ; for these Bodies in which the *Acrid* is so entangled by other parts, that tho' *they* are dissolved, yet *it* cannot be separated from them, but remains fixed to the place, to which those parts are applied ;



and therefore can neither *exhale*, nor *penetrate* into the Lacteal Vessels : of this kind are all the *Viscids* enumerated in the *preceding* Class : hither also belongs *Oxymel*, than which nothing is better to dissolve the *Pituita* ; also *Elixir proprietatis*, if it be thickened with *Honey* ; *Tinctura acetosa* with the most acrid Aromatics ; *Hiera picra* GALENI ; all the *purging Gums* enumerated in the *third* Article of the first Class ; *mild Mercurials* ; as *Mercurius dulcis* taken in a *cool* Air, for it ought to be determined downward, to avoid a *salivation* ; *Mercurius sublimatus* taken in a *very small* quantity, as in the dose of  $\frac{1}{20}$  part of a grain ; *Antimony*, with a very little *Nitre*, as gr. xv. of *Antimonium diaphoreticum* ; all *emetic* and vehemently *stimulating* Medicines taken in a *smaller* dose. Besides there are other *Phlegmagogues* which are called *officinal* ; and all these act by *stimulating* the Fibres, by means of some *volatile Acrid* which is very *stimulating*, but is entangled and restrained by *viscous* parts ; such are, 1. *Agaric*, which is a *fungus* growing to the *Larch-tree* : the *smallest* dose of this *crude* is gr. x. the *largest* ℥ij, and sometimes ℥iij in robust constitutions ; but if it is boiled in Water, and then the juice is expressed and strained, the dose may be *doubled* ; but being put into Spirit of Wine, it is dissolved just like *Sperma Ceti* : the dose of this *extract* is then ℥ij ; but it is so swelled and dilated like a sponge, that a *Tincture* can scarce be drawn from it : well tasted *Agaric* has at first a *sweetish* and *viscid* taste, but leaving som thing *acrid* behind, and at last very *bitter* ; whence it appears, that it's *power* is plainly *stimulating*. 2. Seeds of *Carthamus*, or *Bastard-saffron* ; the dose of which is from ℥j to ℥iij, but if it be taken in *decoction*, the dose must be doubled : but if they are taken in *substance*, they cause vehement *gripings*, with a *swelling* of the Abdomen ; hence they



they use to be *corrected* with Ginger, Galangal, Anise, Cardamom, &c. by which *Flatuses* are dissolved: they have also a taste which at first is *viscid* and *sweetish*, but afterwards *acrid* and *nauseous*. 3. *Coloquintida*, which is a sort of Cucumer: this fruit being deprived of it's seeds and dried, forms a vehemently *purging* medicine, which is prescribed under the name of *pulpa Colocynthidos*; it has a most violent *bitterness*, but very *viscid*; and by it's *viscosity* easily *adheres* to the Intestines: and so great is it's *Acrimony*, that it may cause *death*: hence it was called by the name of *death* by the Sons of the Prophets, *Kings II. c. iv. ver. 40*. The dose of *Coloquintida* in substance is from gr. iv. to ʒj; but it is not given without danger, for it excites *gripings* and *violent purgings* and produces *Ulcers* in the Intestines, and sometimes even fetches Blood (a); the best *Menstruum* for it is *Water*, by the help of which an *Extract* is made (b); the dose of this is the same as if it was given *in substance*, and the *effect* of it is no less powerful, and without such horrid gripings; but the *Extract* made with Spirit of Wine is of more service in *cold* and *pituitous* Bodies: this was the *Arcanum* of MARTINUS RULANDUS, under the title of *Spiritus vitæ aureus*, so called from the colour which it gives (c);

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(a) For which reason it is not given by the *more cautious* Practitioners to those who have *weak* Bowels, who also observe, that the *pulpa Colocynthidos*, when given in *Clysters*, is to be wrapped up in a *nodule*, and the *decoction only* is to be used; for fear the most *subtile pieces* of it should bring on and leave behind them the most horrid Gripes. See FULLER *Pharmac. Extemp. pag. m. 113*.

(b) Especially if this *Water* is first altered with a little quantity of *tartareous Alkali*. Consult LUDOVICUS *Pharmac. Cap. de Purgant. Vegetab pag. m. 58*.

(c) Consult RULAND. *Curation. Empiric. Centur. II. cap. 96*. or TENTZEL. *Exegesis Chymiatr. apud Ang. Salam.*

p m.



it's dose was to  $\text{ʒij}$ , or  $\text{ʒiij}$ , *sweetened* with syrup: he used to add *Cloves*, or something of that sort, that the *disguise* might not be discovered; and this *Tincture* being inspissated and exsiccated affords a *resin*, the dose of which is from gr. iv. to viij.

4. *Euphorbium*, which is the juice of a Plant with a tricoccous seed, very much resembling our Spurge: this *Gummo-resinous* juice is pale yellow, and burns the Tongue with a fiery *Acrimony* that endures a long time; it is exceedingly *viscid*, and therefore adheres very tenaciously to the Intestines, and cannot thence be removed and dissolved, but by Spirit of Wine and Spirit of Salt: it *purges* in an *exceeding small* dose, as of gr.  $\beta$ . though sometimes a dose of gr. xii. has been prescribed by bold Empirics. In Persons easy to be moved, it first abrades the *mucus* of the Intestines, and then fetches Blood; but it is of most *service* to hydropical Persons, in whom the force of it is very much broken: it may be dissolved in *Water*, but then it has so horrid a taste, that it is not fit to be used this way; moreover if it is *dissolved* in Spirit of Wine, which extracts it's most *spirituous* and *resinous* part, leaving the *terrestrial* part behind, it acquires a *greater* force; and therefore the greater dose of it is to be reduced to gr. iv. but if it is boiled with *Vinegar*, it's whole *force* is lost.

5. *Hermodactyl*; this is a gummy root, which being chewed renders the Spittle viscous, and has a *bitter* or *nauseous* taste: it's dose *in substance*, is from gr. x. to  $\text{ʒij}$ , but if boiled in *Water*,

*J. m.* 637. M. BOULDUK has given an account of the Analysis of *Coloquintida*, by Distillation, by Fermentation with *Must*, by Digestion, and by Extraction. See the *Memoirs of the Royal Academy of Sciences, for the Year 1701, p. m.* 12. From this Analysis he concludes that to be the best Extract, which contains both *gummy* and *resinous* parts, provided the *mucilaginous* particles, which cause an irritation, are separated by long Digestions, tending to Fermentation.



*Water*, it may be given in a *double* dose: in *Alcohol* of *Wine* only the *resinous* part is drawn out, and in *common Spirit* of *Wine* a *Body* is extracted, which is compounded with *resinous* parts. 6. *Jalap*; this is the root of a plant called *Marvel of Peru*, which bears such numbers of flowers, that are distinguished with such a variety of colours: if it is chewed *entire*, it first fills the *Mouth* with a *slime*, but soon after exulcerates the *Fauces*; being *swallowed* slowly, it *burns* in a manner the *Tongue*, *Fauces* and *Gullet*; but this disorder may be corrected by *Vinegar*: it's dose *in substance* for children, chiefly against the *Worms*, is to gr. viij. or gr. ix. and the *greatest* dose for grown *Persons* is ʒ iv. (d), which seldom fails, unless there is much *acid* in the *Stomach*; for *Acids* destroy it's *power*: if boiled in *Water* the dose is to be *doubled*; but it operates *sooner* this way, and gripes less: but *Honey*, *Sugar*, or something of that sort should be added to it, to keep it from exulcerating the *Fauces*: moreover if the *slices* of this root are boiled with a sufficient quantity of common *Spirit* of *Wine*, an *Extract* is obtained, consisting of *oily*, or *resinous* and *saline* parts, the dose of which is the same as *in substance*: but being *dissolved* in *Alcohol*, and inspissated, it affords a *resin* of which ʒj. is equal to ʒj. of it *crude*. 7. *Mechoacana* which is a species of *Bryony*, whence also it uses to be called *Bryonia alba*; this works more mildly than *Jalap*: it is a *gummy* root, of a *viscous* and *acrid* taste: it's dose is from gr. xij. to ʒjβ. but it is dissolved no less than *Jalap*,

[(d) The dose here assigned is much larger than is given in *England*, the common dose being ʒβ, which I have seldom known to fail, even in robust *Constitutions*. Whether the *Constitutions* of our learned *AUTHOR*'s Countrymen require so large a dose of this *Pblegmagogue*, or whether it is a mistake of the Editor, I shall not take upon me to determine.]



*Jalap* in Water and Spirit of Wine. 8. Some *Plumbs* called *Myrobalans*, because they are *viscous*, and like *Acorns*: there are various *species* of them, distinguished according to the *difference* of their native place, colour, or size; but there are *five kinds* of them in the Shops, contained in these two verses;

*Myrobalanorum species sunt quinque bonorum,  
Citrinus, Chebulus, Belliricus, Emblicus, Indus.*

ALL these *Fruits* are *viscous* with an *earthy*, *astringent* and *acrid* taste; hence they *purge* pretty vehemently, but afterwards *bind*; they are very *sower*, and not easily *soluble*: the dose of them in *substance* is to  $\text{zij}$ , in *decoction* to  $\text{zj}^{\circ}$ , in *infusion* to  $\text{zij}$ . 9. *Gamboge*, which is an *aromatic* Indian Gum; it expells a matter like the *mucus* of the Nostrils: it's dose is from gr.  $\text{iss}$ . to gr. x. Being dissolved in the *Yolk of an Egg* or *Honey*, it acquires a *double force*; for the Menstruum, by interposing it's self between the *viscous* parts, gives an exit to the *Acrids*: the least part of it only is *dissolved* in *Water*, but that which is *dissolved* acts vehemently enough (e).

10. *Gummy*

(e) *Gummi Gutta* or *Gamboge*, which has other names also, for which the A U T H O R S may be consulted, *purges* Children very well in a *dose* of gr.  $\text{iss}$  or gr. ij. with *Sugar*, but for grown Persons gr.  $\text{jv}$ . or gr.  $\text{vj}$ , are required; if it is given in a larger *dose*, it generally *works* very violently both *upwards* and *downwards*. But though this Gum is endued with so great *Acrimony* yet the Fruit of the Tree, whence it proceeds, is *sweet* and *eatable*; for it is said that the Inhabitants of *Cambodia*, eat it as we do an Orange. See more of this Gum in the *Memoirs of the Royal Academy of Sciences*, where M. B O U L D U C relates various *experiments* made by him concerning the *preparation* of it. And the *history* of it may be read particularly in CLUSIUS *Libr. 4. Exoticorum, cap. viii.* and then in BONTIUS, *de methodo medendi Indica, cap. ix.* and above all in the HORTUS MALABARICUS, *Tom. I. page 41.* Consult also LOTTICHIUS *Tract. de Gbitta Jemou.*



10. *Gummy Turbith*: this is a sort of *gummy* bulb or root; it is called *gummy*, because, if it is *chewed*, it affords a *viscosity* like Gum with a mixture of a *bitter Acrid*: the dose *in substance* is from gr. x. to ℥ij. the *decoction* in Water to ʒj. operates gently, but if it is *dissolved* in *common* Spirit of Wine, it becomes a *clyffus* containing Water, Oil, and Salt, and operating *mildly*; if it is dissolved in Alcohol, it becomes a very *purging resin*: so that it does not much signify, what way it is prepared. These, except *Gamboge*, were the *Phlegmagogues* of the Ancients, together with *Opopanax* and *Sagapenum*.

BUT the Moderns have added *Manna*, also *Aloës*: *Manna* is a viscosus Body, endued with some *Acrimony*; but *Aloës* in it's viscosity and bitterness imitates the Bile, which Bile is esteemed by HIPPOCRATES as a *natural clyffus*. The dose of *Aloës* is from gr. ij, or gr. iij. to j, *Bryony* also is added to these; which is a thick, fungous root, very pituitous, and having an *acrid*, biting, and nauseous taste: it's dose *in substance* is from ʒ℥ to ʒj, and in *infusion* to ʒij, or more. This Root boiled in Water, or Beer, draws out the *Pituita* slowly, but with vomiting and virulence, but it's taste *in decoction* is intolerable; but being boiled in Spirit of Wine and inspissated, it acquires a *double* force: but it is good for Women whose *Menstrua* are suppressed by a *Pituita* affecting the Womb. The root of *Polypody of the Oak* operates also by the power of it's viscosity and acrimony.

MERCURIALS also belong hither, and in the first place *Mercurius Dulcis*; which if it be finely *levigated*, becomes a *Sialogogue*, but if grossly powdered, is a *Phlegmagogue*; for it is not easily *dissolved* in *Menstruums*: the dose of it is from gr. ij. to ʒj<sup>ss</sup>.

## COROLLARIES.



## COROLLARIES

*Tending to the solution of Phlegmagogues.*

As all the *Phlegmagogues* here mentioned consist of a viscous part, which is either gummy or resinous, and have a penetrating, but *inviscated* volatile Salt, the following COROLLARIES relating to the solution of them may be formed.

I. IF a Body, in which neither the saline nor the gummy, nor the resinous part prevails, be *dissolved* in Water, that which remains after the *solution*, will retain the *purging faculty*, tho' at the same time the *purging faculty* is communicated to the Water. Moreover if that residue is put into *common* Spirit of Wine, what remains in that also will be *purgative*. But if this second residue be *dissolved*, as far as it can, in Alcohol of Wine, then what remains will be *inactive*, like a *Caput mortuum*, and therefore not purgative.

II. IF a Body in which the saline predominates, be *dissolved*, as far as it can, in Water, then the residue will be *inactive*; as it happens in Bodies that are not resinous but gummy, as *Agaric* and *Bryony*.

III. IF a Body shall be half saline and half resinous, and be dissolved, as far as it can in *common* Spirit of Wine, then what remains will be no less inactive.

IV. BUT if only the resinous part prevail, then all its *purgative* faculty will be extracted by Alcohol of Wine, and the residue will be *inactive*.

V. IF the three *solutions* mentioned in the *first* COROLLARY are mixed, and inspissated with a slow Fire, we shall obtain the *entire forces* or *quintessence* of the dissolved Body.

VI. ALL



VI. ALL these Extracts kept in the open Air, yield a *nauseous* smell, on the ceasing of which, their virtue perishes, but the *weight* remains.

VII. ALL these being boiled with *Acids*, as with Vinegar, Oil of Vitriol, Spirit of Nitre, Spirit or Oil of Sulphur by the Bell, &c. loose their power.

### Practical COROLLARIES.

I. THE use of the Medicines here explained, is necessary in Persons whose *first Viscera*, or Organs which make the *Chyle*, are weak. These *Organs* are of *two* sorts; (*a*) the Mouth with it's instruments of *mastication*, and the Stomach with it's *digesting* Muscles, and the Stomach with it's *compressing* Muscles. (*b*) The Diaphragm, as it communicates it's motion to them all, the *abdominal* and *pectoral* Muscles, and the *motion* of the Arteries and Liver.

II. THE use of *Phlegmagogues* is very necessary in all diseases, that arise from a *Chyle* vitiated by the *sluggishness* of the Bile; for the Bile is a *menstruum*, by the efficacy of which the *viscidit*y of the food is easily subdued and resolved: therefore when it is too *sluggish*, or flows too *sparingly* into the Intestines, the *Pituita* and *Phlegm* are in a short time generated and grow in the Intestines; whence Persons affected in this manner are rendered *hydropical* or *pituitous*; they receive benefit therefore by *Phlegmagogues*, in a small, but often repeated dose. They agree also chiefly in all *cold* diseases, such as depend on an *inactivity* of the *first Bowels*, and of the *Menstruums*; from which *two faults* arise *white Tumours* called *Leucophlegmatic*, also *infarctions* of the *Abdomen*, the *Dropsy*, *Green-sickness*, &c.

### III. PHLEG-



III. *PHLEGMAGOGUES* are of service to those, who have a *paleness* of the whole Body, a *viscid*ity of the Spittle, Pancreatic and Intestinal Juices, and whose excrements are in a manner covered with *Pituita*. For it must be observed, that *redness* of the Body depends on *redness* of the Blood, and this on the *circulation* through the Vessels, and especially the pulmonary, in which the *least* particles are violently compinged by the *resisting* force of the Vessels against the *impelling* force of the Heart; whence it comes to pass that they are formed into *solid* and *round* *Moleculæ*, which are therefore *red*. Therefore if a *paleness* overspreads the Body, we know from the nature of the disease, 1. Either that the Vessels are too *lax*; 2. Or that the Blood is deficient; 3. Or lastly that the Heart does not contract it's self with sufficient force, and therefore that the *power* of the Solids on the Fluids is *diminished*: for when this *force ceases*, immediately the Blood grows pale, as we find by experience; for the *red* Blood being drawn out and at rest, soon grows *pale*, and is *resolved* into a *pituitous* Serum. Hence therefore *Phlegmagogues*, which *dilute*, *resolve* and *stimulate*, are of great service in this case; because they take away the *defect* of *motion* in the first passages, on which the *defect* of the Heart most depends.

IV. *PHLEGMAGOGUES* are good for those, who, from too *sedentary* a life, or too *viscid* a food, as wholly on *farinaceous* substances, either not at all or not duly fermented, become *pale* and *pituitous*.

V. THE best method of *curing* the diseases enumerated in the *four* preceding COROLLARIES is this: 1. Let the Body be *prepared* for some Days, by giving such things as *stimulate* the Bowels, and *dilute* and *resolve* the *Pituita*; such as those which  
were



were mentioned in the second, third, and fourth article of the *first* Class, where I treat of Soaps, and fetid Gums, and of those which consist of Waters and artificial, that is, fixed alkaline Salts.

2. Let the matter being *dissolved*, and made very *fit* to flow, be expelled by the *Phlegmagogues* described in the *second* Class. For example, let us suppose a Man to be of a *cold*, *pituitous* and *sluggish* constitution, and to live upon *crude* aliments that are not easily dissolved, whence we are afraid he should soon fall into a Dropsy; then the *cure* ought to be attempted after the following manner: ( $\alpha$ ) let him take every hour gr. ij. of *Venice Soap* reduced into Pills; and after each of these Pills, from gr. v. to gr. x. of *Nitre*, or GLAUBER'S *fixed Salt*, or *fixed Salt of Tartar*, or *Pot-ashes*, or *Gum Ammoniac*, in *white Wine* or *Mint-water*: ( $\beta$ ) after the *use* of these Medicines for some Days, let him take every evening *one Pill* of *Aloës*, to gr. iij, or gr. iv. and the next morning a like *pill* with gr.  $\beta$  or gr. j. of *Euphorbium*: by this method the Patient will soon be cured.

VI. LASTLY it appears from what has been said, that innumerable diseases may be cured by *Purges* rightly applied; notwithstanding the *opinion* of HELMONT and other Chemists his followers, who say, that every *Purge* is a *Poison*, and therefore always weakens our *Body* (*f*).

(*f*) Compare HELMONT, lib. de Febris, cap. v. integr. & alibi passim.



## C H A P. VI.

## Of CHOLAGOGUES.

1. **B**EFORE I explain the true *nature* and *effect* of *Cholagogues*, and enumerate the *Classes* of them, I shall weigh the *opinion* of the *Ancients* concerning them. The *Ancients* acknowledged *two* sorts of *Bile*; the one *black* or *splenic*, and the other *yellow* or *hepatic*, and so called the *Medicines* that *purge* the first, *Melanogogues*, and those which *purge* the latter, *Cholagogues*; by this last name they called all those *Medicines*, and those only, which expelled *excrements* resembling the *Cystic Bile* in it's *yellow* colour and other properties: by which means they fell into *two* errors; ( $\alpha$ ) They excluded from the number of *Cholagogues* some *Medicines* that are truly *Cholagogues*, namely such as move the *Hepatic Bile* strictly so called: for this *Bile* if examined in the *Sinus Glissonianus*, before it is mixed with the *Cystic Bile*, plainly resembles *Lymph*, in taste, smell, colour, and tenacity; and therefore though it be drawn out by the help of *Cholagogues*, yet the *excrements* do not owe their *yellow* colour to it. ( $\beta$ ) They often took some for *Cholagogues*, which really are not so, as will presently appear: for as the *Cystic Bile* is distinguished from all other *Liquids* of the *Body* by these four characters; 1. By it's *bitterness*, 2. By it's *yellowness*, 3. By it's shining *brightness*, 4. By it's *thickness* and *tenacity*; hence from the presence of the *three* last characters in the *excrements*, the *Ancients* concluded them to be bilious, for as they did not use to taste the *excrements*, they could say  
nothing



nothing of the *first*; and therefore they called all Medicines *Cholagogues*, that expelled such *excrements*: but this was rash and erroneous; for this *yellowness* and shining *brightness*, which sometimes are observed in *viscid excrements* expelled by *Cathartics*, may be the *creature* of the Medicines themselves, which stain the *contents* and chiefly the *mucus* of the Intestines with a shining *yellow*, though there is not the least quantity of Bile in them: for thus *Cassia*, taken in a small quantity, tinges the *urine* and *excrements* with a *yellow* colour, which therefore is falsely ascribed to the Bile; and if taken in a larger quantity, it makes them *green*, and if in a still larger, *black*; nay the *excrements* will become *yellow*, by taking *Manna*, and also *Tamarinds*, by which they become *pituitous* also; nay and *Aloës* dissolved in a large quantity of Water, grows very viscid, and imitates the Bile, and sometimes tinges the *excrements* with a yellow colour.

2. FROM what has been said it appears, how much the Ancients erred, when from the *effect* which some Medicines have of expelling *excrements coloured* like Bile, they concluded that they really *purged* the Bile. Therefore rejecting the *opinion* of the Ancients, I shall reduce all *Cholagogues* to *two* Classes; of which the *first* contains whatsoever promote a more plentiful *secretion* of the Bile, by attenuating the *hepatic* Blood; but the *latter* includes all those, which by violently *shaking* the Diaphragm and Abdomen derive the Bile from the Liver and Gall-bladder into the Intestines, whence afterwards, if there be occasion, it may be drawn out of the Body by *Stool*.

UNDER the *first* Class are contained all *natural Soaps*: such as the juices of all seasonable ripe fruits, which have a mixture of sweet and acid; as of



*Grapes, Cherries, Mulberries, Elder-berries, &c. of Rasp-berries, Black-berries, Apples, Pears, &c.* for these melt every thing that stops in the Vessels, and consequently the Bile, and that sometimes so vehemently and copiously, as to bring on a *Cholera Morbus*. Hither also are above all to be referred, 1. The *juices* of some Plants that are manifestly *saponaceous*; as the juice of that species of *Lychnis*, which is known by the name of *Soapwort*: hither also belong *Cassia, Manna, Honey, Sugar, Tamarinds, juice of damask Roses, Aloës, Scammony, Myrobalans, Rhubarb.* 2. *Artificial Soaps*, which consist of Oil and Salt combined by art, as was said before, and of which there are *various* species enumerated above; but the best of all is *that* which is composed of a volatile alkaline Salt, and a volatile Oil. Lastly, hither are referred *Elixir proprietatis*, and all moderately *aromatic syrups*, as FERNELIUS'S *syrup of Mugwort, syrup of Botrys, or Oak of Jerusalem, syrup of the five opening Roots, simple syrup of Succory, syrup of Succory with Senna, syrup of Violets, &c.* let all these be taken in *whey*, or in a *decoction* of Dandelion, or other such like *diluent*, and that in the morning on an empty Stomach.

THE *latter Class* contains all the *stronger Emetics*, such as *leaves of Asarabacca*; also *Emetics of Antimony, Mercury, &c.*

#### Practical COROLLARIES.

I. THE Bile ought never to be *evacuated*; for it never offends in *quantity*, unless in those who have abstained from *food* too long; in which case nothing else is required, but to take *food*.

II. THESE Medicines are to be applied in all *diseases*, which arise from an *obstruction* of the  
Hepatic,



Hepatic or Biliary Duct, and consequently in the *Jaundice*; but yet with some caution; for in the beginning of the *disease*, we ought to abstain from the *stronger* Medicines; for they increase the Fever, or rather the inflammation from which the Fever arises: but the *Jaundice* often proceeds from an *infarction* of the Liver, by cretaceous, gypseous, calculous, and other concretions; and sometimes from an *obstruction* of the common Duct, by the stopping of a *little stone*, which is always accompanied by an *enormous vomiting*. This *disease* also generally effects studious Persons, because of their *sedentary life*; and the following method seems to be the best way of *subduing* it. 1. Take daily one Pill every hour, made of *Venice Soap*, or of a small quantity of *Aloës* with Honey, or of *Hiera Picra* in a small dose; or take *Sal Polychrestus*, with a little Honey and *Smegma* of *Rhubarb*, and drink some small *liquor*, sweetened with Sugar, Honey, or *syrup of Violets*, with a *strict* diet; and continue the *use* of these or such like 'till the concretions begin to be *resolved*; which for the most part happens in one or two *Months*; and may be known to be effected, by the *change* of colour in the *Urine*, *Stools*, and *Skin*. Then, 2. Let them take *strong Emetics*, by which the Abdomen may be violently shaken, and the *dissolved* matter squeezed out; but these are not to be prescribed at the beginning, least, by driving out the most fluid part, they render the concretions more hard and fixed; when the operation of the *Emetic* is over, let them take an *Opiate* in the Evening, and accustom themselves by degrees to exercise, and *thicker* food. But the *diseases* which arise from a *defect* of Bile may be cured by administering such things as are easily *dissolved*; as Ptisans, yolks of Eggs, and such like, together with a Pill of *Soap*.



## CHAP. VII.

## Of HYDRAGOGUES.

1. **HYDRAGOGUES** are *Purging Medicines, which draw out Water, that is, the salivose intestinal Serum.* Now every Liquid secreted from the Blood, which is neither *fat* nor *red*, is called *Serum*: it either is *concreted* by the Fire, like the white of an Egg, into a hard mass; and of this kind is the *Serum* of the Blood properly so called: or not *concreted*, but *exhaling*, and leaving thick *Fæces*, but not coagulated; such are Spittle, Sweat, Urine. But the *Serum* which is drawn out by *Hydragogues*, is of the *latter* sort. Moreover it is called *Intestinal*, because it is derived into the Intestines, and that *two* ways; 1. It distills from the *salival Glands* of the Mouth, and also from the Glands of the Palate and Gullet, and is swallowed down: 2. It is secreted and flows into the Intestines, not only from the *Intestinal Glands* themselves, but also from the *Glands* of the Liver through the Hepatic Duct. Now this *Liquid* is drawn out by means of *Hydragogues* in a much greater quantity than naturally, and is expelled by the *Anus*.

2. But *Hydragogues* may be reduced to *three* Classes; of which the *first* contains those which promote the *secretion* of this *Liquid*, by stimulating the Glands of the Intestines. The *second* contains those which stir up the *Secretion* of the said *Liquid*, 1. By dissolving the Blood into parts that are not red; 2. By moving it more quickly when so dissolved, that it may be applied in a greater quantity



quantity to the *secretory Glands* of the Intestines. Lastly, the *third* includes those *Medicines* which do *both* together.

*Of the first Class of Hydragogues.*

THE Medicines of this Class being applied to the inner *Membrane* of the Intestines raise them up into *Bladders* after the manner of a Vesicatory, which they afterwards *dissolve* by their *caustic* power, whence follows a continual *dropping* of Intestinal Tears. For the whole surface of the Body, both *external* and *internal*, abounds with Vessels containing the aforesaid Liquor : but if to these Vessels *acrid* Bodies are applied, which are able to *dissolve* them, and at the same time are so *thick*, that they cannot enter them, then they will draw out that Liquid ; and they will be called *Vesicatories*, or *Hydragogues*, as they are applied to *this* or *that* surface, *internally* or *externally* : wherefore all *acrid Vesicatories*, which are so thick that they cannot enter the Lacteal Veins, become *Hydragogues*, without any exception ; and the more *acrid* and *thick* they are, the *stronger* they are. Moreover the Medicines of this Class ought to have *two* conditions ; for 1. It is necessary that they contain something *thin*, *acrid*, *corroding* and *burning* : 2. That this *burning* part be so *involved* in some gummy or resinous Body, that the whole does not exhale *at once*, but *successively* ; whence also it will *corrode successively*. The Medicines of this kind are *two-fold* ; being taken either from Fossils or Vegetables. Those which are taken from Vegetables are the following : 1. The Root of *Mechoacanna*, which has been enumerated already amongst the *Phlegmagogues* : it has much the same *powers* with *Falap* ; being dissolved in Alcohol it affords a *tincture*, which being inspissated becomes a *resin* ; if this *tincture* is held



in the Mouth, it gives an intolerable heat to the *Fauces*, and excites a *Salivation*; but if it is swallowed, it inflames the *Fauces* and *Gullet*, and fills them with humours; thus also it's *resin*, if it be chewed, vehemently moves the *Spittle*, and exulcerates the Mouth; lastly, if it be applied, with the white of an Egg, to foul Ulcers, it absterges them: the dose of this Root is from  $\mathfrak{zj}$  to  $\mathfrak{zij}$  which indeed is a larger dose than was required for the intention of a *Pblegmagogue*, because in this case the *Stimulus* ought to be *stronger*. It is a most noble *Hydragogue*, but it ought not to be swallowed, without being wrapped up in some *viscous* Body, to keep it from injuring the *Fauces* and *Gullet*.

2. *Jalap*; this, if chewed, seems at first to be *sluggish*, but at length is found to be *very acrid*: it's *tincture* made with Alcohol, and held in the Mouth, exulcerates also the *Fauces*; but the *resin* being chewed raises an intolerable pain and swelling, and greatly promotes the secretion of the *Saliva*: moreover if it be taken dissolved in Water, it *purges* vehemently, as also it's *tincture* sweetened with Sugar. The dose of it *in substance* is from  $\mathfrak{zj}$ . to  $\mathfrak{zv}$ , but of the *Resin* from gr. v. to  $\mathfrak{zj}$ .

3. *Ebulus* or *dwarf Elder*; of this we use the *Fruit* and the *middle Bark*: the dose of the *Berries* is from  $\mathfrak{zj}$ . to  $\mathfrak{zv}$ . the *juice* of them and of the *tops* is usually given from  $\mathfrak{ss}$  to  $\mathfrak{zj}$ . The *middle Bark*, if it be given to  $\mathfrak{ss}$  to Infants, and to  $\mathfrak{zss}$  to Adults, brings off the *Serum* powerfully, and acts more strongly than *Elder*: but the *Berries* and *Bark* of *dwarf Elder* give an acrid and hurting taste.

4. *Buckthorn*, which is commonly called *Rhamnus Catharticus*, or *Spina Cervina*, and by some *Spina Infectoria*, because it is used by Painters (a); the expressed

(a) The *unripe Berries* are called *yellow Berries*, and the juice of the *ripe Berries* inspissated is called *Sap-green*.



expressed juice of it's Berries is taken to  $\mathfrak{zj}$ , and when boiled into a *Syrup* to  $\mathfrak{zij}$ . This *syrup of Buckthorn*, according to SYDENHAM's observation is of the greatest service to hydropical Persons, and from those who are easily purged it draws off Water very plentifully (b). But the juice being held in the Mouth gives a sort of fiery taste.

5. *Sea Bindweed*, or *Soldanella minor*; this is a maritime Herb, and a species of *Convolvulus*: it is esteemed among the maritime *Hollanders*, as a divine Medicine; it has a very hot taste of Salt: it is used in *sallads*, but it's force is very much abated by *Vinegar*; it is a muddy and tenacious Herb, with some acrimony, and purges the *Belly* with gripings: it's dose is from  $\mathfrak{vj}$ . to  $\mathfrak{z\beta}$ . 6. *Gratiola* or *Hedge Hyssop*; this has a fiery and very bitter taste; it purges *Water* with violent gripings, and commonly provokes to vomit: it's dose is from  $\mathfrak{v\beta}$  to  $\mathfrak{zj}$  in infusion, 7. *Iris Nostras* or *German Flower-de-luce*; this acts most vehemently; the dose of the Root in powder is from  $\mathfrak{v\beta}$  to  $\mathfrak{z\beta}$ , in infusion from  $\mathfrak{zj}$ , to  $\mathfrak{z\beta}$ . but the dose of the juice recently expressed is from  $\mathfrak{z\beta}$  to  $\mathfrak{z\mathfrak{ij}}$ . and if it is not given with caution it raises blisters on the Gullet with violent pain; but this pain is taken away by *Vinegar*. 8. *Esula*; the juice of which, as to it's colour and consistence, is like *Milk*, but it is so burning, that being applied to the Skin, it exulcerates it like Fire; and is so tenacious, that being evaporated by a gentle heat, it turns to a resin. MARTINUS RULANDUS had in Germany, a certain *Arcanum* for the Dropsy, and cured almost all that came to him in great numbers; this *Arcanum* was the *cortex Esulae* boiled in whey,

P 4

and

(b) Consult SYDENHAM, *Tract. de Hydrop.* p. 493. edit. in quarto.



and sweetened with *Honey* : the dose of *Efula* is from gr. iij. to gr. viij. *in substance*, but *in infusion* that dose must be doubled ; hither also are referred the other species of *Tithymalus* or Spurge, as also *Euphorbium*. 9. *Gamboge*, of which I spake in the CHAPTER of *Phlegmagogues* : some will have this Plant to be a species of *Euphorbium*, which being wounded yields this *juice*, and that the *yellow* colour is added to it, to *disguise* it : but being tasted it exulcerates the *Fauces*, and adheres to them most tenaciously, and excites *blisters* ; it is also a very strong and good *Hydragogue* ; it's dose is from gr. iij. to gr. xv. but it generally causes a *vomiting* in Bodies that are hard to be moved. 10. *Elaterium*, or the juice of the *wild Cucumber* inspissated by the Sun ; this is a *very acrid* Medicine, and also so *viscous*, that it will remain *tenacious*, though it be kept one hundred years : it is commended by SYDENHAM as the *last refuge* in a *Dropsey* (c) : the dose of *Elaterium* is from gr. j. to gr. xij. and it is a most vehement *Purgative*.

THE *Hydragogues* of this *first* Class which are taken from *Fossils*, are the following. 1. *Mercurius dulcis*, which consists of the *Acid* of Sea Salt and of *Mercury* concentrated or recondited ; this is an excellent *Hydragogue* if grossly powdered ; for it is not easily dissolved by our Liquids, and therefore, whilst it sticks in our Intestines, it *stimulates* them by the power of the *Acid*, which is contained in it, it's dose is from gr. jv. to ʒij. and it draws out the *Water* violently ; but if finely levigated, it causes a *Salivation*, and if being grossly powdered, it is applied to a *Wound*, it excellently corrodes the *Calluses* which grow at the edges.

2. *White*

(c) *Tract. de Hydrop.* page 494. Consult also LISTER *de Morbis Chronicis*, *Tract. de Hydrop.* page 17, ad 20. Edit. *Lugd.*



2. *White Precipate*, the power of which consists in *acid spiculæ*, which are not hidden, but are open and naked; whence if they are broken by *Alkalines*, and separated by the *power* of Fire, it becomes *sweet*: it's greatest dose is gr. xij. and it purges vehemently. 3. *Red Precipate*; which acts still more violently, wherefore it's dose is from gr. ij. to gr. v. 4. *Yellow Precipitate*; it is an excellent *Hydragogue*, but is to be given with caution, for otherwise it excites a *Salivation*: it ought therefore to be given under the four rules already laid down; that it may be determined toward the Intestines, and that it be taken without any other Medicines, by which it may be *derived* to the *habit* of the Body, such as *Diaphoretics* and *Opiates*: but it also corrodes Ulcers, and consumes superfluities, even in the most obstinate *Calluses*, but not without pain: PARACELSUS called it *Turbith Mineral*, because it purges the Lymph after the same manner with the *Vegetable Turbith*, which was thought to draw it even out of the inmost joints of a *gouty* Body: the dose of *Yellow Precipitate* is from gr. ij. to gr. vj. To these may be added, 5. *Green Precipitate*, the dose of which is the same as of the yellow. Hither also are referred, 6. *Chrystals of Metals*, as ( $\alpha$ ) *Vitriol of Silver*, of which the *Lapis infernalis* is made; the dose of it is from gr.  $\frac{1}{8}$  to gr. iij. ( $\beta$ ) *Vitriol of Copper*: both these *Vitriols* violently discharge *Water*; the dose of the latter is about gr. j. To this Class also may belong *Filings of Copper*; which is extolled as a *sacred Anchor*, both by antients and moderns: by this Medicine CHARLES V. was cured of a Dropsy, see FORESTUS; the dose of these *Filings* is gr. vj. ( $\gamma$ ) *Vitriol of Steel*: the dose is from gr. vj. to  $\mathfrak{z}$ j. In the last place, 7. *Common, or white Vitriol*: the dose is from  $\mathfrak{z}$ j. to  $\mathfrak{z}$ iv.

COROLL.



COROLL. ALL these Medicines operate only by their Acrimony; and therefore not by any *specific virtue*: for that this is the case, is proved by, 1. Their most acrid *taste*; 2. The *heat* which they cause in the *Fauces*; 3. The *blisters* which all of them raise, not excepting Jalap and Mechoacanna. 4. The *pain* which they cause, when applied to the Wounds. 5. The *Chemical Analysis*, for if any of them are dissolved as much as possible in *Water* or *Spirit of Wine*, they communicate *most acrid powers* to their Menstruums: but that, which remains untouched and undissolved, has no *powers* at all.

*Of the second Class of Hydragogues.*

THE Medicines of this Class are those which *dissolve* the Blood into a *serous Liquid*, and *move* it more swiftly when so *dissolved*; that it may be applied in greater plenty to the Intestinal Glands. To effect *both* these, it is necessary that the Medicines should be *mixed* with the mass of Blood: and lest any one should think that such *Purges* are never *mixed* with the Blood, we shall confirm this assertion by a *threefold* argument. 1. *Infusions* of *Crocus Martis*, *Senna* and *Rhubarb*, being injected into the cavity of the *Thorax*, in Men and Brutes, cause *dejections* by *Stool*, in *England*, *France*, and *Italy*, in half an hour; and therefore I do not doubt, but that they were received into the Veins. 2. *Mercury* being rubbed into the Feet, to excite a *Salivation*, often causes a *Diarrhœa*, unless it is restrained by *Diaphoretics* and *Opiates*. 3. The *cure* of any *serous flux* through the Belly is successfully performed by the help of *Diaphoretics* and *Opiates*.

IN this Class moreover we know only *one* Medicine, namely *Mercury*: for this, whether given  
*crude*



*crude*, or made into *Mercurius dulcis*, being taken in a small dose, and often repeated, and under the four rules mentioned above, brings on a *serous flux*, after two or three days.

Of the third Class of Hydragogues.

To this Class belong all the Medicines of the *first* Class, which both stimulate the *Glands*, and increase the *Secretions*, and also *dissolve* the Blood, and move it when so dissolved: for as *Cantharides* being applied *externally* to the Skin raise *blisters*, and at the same time so *dissolve* the Blood, as sometimes to cause *bloody Urine*, so also all *Vesicatories* and *Acrids*, such as those which are enumerated in the *first* Class, being *internally* applied to the Intestines, produce *blisters* in them also, and at the same time *dissolve* the Blood, and derive it thither.

Practical COROLLARIES.

I. HYDRAGOGUES agree in all diseases, where a *salivose Lymph* abounds in the Blood: and such are all those diseases, in which the first *Viscera* are *weak* and *stuffed* up; whence the parts of *Aliments* cannot be so *attenuated*, as to enter into the *Lacteal Vessels*, and be mixed with the *Lymph*: such also are all the diseases in which the *contractile power* of the Heart and Arteries is *weak*, whence the Blood becomes too *thin*; for it is manifest from Natural Philosophy, that the *stronger* the *force* of the Heart and Arteries is, by so much is the Blood *more thick*, and on the contrary, that it is the *thinner*, as that *force* is the *weaker*; for thus in Persons who use much labour, as in Plowmen, Porters, and such like, the Blood is found to be very much *compacted*



*acted*; but in *tender* constitutions, and all those whose *Viscera* are weak; as in the Leucophlegmatic, Phthifical, Scorbutical, &c. it is quite *watry*.

II. THE same Medicines are of service in every *extravasation* and *stagnation* of the humours; and therefore in every Oedematous Tumour, and Contusion.

III. THEY are of service also in those diseases in which a *sudden solution* or *evacuation* of the Liquids is required; and therefore in *Fistulas*, the Itch, all sorts of Dropsy, the Apoplexy, which often arises from *Serum extravasated* in the cavities of the Brain, *Gonorrhœa virulenta*, and such like.

IV. As often as these Medicines are to be administered, they should be given the first time in a dose sufficiently *large*; for otherwise, as they are *caustic*, they will greatly *stimulate*, and not *evacuate* at all; whence dreadful anxieties and gripings will arise.

V. HYDRAGOGUES are hurtful in all *inflammatory* diseases, whether the *Inflammation* be in the Arteries, or in the Lymphatic Vessels; and therefore they are *hurtful* in all Fevers, unless *bleeding* has preceded.

VI. THEY are *hurtful* also to Hypochondriacal and Hysterical Persons; for they often are so violently purged by *Hydragogues*, as to fall into *lowness of Spirits* and *faintings*.

VII. ANY *Hydragogues* whatsoever easily cause a *Super-purgation*. Now a *Super-purgation* is of *two* sorts; the *first* sort is caused by Medicines that are too *evacuating*, namely when the velocity and tenuity of the humours are so *increased* by the *Medicines* that the *excretory Vessels* are thereby distended beyond their *tone*, and become *paralytic*; whence it comes to pass, that they cannot *contract* themselves, but remain *open*, and consequently the humours  
flow



flow out in greater quantity than is fitting. The cure of this disorder is best attempted by the strongest *Astringents* with *Opiates* and *Spirits*: for all *Spirits* coagulate, as we learn from *Chemistry*; therefore *austere* and *spirituous* Bodies are always to be used in this case. The last species of *Super-purgation* is the *spasmodic*; such as *HIPPOCRATES* has described, as arising from *Hellebore* (d); for the *Spasms* give a violent shake, and thence the humours are expelled. On this occasion it is best to give *mineral Acids*, together with *Opiates*, and warm *Aromatics*.

(d) *Aphor. sect. v. Aph. 1. and 4.* also *Libr. de Veratri usu, art. 7.* also *Coac. sect. iv. versè 24.* Consult also *DURETI Enarratio* on this place, *Lib. III. Tract iv. art. 17.*

## C H A P. VIII.

### Of MELANAGOGUES.

1. **T**HE Ancients reckoned there were *two* sorts of black *Bile*. The *first* from the Spleen, which was called the *melancholy humour*, the *dregs* and *recrement* of the Blood; and they affirmed that the substance of this was *melancholy* Blood. The *latter* from the Liver, which was called *Bilis hepatica exassata*.

2. **T**HEREFORE the Medicines which were called *Melanagogues* by the Ancients were, 1. Those which *purge* the *atrabilious humour* from the Spleen through the Intestines; now that this may be done, was said before, and at the same time the *way* was assigned, by which *that humour* passes; and therefore



fore in this case they were not mistaken. 2. Those which carry off the *hepatic Bile*; but if we consider attentively, we shall see, ( $\alpha$ ) that there are many *purging Medicines*, which render the excrements *black*; for thus *Polypody of the Oak*, which is reckoned a principal *Melanagogue*, following the nature of all *Oaks*, the property of which is to tinge almost every thing with a *black* colour, stains the Mucus of the Intestines *black*; and therefore is called a *Melanagogue* by the Ancients: and thus also *Lapis Armenus* and *Lapis Lazuli*, as also *black Hellebore*, *Dodder of Thyme*, and *Senna*, were accounted *Melanagogues* by them; but now it is well enough known, that those two stones tinge the *excrements* with a very black colour, as also all *Vitriols*. 2. That sometimes by the power of nature alone, without the administration of any *Cathartic*, the *black* matter is ejected both upwards and downwards: in which case any thing may be called a *Melanagogue*, that expels this matter *kindly*, for it ought not to be treated *roughly*, but only to be moved by gentle *Purgatives*.

## COROLLARIES.

### Of *Purges* in general.

I. THE whole human Body may be *depurated* by the *belly*; though HELMONT affirms the contrary: now to *depurate* is to *separate* some parts of a *determinate Texture* and *Acrimony*; by which properties they differ from the *rest* of the Blood, with which they are *circulated*: moreover these parts are generally *less* than the particles of *Blood*; and therefore if we can *diminish* the *laxity* of the Excretory Vessels in the Spleen, Liver, and other Bowels, and *increase* that of the Expulsory Canals,  
it



it readily appears, that those *peccant* parts may easily be *separated*.

II. *PURGES* are not *Poisons*, as PARACELSUS affirmed, and HELMONT endeavoured to prove by these arguments (*a*) ; namely, 1. Because in an *increased dose*, they always occasion death. 2. Because *Venice Treacle* which resists *Poisons*, helps to take off the *power of Purgatives*. But to these I answer, 1. That not only *Purges*, but whatsoever are most *salubrious*, if taken in *too large a quantity* are mortal. 2. That the *Venice Treacle* stops the *purgative force* of a Medicine by the power of the *Opium* which it contains ; for this stops all *contractile motions* of the Solids for the present ; whence there is a *smaller expulsion* of the Liquids by the Secretory and Excretory Vessels.

III. THERE are no *elective Purges*, that is, which expel the Bile, Lymph, and *Pituita*, leaving the *rest untouched* : for this has abundantly appeared from the history of *Purges* : for when we were considering them *pecially*, we plainly saw, that they act *equally* on all our Liquids, but that *matter* only is moved, which is most easy to *flow* and be *discharged*.

IV. THE powers of *Purges* are falsely deduced from an *Acid*, an *Alkali*, or some inherent *Sulphur* : for the *juice* of Vegetables, and Spirit of Nitre, *purge* ; in which however there is no *Sulphur* : but every *Acrid*, that is able to *stimulate*, on this very account becomes a *Purgative*.

(*a*) See HELMONT, in the *plate* before quoted.



## C H A P. IX.

## Of Emetics or Vomitories.

1. **B**Y *Emetics* we understand all those *Medicines*, by the power of which the contents of the *Stomach* are thrown upwards, through the *Gullet* into the *Mouth*. The immediate cause of vomiting is the *compression* of the *Stomach* upon the contents: now this *compression* may arise either from the *contraction* of the *Fibres* of the *Stomach* it's self; or from an *external* cause strongly *pressing* the sides of the *Stomach*; or lastly from *both* together.

2. **HENCE** therefore there are *three* sorts of vomiting. The *first* is a violent *evacuation* of the *Stomach* by the *upper* parts, procured by the *contraction* of the *Fibres* of the *Stomach* it's self. To this sort are required, 1. A *fitness* for *expulsion* in the matter to be expelled; that is, a *fluxility*. 2. A close *stricture* of the *Pylorus*, and an *opening* of the *upper Orifice*. 3. A *dilation* of the *Stomach*, and a *contraction* succeeding it, which depends on the *Fibres* of the *Stomach* acting together. This sort of *Vomiting* was acknowledged by the *Ancients*, and that it does sometimes happen, tho' some *Moderns* deny it (*a*), who will have all vomiting to arise from a *convulsion* of the *Muscles* of the *Abdomen*, is manifest from this, that if the *Body* is bent when the *Stomach* is full, there will presently arise some *eruclations*; which are caused only by the opening of the

(a) In the first place the famous CHIRAC, who was the Author of this opinion, and also the celebrated DU VERNEY. Consult the *History of the Royal Academy of Sciences*, for the Year 1700, page m. 27.



the *upper Orifice* of the Stomach, and not by any *convulsion* of the Diaphragm and Abdominal Muscles.

3. AND thus Vomiting is usually caused by the following; 1. Any *topical Acrid* applied to the Stomach. 2. Any *inflammation* of the Stomach; as happens in *malignant* diseases and the Small-Pox, also in taking Poisons: but yet not because the Stomach, in a state of *rest*, or whilst it is *flaccid*, is moved to *vomit* by the *inflammation*, but only when something is *taken in*. 3. A *Schirrus* in the Stomach. 4. A *too great* and *sudden repletion* from any substance. 5. An *inordinate motion* of the Animal Spirits excited by any thing *nauseous*, or by any other cause; hence hypochondriacal and hysterical *Spasms* usually excite a *vomiting*. 6. A *Spasm* of the Stomach from an *unusual motion* of the Body; as going in a coach, sailing, turning round, &c. 7. A *sympathetical Spasm* of the Stomach, as in *wounds* of the Head, Apoplexies arising from an extravasated Liquid, Cholic, *Nephritis*, &c. which *Spasm* arises from a communication of the *Nerves* of the Stomach with the *Nerves* of the *affected parts*; whence also it comes to pass, that *vomitings* accompany almost all diseases of the *Abdomen*.

4. THE second sort of vomiting is that which happens from the *compression* of the sides of the Stomach by the *Muscles* of the Abdomen; for these are sometimes so *drawn together*, that all the Bowels contained in the Abdomen are strongly *pressed*; wherefore, if at that time the *upper Orifice* of the Stomach be opened, a *vomiting* will necessarily ensue. But in this sort of *vomiting*, the cavity of the Abdomen is greatly *straitened* by it's proper Muscles, the Diaphragm and *Peritonæum* acting together; whence the Blood is very much

Q *compressed*



*compressed* in the whole Abdomen ; and hence the *Secretions* are chiefly made in all it's contained Bowels ; nay and sometimes the Blood-vessels in the Liver *burst* assunder, whence dreadful *symptoms* arise : thus also the Blood, being driven violently towards the *upper parts*, by the *compression* or *resistance*, which it endures in the lower Belly, sometimes produces an *Hæmoptysis*, and sometimes an Apoplexy. Besides in this *compression* of the Abdomen, if the *force* of the *Sphincter* of the Anus be so great, as to be *insuperable*, the *peristaltic* motion of the Intestines is sometimes inverted, and thence an *iliac Passion* arises ; but if that *force* be *overcome*, then an *excretion* is made at the same time *downwards*, in which not only the contents of the Intestines are excluded, but also the *Liquors* which are secreted and flow from all the *Bowels* of the Abdomen : but this sort of *vomiting* usually follows the first sort continued too long ; for the *Nerves* of the Stomach being *vellicated*, at last the Muscles of the Abdomen are also *drawn together*, by the *consent* of the *Nerve* of the eighth pair.

5. THE third sort of *vomiting* is that which arises from the *contraction* of the Fibres of the Stomach, and of the Muscles of the Abdomen at the same time ; here also the *vomiting* is most violent.

COROLL. THAT almost universal *error* therefore of Physicians is to be expunged, that the action of *Emetics* cannot be explained, without first describing the *coats* of the Stomach ; and this is inculcated by those, who derive *vomiting* from the *motion* of the Stomach only : which how precarious and foreign from the Truth it is, appears not only from what has been said, but from this also, that if any Poison happens to touch the  
beginning



beginning of the intercostal pair of Nerves, a vomiting immediately ensues. Whence we may doubt, whether these Emetics which do not produce their effects 'till after some hours, do not first act on the Brain, and then disturb the Stomach by consent?

6. Now the following are the common causes of the three sorts of vomiting: 1. Those which vellicate more strongly; as a Feather turned about in the Throat. 2. All that disturb the Animal Spirits, though they do not act immediately on the Stomach; as unusual motions of the Body. 3. Nauseous Ideas. 4. A moveable substance fluctuating in the Stomach, being also acrid and vellicating. 5. Any Acrid taken into the Stomach, in tender constitutions. 6. Any Purges, either in too large a dose, or given to tender Persons. 7. Acrids mixed with the Blood; as infusion of Tobacco, in which if Children be washed, to cure them of the Itch, for which it is of great service, they will be seized with a vomiting; thus also infusions of Crocus Metallorum, Hellebore, glass of Antimony, &c. in Water, Wine, or Milk, if they are injected into the Veins, produce first a giddiness, then a staggering, then a nausea, and at last a vomiting. But if Emetics are injected in form of a Clyster; they have no success, except in those, who have a laxity of the Valvula TULPIANA, as is usual in weak Persons.

7. E M E T I C Medicines may be reduced to the five following Classes.

I. THE first Class contains all Bodies that are known to us, which enter the Stomach in such a quantity, as to fill it too much, and distend all it's Fibres, and compel those of the Back into contraction; by which it comes to pass that the Pylorus is constricted, whence a nausea and vomiting soon



follow ; hence also even Water drank copiously and hastily, nay and Wine, Beer, and any sorts of meats may by this means become *Emetics*.

II. THE *second* Class contains all Bodies which so relax and lubricate the *Fauces*, Gullet, Stomach, or Intestines, that the contents of the Stomach are thereby thrown upwards with the least motion : such are any *Fats*, taken often and in great quantity, provided they be not *acrid* ; as Oil, sweet, new, thick beer, mead, syrups, lyes, soaps, beer with butter.

III. THE *third* Class includes *mechanical Applications*, which by irritating the *Fauces*, drive the Fibres of the Stomach and neighbouring parts into *contractions* : for W I L L I S has demonstrated that the *Fauces*, Lungs, Heart, Intercoastal Muscles, Stomach, Diaphragm, and Mesentery have *Nerves* from the same *origine* ; hence also if the *Nerves* of the *Fauces* are irritated, all the enumerated parts are easily convulsed : thus if the Finger or a Feather be put into the *Fauces*, or if the Tongue be pressed down, a *nausea* will presently be excited, and if this be continued, a vomiting will succeed.

IV. THE *fourth* Class contains whatsoever act topically on the Stomach it's self, by irritating it at the very point of time when they are swallowed : such are, 1. *Gilla Vitrioli* PARACELSI ; if this be taken from  $\text{ʒij.}$  to  $\text{ʒj.}$  it soon causes a vomiting. 2. *Verdegris* ; the dose of which is from  $\text{gr. ʒ.}$  to  $\text{gr. ij.}$  and this works almost as soon as taken. 3. *Tincture of Tobacco*, drawn with rectified Spirit of Wine from the leaves of the common Tobacco, a little dried ; which being given to  $\text{ʒj.}$  or  $\text{ʒij.}$  immediately provokes to vomit ; but if it be diluted with Water, then the operation of it may be stopped at pleasure : but in those who are used to chew Tobacco it will have no such effect. 4. The juice of  
of



of *Wormwood* or *Cardus benedictus* recently expressed: the dose is from  $\mathfrak{zj}$ . to  $\mathfrak{z}iij$ . 5. *Oxymel of Squills*: the dose is from  $\mathfrak{zj}$ . to  $\mathfrak{z}jv$ . 6. The juice of *Horseradish* recently expressed; which loses it's powers, unless it be taken within an hour: the dose is from  $\mathfrak{zj}$ . to  $\mathfrak{z}ij$ . 7. *Radish-seeds* contused: the dose is  $\mathfrak{z}\beta$ . 8. The root of *Orach*, and also it's juice recently expressed: the dose is from  $\mathfrak{zj}$  to  $\mathfrak{zj}$ . 9. *Peach blossoms*; the syrup of which is usually prescribed to Infants, as far as  $\mathfrak{zj}$ . 10. The fresh juice of *Quinces*; which being taken to one spoonful is an immediate *Vomitory*, though it stops a vomiting arising from a relaxation of the Fibres of the Stomach. 11. *Seeds of Dill*; the dose is from  $\mathfrak{z}ij$  to  $\mathfrak{z}\beta$ . but they leave a long nausea behind them. 12. The juice of *Sow-bread*; which is used externally in the Ung. *Arthanitæ*. Moreover the above-mentioned Medicines act in the same manner on the Stomach, as a feather does on the Fauces; for they irritate and vellicate. But the use of these agrees with those who easily vomit, who have a pretty sensible Stomach, and who are prone to vomit, and apt to nauseate from mere repletion. From these also may be chosen such Medicines as conduce in acute and chronical diseases; among these we have Bitters, Acids, and Aromatics.

V. THE fifth Class contains all those which being communicated to the Blood bring on universal Spasms, but chiefly exert themselves in the Stomach and Intestines. Now the Medicines of this kind are such as stay an hour or more in the Blood before they act; such as, 1. *White and black Hellebore*, the former of which is not ventured upon by discreet Physicians, on account of the violent Spasms which it brings on; for being given to  $\mathfrak{z}\beta$  it acts most violently: but the black is given to  $\mathfrak{zj}$ . 2. Leaves of *Asarabacca*; the dose is from  $v$ . to  $x$ .



in number, either in substance, or in infusion.  
 3. *Gamboge*: the dose is from gr.  $\text{iv}$ . to gr.  $\text{xij}$ . in a spoonful of Wine. 4. *Gummy Turbith*: the dose in substance is from  $\text{ʒj}$  to  $\text{ʒij}$ , of the *resin* from gr.  $\text{vij}$  to  $\text{ʒß}$ . of the *extract*, which is the best of all, from gr.  $\text{xv}$ , to  $\text{ʒj}$ , of the *infusion* from  $\text{ʒij}$  to  $\text{ʒß}$ . 5. *Cataputia major*, either *root* or *seed*: the dose is from  $\text{ʒj}$  to  $\text{ʒj}$ , but it operates very violently. But all these may be so mitigated and tamed by *Acids*, as to have no force remaining in them (a).  
 6. *Mercurials*; as *Turbith mineral*, *white*, *red*, and *green Precipitate*, &c. 7. *Antimonials*, as *Crocus*, *Regulus*, *Glass*, *Flowers*, *sulphur of Antimony*, *Mercurius Vitæ*, &c. and especially *Emetic Tartar*, which is the most safe of all, and most in use; the dose of it is from gr.  $\text{ij}$  to  $\text{vj}$ . But all these being digested with Oil of Vitriol lose their power. Moreover these violent *Emetics*, if they are immediately injected into the venal Blood, are  
 venomous

(a) There are yet some other *Vomitories* taken from the Vegetable Kingdom; as the leaves of *Gratiola*: the dose is from  $\text{ʒj}$  to  $\text{ʒij}$ . Of *Sedum Vermiculare*: the dose is  $\text{ʒß}$ . Also the first leaves, catkins, and buds of *Elder*, and dwarf *Elder* or *Danewort*; but beyond all these is that noble root *Ipecacuanha*, which the Moderns have discovered, and brought into use with very great success; for being reduced into a fine powder, and given from  $\text{ʒj}$  to  $\text{ʒß}$ , it affords a mild and excellent *Vomitory*; it is usually given in *broth*, or in a *bolus*, and is used by some in *infusion*, and in *decoction*. As for the history and virtues of this Brazilian root, consult the modern AUTHORS, especially PISO, *Histor. Natural. Brasiliæ*, Lib. iv. cap. 53. edit. secund. Also the *Dictionaries* of POMET and LEMERY; also DALE, *Pharmacolog. supplem.* page m. 148; and JUNCKER, *Conspect. Therap.* page 33; and FOURNEFORT *Traité de la Matière médicale*, &c. Tom. I. page 438, & seq. For the virtues also and uses of the root *Ipecacuanha*, see the elder HELVETIUS, who first made the use of it famous, *Traité des Maladies*, &c. Tom. II. page 271. & seq. edit. ult. For the chymical Analysis of it consult BOULDUC in the History and Memoirs of the Royal Academy of Sciences, for the year 1700, *Hist.* page m. 46. and *Memoir.* page 1, and 76, and for the year 1701. *Mem.* page 190.



*venemous* and *mortal*: for their *powers* in this case are sufficiently shewn by WILLIS's Experiment ;  
 " for when he had caused some Wine impregnated  
 " with the *infusion* of *Antimony* to be injected to the  
 " quantity of  $\text{℥vj}$ . into the jugular Vein of a strong  
 " Dog, after about five or six minutes the Dog began  
 " to *reel*, and *stumble*, as he went long, and then to  
 " vomit grievously. But we may imagine, says the  
 " Author, that this *effect* was produced by the  
 " *Medicine*'s attacking the Brain rather than the  
 " Stomach; since a like *vomiting* has often suc-  
 " ceeded an application of a *Liniment* or *Fomenta-*  
 " *tion* of the juice or decoction of *Tobacco* to the  
 " head." (b). Besides it may be worth while to  
 observe, that in *Greece* and in the *Hellepont* there is a  
*Poison*, with which *swords* are infected, the wounds  
 inflicted by which, are always mortal, on account  
 of the horrid *Spasms* which they occasion ; but the  
 observation of the Moderns, and the confession of  
 Drunkards has discovered this *Poison* to be the  
 juice of *Hellebore*, gathered in *Greece* and in the  
*Hellepont*.

#### Theoretic COROLLARIES.

I. IT is not yet demonstrated, whether the stronger *Purgatives* and *Emetics* produce *excretory Spasms* as being *immediately* applied to the Stomach and Intestines ; or as being applied to the *origine* of the Nerves? But it is observed in *vomiting*, that all Excretions, such as *sweat*, *stools*, *tears*, *spittle*, &c. are no less promoted, than by *passions of the mind*, or by some body *mechanically* affecting the *origine* of the Nerves.

II. HENCE therefore it appears, that the stronger *Vomitories* act on the *origine* of the Nerves.

Q 4

III. HENCE

(b) WILLIS *Pharmaceut. Rational. part I. sect. 2. cap. page 54 and 55. edit. Hagana.*



III. HENCE also appears the reason, why amongst Medicines, only *Poisons*, and of those the strongest, and also violent *Vomitories*, produce *Spasms*.

*Practical COROLLARIES.*

I. THE matter which is thrown out by *Vomitories* is manifold. 1. Plenty of *Spittle*. 2. The *mucus* of the Nostrils; whence appears the wonderful effect of Emetics in those who are infested by a most foul *mucus* from the Venereal disease. 3. The Liquor of the *Fauces* and Gullet; hence *Vomitories* are the best Medicines to deterge the *suppurations* of those parts. 4. The *Gastric Liquor*. 5. The *Liquor* of the Spleen; and therefore if the Spleen be filled with any *viscid* matter, *Emetics* are of great service at the beginning of the *disorder*, whilst the matter is moveable. 6. The *oily Liquor* of the *Omentum* or Cawl, which, according to MALPIGHIOUS (c), is collected for this use, and preserved in the *Omentum*, that it may temperate the Bile and other humours, which acquire *Acrimony* from too great a motion of the Body: but this *Liquid*, if it abounds too much, and renders the Bile too tenacious, is easily drawn out by a *Vomitory*. 7. The *Liquor* of the Mesentery. 8. The *Hepatic Liquor*, for there is no Medicine which *aëts* more certainly on the Liver, than an *Emetic*. 9. The *Pancreatic Liquor*. 10. The *matter* of the Intestines heaped together from the said *Liquids*.

II, THERE is no remedy, except the *Paracentesis* or *Tapping*, more ready in a curable *Ascites*; for nothing more readily evacuates what is *extravasated* in the *Abdomen*. Hence also the Ancients, as well as the Moderns, were always obliged to apply such a violent remedy; for the best Medicines for this *disease* are such as occasion *Spasms*.

III. THESE

(c) *Tract. de Omento, &c.* page 44 to 46. edit. Lond.



III. THERE is not a better Medicine to break *Imposthumes* of the Lungs, *Pleura*, *Mediaſtinum*, *Diaphragm*, *Liver*, and all the *Abdominal Bowels*, if they are *ripe*.

IV. VOMITORIES are of great ſervice in removing *obſtructions* of the whole Body, eſpecially if they are in the lower Belly, to diſſolve what is *impacted* and *ſtagnating*, and alſo to increaſe the *expelling force*.

V. THESE Medicines therefore are of ſervice in innumerable diſeaſes, both *acute* and *chronical*.

VI. VOMITORIES are the moſt dangerous to all *plethoric* Perſons, for oftentimes they produce an *Apoplexy* or *Hæmoptoe* in ſuch; alſo to all *conſumptive* Perſons, and to all that labour under a *hæmoptoïcal Diathēſis*, alſo to all ſuch as are troubled with the *Stone* and *Gravel*, or concretions of the *Bile*, for *bloody Urine* may be occaſioned by too much *friction* and *attrition* either of the *Kidnies*, or the *Bladder*, or the *Liver* againſt a *Stone*; whence all the neighbouring *Veſſels* are injured; alſo to all who have a *Schirrus*, *Cancer*, or *contraindicating Inflammation*, alſo to thoſe who are liable to *Apoplexies*, from *too great a quantity* of *Blood*; laſtly, to all thoſe who have *corrupted Viſcera*.

VII. IN *plethoric* and *acute* diſeaſes, *Bleeding* ought to be premixed, as often as a *Vomitory* is to be given.

VIII. THOSE who have any leſs *moveable* matter ſtopping in any part, or hidden in the inmoſt reſſes of the *Bowels*, before they *vomit*, ſhould take ſuch Medicines as are *inciding*, *lubricating*, *relaxing*, and *irritating*: and this being well obſerved, an incredible number of diſeaſes may be cured.

IX. WHEN the *contents* of the *Stomach* are expreſſed by the firſt or ſecond *act* of *vomiting*, there is always need of ſuch Medicines as are *diluting*,  
*lubricating*



*lubricating*, and *relaxing*. For otherwise great pain and anxiety are excited.

X. A *SUPER-PURGATION* is always to be carefully avoided in *vomiting*; for it does not arise from any Medicines more easily than from *Vomitories*; but if at any time it follows upon them, it may be stopped, 1. By *antispasmodic* remedies; namely such as are diluting, relaxing, and anodyne, that is such as give a stop to an *impetus*; as drinking of *warm Water*, taking juice of *Liquorice*, *Opium*, or by binding the Arms and Legs. 2. By various *Aromatics*: such as all Alexipharmic Confections; namely, *Diascordium*, *Treacle*, all the *Philoniums*, *Mithridate*, &c. for these determine the *motion* of the humours from the *centre* to the *circumference*; for by means of a *Vomitory* the Vessels of the *circumference* are constricted, whence the Liquids are compelled to be moved towards the *centre*. 3. If the *Super-purgation* arises from the Vessels being *relaxed*, and the Stomach being *flaccid*, the *austere* Medicines and *Acids* are required; such as *marmalade* of *Quinces* in a pretty large dose, as ℞ss. or the root of *Tormentil* or *Bistort*, the *Peruvian Bark*, *Oranges*, &c. 4. *Fermented Spirits* also are of great service, provided they are given in a pretty large dose, as to ℥v. but if the Patient has been accustomed to these, then the dose is still to be increased:

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## CHAP. X.

### Of DIURETICS.

I. **T**HE *Excretion* of Urine is always made through the *Urethra*, into which it flows from the Bladder; but it distills into the Bladder from



from the Ureters, for it has no other passage into it, as is manifest from the following considerations: 1. Because those who labour under a *Dysury*, or difficulty of Urine, occasioned by a *Stone* in the *Ureters*, are observed to have no Urine at all in their Bladder. 2. Because if the Abdomen of a *living Animal* be opened, each Ureter *tied*, the Bladder emptied, and Abdomen sewed up again, the Animal will most certainly die of a suppression of Urine, not so much as one *drop* coming to the Bladder. Moreover whatsoever enters into the Bladder by the Ureters, flows from the Pelvis, which is nothing but an *expansion* of the Ureters; and it comes into the Pelvis from the *branches* of the *Papillæ*, which arise from innumerable renal Canals, as MALPIGHIUS and RUYSCH have demonstrated: but all those Canals are *outlets* of the small renal Glands; but if any thing *urinous* stops in these, it is all derived from the *branches* of the emulgent Arteries.

2. FROM what has been said it appears therefore, that none but *Diuretics* increase the power of *secreting* the Liquid in these Glands, the *passage* without the Body remaining open: this may be obtained *five* different ways, and consequently there are *five* sorts of *Diuretics*; 1. Those are *Diuretics*, which *relax* the *arterial* Vessels of the Kidneys, and their lateral ones, though the constitution of the Blood remain entire and untouched. 2. All those are *Diuretics*, which dissolve or dilute *more than usual*; now the Blood may be said to be dissolved, when it's *spherical* parts are reduced into *smaller* ones: and the Blood being thus constituted, this *secretion* is easily augmented by the *relaxation* of the renal Vessels, nay these Vessels are always *more lax* than others, that is, they make less *resistance* to the Liquid flowing in, than any other Vessels in our Body;



Body; as gaping into the open Pelvis. 3. These also are Diuretics; ( $\alpha$ ) whatsoever apply the Blood remaining the *same*, with a *greater* velocity, to the Vessels also remaining the *same*. ( $\beta$ ) Whatsoever apply the Blood being *diluted* and *dissolved* with a *greater* velocity, to the *relaxed* and *dilated* Vessels. 4. Those are *Diuretics*, which determine the *flowing* of the Blood to the Kidneys, more than to the other parts of the Body, without changing any thing in the Vessels, the Liquids or the velocity of motion. 5. In the last place, those are *Diuretics*, which *stimulate* the Vessels into secretory contractions.

3. ALL *Diuretics* may be reduced to these *five* Classes; but before I treat of them *separately*, I must consider the Urine it's self; which consists, 1. Of what we *drink*; and this sort of Urine is *aqueous*. 2. Of some parts of the *Chyle*; and this sort is crude. 3. Of the *Water* of the Blood; and this is *concocted*; 4. Of parts of the *Solids* of our Body, abraded and rubbed by the *vital power*, and also of the *Fluids*, so far dissolved by continual circulation, as to become *acid*; and this is usually *red*, *small* in quantity, *oily*, *acid*, and *terrestrial*. 5. Of *morbid* parts; and this sort of Urine is excreted *thick* and *various*. According to this *difference* therefore of Urine, *Diuretics* ought to be *varied*.

4. Now follow the Classes of *Diuretics*, which are five.

I. THE first contains all the *Decoctions*, *Emulsions* and *Oils*, taken either from Vegetables or Animals, which were recited above, under the title of *relaxing* and *emollient* Medicines; as *Decoctions* of Pellitory, Mallow, Mercury, Oil of Olives, *Walnuts*, *Turpentine*, &c. But they are to be administered with a *regimen*, that they may be determined



to the Kidneys ; and therefore, 1. They ought to be taken on an *empty* Stomach, in a *cool* Air, using *easy* motion afterwards. 2. They are to be injected in form of a *Clyster*, to *foment* and *mollify* those parts : and these being thus administred are sometimes of wonderful service, when other remedies have been tried in vain. 3. They may be applied also to the Kidneys in form of a *Bath* or *Fomentation* ; for experience teaches, that those who are put into *Baths* up to the Breast, make plenty of *Urine*. But the use of the *Diuretics* of this Class is so great, that the *first* place may be given them ; for if there is any *obstruction*, they do not increase it like *Stimulators*, but remove it by *relaxing* the Vessels. To this Class also belong those which correct or expel the *Acrid*, which excites *Spasms*, of what sort soever the *Acrid* is ; thus *terrestrial* Bodies, as also fixed and volatile *Alkalines* are of the greatest service to Infants that labour under a *suppression* of *Urine* from *Milk* turning *sower*, and also to hysterical Persons.

II. THE second Class comprehends all those which *dissolve* and *dilute* the Blood : but we know only *one* *Diluter*, namely *Water* ; for the rest that *dilute*, do it so far as they have *Water* mixed with them. But *Dissolvents* are of *two* sorts ; namely, either those which being taken into the sanguineous Liquid, *dissolve* and *divide* it's *molecule*, by *interposing* themselves ; or those which by exciting a *greater* motion, increase the *attrition* of the Vessels, and so promote the *comminution* of the Blood ; and therefore they are either cutting and penetrating *Salts*, or *Stimulators*. To this Class belong, 1. *Aqueous* Bodies ; such as all *mineral Waters*, *wey*, *butter-milk*, *tea*, *coffee*, *small-beer*, &c. all which are referred hither, so far as they contain *Water* : 2. All the *Salts* ; that are known to us, without



without any exception; as ( $\alpha$ ) all fixed and volatile *alkaline Salts*; ( $\beta$ ) all *ammoniacal Salts*, which are composed of a volatile acid Spirit, and a volatile alkaline Salt; ( $\gamma$ ) *fixed compound Salts*, prepared of any fixed Alkaline with any Acid, except a Vegetable ferment; which are the better, as they are more subtile and acrid: ( $\delta$ ) *Saponaceous Bodies*, made of Alkalies with any Oil: hither belong all *oily volatile Salts*; such as the *Offa HELMONTIANA*, which is usually given from gr. jv. to  $\mathfrak{a}\mathfrak{j}$ ; and it is composed of any volatile alkaline Spirit that is not oily, as of the purest alkaline Spirit of Sal Ammoniac, pouring upon it an equal quantity of the purest Alcohol of Wine, which being done there is a *coagulum* formed in that part where the surfaces of these Liquors touch each other; then if you shake them, both Spirits are presently *coagulated* into a lump, and then by distilling them often with a retort, they are intimately united ( $a$ ): and thus such an *oily Salt* is soon obtained; to the preparing of which some months are required, after STARKEY's method, namely by pouring ætherial Oil of Turpentine on any alkaline fixed Salt, that is very strong and pure, and fused and melted by a vehement Fire, &c. which makes what is called STARKEY's Soap ( $b$ ). Hither also belong those which are called *fixed Soaps*: such as may be made of Salt of Tartar boiled a long time with Oil of Olives or of Turpentine; ( $\epsilon$ ) the *saline parts* of Animals; as their *saline juices*, for instance, the fresh juice of Sea Oysters, the juice of Sea Muscles, and Crabs recently

(a) Consult HELMONT. *Traët. de Lithiâsi*, cap. 3. sect. 5. also BOERHAAVE *Operat. Chem.* page 251, 252. also his *Materia Medica*, sect. 66. n. 5.

(b) See STARKEY *Pyrotechn.* and BOERHAAVE *Operat. Chem.* page 160 and 163.



recently expressed, and the juice of *Millepedes*, which tastes like *Borrage*; (C) vegetable juices of those Plants, as afford by Chemistry but little Oil, and much essential Salt; as *Opium*, which on that account is reckoned amongst the *Diuretics*; as also the juice of *Parsley*, *Sorrel*, *Fumitory*, *Chervil*, *Eryngo*, &c. of which some of the *Salts* approach nearer to Nitre, and others to Tartar.

III. THE third Class contains four different kinds of Medicines: such as, 1. All *Acrids*, which stimulate the Vessels, especially those of the Kidneys; amongst these the principal are some *Insects*, as *Bees*, *Grass-hoppers*, *Ants*, *Cantharides*, *Millepedes*; which also dissolve the Blood, and accelerate it's motion, and excites a sort of artificial fever. 2. All *Salts*, which dissolve the Blood, and at the same time increase it's velocity: hither also chiefly belong one or two kinds of Salt; such as we know to be driven from *Amber* and Vegetables; but Salt of *Amber* is a species of rectified acid volatile Salt, and exceeds all others, if it be given to  $\mathfrak{vj}$ . with a regimen. 3. All fixed and volatile alkaline Salts, without distinction. 4. Moderate heat and motion of the Body, without sweat.

IV. THE fourth Class includes some *Diuretics*, which are in a manner specific: such as any balsamic Aromatics, that is, such as consist of a subtile Salt and an involving Oil; as *Saffron*, *Rhubarb*, *Sparagus*, fresh *Cassia Fistula*, *Nutmeg*, *Juniper*, *Turpentine*, and all native Balsams, &c. for these being taken increase the quantity of Urine, and even change all their qualities, as colour, smell and taste; thus *Saffron* and *Rhubarb* gives it a flame colour, *Cassia* taken in a small dose turns it green, in a greater quantity, brown, and in a still greater, black; thus also *Sparagus* gives a stink to the Urine, but *Turpentine* gives it a smell of Violets.



*Violets (c)*. But such changes never happen to our other Liquids; whence it comes to pass, that we use to call these *Diuretics specific*.

V. THE fifth Class contains those, the *effects* of which discover themselves principally and more sensibly about the Kidneys and Bladder; as *Cantharides*, on the taking which there arises a *heat* in the Loins, and a *dropping* of Urine, or *Strangury*. Hither also are to be referred the *Insects* mentioned already; as also *Beer* in those who are *not accustomed* to it; thus also *flat Milk* excites a *Strangury*. Lastly, all *acrid* and *dissolving Diuretics* belong to this place.

### Practical COROLLARIES.

I. *DIURETICS* ought to be prescribed, in order to provoke Urine, in the same *order* as they are here described; that is, always beginning with the *first* Class, and then proceeding to the rest *successively*.

II. IN *acute* diseases, there is room only for *three* of these Classes; the *Relaxers*, *Diluters*, and *Temperaters of Acrids*.

III. IN *chronical* diseases, if the *morbid* matter is to be expelled by the Kidneys, first the Vessels are to be *relaxed*, then the Blood is to be *dissolved* and *diluted*, and then *Acceleraters* are to be given, and in the last place *Stimulaters*.

IV. THE Blood is more *purged* this way, than by every *evacuation* by Stool; for *Diuretics* act on the Blood it's self, but not all *Purges*: therefore a Physician who duly attends to all symptoms, may

(c) Thus also *Balsam of Capivi* manifestly gives a *bitter taste* to the Urine, according to FULLER, *Pharmacop. Extempor. de Mist. Balsam.* page m. 247.



may often procure a *salutary crisis* in violent diseases by those Medicines, without any notable *perturbation* of the Body. Besides the Kidneys are the best *depuratory* of the Blood; because all the *thicker* parts of the Blood may pass through them.

V. THERE are *diverse* species of *intercepted* Urine; and indeed so many as there are Classes of *Diuretics* enumerated; whence it follows, that there ought to be *different methods* of healing. But now there are various causes of *intercepted* Urine; namely, 1. A *Constriction* of the urinary passages; 2. An *Infarction* of them by a *calculus*, or some other substance. 3. *Too great a dryness* of them, and *defect* of Liquid; which arises either from *Acrimony*, as in *acute* distempers; or from too great a *thickness* and *lentor* of the Fluids, as happens in *sedentary* Persons; or lastly from the Liquids being too much *derived* into the other parts. 4. A *Palsy* of the renal parts; and this scarce admits of a cure.

## CHAP. XI.

### Of SUDORIFICS.

1. **E**VERY Medicine, by the power of which a sensible moisture exhales through the Skin, is called a Sudorific: in Greek ἰδρωτικόν; and consequently whatsoever sensibly expels the Liquids through that part of the Skin, which is endowed with pipes appropriated to sweat. Now these pipes are demonstrated to be the *outlets* of the subcutaneous Glands, or the *smallest* Vessels arising  
R from



from the Lymphatic Arteries, or the last *ends* of them.

2. HENCE therefore it appears, that the substance of *sweat* is derived from the Arterial Blood, and that it is not an *excrementitious humour*, as is generally thought, but a *juice* entirely necessary to preserve the *flexibility* of our Machine: for that the Body may remain *flexible*, there ought to be many interstices between the parts which compose it, and these interstices are called *pores*; and lest those *pores* should be lost by the *concretion* of the solid parts, it has pleased GOD to constitute that Liquid, called the SANCTORIAN, to flow perpetually through these *pores*; which Liquid is the very substance of the *sweat*, and the most moveable, most subtile, and most friendly part to the Nerves, so long as it continues in it's *natural state*; and thus it ought not to be *drawn out* of the Body, any more than the Blood it's self, unless it is corrupted by the nature of some *disease*: and indeed *sweat* never arises in a *healthy state* of the Body, but as often as any cause is applied to the Body, which may take away the *balance* between the Vessels and the contained Fluids, so that the *force* of the Liquids may *exceed* the *resistance* of the Vessels, and at the same time some Function may be too much *increased*, then the *sweat* manifests it's self. *Sweat* therefore always shews that the Body is *out of order*, and this *disorder* will continue, till the cause which excites the *sweat* is removed, and till it's effects are corrected.

3. THE substance therefore of *sweat*, which in it's *natural state* goes out under the name of insensible perspiration is very *mild*, and greatly different from Urine: but *sensible sweat*, if it be much urged, approaches nearly to the nature of Urine; is sometimes *thick*, *oily*, and *fetid*, nay and sometimes



times becomes almost *bloody*, as we may see in some Porters, whose *sweat* under the *Arm-pits* will sometimes stain their shirts, as it were with *Blood*.

4. *SWEAT*, as well as *Urine*, is promoted *five* ways; 1. By *relaxing* the emissaries or outlets, all the Liquids remaining the *same*. 2. By *diluting* and *dissolving* the Blood: now the Blood is said to be *diluted*, when it's more *subtile* and *fine* part exceeds the *red* part; and it is said to be *dissolved*, when the *red Molecule* are resolved into those lesser *fix*, of which they consist, as was observed before. 3. By applying ( $\alpha$ ) the Blood continuing the *same* to the outlets continuing also the *same*, with a greater *velocity*: ( $\beta$ ) the Blood being *dissolved* and *diluted*, to the *relaxed* emissaries, with an accelerated *velocity*; in which case a great *sweat* arises. 4. By determining the Blood to the *extremities* of the Body: whence whatsoever changes the *course* of the Blood from the *inward* parts towards the *outward*, will excite a *sweat* by deriving it; as the passions of the mind. 5. By exciting *Spasms* in the last *Villi* of the subcutaneous Glands.

5. *SUDORIFICS* may be varied, according to the different *nature* of the matter to be evacuated: for *sweat* is *manifold*; and arises; 1. From the aqueous *part* of our drinks. 2. From *crude* Chyle: hence also *sweat* is wont to break forth from all those who have *weak* Bowels, at the time when the Chyle ought to be mixed with the Blood; as is observed in phthical Persons, and sometimes in Women that give suck. 3. From *concocted* Blood; but chiefly in *fat* Men, whose insensible perspiration is daily diminished, because of the *fat* stopping up the Vessels; but they also daily sweat more. 4. From the Blood being too much *dissolved*, and from too great a *contrition* of the Vessels, a *reddish*, *fat*, *acrid*, *terrestrial*, and *saline* *sweat* arises, so that it sticks to the Skin, as if



infix'd into it. TACHENIUS took the *Lixivium*, in which foul *linnen* had been macerated and washed; and then *distilled* this *Lixivium*, consisting only of *alkaline Salt*, and obtained a *Salt* from it, like the *Salt* of distilled Urine, but not so fetid (a). Thus also a great quantity of volatile Salt is found in the *sweat* rubbed off from Horses (b). But this *sweat* for the most part breaks forth, when the Blood is very violently moved through it's Vessels; and therefore it may be observed in those who are much fatigued. 5. *Sweat* is sometimes *morbid*, and hence it is most *various*: for sometimes it is quite *watery*, as in Women with Child, and consumptive Persons, in whose *sweat* there is scarce any colour, smell, or taste to be observed; so that it seems to be the *most diluted* part of the Blood: but sometimes it is very *viscous*, very *yellow*, *red*, and sometimes it *stinks* very much; such as is the *sweat* of those who have the Plague, which frees the *Patients* from that *disease*.

6. Now follow the Classes of *Sudorifics*, of which there are *four*.

I. THE first contains all those which *relax* the Vessels: and they are either *internal* or *external*. The *internal relaxing Sudorifics* are all those, which are related amongst the *Diuretics*, except those which *specifically* affect the Kidneys; thus *warm Water* sweetened with Honey excites a copious sweat: thus also in burning Fevers *Barley Water*, or such like, is an excellent *Sudorific*, because it relaxes the *constringed* Vessels. Hither also belong those which remove a *Spasm* of the Vessels, or *Demulcents*, and temperaters of *Acrimony*; as *Opium*,  
Crab's

(a) See TACHEN. Hippocr. Chym. Cap 12. page m. 54.

(b) Idem ibid. page 55.



*Crab's Eyes*, and *terrestrial Absorbents*. But the external *Laxatives* are, 1. All Frictions. 2. All warm *Vapours*, and especially the *aqueous*. Hither also belong *Baths*; but they press the Body too much, whence often arises a fainting. Hither also ought to be referred *Inunctions* by mild Oils, Fats, Marrows, &c. which render the Skin *lax* and *soft*; though of themselves they rather *stop* a *sweat*, as appears from the ancient *Wrestlers*, who before the contention anointed their Bodies with Oil, to make their Joints *limber*; for by this means the *sweat* was hindered. Hither belongs in the last place the *washing* of the Body with saponaceous Water.

BUT the use of these *Sudorifics* agrees, 1. In every *disease* that arises from a very great *cold*; which is the greatest injury to the external Skin and to the Lungs, rendering their Vessels rigid, and coagulating the Fluids. 2. In any *disease* where *fordes*, *ulcerous* or any *morbid crusts*, *scabs*, *ulcers*, *elephantiasis* or *leprosy* adhere to the Skin. 3. Where there is a *Spasm* of the Emissaries; which may be known by the *dryness* and *hardness* of the Skin. 4. Whensoever a *disease* happens by any *Acrid* impacted *externally*; and therefore seeing the Plague is of the nature of a Poison *externally* applied, these *Sudorifics* are of the greatest service in expelling it. 5. In the most *acute* diseases, where the Blood tends vehemently toward the *internal Viscera*, as in the Small Pox; for in these cases, Physicians make use of this Class of *Sudorifics* with success; though SYDENHAM justly condemns the provoking of *sweat* by *Cordials* and *strong internal Sudorifics* in the Small Pox, and it may be questioned, whether the provoking of *sweat*, attempted by these *Sudorifics*,



would not be of great service in curing any inflammatory diseases.

II. THE second Class contains the *dissolvers* and *diluters* of the Blood, which are enumerated in the *second* Class of *Diuretics* : but the greatest *diluter* is Water, the power of which is increased by *heat* ; hence *warm Water* is the greatest *Sudorific*. Now some *dissolvents* immediately *dissolve* the Liquids ; and of these there is but *one* that can safely be given in acute cases, namely, Nitre and the preparations of it : but others dispose the Vessels to *act* on the Liquid, and *dissolve* it ; thus Vinegar sweetened with *Honey*, and diluted in *Water* is an excellent *Sudorific* in acute diseases : for example,

Rx *Aceti.*

*Mellis ana* ℥j.

*Macis q. s.*

*Diluantur in Aquæ ℥xij vel xiv. Sumat æger in-  
star Theæ aut Caffè, & in Læto expectet fu-  
dorem.*

*T A K E* Vinegar and Honey, of each one ounce, of Mace a sufficient quantity ; dilute them in twelve or fourteen ounces of Water, Let the Patient drink it after the manner of Tea or Coffee, and lie in bed to sweat.

THIS is a Medicine of HIPPOCRATES ; but plain Vinegar does not *coagulate* the Blood, nor any fermented Acids diluted.

III. THE third Class agrees with the *third* Class of *Diuretics*, excepting only those which determine the Liquids to the Kidneys : therefore whatsoever is taken *hot*, as also *warm Aromatics*, *Opiates*, and *vehement motion* are great *Sudorifics*.

IV. THE fourth Class contains those which determine the Liquors to the *external habit* of the Body ; such as, 1. All that relax the *external* parts



parts. 2. Those which dilute, dissolve, and move toward the *external* parts. 3. Those which diminish the *external pressure* of the Air. 4. Those which increase the *force* of the Heart, or it's *pulsations*, as to number and strength : hence therefore all *Cordials* are *Sudorifics* ; as Rhenish Wine, fresh juice of Citron, penetrating Spices, volatile Salts, &c. 5. Those which stimulate *externally* : as any *Acrids* applied to the Skin ; such as Vinegar, and Ginger, which is most subtile and penetrating, and is highly commended by HELMONT (c). 6. To these also may be added those which restore the *obstructed motion* in the *internal* parts ; thus, for example, passions of the mind restore *obstructed* respiration.

As for what is pretended about *specific Sudorifics*, it is all trifling ; for all these at last become *Sudorifics* when the Body is disposed to sweat, otherwise they do nothing ; for tho' *Venice Treacle* be taken to the quantity of ʒj, unless the Body is disposed to *sweat*, it will only *dry*, and not provoke a *sweat* ; nor indeed does any other Medicine provoke *sweat specifically* ; but those which are thought to have that effect, perform it only, 1. As they supply matter for *sweat* : 2. As they remove the obstruction of the *sweat* : 3. As they determine the Blood to the *circumference* of the Body. But among these *Specifics*, there are some related by *AUTHORS* ; such as, *sealed earth*, *leaves of Scordium*, *Swallow-wort*, &c. also Bezoar, Pedro del porco (d). Goa-stone, which is composed of Bezoar, Am-

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ber

(c) In his *Traët* intituled TARTARUS NON IN POTU, *sect.* 9.

(d) See the best *history* of all these *Stones* in KÆMPFER, *Amœnitat. Exotic. Fascic. II. sect.* 3. *page* 391, to 406. As for the *lapis hystricinus Malacensis*, or Pedro del porco, of which we have said something already, in *page* 133, the use of it is shewn and highly extolled by TULPIUS, *Libr. iv. Observ. Cap.* 52, *page m.* 363, and by HELVETIUS in his *Traité des Maladies, &c. Tom. II. page m.* 70.



ber, and Gum Tragacanth (e); also *lozenges* or *troches* of *Vipers*, &c. and the AUTHOR testifies, that he has given the *genuine* Bezoar-stone, to the quantity of  $\text{ʒj}$ , to a Child of two years old, sufficiently disposed to *sweat*, but without any effect; and he testifies also that no *sweat* was procured by the troches of *Vipers* given to  $\text{ʒiij}$ .

## COROLLARIES.

I. FROM what has been hitherto said of *Sudorifics* we gather, 1. That there are various and quite opposite *causes* of *sweat*; as the *greatest* sadness and joy, fear and hope, *warm* Water and *cold*. 2. That there is also various and quite opposite *effects* of *sweat*: for *sweat* sometimes *dissolves* the Blood, and sometimes *thickens* it, according to the condition of the subject from which it is drawn; therefore nothing can be said universally of the *effect* of *sweat*. 3. That various *applications* may be used to draw out *sweat*; sometimes it is procured by the *washing* of the whole Body, sometimes by *heating* it, by *friction*, and *violent motion*, sometimes by the administration of various *internals*. 4. That there are various *necessities* of drawing out the *sweat*; thus for example in an *Anasarca*, we must

(e) This Stone is called by the *Portuguese*, *pedra cordial*, and is made at Goa in the *Indies* by the *Jesuits*, of *cordial* and *alexipharmic* Species, in which the *Bezoar Stone* is an ingredient: it was first made by F. CASPAR ANTONIO, whence also it took its name; and afterwards by F. NICOL. MANUCHE, which is distinguished from the former by the letters N M stamped on the surface, with the figure of a Goat or some other Animal, on the opposite side; its *figure* is oval and round; its *colour* is grey *within*, blackish and shining *without*; and distinguished with golden spots, and sometimes all over gilded. Its use is *frequent* and highly esteemed in the *East Indies*, it is sold by the *pound* and therefore varies in its price according to its *bigness*. See KÆMPFER *ibid* page 397.



must *stimulate*, and expel what is *slow* and *stopping*: therefore every morning and evening the following prescription may be given.

R $\bar{y}$  Theriac.  $\text{ʒij}$ .  
 Spir. Juniperi  $\text{ʒjss}$ .  
 Oxymel. Scillit.  $\text{ʒij}$ .

*Diluantur in Cereris Cerevisiæ meracæ, vel Hydromel. ʒix. vel x. Sumat æger, & disponat Corpus ad sudorem.*

*T A K E* of Venice Treacle two drams, of Spirit of Juniper an ounce and half, Oxymel of Squills two ounces, dilute them in nine or ten ounces of genuine Mum or Mead. Let the Patient take it, and dispose his Body to sweat.

THE same is done with success in other *chronical* diseases, as in the Green-sickness: thus also in the Leprosy, because all nourishment is stopped, therefore the procuring of *sweat* is required; but not by *Aromatics*, which heat the Body *internally*, but in such a manner, as to make all hot *externally*, and to wash all away *internally*: therefore let a Pill of Venice Soap be given every hour, so that  $\text{ʒij}$  may be taken in a day; and then, after the use of these for three days, the Patient may drink any *antiscorbutic decoction*, as of *Guaiacum*; then let him go into a warm Bath to provoke a sweat. Moreover if any thing is to be resolved about the first Vessels, as in the diseases of the Breast, and other acute diseases, and if the cause of the disorder arises from an *Alkali*, let him drink plentifully of Honey, Vinegar, or Rhenish Wine, with Water; and at the same time let his Skin be relaxed *externally*: but in the middle of the sweat a decoction may be given with



with *Nitre*. But if the *cause* of the *disorder* be from an *Acid*, then let *Alkalines* be given; and so let always those things be given, which are *opposite* to the *cause* of the disease. 5. That there are various *opportunities* of procuring a *sweat*; for at some times it succeeds much more readily and happily, than at others: the *knowledge* of which depends entirely on the observations of the Physicians; thus in the Small Pox, from the *first day* to the *eighth*, *sweating* is promoted and this seems to be a proper time enough for *sweating*; and the Patient may be cured by *continual sweating*, but with this *regimen*, that the Humours may always be copiously *diluted* and the Vessels *relaxed*, for *hot* and *drying* things must by no means be then given, as being very pernicious. But in *acute diseases*, many Physicians agree with the vulgar, in giving *Sudorifics*, because they observe that Nature often relieves herself on the *fourteenth day*, by *sweating*; and thence fall into this wretched *practise* of giving *hot* and *drying* things, by which method they destroy many: but if they were to lay aside all *hot Sudorifics*, and give only those, which *dilute* the Blood, and *relax* the Vessels, then the Patients would *sweat* kindly, and have a laudable *crisis* on the *seventh*, or *fourteenth day*: for thus in the *sweating sickness* of the *English*, many were cured by a continuation of the *sweating* for twenty four hours, by *internal Diluents*, and *external relaxing Medicines*: whereas on the contrary, all those, to whom *internal Diluents* were not administered, died (f).

II. FROM what has been said, it appears also,  
 I. That *Sudorifics* are to be varied, according to the various *causes* of the disease: thus in diseases arising from an *Alkali*; as for instance, a young  
 Man

[(f) See Dr FRIEND's *History of Physic*, Part II. page 332.



Man is seized in summer time by a *most ardent Fever*, to get the better of which a *very quick* remedy is required, that is a *Sudorific*; but before this is given him, the *cause* of the disease ought to be inquired into: for let us suppose, that it is too much *dryness* and *inflammation*, it is manifest that *Diluters* and *Stimulators* are required, because of the *defect* and *obstruction* of the *powers*, which indicate a *Stimulus*. Thus, that Diluters may operate the better, let a *liquid Medicine* be given, the base of which may be some *dissolving Acid*, and for a *Stimulus* let Rhenish Wine be added, which may be diluted with a large quantity of *Water*, and may have an *antiphlogistic power* added to it by the help of Nitre; for example,

R $\bar{x}$  *Vin. Rhenan.* ℥viij.

*Nitri* ℥ij.

*Succ. Limon. recent. express.* ℥j.

*Syr. Viol. q. s. vel ad* ℥ij.

*Diluantur hæc cum Aquæ communis* ℔jv.

*Singulis horis capiat* ℥ij. *calidè cum determinatione ad Sudorem; si vero Alviter tantum fudet, plus Vini addatur, si minus, plus Aquæ.*

**T**AKE of Rhenish Wine *two ounces*, of Nitre *two drams*, of Lemon juice *fresh squeezed*, one ounce, of syrup of Violets a *sufficient quantity*, or to *two ounces*.

**LET** these be diluted with *two quarts* of common Water.

**LET** the Patient take every hour *two ounces* warm, with a determination to sweat; but if he sweats but little, let more Wine be added, if too much more Water.

**B**U T



BUT if the *cause* of the disease is an *Acid*, then instead of Rhenish Wine, let him take some other Liqueur, as *Sal Volatile Oleosus*; but if the *cause* be something *tenacious*, let *dissolving* Salts be added. 2. That *Sudorifics* are to be varied also, according to the various *nature* of the disease. But the *nature* of a disease depends ( $\alpha$ ) on the *peccant* matter; ( $\beta$ ) on the *efficient* or *applying* cause, that is, on the *vital power*; thus therefore, if the matter is *tenacious*, let strong *Stimulators* be given, as *Alkalines*; but if it be of the nature of the venereal disease, then Mercury determined to *sweating* is the best remedy. 3. That *Sudorifics* ought to be varied, according to the different *seats* of the disease. 4. That different *Sudorifics* are required in different *degrees* of a disease; thus in the *beginning* of the Small Pox a *Sudorific* that resists Inflammation is required; but on the *fourteenth day*, for the most part *saponaceous* Medicines are required, and *drying aromatic decoctions*.

### THEOREMS.

I. THE greatest power of *Sudorifics* consists in *resolving* the Liquids, and in *opening* the *obstructions* of the Vessels. Now the Liquids are *resolved* either by *diluting* or *dividing*; wheresoever therefore it is necessary to *dissolve*, there *Sudorifics* are required: but the deobstruent power of *Sudorifics* consists in *relaxing* the Vessels, or in dissolving their contents.

II. IN *Sudorifics* considered by themselves, there is a great power of *coagulating* and *obstructing*: whence it comes to pass, that what remains, becomes thick, coagulated, and sometimes as hard as a stone, afterwards by no art to be *resolved*; and hence it is, that no inflammatory diseases sooner turn to a *gangrene*, than those which arise from violent exercise.

### III. WHILST



III. WHILST *Sudorifics* incrassate, they also obstruct at the same time; and whilst they consume the Liquid, the Vessels contract themselves, and are straitned, and their *Fibres* grow stiff.

IV. ALMOST all Medicines may be converted into *Sudorifics*: thus if a *purge* be administered, and the Person presently disposed to a *sweat*, there will arise a great expulsion of *sweat*; and the *stronger* the *purge* is, the more *copious* will the *sweating* be: but in chronical diseases, it is an *arcanum* to add *purges* to *Sudorifics*, as the *Trochisci Albandal*, &c. It is the same with *Emetics* and *Diuretics*, if they are determined towards the Skin.

## CHAP. XII.

### Of DIAPHORETICS.

1. **D**IAPHORETICS are Medicines, which drive the morbid matter out of the Body, under the form of the *Sanctorian Perspiration*; or rather all those which increase the *Sanctorian Perspiration*. Therefore that we may the better understand the nature of these, we must consider by how many ways, and from what causes Perspiration is increased.

2. THE causes therefore of the increase of Perspiration are, 1. The increased force of the Bowels; which divides our Liquids into *minutiae*. 2. All those which determine the Liquids so dissolved, towards the *external* parts; by *external* parts I mean all those that can be touched by the Air, such as the Skin, Mouth, Lungs. 3. Those which so dispose



pose the *external Skin*, that it may *readily* transmit the Liquids under an *insensible* form, but not the more *thick* and *sensible*: in order to which the Skin ought neither to be too *lax*, nor too *tight*. 4. Those which perform together the three just mentioned: and as there are no Medicines of this kind known to us, we may thence conclude, that there are no *proper Diaphoretics*, that is, which certainly and undoubtedly obtain such an effect.

3. *DIAPHORETICS* therefore may be divided into the *three* following Classes, according to the *three* former causes of an increased Perspiration.

I. THE first Class of *Diaphoretics* contains those which increase the *force* of the Bowels, that is, the *elasticity* of the Vessels: now this is increased, wherefoever the *Fibres* of the Vessels become more rigid and hard. To this Class therefore belong, 1, Whatsoever astringe, or rather contract the Solids, that is, which by insinuating themselves between the Interstices of the *last parts*, and stopping there, make those parts more flexible or more rigid: such are *Opium*, the *Peruvian Bark*, all *astringent Roots*, *austere Wine*, &c. Moreover as *Diaphoretics* constringe, and do not relax, it is manifest, that whatsoever increases the *sensible* Excretions, diminishes a *Diaphoresis*: which plainly agrees with the *SANCTORIAN* Experiments. 2. *Exercises* of the Body, as *walking*, *riding on horseback* or in a *Coach*, &c. by the help of which experience teaches us that the *SANCTORIAN* Excretion is promoted. 3. Very *gentle Stimulators*, or *strong* ones a little *enervated*; for thus *Coloquintida*, infused in a small quantity of Wine, becomes an excellent *Diaphoretic*; thus also *Corrosive Sublimate* to gr. j. or ij. mixed in ℥ij or iij of *Rob of Elder*, and so given to the quantity of  $\frac{1}{20}$  part of a grain for *one dose*, is of great service in *Chronical Diseases*; and in like manner any  
*Acrids*



*Acrids* may be so mitigated, as to become *Diaphoretics*.

II. The second Class includes all those which determine the *perspirable* Matter to the Skin: such as, 1. Air moderately warm. 2. Moderate Exercises. 3. An equal Circulation of the Liquids; which happens, when all the parts of the Body either *equally* rest, or are *equally* moved.

III. THE third Class contains those which give a *due temper* to the Skin, so that it be neither too loose, nor too tight. And this is performed by *Frictions, Lotions* and *Deterfions*.

## C H A P XIII.

### Of UTERINES.

I. **T**O Uterines are referred *Emmenagogues, Aristolochics, and Ecbolics*; or those which expel the *Menses*, the *Lochia*, and the contents of the Womb. Moreover *Emmenagogues* are properly those, which promote the Secretion and Excretion of the *menstrual Blood*. Now the Secretion is from the whole mass of Blood into the Uterine Vessels; but the Excretion is from the Womb through the Vessels adhering partly about it's *internal Orifice*, partly within it, and partly in the *Vagina*.

2. Now this *derivation* into the Womb, and *Excretion* from it are made, because the Vessels just mentioned being filled with *abundance* of Blood are so far distended by the *force* of the Heart, that the *orifices* of the little Arteries are at length dilated, whence follows an *eruption* of the Blood; but when  
the



the *force* of the Heart ceases, and the *Plethora* is relieved, they contract themselves again: but that the Uterine Blood is *pressed* by the *force* of the Heart is manifest from hence, that if the *Placenta* is broken off in a Woman with Child, the *Fœtus* still remaining in the Womb, there follow so great a *hæmorrhage* that the Mother dies; because the Blood is urged by the *force* of the Heart, and the Uterus is so distended by the contained *Fœtus*, that the *orifices* of the Vessels cannot contract themselves. The same also may be gathered from the flowing of the *Lochia*.

3. Now if it is enquired why the efflux of the Blood is not *always* from those Arteries, but only at stated times? It must be considered, that the *ends* of the Arteries are in a manner *trifid* or divided into *three* Branches; of which the *middle* one goes into a Vein, and the *two lateral* gape into Cavities, *one* into a Gland, and the other into Lymphatic Vessels: the *first* Branch therefore transmits the *thicker* Blood, and the other *two*, because they are more tender and small, transmit only the more *subtile* part of it. Now let us suppose, that there is an *obstacle* in the Veins, for example, from a *Plethora*, or a greater *pressure* than usual in the Arteries, then the *lateral* Vessels must be so far dilated, that those which before admitted nothing but Lymph; now admit the *red* Blood: because they are of a finer structure, and gape into Cavities, where there is no *obstacle*, *resisting* the *Impetus*; but is quite otherwise with regard to the *middle* Branches; and as soon as that *obstacle* in the Veins is removed, or the *pressure* and *force* of the Heart is diminished, namely, when the plenty of Blood is diminished by flowing, then these *lateral* Vessels contract themselves, and the Blood goes again into the Veins. This Argument may be illustrated by the example of the external  
*horny*



*horny coat* of the Eyes; which in the natural state is evidently *white*, hardly any but the lateral Vessels of the Arteries going to it; but if any *obstacle* is put in the way to the Vein, as if it be compressed, or if the end of the Artery be obstructed, or contracted, so that the Blood cannot flow readily out of the Artery into the Vein, for example, if the Neck be *strait* bound, then those Vessels of the *Cornea* which were at first *inconspicuous*, will grow *red* and *conspicuous*, by means of this *pressure*; because the Blood being hindered from flowing into the Veins is pressed into the *lateral* Vessels: but as soon as that *obstacle* is removed, this *redness* vanishes. It is the same in the Uterine Vessels, where there are Lymphatic Vessels, or the smallest extremities of Arteries gaping into the Cavity of the Womb. But that this Blood flows out of those *lateral* Vessels (which in their natural state do not receive the Blood, but a *finer* humour for the lubrication of the parts) being dilated, appears plainly enough from the flowing of the *Lochia*, which gradually lose their *bloody* colour.

4. Now let us see what is the cause of the first *eruption* of the *Menses* in Girls: which indeed, to say it in one word, is nothing else but a *Plethora*; and this arises from hence, that in a Virgin, from her Nativity to her state of Puberty, the *quantity* of Blood gathered by the force of the *Viscera* increases, for such an *increase* is entirely necessary for the greater distension of the Vessels, and the increase of the Virgin: but after she is arrived to the *limits* set to her growth, so that the Vessels can no longer be dilated and distended, a *Plethora* must necessarily arise, from the *increase* of that Blood which still remains; for there is no reason why it should cease, seeing the *force* of the *Viscera*, by which it is gathered, is so far from being diminished, that it is



rather increased: therefore the *superfluous* Blood must be expelled by the *less resisting* Vessels, such as the Uterine; otherwise the Girl will be *sick*.

5. BUT if it be enquired whence it comes to pass, that these *menstrual fluxes* do not happen in Men as well as in Women? The Reason is, that Men later attain to the *bounds* of their increase than Women; for as soon as they arrive thither, some *excretion* is increased in them at *stated* times: for it is manifest from the *Observations* of SANCTORIUS, that Men are subject to a *Plethora* every *Month*; but which goes off either by a larger *sweat* or *Urine*, or some other excretion (a). The same also happens sometimes to Women, whose *Menses* do not flow; and thereby they are preserved in *health*: Besides, it must be observed, that Women have a *smaller Diaphoresis* than Men, and that in those who have a *plentiful Diaphoresis*, as *Virago's* the *Menses* do not flow at all, or at least in a very small quantity; but those who have a *lax* and *cold* habit of Body, and live an *idle* Life, have the *Menses* for the most part in *plenty*.

THEOR. THE nearer we are to our *origin*, the more the *pressing force* of the Heart prevails, above the *resistance* of all the Vessels of the Body together; and this appears from the *increase* of Animals, which increase in a greater proportion in their tender years, than in a more advanced age: thus therefore that Body whose *bound* of it's increase is nearer to it's origin, ought, the rest being equal, to have more *lax* and *soft* Vessels, than that whose *bound* of it's increase is more remote from it's origin; seeing therefore Women come sooner to the ἀκμή of their increase than Men, it is necessary, that their Vessels should be more *soft* and more easy to *unfold*.

(a) *Med. Static* 1. *Apbar.* 65.



6. IT remains now to be examined, why the *superfluous* Blood in Women is determined to the Womb. And it manifestly proceeds from hence, that in a Woman approaching to the bounds of her increase, there is no where *less resistance* in the Vessels, than in the *Abdomen*, hence also no where *less* than in the *Pelvis*, and there no where *less* than in the Womb: for Women, in proportion to their bulk, have their Abdomen much more *large* and *expansile* than Men; for in their *Pelvis* are contained only the *Bladder* and *Rectum*; besides which there is also the Womb in Women; add to this that their *Pelvis* is usually more *capacious*, than would be required, with regard to it's contents. Besides, when at any time the *Bladder* and the *Rectum* receive their liquids, and the Womb nothing at all, it appears from hence that there is the *least resistance* in the Womb. Moreover there is no part known in the female Body, into which the Blood flows from so many different places, as into the Womb; for *various* extremities of Arteries meet there in *one*, from *three different* Springs. To this may be added, that in the whole *uterine tract* the Veins are destitute of Valves, and that this want of Valves is not supplied by the compression of the *Muscles* that propells the *venal* Blood; for there is no part of the Body which has fewer *Muscles* about it: all the Blood therefore, which is contained in the Veins, *resists* the Blood coming from the Arteries; and thus wheresoever it is first in a something *greater* quantity, it is pressed immediately toward the *less resisting* places.

7. Now we know *three* kinds of *causes*, to which the *excretion* of the *menstrual Blood* in a healthy Woman is owing; 1. A *Plethora*, 2. A determination of the *superfluous* Blood to the Womb, as the *less resisting* part. 3. A *fitness* of the Uterine Vessels



for *excretion*. *Emmenagogues* therefore may be reduced also to *three* Classes; of which the *first* contains those which cause a *Plethora*. The *second* those which determine it to the Womb. And in the last place, the *third* includes *aperient uterine Topics*. Whosoever therefore would cure a Woman labouring under a *suppression* of the *Menses*, ought first to inquire, whether there is matter to be *excreted*, or whether there is any *superfluity* of Blood; for if this is wanting, the Medicines of the *second* and *third* Class will do more harm than good.

8. A PLETHORA is produced; 1. By every Medicine which causes more *Chyle* to be received into the Veins, from the meat and drink, by the *power* of the first Bowels, than is required for the increase or nourishment of the Body, and to repair the loss. 2. By every Medicine which so strengthens and affects the second Bowels, which are called *Hæmatopœa*, or *Blood-making*, that they turn the *Chyle* into good Blood. 3. By the *removal* of causes which attenuate and dissipate the collected Blood. We have therefore *three* different kinds of *Medicines* contained under the *first* Class of *Emmenagogues*, or those which cause a *Plethora*.

THE *first* of these kinds contains those which increase the *force* of the first Bowels, or those which are appropriated to *Chylification*; to which also are to be enumerated, 1. Those which *dissolve* the sluggish *Fæces*. 2. Those which *purge* them out, when *dissolved*, by a *Stimulus*. For it is well known, that the cavities of the Intestines are always *lined* with a certain Mucus secreted there from the Glands; which if it is *thick*, and adheres, *obstructs* the *orifices* of the smallest Vessels, and so hinders the passage of the *Chyle* into the Lacteal Vessels; whence arises an *Inanition* or *Atrophy*, which is contrary to a *Plethora*. Therefore if there is such a Mucus, as to cause  
a *Plethora*,



a *Plethora*, it ought, ( $\alpha$ ) to be *dissolved*, and ( $\beta$ ) *expelled*: wherefore I shall treat first of those which *dissolve* and *expel* this Mucus; and afterwards of those which increase the *force* of the first *Viscera*.

THOSE which *dissolve* the said Mucus, are, 1. Any aromatic fetid Gums, called *Uterines*; for these adhere by their *viscosity*, and mix themselves by their *saponaceous power* with the *Pituita*, and *dissolve* it, and at the same time stimulate and promote it's *expulsion*; and therefore Gum *Ammoniac*, *Asa Fœtida*, *Bdellium*, *Galbanum*, *Myrrh*, *Sagapenum* and *Opopanax* are by all called *Uterines*; for these being taken are easily *dissolved* by the heat of our Body, and whilst they remain *dissolved*, the *Acrid* which is contained in them exhales, and stimulates and gently deterges the *Viscera*: they do not act therefore by any *power* directly appropriated to the Womb, but by their own *dissolving* quality, being *saponaceous*, *aromatic*, and friendly to the Nerves. A Physician therefore, who would cure a Woman whose *Menses* are suppressed for want of a *Plethora*, may prescribe after this manner,

℞ Gummi Ammon.

Galbani

Sagapeni

Myrrhæ, ana ʒj.

Olei stillat. Succini rectif. q. s.

M.

Fiant inde Pilule.

TAKE of Gum Ammoniac, Galbanum, Sagapenum, and Myrrh, each one Scruple, of distilled Oil of Amber rectified a sufficient quantity, mix them, and make them into pills.

THESE agree wheresoever the *entrance* of the *Chyle* is obstructed by the cause just mentioned, as



happens in hypochondriacal and hysterical persons; and they dissolve the Mucus spoken of above. 2. All *fixed Salts*, whether they are prepared after TACHENIUS's method, or *alkaline*: which besides have this peculiarity, that they soon pass off; whence for a time their *effect* is great, but it soon ceases. Hither belong *compound fixed Salts*; as *Borax*, *Sal Ammoniac*, *Vitriol*, *Tartar*, *Sal polychrestus*, *Sal regeneratus Sennerti*, &c. Thus also, take of either of these *Salts* ʒj. dissolve them in ʒjv of *Rue-water*. Let the Patient take one spoonful after the pills. 3. All *alkaline volatile Salts*; such as *oily volatile Salts*, *Spirit of Harts-horn*, *Spirit of Urine*, and *Spirit of Blood*. 4. All *Soaps* whatsoever: for they approach to the nature of Gum; wherefore *Soap* is much cried up for procuring Abortion and provoking the *Menses*. Also to dissolve the beforementioned Mucus,

R̄. *Saponi Veneti* ʒjv  
*Bulb recent. Ari* ʒj.  
*Ase foetida* ʒss.

*Fiant Pilulae, sing. gran. iij. Sumant singulis biberiis unam.*

TAKE of Venice Soap four drams, of fresh Arum roots one dram, of Ase foetida half a dram. Make this mass into Pills of three grains each; take one every two hours.

THESE are *Detersives* of the first passages. Now follow those which expell the *dissolved Mucus*: such are *Aloës*, *Rhubarb*, *Coloquintida*, *Jalap*, *Sagapenum*, *Opopanax*, and above all *white Bryony*. Physicians have given the name of *Uterines* to these, from their effect, because they at the same time *dissolve* and *expel*. To this purpose therefore the following prescription is to be given.

R̄. *Aloës*



Ry. Aloës opt. ʒj.

Resin. Jalap. gr. xv.

Colocynth. gr. v. (pro stimulo.)

M.

*Fiant Pilule, sing. gr. iij. quæ deaurentur. Capiat ex iis sub Aurora, ubi adsunt signa solutæ pituitæ; & dormiat per horam unam vel alteram.*

*T A K E* of the best Aloës one dram, of Resin of Jalap fifteen grains, of Coloquintida five grains, for a stimulus; mix them and make a mass, of which make Pills of three grains, and gild them. Take of them early in the morning, where there are signs of dissolved Pituita; and sleep an hour or two after them.

Now let us see, what give a greater force to the Bowels, so that they may make good Chyle, and propel it into the Lacteal Vessels. The force therefore of the first Bowels is increased, namely by increasing the *contractile* force of them, by all those which make the Fibres more rigid: such are *astringent* Medicines, as 1. *Steel*; for nothing is of more service in this case, especially if it be given under such a form, as not to mix with the Blood, but to act on the Solids, by corroborating the *Fibres*; for if it is mixed with the Blood, it becomes highly *coagulating*: but being taken with the *regimen* mentioned above, it acts very well, and strengthens the *Fibres*; as is manifest from this, that after the *use* of it, the *pale* colour of Virgins is soon turned to *red*, and the Pulse, which before was *languid*, to an almost *feverish* one. But the *use* of it obtains, when a due *rigidity* of the Bowels is wanting, and there is a plenty of *Pituita*: moreover, if an *Acid* abounds, then it



may be taken in *substance* or *filings*; but if a *sluggish* and *not acid* Mucus predominates, the *Steel* may be given in *Rhenish Wine* or *Vinegar*; other preparations are mere trifles. Besides hither belongs, 2. The *Peruvian Bark*, in whatsoever form it is given; and here it obtains the next place to *Steel*. 3. *Rhubarb* and *Rhaphontic*. 4. *Tamarisk*, and especially the *Bark* of it's root. 5. *Caper*; and various compounds of it. Hence therefore it appears, that the greatest *Astringents* may become *Emmenagogues*.

Now follow examples for *forms*. If an *Acid* predominates, it may be known by an *appetite* to improper and unufal things, *sower eruētations*, *gripes* with a sensation of cold, *nidorous eruētations* after taking *Vinegar*. In this case therefore,

R $\acute{x}$ . *Limat. Ferri* (*supra porphyritim diu trit.*) ʒij.

*Extract Rhei* ʒj.

*Cort. Peruv.* ʒss.

M.

*Fiant Pilulæ, sing. gr. v. Capiat unam omni bihorio.*

*T A K E* of *Filings* of *Steel* (*ground a long time on a Porphyry stone*) *two drams*, of *Extract* of *Rhubarb* *one dram*, of *Peruvian Bark* *half a dram*. *Mix them, and make Pills, each of five grains*. *Take one of them every two hours*.

BUT if the *Acid* does not abound, then *Steel* it's self given in *substance* for the most part excites anguishes, vomitings, *diarrhæas* and gripings; for it is not *dissolved*, but acts only by *stimulating*. In this case therefore,

R $\acute{x}$  *Vin*



R $\acute{e}$ . Vin. Rhen. ℥ iij.  
 Chalybis contrit. ℥ij.  
 Cort. Peruv. ℥j.

*Leni tepore macerentur per 24 horas ; deinde vacuo stomacho ter de die una hora ante pastum, sumatur ex hoc ℥j℔.*

*TAK E of Rhenish Wine three pints, of Steel in powder, two ounces, of Peruvian Bark one ounce, macerate them in a gentle heat for four and twenty hours ; and then take an ounce and half, three times a day, on an empty stomach, an hour before eating.*

*HITHER also belong those warm and stimulating Aromatics, which afford a great deal of very acrid Oil by distillation ; as Thuya or Arbor vitæ, Savin, Rue, especially the mountain Rue, Rosemary, Penny-royal, Marjoram, Feverfew, &c.*

*THE second kind of Medicines causing a Plethora, are those which increase the Blood-making power in the Heart and Blood Vessels. Now that power is no other than the oscillatory force of the Vessels : and this is increased by the same Medicines, which have been already prescribed for the Vessels of the first kind, or those which serve for Chylification : all therefore which promote Chylification, are sufficient also to promote Sanguification ; for it is impossible for the first passages to be amended, without amending the second ; or for the second to be amended without amending the first. But hither also should be added the motion of the Body in a free Air.*

*THE third kind of the said Medicines includes those which hinder the too great consumption and dissipation of the collected Blood. Therefore we should*



should avoid whatsoever excites sweat or *too great* perspiration.

9. THE *second* Class of *Emmenagogues* contains those which determine the *plethoric* Blood to the Womb : and such are all that diminish the *resistance* in the uterine Vessels, and at the same time increase it in the others. But the *resistance* of the uterine Vessels is diminished *two ways* ; 1. By *relaxing* those Vessels : 2. By *accelerating* the *reflux* of the Blood from the lower Veins toward the Heart. I therefore divide the Medicines of this *second* Class into *two* kinds.

THE *first* contains those which *relax* the uterine Vessels : such as, 1. All *warm Baths*, applied as far as to the Navel ; for by this means the Vessels of the lower parts are *relaxed*, whilst the Vessels of the upper are *constricted* by the coldness of the Air ; especially if those upper parts are placed in a cool Air. 2. Any *external* heat, applied to the lower parts. 3. *Ointments*, which consist of fat, oily and saline Aromatics ; such as *Unguentum nerinum*, *Martiatum* and *Arthriticum* : for such being laid to the Feet, Legs and Groin are very serviceable. Hither also belong relaxing and warming *plasters*, and especially those which are prepared of the *fetid Gums* ; which *relax* the Vessels, and at the same time restrain the *perspirable humour*, whence a greater *beat* arises under the form of a continual *Bath*. Hither also belong the *uterine Plants* ; among which the best are *Rue*, *Savin*, *Juniper*, *Arbor vitæ*, *Marjoram*, *Penny-royal* : of which may be made Baths, Cataplasms, Ointments, and Plasters.

The *last* kind of Medicines of the *second* Class includes those which accelerate the *reflux* of the Blood from the lower Veins toward the Heart : such as the following : 1. All *Frictions* continued from the bottom of the Feet to the Groin, and  
that



that by warm and dry linnen cloths, for half an hour every time. 2. *Walking*; for the *tibial*, *crural* and *femoral* Muscles compress their Veins by frequent action, and propel the Blood toward the upper parts. 3. The *motion of leaping*; which indeed is of so much consequence, that HIPPOCRATES says it will procure *Abortion*. But all these provoke the *efflux* of the *Menses*, by removing the *resistance* in the Veins: for when this is removed, the Blood flows in a *greater* quantity toward those parts; whence there is a *greater pressure* of the Blood into the *lateral* Vessels; and hence follows the *excretion* of it.

10. THE *third* Class of *Emmenagogues* contains those which dispose the uterine Vessels to *excretion*: such as *vapours of fair warm Water* applied to the lower parts of the Body. 2. *Relaxing Fomentations* applied by means of sponges or linnen cloths to the Groin, *Perineum*, *Vagina*, *Hypogastrium*: hither also belong *Cataplasms*, *Plasters*, *Pessaries*, and such like, consisting of *Relaxers*; the materials of which may be taken from the former doctrine of *relaxing* Medicines. 3. Here a *vapour* of some *Acrids* is much commended; as of *urinous Alkaline salts*, received into the Womb, which however is not without danger, for it irritates vehemently, and causes a great contraction in the uterine *Fibres*; such a *vapour* therefore ought to be cautiously applied, for it often makes the Womb *barren*, and produces horrid contractions and spasms; for that *vapour* is most *acrid*, and inflames the Womb, whence a *Gangrene* or *Schirrhus* may easily arise; and if the Womb is violently inflamed, the whole nervous system is affected with spasms: wherefore if such a *vapour* is ever used, there should be great care taken, that it be not too *acrid*; let that *vapour* therefore suffice,  
which



which exhales from a small quantity of *Spirit* of *Sal Ammoniac* and a great quantity of *Water*, mixed and made warm; but by no means let that *very acrid vapour* be used, which a certain Empiric was accustomed to prepare for this purpose; namely a mixture of Urine and quick Lime set over the Fire.

### COROLLARIES.

I. HENCE it appears, that *Aristolochics* are *Uterines* of the *third Class*; for there a *Plethora* is supposed to be already present, and also a *determination* toward the Womb; for otherwise there is no occasion to move the *Lochia*.

II. *ECBOLICS* are the same, but *stronger*; to which if *Sternutatories* are added, then they act most strongly.

III. *ABORTIVES* are those which *open* the Womb, and *expell* the Fœtus and Placenta: such are 1. *Too great a quantity* of Blood. 2. All that *determine* strongly to the Womb. 3. Those which violently *constringe* the Womb: hither also is to be referred a *vapour* of *Sal Ammoniac*, received into the Womb of a *pregnant Woman*; than which there is not a more powerful *Abortive*; but the danger of it is great, as was said above.

IV. ALL *Ecbolics* and *Abortives* are to be given with great caution; for they all do *harm* to the Body, and are very dangerous, not only to the *Fœtus*, but also to the Mother.



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## The Third CLASS

*Of some other MEDICINES which act on the SOLIDS and FLUIDS together.*

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### CHAP. I.

#### *Of APERIENTS.*

1. *APERIENTS* are those Medicines which open the obstructed passages. Of these there are three Classes, of which the first contains all that relax the Vessels; of which before. The second contains those which attenuate, resolve, and dilute the Liquids; of which also I have treated already; lastly, the third includes whatsoever, after the Vessels are relaxed, and the Liquid attenuated, drive both into motion, and promote the Circulation.

2. FOR to open any obstructed Vessel, these three things are necessarily required; 1. That the Vessels be relaxed. 2. That the obstructing matter be resolved, or at least diluted. 3. That the Circulation be promoted in this Vessel.

COR. HENCE therefore it appears, how rashly some assert, that there are *specific Aperients*; such as *Scordium*, *white Horehound*, *Spirit of Sal Ammoniac*, &c.

### CHAP.



## CHAP. II.

## Of DISCUTIENTS.

1. **D**ISCUTIENTS are those which dissipate the Liquid, either in the Vessels, or extravasated, stagnating or coagulated without any sensible solution of continuity in the external parts. Now these are so many as there are different causes of stagnation or extravasation.

2. A LIQUID stagnates in the Vessels, and becomes a tumour; 1. From a *Plethora*; and then the tumour appears *red*: in which case the best *Discutient* is the evacuation of the Liquid which presses behind upon that which stagnates; hence therefore *bleeding* may remove these *red* tumours. 2. Such a tumour arises from inflammation: and then the true *Discutients* are ( $\alpha$ ) whatsoever relaxes the Vessels. ( $\beta$ ) Every thing which variously moves the relaxed Vessel, by applying such moving powers as are very contracting and dilating; this is done by *bleeding*, and external *Frictions*. ( $\gamma$ ) Whatsoever revulses, resolves, attenuates, and dilutes the Liquids, by emptying the Vessels. 3. A tumour derives it's origin from the thickness of the gathered or coagulated Liquid; and this is *discussed* only by an *aperient* Medicine.

3. EXTRAVASATED Liquids are also *discussed*, when they are driven again into their own Vessels: and this is obtained, 1. By freeing the absorbent Vessels, as much as possible, from the distending Liquids



Liquids ; and these absorbent Vessels, which were spoken of before, in PROLEG. CAP. V. were discovered by VIEUSSENS, by the help of Microscopes, in many of the Bowels, and end in Veins after the same manner as the Excretory Vessels arise from the Arteries : consult this AUTHOR'S *Novum Vasorum Corp. Hum. Systema*, page m. 23. & seq. Now this may be done by copious *bleeding*, or by the use of *Hydragogues*, where *bleeding* is not proper : which *two* do not weaken in this case, but rather restore ; whence at that time they are of great service, provided they can be administered together. 2. The same is obtained by means of all *Aperients*. 3. By an *external*, or *pressing*, or *drying power*, applied to the Body. Moreover, it is to be noted, that *Discutients* are of no force against *Schirruses*.

## C H A P. III.

## Of E M O L L I E N T S.

1. **A**N Emollient is every thing that reduces any part of our Body, that is indurated, and compacted into one mass, to it's former state of a contained Liquid and a containing Solid. Induration happens in our Bodies principally after three ways ; 1. By a too great coëtion and pressure of the Liquids ; for by this means the more fluid parts are expressed, and the thicker are driven into a more compact mass ; whence it happens, that the Vessels being partly emptied, in a very short space of time, concrete and consolidate into one ; or the thick Bodies stagnating or being impacted, concrete



concrete with their Vessels. 2. By a *coagulum* which arises from the proper nature of the Liquids: now that there may be such a *coagulum* appears from the *white of an egg*, which is *coagulated* by the Fire, tho' it remains inclosed in the shell. 3. By a super-induced *coagulum* by the mixture of any *coagulating Body*.

2. *EMOLLIENTS* are either *internal* or *external*. Those which we call *internal*, are, 1. Those which are used under the form of *Halituses* or *Fumigations*, either drawn in or injected: such is *Water* dissolved into a *vapour*, than which nothing is more *Emollient*; but it should not be too *hot*, for then it *constricts*, but moderately *warm*, and then it is the greatest *Emollient*; as appears in *Bones* and *Horns philosophically calcined*; which are more *softened* by vapour than by boiling. 2. *Emollients* which are taken *inwardly* are *Broths* prepared of all parts of *Animals*, and especially of the *Mesentery* and *Intestines*. 3. *Raw yolks of eggs*; which dissolve *Resins* and *Gums*, though they have no *Acrimony* in them. 4. Any *decoctions* of mild *farinaceous* substances, especially of the *frumentaceous*; which being expressed afford a most mild *Oil*, resembling the *Oil* of sweet *Almonds* in it's mildness: such are *Rie, Wheat, Oats, Barley, Millet, Pistachios*, but especially the meals of all these: also the *four greater and lesser Cold seeds*. 5. *Decoctions* of mucilaginous and mealy herbs, almost insipid: such herbs are all the species of *Mallow, brank Ursine, Mullen, Pellitory, Mercury, Violets, Liquorice, red Poppy, Soapwort, &c.* which are all known by the visciduity of their juice. 6. *Decoctions* of like sweet mucilaginous *Fruits*: such as *Figs, Sebestens, Raisons, Currants*. 7. *Juices* of plants that are not acrid: such as *Honey, Sugar, Cassia, Manna*. 8. *Expressed Oils*, almost insipid: as *Oil of sweet Almondst,*



*Almonds, Coco Nuts, Pistachios, white Poppy seeds, Henbane seeds, Olives, Linseed, Walnuts, &c.*

9. Sweet Cream, and fresh Butter.

3. *EXTERNAL Emollients* are the same; but they are applied in form of a Liniment, Ointment, Fomentation, Bath, Vapour, Cataplasm, Plaster, Embrocation.

*LINIMENTS* are made of a fat, chylous, marrowy, compacted substance, rubbed on the Body, as of the *marrow of Bones, &c.*

*OINTMENTS* are thicker Liniments; consisting of some Oils and Fat.

*FOMENTATIONS* are decoctions applied warm to the Members by spongy Bodies.

*CATAPLASMS* are *Emollients* boiled in Water, and applied to the Body.

*PLASTERS* are of the same kind, but reduced to a thicker consistence.

*EMBRICATIONS* are a kind of Fomentation, when the fomenting Liquor is let fall by drops on the part to be fomented.

OF all these *Emollients*, there is none better than the *warm vapour* of an Animal *newly killed*; for example, if an Arm or other Member, is put naked into the Body of any Animal *newly killed*, which remedy is no where more in use than in *Italy (a)*.

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BUT

(a) Our AUTHOR no doubt alludes to that memorable case, which the Historians relate of Pope ALEXANDER VI. and CÆSAR VALENTIN BORGIA his natural Son; who having a design to destroy some Cardinals, whose wealth they longed for, by poisoning them at an entertainment, it happened, by a mistake of the Cup-bearer, that the poisoned Wine was drank by the Poisoners themselves: upon which it happened, that ALEXANDER soon died; but the Physicians saved CÆSAR, who had drank less liberally of it, by the administration of seasonable remedies; and especially by inclosing him naked in the Belly of a Mule just killed: by which fomentation his Skin was  
so



BUT all these have this good on them, that they are applied to *indurated* places, yet they are never *noxious*, seeing *Aperients*, &c. often increase an inflammation, and generate *Schirruses* and *Cancers*.

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## C H A P. IV.

### *Of Astringents and Induraters.*

1. OF these Medicines, and also of *Corroboraters*, we have treated already in the history of Medicines, *which operate on the Solids*, under the title of *Contracting Medicines*; and in the history of those *which act on the Fluids*, under the title *Condensants, Incrassants, and Coagulaters*. In this place *Astringents* are considered, so far as they increase the *contractile force* of the Vessels, and at the same time *inspissate* the Liquids: of this sort are all *unripe fruits*; for these *shorten* the Fibres, and *condense* the Liquids.

#### 2. THOSE

so *softened*, and such a *Diaphoresis* promoted at the same time, that the *Poison* went out, being *dissipated* by the orifices of the cutaneous Pores, that were every where open; and so that Prince escaped *death*, but he lost all his *Hair* and his *Skin*, and was thereby for a long time *afflicted* with a troublesome disorder. Consult OLDONINUS, in *Addit. ad CIACONIUM, Histor. Pontif. Rom. & Cardin. Tom. III. page m. 161 & 162*. The Reader may consult other Authors also on this subject, as GUICCIARDIN, AUBERIUS, MARIANA, &c. See also MARC. AUREL. SEVERINUS, in *Trimembr. Chirurg. Cap. de Medela ex dissecis vivis Animantibus, pag. m. 221*. A like case is related by RHODIUS, (*Observ. Medic. Centur. III. Obs. 37.*) of the Marquis FRANC. ALVAROTI, who had drank Wine poisoned with *corrosive sublimate*, and preserved after the same manner as CÆSAR BORGIA,



2. **T H O S E** also which are called *indurating* entirely agree with *Astringents*, and are of the same nature; and therefore it is not necessary, that we should say any thing about them. But now we must treat of *Detergents*, *Emundants*, and *Erodents*.

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## C H A P. V.

### Of Detergents, Emundants, and Erodents.

1. **D E T E R G E N T S** are those, which being applied to the Body can remove any foreign Body that adheres, without injuring the Body to which it adheres. We call that foreign, which cannot constitute one Body with that to which it adheres; such as a grume of Blood sticking to the sides of a Wound: but this *adhesion* ought to depend on *tenacity*; for a Dart or a Spine sticking to any part does not in the least belong hither.

**T H E** object therefore of a *detergent* Medicine must be something *tenacious*; which necessarily consists of an *indurated* Oil, for other *indurated* or *coagulated* Bodies do not adhere because of their *viscosity* and *tenacity*. Thus therefore a *Detergent* ought first to divide that *tenaciousness*, and then reduce it to such a state as to be *dissolvable* in Water, and capable of being washed away by it; but as it is Oil, it cannot be *washed away* by means of Water alone; but if it be first rubbed with the yolk of an Egg, it may afterwards be easily mixed with Water, and brought out.



## 276 *Of Detergents, Emundants, and Erodents.*

HITHER therefore belong all *saponaceous* Bodies, and *Lixiviums*, that are very *alkaline*; for those *two* so dispose the *tenacious* Body, as to make it mix with the Water. Moreover all Oils mixed with Salts are *saponaceous*; but if these are given *internally*, they ought to be *mild*, for otherwise they will *erode*: they are of two sorts namely, 1. *Native*: among which the principal are, *Honey*, *Aloës*, *Manna*, *Cassia*, *Sugar*, every *mild milk* of Vegetables, as of *Lettuce*, *Succory*, *Dandelion*, *Scorzonera*, and the *juice* of *Soapwort*. Hither also belongs the *Bile* of Animals; which is of excellent use in detaching glutinous and sordid Ulcers. Hither also belongs the *yolk of an Egg*; which is the best, if it be mixed with a little *Bile*. 2. *Artificial*: as *Venice Soap*, and *black Soap*, *Sal volatilis oleosus*, *Sal regeneratus* SENNERTI, *tincture of Tartar*, with *fixed Salt* and *Spirit of Wine*; also *Elixirs* compounded with *alkaline Salts* and *Water*.

2. *EMUNDANTS* are those, which *de-terge* and *wash away* at the same time, by an *aqueous vehicle*. Hither therefore are referred all which melt what *adheres*, and dilute and expel it by an *aqueous vehicle*.

3. *ERODENTS* are those which *resolve* not only the *adhering tenacious Body*, but also the *half corrupted scraps of the Vessels*, even to *live flesh*: but they ought to leave the *live flesh untouched*, otherwise they would be properly *Caustics*.

THE following therefore are *Erodents*; 1. All that *excite pain*, which have been described already. 2. *Attenuants*, *Resolvents*, *Putrefiers*. But if any malignant Ulcers (which always are *seated* in the fat, because they easily creep there, and are called *phagedenic*) are to be cured, we can do nothing in them, unless the Liquids are greatly moved and expelled by *internal Medicines*, and the separation



ration be made by *external Corrodents*; of which the chief are the *Mercurial Precipitates*, laying a *warming* plaster over them: the next day take away what is putrified, and apply the *Precipitate* anew, 'till all are consumed that ought to be consumed; that is, till all the infected Glands are taken away: but if any one does not care to use *Mercury*, on account of the *stink* that is occasioned by it, then *volatile urinous Salts* may be used, with *copper* dissolved in them; therefore let the Ulcer be touched with this solution, which is very good; or instead of it with *Elixir Proprietatis* prepared with Salt of Tartar and fair Water,

## CHAP. VI.

## Of HEATERS.

1. *A HEATER* is that which increases the heat of the Body. But that we may the better understand the manner of it's operation, I shall premise some things concerning heat in general.

2. *WHATSOEVER* of cold becomes hot, is heated either because *fire* is actually applied to it, or because a *motion* is caused in it by attrition. There are *three* things necessary to produce heat by *attrition*; namely, 1. The *contact* of Bodies, 2. The *motion* of Bodies. 3. The *pressure* of Bodies to each other. And unless all these *three* concur together, heat cannot be produced; for the *contact* of Bodies without *motion* and *pressure* or *attrition*, does not make heat; but a *slight attrition*, that is, without a notable *pressure* of the Bodies to each other,



other, excites no heat, or at least not any that is sensible.

3. HENCE therefore it follows, 1. That the more points the Bodies that make *attrition* touch one another in, or which is the same, the greater their surfaces are, according to which they touch one another, the rest being equal, the greater will be the heat excited by *attrition*. 2. That the more violent the *motion* of the Bodies that make *attrition*, being repeated at short intervals and long continued, is, the greater will be their heat, the rest being equal. 3. That the greater the *force* is, by which these Bodies are applied to each other, in like manner, the more their heat increases. To these *three* AXIOMS, for that they are such, any one who attends to them will easily perceive, I shall add a *fourth* which has been universally confirmed by experience; 4. That the more *solid*, the more *hard*, the more *elastic* any Body is, the rest being equal, the stronger it's heat is, by the *application* of actual Fire, or by the *attrition* of another Body.

4. BUT our Body may be *heated* either *externally* or *internally*. But heat is excited in our Body *externally*, 1. By the application of *Fire* or any other *hot* Body. 2. By *friction* and *attrition*. And heat may be excited *externally*, 1. By the exciting of *external* heat. 2. By the *attrition* of the Solids against each other; also by a like *attrition* of the Fluids against each other. Moreover the solid parts may suffer *attrition* against each other in all the Joints; but as in them, beside the *bound* and *binding* parts, there are also *lubricating* Liquids, which lie between the parts; it is very manifest, that so long as *that* Liquid is at hand, the heat cannot be so increased by *attrition*, as to become morbid; but as soon as *that* Liquor fails, then



then the heat increases too much, by the *attrition* of the solid parts; as in the Gout, Rheumatism, Scurvey, &c. 3. Heat may be excited by the mutual *action* of the Solids and Fluids on each other.

**THEOR. I.** IF the *velocity* of the projectile motion is increased in our Body, the Vessels and Liquids remaining the same, the heat also will be increased by **AXIOM. 2** and 3. Hence therefore whatsoever increases the *velocity* of the circulation, is a *Heater*; and therefore the *first* Class of *internal Heaters* contains all those which *increase* the circulation, either by stimulating the Solids, or moving the Liquids: such are all *Acrids*; hence Spirit of Wine, so far as it stimulates, is a *Heater*.

**COROLL. I.** IF the heat be increased in our Body, the Vessels and Liquids remaining the same, it plainly indicates, that this projectile motion is increased.

**THEOR. II.** IN our Body, the Vessels and projectile motion remaining the same, if the *thickness* of the Liquid is increased, the heat also will be increased by **AXIOM. 2, 3, and 4.** The *second* Class therefore of *internal Heaters* contains those which *condense* the Fluids: hence also cold *beats* the more, as it *acts* the more, if it does not suppress all *motion*; for it *condenses* our Liquids: therefore after great *external* cold, there always follows a greater *internal* heat; and **HIPPOCRATES** has observed, that *Bellies, or Cavities* containing Liquids, *are hotter in Winter and Spring than in Summer* (a).

**COROLL. II.** IF the heat be increased, the Vessels and projectile motion remaining the same, it plainly indicates, that the *thickness* of the Liquids is increased. The proper remedies therefore are the *rarefying*.

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THEOR. III.

(a) *Aphorism. sect. 1. Aphor. 15.*



THEOR. III. IN our Body, the Liquids and projectile motion remaining the same, if the Vessels are *straitened*, the heat will be increased by AXIOM I. Hence also the *third* Class of *Heaters* contains, 1. All that *compress* the Vessels; such as *strait cloaths*, *thick bedding*, *heavy Air*, *cold Water*, and *cold Air*; therefore whosoever is subject to *Hæmorrhages*, ought to avoid them, as much as possible. 2. Those which *contract* the Vessels. (See the *Chapter of Contracting Medicines*.) 3. Those which *bind* the Vessels *externally*; provided they do not hinder the *motion* of the Blood.

COROLL. III. IF the heat is increased, the Liquids and projectile motion remaining the same, the Vessels must necessarily become *more strait*: hence the Liquids being very much diminished, the heat may remain in some *diseases*, as in a *Consumption*; for all *hectic Persons* are dried by the heat, whence their *Fibres* become most rigid and most contracted, and because of the *marasmas*, many of their Vessels *fall together*, and therefore in the rest of the Vessels the Fluid is greatly *straitned*, though this also is diminished.

COROLL. IV. IF the *velocity* of a Liquid and it's *bulk* be at the same time increased, the rest remaining the same, the heat will be in a *proportion compounded* of both; and in general, if any *two* of these be increased, the *third* in the mean time remaining the same, then the heat will increase in a *proportion compounded* of the two that are increased.

COROLL. V. IF the *velocity* and *bulk* of a Liquid, and at the same time the *straitening* of the Vessels be increased, a *very great* heat will arise.



## CHAP. VII.

## Of COOLERS.

1. *COLD* is excited in our Body by causes opposite to Heaters. Therefore external cold is caused, 1. By the application of cold Bodies: and these, as Experience teaches, cool the more, as they are more solid; for thus cold Water cools more than cold Air; and Baths of fair Water cool less, than those which are made of salt Water. Hither also are referred Winds and Fans; which cool the Body so far as they remove that part of the atmosphere which immediately surrounds us, and substitute another; for that part of the atmosphere which immediately surrounds any hot Body, is always warmer than the more remote parts of it. 2. By taking away the attrition of all externals on our Body.

2. Now internal cold is, 1. From external cold. 2. By removing or diminishing the mutual attrition of the internal parts, both Solids and Fluids: therefore there cannot be a greater cold given to our Body, abstracted from external causes, than that which is produced by death.

THEOR. I. IN our Body, the Vessels and Liquids remaining the same, if the projectile motion be diminished, the heat also will be diminished or the cold increased by the second AXIOM of the preceding CHAPTER, sect. 3. Hence therefore the first Class of Coolers contains those which diminish the projectile motion: but this depends on the contractile force of the Solids, and that on the Stimulus applied to the Solids; for the greater the motion



*motion* is, the greater is the *force* of the Solids, and on the contrary. Whatsoever therefore destroys the powers of *Stimulators*, is to be accounted a *Cooler*: such therefore are the following; 1. All *Diluters*; such as *Whey*, *Water*, *Milk and Water*, &c. all which, if they are taken *warm*, act the better, by penetrating and relaxing. 2. *Obtundents*; or those which break an *acrid Stimulus*; such as any *Acids* with regard to *Alkalines*, and *Alkalines* with regard to *Acids*: hence if heat arises from an *Acid*, as often happens in hypochondriacal Persons, then *Alkalines* will be *Coolers*; but if an *oily Acid* is the cause of *heat*, then *saponaceous Acids* will be *cooling*, such as the *juices* of seasonable Fruits fresh squeezed; nay and *lime* dissolved in *Water* is a *Cooler*, with regard to *oily Alkalines*. 3. *Involvents*; namely those which involve a *stimulating Acid*: of this kind are all gelatinous, farinaceous, terrestrial Fat, mild *Oils* of Vegetables; hence *Ptisans* prepared of such *cool* excellently. 4. *Expellents*; namely those which shake off an *impacted Stimulator*, and derive it without the Body: therefore in this case *Coolers* are those, which being considered by themselves are *heating*; as *Purgers*, *Vomitories*, *Diuretics* and *Diaphoretics*.

THEOR. II. IN our Body, the rest being equal, if the Vessels are *less elastic*, a *cooling* will arise by AXIOM 2, 3, and 4, above. The *second* Class therefore of *Coolers* contains *Relaxers*; and thence a reason may be given why Baths *cool*.

THEOR. III. IN our Body, if, the rest remaining the same, the *density* of the Liquid be diminished, the heat also will be diminished by AXIOM 2, 3, and 4. Now the *density* of a Liquid is diminished by attenuating and diluting. The *third* Class therefore of *Coolers* includes *Attenuants* and *Diluents*: such are all *watery Bodies*,  
and



and also *Nitre*, which greatly attenuates, hence all *nitrous* Plants are here the best. Thence it appears why in inflammatory diseases, when the Blood is the *thickest*, *Attenuants* are so much extolled.

THEOR. IV. IN our Body, all the rest remaining the same, if the Vessels are rendered more *capacious*, the heat will be diminished by AXIOM I. Therefore the *fourth* Class of *Coolers* contains all those which increase the *capacity* of the Vessels: such as *Moisteners*, *Relaxers*, *Aperients*, *Deobstruents*. And hence it appears, why a storm of *thunder*, which renders the Air *light*, is often immediately succeeded by *cold*. Thence also it is manifest, why those who wear *loose* garments, or lie in bed with *few* cloaths, are *cold*; also why Men who have *lax* Vessels, as also fat persons and Women, are for the most part *colder* than others.

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## CHAP. VIII.

### Of *Attractives or Drawers.*

I. **A**TTRACTIVES or Drawers are such as transpose any thing that sticks in our Body, by drawing it from the place where it sticks into another. But to do this, there are three things necessary; 1. That the matter be rendered *penetrable* or *fit for motion*. 2. There are *causes* required which may drive the matter being rendered *penetrable* into the destined place, or which being applied to the destined place may draw the matter to the same place. 3. It is required that the intermediate passage be *free*, by which the matter being



being *drawn* or *repelled* may come to the destined place, without hindrance.

2. HENCE therefore there are *three* Classes of *attracting* Medicines, which follow.

I. THE *first* Class contains all those which render the matter *penetrable* : as 1. Whatsoever *stimulate* the Solids ; of which hitherto. 2. All that render the matter *moveable* : such as *Attenuants*, *Resolvents*, and *Diluents* ; of which also I treated above.

II. THE *second* Class contains all those which produce a *motion* and *translation* of the matter rendered *penetrable* : such as, 1. Whatsoever *drive* the matter from the place where it was to be moved, into a determinate place ; as ( $\alpha$ ) The *force* of the Heart and Arteries. ( $\beta$ ) The *motion* of Friction, and Compression in the Vessels which are destitute of *valves* ; thus by means of *constriction* the tumours are transferred from place to place. All that diminish the *resistance* in the place, into which the matter is to be moved : such as ( $\alpha$ ) The *opening* of a Vein or Artery ; thus we may evacuate the whole mass of Blood by one Artery : moreover *Scarifications*, *Issues*, *Setons*, *Fistulas*, *Cauteries*, and all such *erodent* remedies conduce to this end, by taking away the *resistance*. ( $\beta$ ) *Friction* ; which takes away the *resistance*, so far as it promotes the *motion* of the Blood through the Veins. ( $\gamma$ ) Whatsoever takes away the *pressure* in the place of the external Air ; as *Cupping-glasses* and *Suction* : hence HIPPOCRATES advises to apply broad and large *Cupping-vessels* in a Pleurisy ; that all the inflammation may be derived to the Skin. ( $\delta$ ) *Emollients* or *Relaxers* ; of which hitherto.

3. All *specific drawers* : such as *venomous* Animals, which being applied either living or dead to the Body, are said to *draw* to themselves the *venom* of  
their



their own nature; thus a *Scorpion* being crushed upon the wound which he has made, and a *Toad* being applied, either alive or dead, draw out their own *venom*: thus the *flesh* of a mad *Dog* being applied to the wound which he has made, before the *poison* has spread it's self too far, cures some that have been bitten: thus also the *Serpent-stone*, if it be applied to a wound inflicted by a *venomous* Animal, is said to stick there, 'till it has drawn out all the *venom*, and then to fall off of it's own accord; they relate also that, if after it is fallen off, it be put into Milk, it will be purged, and recover it's virtue (a).

### III. THE

(a) Such *Specifics* have not been so far confirmed by experience, as to gain any *great credit* among the Physicians: whence we may conclude that these, excepting only the *crushing* of a *Scorpion* upon the Wound, are not only *uncertain* but even *frivolous*; wherefore it would be most injudicious and rash, to trust to these alone, while there are more approved and more efficacious remedies: as to the *application* of a *Toad*, or the *Flesh* of a mad *Dog* to the wounds which they have inflicted, they are acknowledged by many of the most skilful Naturalists to be mere trifles and old Womens stories: nor does our most excellent AUTHOR himself propose this last *specific drawer* for the cure of a *Hydrophoby* in his *Golden Aphorisms*; but rather opposes and subverts with great justice all the *Specifics* that have hitherto been cried up for that disease (*Paragr. 1147*). But what shall we say of the *Serpent-stone*, the *virtue* of which, as related in the *text*, very many AUTHORS extoll with so great encomiums, and strive to support with so many experiments; among whom the chief are those famous Philosophers, the honourable Mr BOYLE, in his *Treatise of specific Medicines*, and ATHANASIUS KIRCHER, in his *China illustrata*? This question has been long ago answered by FRANCISCUS REDI in his *Epistle to KIRCHER, concerning natural experiments, pag. 3. & seq.* and by many experiments proved that the *virtues* of this *stone*, however boasted, are quite *vain*. On the same account may be consulted ENGELB. KÆMPFER, *Amœnitat Exoticæ, fasc. III. Observ. X. sect. 2.* If the Reader desires to see more on this subject, he may consult also DALE, *Pharmacolog. Supplement. page 381, & seq. Edit. Lond.* who has



III. THE *third* Class contains those which *prepare* the intermediate way; such as, 1. Those which *relax* the Vessels. 2. Those which render the Liquids penetrable. 3. Those which by procuring suppuration, make the passage open.

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## CHAP. IX.

### Of Repercutients or Repellers.

1. **R**EPERCUTIENTS are those which *repel* the matter sticking in any internal part of the Body, toward some other still more internal. The action of these is the same with the operation of *Drawers*, only that one is *from* and the other *to*.

2. HENCE also there are three Classes of those Medicines.

I. THE *first* Class of *Repellers* does not differ from the *first* of *Drawers*.

II. THE *second* Class contains, instead of *Drawers*, which cannot conveniently be applied internally, various *evacuations*; such as *purgations* by *Hydragogues*, *Bleeding*, *Salivation*: all which operate so far as they revulse the matter from a place.

III. THE *third* Class includes, 1. All that are *actually cold*; for the Fibres being constricted by cold, drive the matter toward the *more inward* parts;

has made a good collection of the various *Opinions* of *Authors*, concerning the *nature* and *virtues* of this stone; and has added besides, "that a Boy of *three* years old, who had "taken some *Arsenic* in Milk, was freed from impending "death, merely by the repeated application of one of these "stones." But I cannot be persuaded to believe it.



parts ; thus therefore *cold* Water, *cold* Vinegar, &c. are here of service ; nay the more thick and the more compact a cold Body is, the better it operates. 2. All *styptic*, *contracting*, and *constipating* Medicines externally applied.

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## CHAP. X.

### Of Suppuraters and Ripeners.

I. **SUPPURATERS** are those which convert any part of a living Body into Pus ; I say of a living Body, because no one has hitherto been able to convert the Solids or Liquids of a Carcass into Pus. Now Pus or Matter, is a thick substance, and though fat, yet capable of mixing with Water, of a whitish colour, and of no smell or taste, provided it be *laudable*.

2. THERE is never any *suppuration*, unless the Vessels are burst, so that the Liquor flows out ; for Pus was never observed to flow out of any bursten Vessel, immediately on it's bursting ; but that Liquid then flowing out, becomes Pus after some time, by stagnating ; as appears even from hence, that if a Wound be continually absterged, there will be no Pus found in it : therefore the extravasated Liquid by stagnating is converted into Pus by means of heat ; for the most liquid part then exhales, but the more viscous remaining constitutes Pus : and this, so long as it continues mild, is a good balsam ; but by continuing longer, it is turned by the same heat into a most thin Liquid, yellow,



yellow, grey, reddish, and at last black, acrid, eroding hurtful to the Nerves.

3. A SUPPURATING Medicine therefore is whatsoever bursts the Vessels, and pours out the Liquid, and mixes it, being poured out, with the broken Solids, dissipates what is most liquid, and at last moves and concocts the rest.

4. SUPPURATION is required, where the impacted matter cannot be *resolved*, and *resorbed*, after it is extravasated. It must be avoided therefore, where the *peccant* matter cannot be converted into *Pus*, as in a Schirrus, Cancer, Exostosis: it should be avoided also in places whence the *Pus* cannot be drawn out after it is formed, as in the internal parts.

5. ALL Suppuraters may be reduced to the three following Classes.

I. THE first Class contains those which *dissolve* the Vessels by gently stimulating them, such as, 1. *Gums* having aromatic and moveable parts; as *Gum Ammoniac*, *Bdellium*, *Galbanum*, *Myrrh*, *Elemi*, *Opopanax*, *Sagapenum*, *Tacamahacca*, &c. 2. *Roasted Onions*, with *Flower* and *Oil*. 3. *Honey* mixed with other things. 4. Some Plants, as *Bay*, *Chamomile*, *Saffron*, *Melilot*, *Elder*, &c.

II. THE second Class includes those which join by the vital power the parts which before stagnated, and others which were separated from each other; and this is done by means of *Drawers*, which determine the *moveable* parts of the Liquids to the place where the *Pus* ought to be made: hither therefore belong, 1. All *warm watery* Bodies, which *relax* the Vessels; whence a greater motion arises to the above-mentioned place. 2. *Moisteners* or *viscous aqueous* Bodies: such as *Pimpernal*, *Duck-meats*, *water Lilly*, *Pellitory*, &c. all which contain *aqueous* and *glutinous* parts.

III. THE



III. THE *third* Class contains all those which by *restraining* the Liquids being moved into a determin'd place, hinder them from being too much *dissipated* by the heat of the Body : hither therefore belong all that so shut up the *pores*, that the matter may be retained, be moved in the mean time, and yet not *exhaled* : and these are *Emplastics* ; as, 1. *Aromatic Gums*, with regard to their *glutinous* and *slug-gish* part ; but with regard to their *acrid* and *volatile* part, they act by stimulating. 2. *Honey* rendered tenacious by boiling. 3. All *meals* of *Beans*, *Peas*, *Chiches*, *Linseed*, *Corn*, &c. 4. *Figs*, especially if the more *acrid* part be expelled by a gentle Fire. 5. *Wax*. 6. *Yolks* of *Eggs*. 7. *Fresh Butter*. 8. *Fats* of all *Animals*. 9. *Mild expressed Oils*. 10. The *Herbs* called *emollient*.

### COROLLARIES.

I. As there are *three* things necessarily concurring to *suppuration*, it appears from hence, how great the error of those is, who always esteem as *Suppuraters* some Medicines considered absolutely and in themselves ; whereas in reality they are not so, any farther than they are applied *jointly* with others.

II. VARIOUS forms of *Suppuraters* may be prescribed, and ought to be so, as the matter to be *suppurated* is more or less *moveable*, or more or less deep under the *Skin*, as it is in a part more or less *glandulous*. Therefore if a great inflammation is to be *suppurated*, then omitting the Medicines of the *first* Class, those only of the *second* and *third* ought to be applied ; but if there is a *tough* matter, and the vital power is *weak*, then there is need of the *Suppuraters* of the *first* Class.

Now follow some forms of *Suppuraters*, for the *three* differing Classes.



( $\alpha$ ) To suppurate a very hot inflammation;

*Rx.* *Acetose recent. M. jv.*  
*Butyr. recent. ℥ij.*  
*Farin. secal. q. s.*  
*F. Cataplasma igne lenissimo.*

*T A K E* of fresh Sorrel four handfulls, of fresh Butter two ounces, of Rie meal a sufficient quantity. Make them in a Cataplasma over a very gentle Fire.

*S O R R E L* is a resister of *Alkalines*, and *Rie meal* is the most ready thing to grow acid in heat; but in very hot inflammations, the Liquids always tend to an *alkaline* nature; and therefore this is the best form for pestilential *Buboes*: and there is no larger a quantity of *Butter* added, because a heavier plaster is not to be applied, for fear of a Gangrene.

( $\beta$ ) *I N* a cold case, or cold tumour with a sluggishness of the vital Power, and inhering Liquid.

*Rx* *Flor. Chamæmeli,*  
*Sambuci,*  
*Meliloti, ana ℥ij.*  
*Croci ʒ℥.*  
*Gummi Galbani (in vitello ovi soluti).*  
*Olei Chamæmeli, ana ℥j.*  
*Farin. Orobi q. s.*  
*F. Cataplasma.*

*T A K E* of the Flowers of Chamomile, Elder and Melilot of each two ounces, of Saffron half a dram, of Galbanum dissolved in the yolk of an Egg, and Oil of Chamomile, of each an ounce, of  
the



*the meal of Orobus a sufficient quantity, make them into a Cataplasma.*

THIS method of dissolving Gums is very good in cases where there is need of *opening*. But the following is the best form where there is danger of a *Schirrhous*.

(γ) To convert Schirrhous Glands into Pus,

℞. Mellis ad tenacitatem cocti,  
Ficuum recent. contus. ana ℥ij.  
Ceparum sub ciner. assat. ℥jv.  
Ol. Lilior. Alb. q. s.  
F. Cataplasma.

TAKE of Honey boiled to a tenacity, and fresh Figs contused, of each two ounces, of Onions roasted under the embers four ounces, of Oil of white Lillies a sufficient quantity. Make them into a Cataplasma.

THIS form elegantly promotes suppuration without a great inflammation: but if there is a *viscid tumour*, as in a venereal Bubo, then there is need of another form.

6. *RIPENERS* are those which so dissolve what are to be suppurated, that the whole matter gathers into one place, without any division or separation made by cells, to that end, that an outlet being made, the whole suppurated matter may be at once expelled. Now as what are to be suppurated are nothing but half broken Solids, and stagnating Liquids, a Ripener is nothing but a Suppurater a long time applied in such a manner, that all may be resolved by it.



7. BUT we know this *maturation* or *ripening* to be made by the very great *softness* and *fluctuation* of the part. But the longer the matter to be *suppurated* remains close, the easier it is *concocted*: and indeed the greatest care is to be taken, that all the indurated parts become *soft* quite round, before the Skin is opened: for when once that is done, what was not *suppurated* before can hardly be brought to *Suppuration*.





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# The Fourth CLASS

## *Of Topical* MEDICINES.

### THEOREMS.

#### *Of TOPICS in general.*

I. **A** TOPIC is a local Medicine, which heals any part of the Body by some action or force that is peculiar and appropriated to that part.

II. A Topic therefore ought to have such an action or force, as may specifically amend the Solids and Liquids of that part to which it is appropriated.

III. BUT it performs this, either because it tends to that part by it's own *bulk* ; or because it so *prepares* what are going thither, that when they are carried to this place, they act *topically*. Hence also a Topic is *twofold* ; either because it is applied to the part by it's own *bulk* and *substance*, and *acts* there ; or because it *prepares* other things which are sent to the part. Thus for example, a *Cephalic* is said to be that, which being received into the Stomach, and carried to the Head, *operates* upon it ; or which so *prepares* and *disposes* the Blood, otherwise unfit for it, that it may relieve and heal the Head,



IV. *WHATSOEVER* goes to any part, either tends thither by the law of universal circulation, or is determined *thither* by some other force.

V. *By* the law of universal circulation, there cannot be any *Topic*, unless there are some *mechanical* conditions in it, that it may go by the universal motion, to *one* place rather than to another. For example, if one globule of *Mercury* and another of *Wax* were projected together out of the Heart, these globules are of that nature, that the *former* would be carried towards the upper, and the *latter* towards the lower parts: for the globule of *Mercury*, being very heavy and solid, will preserve it's motion in a *right line*; and therefore will be carried to the Head: in the mean time the globule of *Wax*, being very light, will soon lose it's motion upwards and in a *right line*, and be thrust to the lower parts. The truth of this assertion may be evinced by the doctrine of the *projection of Liquids through Pipes*: it is manifest therefore, that there may be such Medicines; see *BOYLE of Hydrostatical Medicines*.

VI. *THE* determination to a *place* is obtained by *drawing* Medicines, of which I treated above.

VII. *ALL* that are called *specific Topics*, which operate, as was said before, either by being *applied* to the part, or by *preparing* what are going thither, act either by relaxing, or stimulating, or contracting, or condensing, or moving, or attenuating, &c. according to the doctrine already laid down concerning the *operation of Medicines*.

VIII. *HENCE* therefore it plainly appears, that the *power* of *Topics* consists in a *determination* to a certain *place*.

IX. *AND* therefore the whole doctrine of *Topics* consists in a description of the *determining* causes.

X. *ALL*



X. ALL *Topics* are usually divided, according to their effect, into *hot* and *cold*.

NOW these THEOREMS concerning *Topics* in general having been premised, it remains, that we treat of them in particular.

## CHAP. I.

### OF CEPHALICS.

1. **C**EPHALICS are those which peculiarly regard the Brain, and not the other parts of the Body. Now the functions of the Brain are two; ( $\alpha$ ) to secrete the Animal Spirits, and ( $\beta$ ) to distribute them afterwards: but that these functions may rightly proceed, there is required an adaptation of the Vessels, and a due solution of the Liquids; hence therefore whatsoever adapts the Vessels, and duly dissolves the Liquids, is a *Cephalic*.

2. **C**EPHALICS are of two sorts; namely,  
 1. *Hot*, which abound with a thin Oil, Salt, and Spirit: all Attenuants therefore belong hither, especially those which at the same time have a pleasant smell and taste; as *Southernwood*, *Betony*, *Germander*, *Calamint*, *Lavender*, *Marjoram*, *Balm*, *Mint*, *Origany*, *Rosemary*, *Sage*, &c. Hither also belong some *Insects*, as *Wood-lice*; also *Spirit of Castor*; also *Sal volatile oleosus*, aromatic Oils, &c.  
 2. *Cold*, namely those which affect the Nose with a grateful smell without heat; as *common Lilies*, *Lilies of the valley*, *Roses*, *Violets*, &c.



## C H A P. II.

## Of Ophthalmics, Odontalgics, Otagics and Stomatics.

I. **T**HE function of the Eye is to *see*; and whatsoever hinders this is said to be a *disease* of the Eye: such as the faults of the *Eye-lids* arising from a palsy or tumour, which by the way do not differ from *diseases* of the same name in other parts, hurts or inflammations of the *Cornea*; or horny coat of the Eye, it's *Phlyctenæ*, Hydatids, unnatural colour, opacity, exulceration, *cicatrix*, any Body growing to it internally: all which indeed are to be considered after no other manner than as if they *infested* any other part. Moreover that Eye does not *see*, which has any *disease* in it's humours, as a *Suffusion*, or a *Cataract*, &c. or because of the *faults* of the optic Nerve; or when the Lymphatics *swell*, which are largely dispersed through the *Retina*, as RIDLEY has demonstrated in his *Anatomy of the Brain*: but in these last cases, as nothing can be applied *externally*, the principal remedy is *Mercury* properly applied, to excite a *salivation*; but not that it acts *specifically* on the Eye, but by an *universal operation* on the whole Body. The Eye also *offends* by immobility; for it *offends*, if the resorbent Vessels cannot reduce the *aqueous humour* the same.

BUT in all these the titles of *Specifics* are to be omitted; but it is to be inquired, what *fault* there is in the Solids and Fluids; and the *cure* ought to be instituted from general indications: but this seems



seems chiefly to be inculcated, because even the best Physicians cannot yet leave off the titles of *Specifics*, but always think that something is to be *specifically* required; whereas there is indeed no difference properly, for example, whether an *inflammation* is in the Eye, or in the Hand.

HENCE therefore *those are said to be Ophthalmics, which remove sanguineous, serous or lymphatic, and nervous Inflammations.* For it is the same in all.

2. *ODONTALGICS* are those, which take away arterial sanguineous inflammations, and such as are in the Lymphatic Vessels, or in the Nerves; and by this means assuage the pain of the Teeth. Hence also relaxing Purges sometimes become Odontalgics; as do Opiates also.

3. *OTALGICS* are those which assuage the pains of the Ears. And these again include all such as remove the inflammations of the three forts mentioned above.

4. *THOSE* are called *Stomatics*, which cure the diseases of the Mouth. And these are common to the Mouth and other parts; and therefore Medicines have nothing that is *specific* for those Diseases.

### CHAP. III.

#### Of ARTERIACS.

1. **T**HE Ancients gave the name of *Artery* to the *Larynx*, or properly to those harder Canals, which enter the Lungs (a), and are called

(a) Consult GALEN, *Libr. 6. de HIPPOCR. and PLAT. De aer. cap. 9.*



called by the Moderns the *Aspera Arteria*; and they called *those Arteriacks*, which remove the diseases of the *Larynx* and the *Bronchia* (b), and particularly their roughness: which is frequent in a *Cough*; and arises from a *penury* or *defect* of the Liquid which is there secreted; whence it comes to pass that the nervous filaments remain *naked* and *dry*.

2. *ARTERIACKS* therefore are those Medicines, which supply a like Liquid: as, 1. All the *mild Oils*, slowly swallowed. 2. All that can be received with the Air into the Lungs in the form of a *mild vapour*, as *farinaceous* and *emollient decoctions*: here also Emulsions, Linctuses, Syrups, and inspissated juices are of service; but especially such as are prepared from *sweet Almonds*, *seeds of white Poppy*, *four greater and less Cold-seeds*, *Coco Nuts*, *Walnuts*, *Filberts* *very fresh*, and *Pistachios*; from which an Oil is drawn either by emulsion; or by expression. 3. The chief of all *Arteriacks* is *Opium*; which by taking away the sense of *Titillation*, assuages the *Cough*; which being taken away, the *Liquors* secreted in the *Trachea* and *Bronchia*, tarry there, and by lubricating them remove the *Acrimony*. *Arteriacks* therefore are all those which restrain a *Cough*.

(b) *Idem* Libr. 7. de Compos. Medicam. sec. Loc. cap. 1. See also CASP. HOFMANN, *Instit. Med. Libr. 2. cap. 13, sect. 2.*

## CHAP. V.

### Of THORACICS.

1. **T**HE function of the Lungs is *twofold*; *Respiration*, and the *propulsion* of the Blood into the left Ventricle of the Heart. Whatsoever



soever therefore promote these *two* functions, use to be called *Thoracics*: but in truth there are scarce any *specific Thoracics* properly so called; for those which are called by this name, *act* quite in the same manner as other Medicines, by attenuating, inspissating, stimulating, &c. for thus *Hyssop*, *Marjoram*, *Penny-royal*, *Scordium*, *Sulphur*, &c. which are called *Thoracics*, use to operate by attenuating; and they are then to be accounted *Thoracics*, when the venal Blood is so *viscid*, that it can scarce flow through the Lungs: thus also *Pulmonaria* is the best *Pulmonic* remedy, when a too *hot* and *quick* Blood wants to be sweetened and inspissated.

2. BUT if any thing is to be accounted a *true Thoracic*, it is the *Air* it's self, so far as being impregnated with some *vapours* it is received into the Lungs: and therefore, 1. When too *thin* and *acrid* a Lymph glides from the too much relaxed lymphatic Vessels into the Lungs, then *Fumigations* of *Mastic*, *Franckinsense*, *Benjamin*, are the best *Pulmonics*. 2. If there is any *alkaline* and heating acrimonious *exhalation*, as in the Plague, Small-Pox, malignant Fevers, then the *vapour* of *Rhenish Vinegar*, or *Gun-powder* is a true *Pulmonic*. 3. Where the *effluvia* of *Spirit of Vitriol* or *Aqua Fortis* invade the Lungs, whence oftentimes grievous *Peripneumonies* and *Asthmas* arise, the best *Pulmonic* is the *vapour* of *purified Urine* received directly into the Mouth; from which *vapour* the very *Acid* infesting the Lungs is converted into an innocent *volatile Salt*. 4. If the *thick* and *acrid* matter occupies the Lungs, and stuffs up their passage, the best *Pulmonic* is a *vapour* of *warm Water*, with a mixture of a little Salt of Tartar and Urine, also of relaxing and stimulating Herbs. 5. When there is too great a *dryness*, and *tough thickness*, then it is to be diluted by a *vapour* of *warm Water*;  
by



by applying a *sponge* moistened with the same *Water* to the *Nose* of the *Patient*, and directing him at the same time, to *inspire* through the *Nose*, and *expire* through the *Mouth*.

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## C H A P. V.

### Of Cardiacs or Cordials.

1. **T**HE history of *Cordials* is very difficult; because what is a *Cordial* to one is a *Poison* to another. Now we call that a *Cordial* which *increases* the *powers* of the *Body* rather than of the *Heart*; the *force* of the *Heart* may be *increased* to the detriment of the *Health*; for in an inflammatory *Fever*, if the *force* of the *Heart* be increased, a *weakness* of the *Body* will follow, which may be succeeded by *death* itself.

2. By *forces* I mean the *corporeal powers* which move the *Muscles* and *Liquids*: hence the *forces* or *powers* are *twofold*; namely, either *animal* or *natural*. Therefore a *Cordial* is properly whatsoever *increases* the *animal power* of moving the *Muscles*, and the *natural power* of moving the *Liquids*.

3. THE *animal power* of moving the *Muscles* entirely depends on the *due secretion* of the *animal Spirits* in the *Brain*; and *this* on the *due motion* of the *Liquids* through the *Vessels*. But to *this motion* is required, 1. That the *contractile force* of the *Heart* drive the *Liquid* in such a manner, that there may be a sufficient *quantity* in every part of the *Body*. 2. That the *Vessels* may be *fit* to transmit the *Liquid*. 3. That the *Liquids* may be *moveable*, or *fit to flow*.

4. HENCE



4. HENCE also we may reduce *Cordials* to the *three* following Classes.

I. THE *first* Class contains those which *affect* on the animal Spirits. 1. By affording a substance *fit* to produce them: and this substance approaches the nearest to the *white of an egg*; consult HARVEY, *Tract. de Generatione Animalium*, where he treats of the *white of the egg*, and of the *nourishment of the chicken in the egg*; also MALPIGHIUS *Tract. de Ovo incubato*; also *de formatione Pulli in Ovo*. Those are observed to be the *most robust*, whose *Serum* comes nearest to the *white of an egg*; whence it appears, that the origin of the animal Spirits is from *aliments*, so *changed*, as to approach the nearest to the *white of an egg*, but so *attenuated* by circulation, as to *concrete* by the Fire. Moreover, the greatest substance of the Spirits is afforded by *light* and *nourishing* meats and drinks, of a taste and smell agreeable even to Infants: such as *milk*, small *broths* of sound Animals, well scented *wines*, well fermented *malt liquors*, ripe, pleasant and fragrant *seasonable fruits*; as *Grapes*, *Currants*, *Cherries*, especially the black, *Mulberries*, *Apples*, *Melons*, *Peaches*, *Oranges*, &c. 2. By determining to the *Cerebrum* or *Cerebellum* the Spirits that wander to this or that Muscle: such are all *Antispasmodics*, and removers of hysterical and hypochondriacal suffocations; all which *operate* indeed either by stimulating, drawing or relaxing. 3. By *raising* the quiescent Spirits: such as all that have a *pleasant* taste and smell; as any *Aromatics*, especially the *oriental Balsams*; as *Cinnamon*, *Nutmeg* and *Mace*, *Cloves*, *Zedoary*, *Galangal*, &c. also *Orange peel*, *China Citrons*, the grateful smell of *Pomegranates*, *Southernwood*, *Balm*, *Thyme*, *Lavender*, *Roses*, *Jasmin*, *Lilly of the Valleys*, *Kermes berries*, *Saffron*, &c. Hither also belongs



longs *Opium* (a); hither also belong all *generous Wines*, *Spirits of Wines*, *oily Spirits*, *aromatic*, *oily*, *alkaline*, *volatile Salts*, and all *compositions made of them*; all *essential and aromatic Oils*, *Tinctures*, *Elæosacchara*, *Syrups*, and *Confections* of this sort.

II. THE *second Class* contains those which *affect* on the *Vessels*, by rendering them fit for the transmission of *Liquids*: and these are, 1. Those which *relax* the too tight *Vessels*, such as *Baths*, which in this sense deserve the name of *Cordials*. 2. Those which *strengthen* the too lax *Vessels*, and restore their lost *elastic force*: therefore the *Peruvian Bark*, *Quinces*, *Steel*, *rough Wine*, &c. perform the office of *Cordials* in those whose *Vessels* are *sluggish* and *flaccid*; but are *destructive* to those who have *tight Vessels*: thus therefore *Steel* is of the greatest service in the most *lax* disorders of *Virgins*: but in acute diseases, where the *Vessels* are *constringed*, it causes incurable *Schir-ruses*, or death.

III. THE *third Class* includes those which *operate* upon the circulating *Liquids*; and these either by *diluting* or *incrassating* them, according as they are too *thick* or too *thin*, but if the *Liquids* want *diluting*, there is scarce any better *Cordial* than *Water* moderately *warm*.

(a) That is, so far as it *rouses* the quiescent *Animal Spirits*, by attenuating the *Blood*, if it is rightly administred. But concerning this *attenuating power* of *Opium*, the arguments and experiments of the famous Dr FREIND, in his *Emmenologia cap. ult.* highly deserve to be consulted.



## CHAP. VI.

## Of CARMINATIVES.

1. **C**ARMINARE signifies to assuage with *verses* (*carminibus*): for the Ancients thought that Poets by means of their verses could assuage *pains* and too vehement *motions*; hence APOLLO was accounted equally the inventor of *Poetry* and *Physic*.

2. **N**OW a *Carminative* is properly that which moves *Flatuses*, together with the *pains* of the *Intestines*: wherefore he that would explain the power of a *Carminative* Medicine must inquire, how *Pain* and *Flatuses* may meet together in the *Intestines*, and whence they are generated.

3. **P**AIN in general arises from too great a *distraction* of a sensible Fibre; (see more in the CHAPTER of *Solvents* or *Causers* of *Pain*.) Now a *Flatus* supposes an *elastic* liquid matter, rarefied by heat, and retained in the *Intestines* by some *force*, to stop there, and that at last it overcomes this *force*, and bursts out with great violence.

4. **T**HIS liquid *elastic* matter is the Air it's self, which indeed bursts either *upwards* or *downwards*; and rushes through the *Intestines*, now one way, and now another; whence come *Borborygmi*: and therefore there are *three* sorts of *Flatuses* in diseases; which are called *Ructus*, *Crepitus* and *Borborygmi*.

5. **N**OW this *elastic* matter, namely the *Air*, enters the Body by the Gullet, and passes through the *Intestines*, whence it makes it's exit through the *Anus*, without producing *Pain* and *Flatuses*, unless it be pent up and rarefied by heat; but if it is pent up, then it creates horrid symptoms: moreover it



is pent up either by an *external force* pressing it, as is often observed in Women, who press the *Abdomen* by lacing too tight, or by the *contraction* of the Fibres, as it happens in *Spasms* of the intestinal Fibres, or first passages; thus the *Sphincter* of the *Oesophagus* or Gullet is often *spasmodically* contracted, as in hysterical Persons; hence the *Air* is there included, and being rarefied vehemently extends the Gullet; whence the Wind-pipe is then compressed, and thus there arises a fear of *suffocation*; nay indeed hysterical Women are sometimes for a little while really *suffocated*: and hence it is easily enough explained, whence the *swelling* in their Abdomen proceeds. A *constriction* of this kind sometimes happens about each *orifice* of the ventricle, whence the Stomach is greatly distended: much the same also happens, if any *Spasm* occupies *successively* sometimes one, sometimes another part of the Gullet; and thence a most perfect sense of a *globule* rising up to the Throat is excited: the same also happens, if a part of the intestinal Tube is at any time *constricted*. All which pains are relieved by the expulsion of the *Flatus*.

6. *CARMINATIVES* therefore are those, which take away such *Spasms*; whence *relaxing* and *opening* Medicines are *Carminatives*. Hence therefore *Water* drank moderately *warm*, also *warm Oils*, *oily volatile Spirits*, all *Antispasmodics*, *external Motions*, *Baths* and *Fomentations* belong to this place; but the chief of all is *Opium*.

7. *THE causes* of the before mentioned *Spasms* in the first passages are, 1. Some *diseases* which determine the nervous Liquid more towards one part than towards another. 2. *Poisons* or *Acrids* taken in, which frequently excite *Gripings*, *Flatuses* and most violent *Tumours*, and those often so great, as even to *burst* the Intestines: for if the *caustic power*



*power* applies it's self to any part of the intestinal Tube, it will *contract* and *constringe* it's self; whence the *elastic* Liquid will be shut up, be rarefied by heat, and excite *pains*, the Spirits in the mean time rushing in great plenty to the part in *pain*, as is usual in all sorts of *pain*; whence a more violent *contraction* will arise. In this case therefore *Carminatives* are those which either extinguish *Poison*, or diminish the *pressure* and *flux* of the nervous Liquid towards the part affected, as *Opium*, and all *Opiates*; which at that time *operate* almost in the same manner as *bleeding* in an inflammation, namely by diminishing the *impetus*.

8. *WARM CARMINATIVES* act so far as they stimulate and excite a *motion* through the whole tract of the Intestines; whence the *contraction* and interception of the *Air* are taken away.

## CHAP. VII.

### Of ANTHELMINTHICS.

1. *HELMINTHES* is the GREEK name for *Worms*; hence *those Medicines* are called *Anthelmintics*, which kill and expell *Worms*.

2. THE places in which *Worms* nestle and creep are the Stomach and all the Intestines; but they are seldom in the Colon, except while they pass through this Intestine: now that these are the places where *Worms* conceal themselves, is manifest from the *Titillation* which they excite in the Sto-



mach and Intestines, and the *discharge* of them by *vomiting* and *stools* (a).

### 3. ANTHEL

(a) *Worms* are Animalcules of different kinds, *generated* in the human Body from the *Eggs* of Insects : for as various kinds of Flies and Insects, after a successful copulation, lay their *spermatic Eggs* more or less copiously on several *esculent Bodies*, as on Herbs, Fruits, Flowers, or other things that are fit for *food* or *drink*, and as these things afterwards, being defiled with this *spermatic verminous* filth, are either immediately eaten by Men, or are devoured by Brutes that afford food to Men, and at that time such *Eggs* are transmitted into the Bodies of Men : add to this, that even the *Air*, which we breathe and swallow, is sufficiently known by the experiments of modern Philosophers to *abound* with the *Eggs* of Insects ; whence it comes to pass, that such *Eggs* being swallowed with *meats* and *drinks*, and even together with the *Air*, nay and sometimes perhaps with other *Worms* also, which are contained in the before mentioned things, being taken into our Body, and there being enlivened by the *mild cherishing* and *beat* of the Stomach, Intestines, or other parts, are converted into creeping Animalcules, as happens also on the outside of our Body and that more and more frequently in the tender *Stomachs* and *Bowels* of Children, than in the stronger ones of grown Persons. Hence such *Worms* are observed to be *generated* in different parts of the human Body : for they are found not only in the Stomach and Intestines, but also in the Liver, Kidneys, Bladder, Lungs, *Pericardium*, Brain, hollow Teeth, &c. nay and the celebrated RUYSCH has not long ago discovered the *Exuviae* of *Chrysalides* or *Nymphæ* in the inner *cavities* of the Bones. (See his *Adversar. Anatom. Dec. III* page 18. & *seq.*) The same famous AUTHOR also says in another place, *Adversar. Anat. Dec. I.* page 18 ) that it is to be observed, “ that *Worms* are generated in the human Body of such different forms from each other, and yet “ so differing from every thing else in nature, that nothing “ *like* them is ever to be seen without the human Body ; and “ some of them are extended to several *ells* in *length*. And “ he thinks it very probable, that they do not owe their origin to *little Eggs* swallowed down, but rather that they are “ produced in our Body from *Eggs* generated in us at the “ same time with the other parts of our Body.” Now this agrees with the *opinion* of HIPPOCRATES, and of a many other great Philosophers, and especially of that most experienced Physician of *Pari*, NICHOLAS ANDRY ; who has written an excellent treatise in the *French* tongue, on the *Worms* that  
are



3. *ANTHELMINTHIC* Medicines may be reduced to the *two* following Classes.

## X 2

## I. THE

are generated in the human Body. But after what manner soever *Worms* may grow in us, those, of which we are at present speaking, are the most frequently observed; which most often lie hid in the Stomach, and sometimes in the Intestines. Now there are *three* sorts of them commonly distinguished by Physicians; 1. The *round Worms*, in Greek *Ελμυνδες στρογγύλαι*. 2. The *broad Worms*, in Greek *πλατέαι*, sometimes *κεειάαι* and *ταινίααι*, that is *Fascia*, whence they are also called *Fasciati*, or *Tape Worms*, because they resemble a piece of *tape* or *ribband* except their head and tail, which end in a sharp point. 3. The *Ascarides*, which name is given them only by *GALEN*, in his *Exegetis*. The *Round Worms* are the most common, and the best known of all, and are usually generated in the *small Guts*, in great plenty; whence they often rise up into the Stomach, and sometimes are cast out by the Mouth, and sometimes by the Nose, though most often they are driven out by the *lower passages*, sometimes *alive* and sometimes *dead*: these are very common in Infants. But it is not easy to know when Children are afflicted with these Animalcules; because most of the *signs* and *symptoms*, which are produced by them, are *common* with those of other diseases. But however, *bitings*, *gnawings*, and *sudden* and *intermitting gripings* of the *Belly*, especially on an *empty Stomach*, *leanness*, *pale ness* of the *Face*, *hollowness* about the *Eyes*, *restlessness* in the *night*, and *grievous watchings*, *frequent rubbing* of the *Nose*, *stinking Breath*, *dry Cough*, sometimes attended with a *difficulty* of *breathing*, sometimes also a *slow Fever* attended with *thirst*, *shiverings*, *head aches*, *heart burns*, sometimes *faintings*, a *swelling* and *tightness* of the *Abdomen*, *Hiccups*, *Nauseas*, *Vomitings*, *frequent putting* the *hands* to the *Belly*, *ceasing* of *gripes* after *eating*, *too great voraciousness*, *stools* of a *grey colour*, *resembling* a *solution* of *clay*, in the last place, *crude* and *turbid Urine*, almost like *Milk*, are the usual signs of these *Worms*: though all the symptoms are sometimes greatly varied; for there is no *symptom* so strange, as may not sometimes arise from *Worms*, as we find by the observations of Practitioners. Now if we regard the *Prognostic*, *Worms* may dwell a long time in the human Body without any notable hurt or trouble; but yet it often happens, that most cruel symptoms are produced; such as a *Fames canina*, *sleepiness*, *delirium*, *continual*, *slow* and  *hectic Fevers*, nay and often those which are called *malignant*, together with *mortal convulsive* and *epileptic fits*; sometimes the



I. THE first Class contains those, which are known by experience to kill *Worms*: such as, 1. All  
Oils,

the Intestines or Stomach are eaten through by *Worms*, and thence death ensues: in a word, the most grievous symptoms may hence arise. The *Tape Worms* are the most rare: but they have one peculiar symptom, among others which they have in common with the rest, namely, the discharging, together with the excrements, little Bodies resembling the seeds of Gourds; and these seem to be the excrements of the *Tape Worms*: the length of these Worms often amounts to several ells; and they are not numerous, but generally only one, which is therefore called *Solium*, and sometimes two meet together. If any one desires to know more of these *Worms*, let him consult the AUTHORS who have treated expressly on this subject, and especially DAN LE CLERC, *Histor. Latorum Lumbricorum*. In the last place, those short and Minute Worms, which are called *Ascarides*, are usually generated and gathered together in great numbers and heaps in the *Intestinum Rectum*, and are in size, thickness, and shape like needles: these are protruded alive from the *Anus*, together with the excrements; they are very common in Infants and Children, and are sometimes found in grown Persons, the Pathognomonic sign of *Ascarides* is an almost intolerable itching in the Fundament, with a frequent and troublesome Tenesmus, or needing to go to stool; nay and sometimes these little torturers cause such vehement torments in the Persons affected, as to make them faint away; but though they do not use to create such grievous symptoms as the others, yet concerning the method of killing and expelling these *Worms*, the Reader may consult FULLER's *Pharmacop. Extempor. tit. de Enem. Amar. p. m. 110.* Thus much may suffice concerning *Worms*: he that desires to know more may consult besides NICHOLAS ANDRY and DAN. LE CLERC, in the *Treatises* mentioned above, the various AUTHORS which have treated at large on this argument, namely (α) The Writers of natural history; and in the first place, ULYSSES ALDROVANDUS, *Libr. 6. de Insectis, cap. 2.* FRANC. REDI, *Observat. de Animalculis vivis quæ in corporibus vivorum Animalium reperiuntur, &c.* also (β) the Collectors of Medical Histories and Observations; especially SCHENCKIUS, BARTHOLIN, STALP VAN DER WEIL, PAULLINUS, *Disquisit. de Morte Verminosa*, though here he heaps a great many foreign and useless things according to his usual manner; also HILDANUS, FORESTUS, TULPIUS, &c. (γ) Lastly let the best practical Physicians be consulted concerning the knowledge and cure of diseases arising from *Worms*.



Oils immediately applied to *Worms*; which indeed destroy them in a short time by obstructing their *Tracheæ*: therefore let Oil be drank, or thrown up in form of a Clyster; for thus the AUTHOR cured one who was troubled with the *Ascarides*, after all other remedies had been tried in vain, only by a clyster of Oil retained a long time, after having first gently *purged* the Belly. 2. All preparations of *Honey*; which act after the same manner: thus therefore after the taking of a gentle *purgative*, on an empty Stomach, that there may be no obstruction, *Honey* being *drank* is an excellent *Anthelmintic*, especially for Children. 3. Those which *kill* the *Worms* by wounding, bruising, and pricking them: as the little *bones* of *Fishes*, *Hart's horn*, filings of Steel, and such like, which act after the manner of *darts*; but these seldom leave the *tender Intestines* untouched. 4. *Poisons* appropriated to these *Insects*: as *Mercury*, so prepared as only to pass through the Intestines, and not to penetrate into the Lacteal Vessels (*b*), such a preparation is the *Æthiops Mineral* in powder, given with a gentle Purgative: also the *Vitriols of Metals*, as of *Steel*, *Copper*, *Silver*, if they are taken in Pills, and determined downwards, by the addition of a gentle *Purgative*.

II. THE *second Class* contains those which *expel* the *Worms*: such are all *Purges* and *Vomitories*, of whatsoever kind, without any distinction, provided they be taken on an empty Stomach. But those *bitters*, which are usually commended as *Anthel-*

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*mintics,*

[(*b*) There is not perhaps any *preparation* of *Mercury* more proper for this purpose than the *crude Quicksilver* it's self, taken every morning fasting, from  $\mathfrak{z}\mathfrak{ss}$  to  $\mathfrak{z}\mathfrak{ij}$  for a considerable time. But care is to be taken, not to catch cold which I have known in some instances, though very rarely, to cause a slight salivation.]



*minthics*, and honoured with that name, *do good* only by *accident*; namely when the intestinal Fibres are too *weak* to expel the *nests* of *Worms*; but these *bitters* do not *kill* the *Worms*. It is to be observed also, that those are in a great error, who say, that a Man cannot be freed from *Worms*, unless they are expelled by the *Anus*, at the same time that they are *killed*; whereas they are of so tender a texture, that if they are once *killed*, they soon *rot*, and come out in the form of a *mucus*.

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## CHAP. VIII.

### Of ANODYNES.

**T.** *ANODYNES* are those Medicines, which take away pain in general. And under this Head are contained, 1. *Paregorics*, which take away pain by *assuaging* it; 2. *Hypnotics*; which take away pain by causing *sleep*. 3. *Narcotics*; which take away pain by causing a *stupidity*. 4. *Nepenthes*; which properly signifies a Medicine that takes away pain (a).

BUT

(a) In this sense therefore *Nepenthes* is synonymous with *Anodyne*; and does not seem proper to constitute a *peculiar* Class. Besides, there has been no small dispute among *AUTHORS* what that *Nepenthes* really was, which *HOMER* has so highly extolled in the *fourth Book* of the *Odysses*; it would be to little purpose to recite all their various *opinions* in this place: it may suffice for the present, to say only a little upon this argument. The word *Νηπενθές* is composed of the *privative* particle *νη*, and *πένθος* *mourning*; because this Medicine dispells *sadness* and brings *joy*; for, according to *HOMER*, it was mixed with the *Wine* by *HELEN*, to make the *Guests* of *MENELAUS* chearful;



BUT as *Anodyne* is a general name comprehending the *four species* of Medicines, which were said before to take away pain, I shall first premise some THEOREMS concerning *pain in general*.

I. NOT only the *fluid* but also the *solid* parts of our Body are subject to *pain*; and those so far as they are composed of Nerves, and no otherwise: now some Nerves are *open* and *hollow*, and others are *consolidated*; and the Nerves of the first kind only are affected with pain.

II. IN every Nerve being yet *alive* if it's *last component* part be considered, there occurs only a *very fine* Membrane, and at the same time a Liquid detained and confined in it: now every *last* nervous Membrane, of any Nerve whatsoever,

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consists

cheerful; and she had received this drug as a present from POLYDAMNA an *Egyptian*, the Wife of THONE: the POET affirms that the *Nepenthes* is endued with such a *power*, that whosoever swallows it, entirely *forgets* all *evils*, and would not weep all that day, though his Father and Mother should die, or his Son and Brother be killed before his face. Whence we may conjecture, that by this so celebrated *Nepenthes* of HOMER is meant *Opium* it's self, or some *Composition* of it; seeing it grows chiefly in *Egypt*, where it was presented to HELEN; and has a *faculty* also of *exhilarating* those who are used to it, and of dispelling *fear* from their minds, as is abundantly manifest from the example of the TURKS and other oriental People. Hence also the CHYMISTS seem to have transferred that word to a certain *Composition* of *Opium*, which is called *Nepenthes Aureum* ANGELI SALÆ, and is described by this AUTHOR in his *Opiolog.* page *m.* 610; and therefore also the common *Laudanum Opiatum* is called *Nepenthes* in the *prescriptions* of some Physicians. But if any one would know more concerning this word, and it's significations, let him consult in the first place the *dissertation*, which CONRAD. BARCHUSEN has made entirely upon this argument, and annexed to his *Historia Medicinæ*, also CASP. à REJES, *Camp. Elys. jucund. Quæstionum, quæst. 2. n. 12. & quæst. 88. n. 13*; also LANG. *Epist. Medic. Libr. 1. epist. 56. & Libr. 3. epist. 6.* as also the LEXICOGRAPHERS and others. As for the *modern Nepenthes* of the *Indians*, see KEMPFER *Amœnitat. Exot. p. 652.*



consists of *solid* and *not hollow* Fibres, which are composed of parts incredibly small and minute, and scarce changeable by Fire or Water; as was explained in the PROLEGOMENA, CHAP. IV. and V. The Liquid also therein contained, is the finest of all, and, if there can be any comparison made with it, in some measure like the *Water* produced from the Liquid of the *white* of an *Egg*.

III. EVERY pain therefore is some *affection* either of a *solid* Membrane, or arising from the *contained* Fluid, or from *both*.

IV. ALL *Causes* which produce pain, howsoever they may *act* on the Liquids, and *change* them, can never create pain, unless their *effect* be such a *change*, as may *affect* the Solids.

V. ALL pain therefore depends on some *change* of the *Contacts* in the *last Solid* of a Nerve, so far as it still contains a Liquid.

VI. ALL pain therefore arises from the *action*, which excites such a *motion* in a *last* Fibre, which, if it be continued, or increased, will necessarily *destroy* the *continuity* of that Fibre; and this we learn from all histories of pain whatsoever: hence also all *great* pain, enduring a long time, has for it's *end* a *rupture* of the Vessels, and a *destruction* of the part; thus from an inflammation at length arises a *suppuration* and a *gangrene*, and from a nervous pain arises an insensibility: therefore that *motion* being taken away, the pain is taken away also.

VII. EVERY *cause* of pain, so far as it *acts* upon one Fibre, *acts* only either by drawing, or squeezing, or wounding; but if it *acts* on more which constitute one *Tube*, then it may be considered as *inflating* and *distending* this *Tube*: whatsoever



soever therefore creates pain, *does* it only by drawing, or squeezing, or distending, or wounding.

VIII. ALL *drawing*, in the *soundest* Body, excites pain by *prolonging* the Fibres; as we may learn from the *tortures* of Executioners.

IX. THAT a great *distension* of the Vessels, by the contained Liquids, causes pain by *prolonging* the Fibres; we learn from the *history* of *Physic*; for this appears from *painful* tumours, where, the tumour being taken away, the pain ceases: it is to be observed moreover, that though the *distended* Vessel remains the same as to it's length, yet the Fibres of the *sides* may be prolonged by that *distension*.

X. ALL *Vulnerants*, properly so called, *operate* either by pricking, boring, or cutting: and so long as they *act*, they excite pain by *prolonging* the Fibres; but as soon as they have produced the *effect*, the pain ceases: hence also a Nerve *cut off* has no pain.

XI. THAT *Fire*, and all invisible *Acrids* act after the same manner, as the enumerated causes, has been proved in the history of *Acrids*.

XII. PAIN excited in any part is taken away,  
1. By *destroying* the Nerve in the part where the pain is: now the Nerve is *destroyed*, when the Liquid can no longer *flow* into it. 2. By *intercepting* the communication of the *motion* exciting the pain with the common *sensorium*. 3. By rendering the Brain *unfit* to receive the communication of the *dolorific cause*; as appears from *apoplectic* Persons, and all those whose Brain is *compressed* by any cause.

XIII. THE *lowest* and *mildest* pain of one last *Fibrilla* arises from any *motion* a little larger than usual, impressed on the *Fibrilla*; the *end* of which is a *most pleasing sensation*: which, so far as it is caused



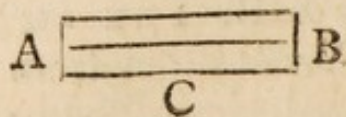
caused by a *gentle vellication*, is called *Titillation*; but when by a *corrosion* of the contained Liquid, it is called *Itching*: thus the *most pleasant* smell and taste, if they are perceived a long time and vehemently, excite pain, it is the same also in sounds.

XIV. THE *greatest* and *most vehement* pain of one last *Fibrilla* arises from a *prolongation* of it a long time continued, as near as possible to *dissolution*, but yet without *dissolution*.

XV. BUT the *greatest* increase of pain arises from a *number* of the *Fibrillæ* being affected together; for *two Fibrillæ* so affected do not excite so great a pain, as if *more* were affected together.

2. FROM what has been said therefore it is manifest that all pain arises from a *distraction*, or too great a *prolongation* of the *Fibres*: which if it proceeds from an *external* cause, may be removed by the *taking away* of that cause: but if it arises from an *internal* cause, we must first examine what that is, that we may be able to remove pain. Now the *internal* causes of too great a *distraction* are reduced to *five*; and therefore there are *just so many* Classes of *Anodyne* Medicines, which remove such causes.

3. AND these are the causes, 1. A *semi-laceration* of some Nerve: for that part of a *semi-lacerated* Nerve, which remains *unhurt*, sustains a much *greater impetus* or contraction, than in a *sound* state of a Nerve; whence follows a *distraction* or *prolongation* of it. Let us suppose for example, that A B is a Nerve consisting of *three* *Fibres*, which, whilst they are *entire* and unhurt, sustain all that *force* together, by which the Nerve endeavours to contract





it's self, and to start back towards the points A B, to which it is affixed : if now *one* of these Fibres is broken at C, the other *two* will sustain the whole *force*, which was before sustained by all *three*, and hence they will necessarily suffer a *distracti*on and pain. 2. Too great an *inflati*on from a Spasm. 3. Too great a *distensi*on from some obstruent, and the pressing of the Vital Power. 4. Too great a *distensi*on from the impacting of an Acrid and the pressing of the Vital Power. 5. A *distracti*on of the Nerves from their own elasticity over some hard and impacted Body, as over a *Stone* in the Ureter.

4. THOSE which take away the *first* cause are,  
 1. An entire *discisi*on or *burning* of a *semi-lacerated* Nerve : in this sense therefore Knives, Fires, and potential Caustics are the greatest Anodynes.  
 2. The *drawing* of the *lacerated* parts towards each other : for in the greatest pains these are often of wonderful service, as we find by experience ; for a *wounded* Muscle is in pain, so long as it *gapes*, but when the parts are *drawn* to each other, the pain ceases : hither therefore belong *Sucti*on, *Ligatures*, *Sutures*. 3. The *softening* and *relaxing* of the whole Nerve, which cause the *unhurt* parts of the Nerve to be protended in length without pain : hither therefore belong all *Relaxers* and *Emollients* ; such as (α) warm *Water*. (β) A light *mixture* of one part of *Vinegar* and three of *Water*. (γ) Mealy, oily, *emollient Decoctions*, applied in form of a Plaster, Fomentation, Vapour, Cataplasm, or Bath. (δ) A large *draught* prepared of the *like*. (ε) All the mildest *Balsamics* ; as *Balsam of Peru*, *Gum Elemi*, *Turpentine*, &c. dissolved in the yolk of an Egg, and applied so as to penetrate



trate to the affected place. (C) *Parts of Animals* newly killed applied *warm*; for thus it is accounted a great *Anodyne*, if, for example, an injured Arm be put into the Abdomen of an Animal newly killed. 4. Lastly the *first* cause is removed, if the parts near the Wound be so changed by any thing, as to *harden* and *spring back*, and thereby perfectly *dissolve* the *semi-lacerated* minute parts: but such a change is effected in the parts near the Wound by *Oil of Turpentine* and *Alcohol of Wine* poured on warm, and such like; which indeed, during the action, always produce a very great pain. Moreover if a pain arises any where deep in the Body from a *semi-laceration*, there is no hope of a *cure*, unless the pain being increased, the *injured* Nerves are at length entirely *dissolved*: for thus if such a pain is in the Ligaments, it cannot be taken away unless the Nerve be *destroyed*, which being performed, the pain immediately ceases; hence in a *tophaceous* Gout, there is hardly any pain.

5. THOSE which take away the *second* cause are such as remove the cause of a *Spasm*: now the cause of a *Spasm* is either in the Brain, or in a Nerve, or in the muscular *Villi*; and it is always either an *irritating Acrid*, or an *unequal determination* of the Animal Spirits: the chief remedies therefore in these cases are, 1. Attenuating and diluting drinks, which are opposite to the *Acrid* that *irritates* taken plentifully. 2. An *increase* of the motion of the Liquids.

6. THOSE which take away the third cause are, 1. Those which correct the *impacted Acrid*; by changing it's *acute* figure into an *obtuse* one: and this is done, (α) By compounding the *Acrid* with other particles. (β) By breaking it's *point*, either by boiling or suppuration. (γ) By involving it with *demulcents*. 2. Those which draw out the *impacted*



*impacted Acrid*: such as, (1) Those which relax the passages; hence HIPPOCRATES said, that every *pain* arising from an *Acrid* should be relaxed. (2) Those which dilute the Liquids. (3) Those which determine it *outwards* (see the CHAPTER of *Drawers*). (4) Those which draw down the *impacted Acrid* to *rest*: now it is composed to *rest* by *four* ways; ( $\alpha$ ) by diminishing the *impetus* of the circulating Liquids, and contractile Solids; for unless the *infix* *Acrid* was compressed by the *contractile force* of the Solids, and by the *projectile force* of the Fluids, it would not produce pain: but the *contraction* of the Solids is diminished by *relaxing*; and the *impetus* of the Fluids is diminished by bringing them nearer to the state of *death*, or approaching to *death*; hence also all pain ceases a little before death (see the CHAPTER of *Sistents*). ( $\beta$ ) By determining their *impetus* another way (see the CHAPTER of *Drawers*). ( $\gamma$ ) By causing faintings. ( $\delta$ ) By taking away the external causes, which by their action *excite* the *Acrid*, which of it's self is unactive; such as *heat* and *motion* of the part.

7. THOSE which take away the *fourth* cause are such as relax the Vessels, resolve an *infarction*, and diminish the *projectile force* of the Liquids: hither therefore belong *bleeding*, any *great evacuation*, also *inciding*, *attenuating*, *resolving*, *diluting Medicines*; such as *Baths*, *Fomentations*, &c.

8. THOSE which take away the *fifth* cause are,  
1. All that take away the *first*. 2. Those which move and propel what is *impacted* by gently lubricating, resolving and stimulating. 3. Those which determine what is *impacted* to the place where it does least hurt: (see the CHAPTER of *Drawers*).

9. MOREOVER if the pain is great, and we are not able to remove the cause, then the pain becomes



comes it's own *cure*, namely by destroying the Man: but yet there are some things which, though they do not take away the *cause* of pain yet diminish the *sense* of it; such as *Hypnotics* or *Soporifics*.

10. ALL *Hypnotics* may be reduced to the two following Classes.

I. THE *first* Class contains whatsoever procure *sleep*, by taking away the impediments of *sleep*: and these impediments for the most part are *external objects*, pains, heats, sweats, various diseases of the *Body*, and passions of the *Mind*; which being taken away, *sleep* follows of it's own accord: by this means therefore almost all Medicines, as *Diluents*, *Resolvents*, *Incrassants*, *Moisteners*, *Dryers*, *Heaters*, *Coolers*, *Acids*, *Alkalines*, and innumerable others, and quite contraries, become *Hypnotics*; according as they remove or mitigate this or that symptom, by which *sleep* is hindered: for thus *terrestrial Absorbents* often produce *sleep* in Infants, affected by pain in watching, because of the *Acid* contained in their Stomach and Intestines: thus therefore *Roses*, *Willow*, *Lettuce*, *Dandelion*, *Endive*, *Sorrel*, *Melons*, *Pompions*, *Cucumbers*, &c. being applied externally and internally in hot diseases procure *sleep*.

II. THE *second* Class includes those which procure *sleep* by suppressing the natural causes of *watchings*, and in the first place by hindering the *flux* of the Liquid through the Nerves: and these are of *three* sorts; 1. *Mild* and safe. 2. *Strong* and dangerous. 3. *Hurtful*, and almost mortal. *Mild Soporifics* are those which produce a natural, light, and easy to be dissolved *sleep*; such as *Saffron*, all the parts of the *wild Poppy*, as the *seed*, *leaves*, *heads*, *juice*; also *white Poppy*, *Hound's-tongue*, in all it's parts, *common Nightshade*, and that mild

*Soporific*



*Soporific* called *Herba Paris*, &c. The *strong* are those which bring a forced, deep sleep, hardly to be shaken off, together with a great *stupor*: and these, as well as the following, are properly called *Narcotics*. Hither belong *Opium*, *Henbane Seed*, &c. The *hurtful* are those which produce a most profound *sleep*, generally ending in *death*; if this happens to be shaken off, there follows a *depravation* of all the faculties of the mind: hither belong the *leaves*, *flowers*, *fruits*, *roots* and *juice* of both sorts of *Henbane*; also the seeds of *Stramonium* or *Thorn-Apple*, which being taken to  $\text{ʒss}$  causes *madness*, but  $\text{ʒj}$  of it is mortal (a); also the

(a) The seed of the *Stramonium fructu spinoso* or *Datura*, reduced to powder, and given to  $\text{ʒss}$  in drink, disturbs and disorders the *mind*, causing a sort of *madness*, that lasts four and twenty hours. The unhappy Person who has taken this seed, remains for a long time, as it were disturbed in *mind*, either laughing, or howling, or sleeping, and generally talking with another Person, or answering him; so that sometimes one would think him to be in his *right mind*, though at the same time he is *out of his senses*, and does not know the Person with whom he converses, and quite forgets the conversation, after he is comes to himself. Hence as GARCIAS AB HORTO relates, the flower and seed of *Datura* is put by Thieves into the *food* of those whom they would *rob*; for those who have taken this Drug, are *out of their senses* for some time, they suffer themselves to be *robbed* of any thing with great freedom. CHR. ACOSTA also relates, that some *Indian Women* know how to prepare this poison in such a manner, as to disorder the *senses* for a *certain number of hours*, more or less, according as they have a mind. And some Writers of Travels affirm, that *adulterous Women* frequently make use of this trick, to deceive their *Husbands*. See more in GARCIAS AB HORTO, *Libr. 2. cap. 24.* & CHR. ACOSTA *p. m. 301. & seq.* or in RAY, *Hist. Plant. page 749.* In the last place see KÆMPFER concerning a certain *magical Electuary*, as he calls it, composed of the seed of *Datura*, *Opium*, *meal of Persian Hemp*, and other things, of which he relates that he had experienced wonders, *Amœnit. Exotic. Fasc. III. Observat. 15. sect. 3. sub finem.*



the meal of Darnel, the seed of *Oxyschoenos* (b), deadly Nighbshade, called also *Melanocerasos* or *Belladonna*, the Fruit or Golden Apples of the *Solanum Pomiferum fructu rotundo* C. B. or *Lycopersicon* GAL. and ANGUILL. (c), the smoak of Tobacco taken too plentifully by those whose are not used to it; also too great a quantity of Wine, or of the Spirits drawn from it, &c. (d).

(b) *Oxyschoenos* is the *Juncus acutus capitulis Sorghi* C. B. P. concerning the powers of it's seed see DIOSCORIDES and MATTHIOLUS, *Libr. iv, page 732. Edit. BAUH.* [It is called in English, Pricking large Sea-rush, and is found in great plenty on the Welsh-shoar, in Merionethshire]

(c) But yet the Italians and Spaniards eat these Apples pickled with Vinegar, Salt, and Pepper; and also the fruits of *Mandrake* and *Melongena* are by some affirmed to be eaten safely, as by HERNANDEZ, BELLONIUS, &c. though many AUTHORS refer them to that Class.

(d) To these stronger Narcotics there are yet some other Poisons to be referred; as the *Cicuta major* or common Hemlock, *Cicuta minor*, *Petroselinum similis*, or Fool's Parsley, and the *Cicuta aquatica* GESNERI, or great poisonous Water Hemlock, for which see WEPFER, and others of that kind. The smell also of Saffron a long time received has a very narcotic and even destructive power; for it is so injurious to the Brain, as even to cause death: a memorable example of which is delivered by PETER BORELLUS, *Observat. Centur. iv. Observ. 35. page m. 303.* In the last place all the Soporifics of N<sup>o</sup> 2. belong to this third also, if they are taken in too large a dose, as Opium, &c.



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## The Fifth CLASS

Of MEDICINES operating on the  
SOLIDS and FLUIDS together.

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The only CHAPTER.

Of ANTIDOTES.

I. **A**N Antidote or Alexipharmic is called in Latin *Antidotus, Antidotum, Alexipharmacum, Alexicacum, Alexiterion* and *Theriaca*; and all these names denote the same kind of Medicine, namely, *one that is good against Poison.*

BUT before I treat of *Antidotes*, I shall premise some general THEOREMS concerning *Poisons*.

I. *THAT* is called a *Poison*, which suddenly causes death, by some singular power.

II. *DEATH* is caused by taking away the circulation of the Blood from the Heart into the Lungs and Cerebellum, and from them into the Heart again.

III. Now this *circulation* may be taken away,  
1. By taking away the moving powers. 2. By corrupting the Liquids. 3. By destroying the Vessels.  
4. By doing all these three together.



IV. THE moving powers cannot be *taken away*, unless the Solids and Fluids are *corrupted*: now the Liquids considered by themselves cannot *offend*, so as to destroy the moving forces, but by going into a *coagulum*; now a *coagulum* is made either in the Veins by what is *taken in*, or in the pulmonary Vessels by what is *inspired*; see the CHAPTER of *Coagulaters*: but the Vessels are *destroyed*, either as they are *corroded* by an *Acrimony* brought upon the contained Liquids by *Poisons*, or as they are too much *straitened*; now such a *straitening* is caused in the pulmonary Vessels by the *smoak* of Sulphur, &c.

V. THUS therefore whatsoever greatly *constrict* or *corrode* the *smallest* Vessels, being applied either externally or internally, or *coagulate* the Liquids, are *Poisons*: and if these produce their effects *suddenly*, they are called *violent Poisons*; but if they operate *slowly*, they are called *slow Poisons*. And most of these exert their *power*, by disturbing the circulatory, secretory, and excretory motion, also the motion of the *Spirits*, by causing *Spasms*.

VI. HENCE all *simple Poisons* may be reduced to *three Heads*; 1. To those which *constrict* or *corrode* the Vessels. 2. Those which *coagulate* the Liquids. 3. To those which *disturb* the before-mentioned motions. But from these *simple Poisons* the *compounds* may easily be drawn.

2. FROM what has been said it appears, that *Antidotes* ought to be such as may either *correct* the *Poison*, or *expel* it, or *fortify* the Vessels, or *restrain* *Spasms*.

3. BUT now the *Antidotes* which *correct Poisons*, operate either by *assuaging*, or by removing the force of the *coagulum*, or by *resolving* it. Those which *expel* it, do it either by the help of the  
circulatory



Circulatory motion, and thus *warm Water* drank with *Vinegar* and *Salt*, on account of it's increasing the *motion*, and exciting *sweat*, is the best *Alexipharmic*, or by drawing out of the Body ; see the CHAPTER of *Drawers*. Moreover the Vessels are defended by mild, glutinous, oily and saponaceous Bodies ; see the *Emollients*, *Lubricaters*, and *Demulcents*. Lastly, An *Impetus* in the *nervous System*, or *Spasms* are restrained by all that have been enumerated, and also by *Opiates* ; hence also *Venice Treacle*, *Diafscordium*, and other *Alexipharmics* use to be composed of strong *Sudorifics*, *Gellies*, *Demulcents*, &c. mixed together with *Opiates*.

4. ALL *Antidotes* may be reduced to the two following Classes.

I. THE first Class includes the simple ; and these are taken, 1. First from Animals : as the *Flesh* and *Salts* of all *venomous* Animals ; also *Oils* prepared with their *Flesh* by infusion ; and the *Stones* or concreted *Calculi* of *venomous* Animals : hither also belong HELMONT'S *Lozenges of Toads*, ANDROMACHUS'S *Lozenges of Vipers*, and the *Lozenges of Serpents*: thus also the *Italians* esteem the *Oils* of *Scorpions*, *Serpents*, *Vipers*, *Toads*, *Frogs*, as great *Alexipharmics*. Hither also belong *Drawers* or *Absorbents* : such as both sorts of *Bezoar*, the oriental and occidental, the *Lapis Hystricinus*, or *Pedra del Porco*, *Lachryma lapidosa* (a), *Crab's Eyes*, &c. 2. From Vegetables :

Y 2

namely,

(a) By *Lachryma lapidosa* understand those *sordes*, which are found in the angles of the Eyes of *Stags*, hardened like *Wax*, of a strong and penetrating *smell*. Of the faculty of which MATTHIOLUS discoursing, in *Comment. ad Libr. II. Dioscor. page m. 290.* writes, according to SCRIBONIUS LARGUS, " that these *sordes*, both taken inwardly and applied outwardly " are of wonderful service in the bites of *venomous Serpents* ; " and therefore, according to SCRIBONIUS, that they are di-  
" ligently



namely those which *astringe* or *open*, or *assuage*; as the Roots of *Angelica*, *Anthora*, or *wholesome Wolf's-bane*, *Carline-thistle*, *Contrayerva*, *white Dittany* or *Fraxinella*, *Swallow-wort*, *Virginian Snake-root*, *Tormentil*, &c. the leaves of *Southernwood*, *Cardus Benedictus*, *Walnut*, *Rue*, *Scordium*, the bark and fruit of *Ash*, &c. of which all the preparations are excellent *Alexipharmics*. 3. From Minerals: namely, all *Absorbents*, as *Boles*, *Earths*, &c.

II. THE second Class contains the compound *Antidotes*; such as the *Theriaca Diatesjarôn* MÉSUE, which is a great *Diaphoretic*, and very innocent, the *Electuary* of the juice of *Rue*, of *Bay-berries*, of *Satyrion* and of an *Egg*; the *Confection* of *Jacinth* and *Alkermes*; also the *opiate Antidotes*, as the *Requies NICOLAI*, the *Philonium Persicum*, *Romanum*, &c. the *Theriaca aucta*, *Diascordium* of FRACASTORIUS and of SYLVIVS, the *Mithridate* and the *Orvietan*: which however deceived it's master; for he boasted, that by the help of it he could subdue any *Poison* taken inwardly: but when, according to the prescription of the Physicians, he had taken *thirty grains* of *Arsenic*, he died in a short time, notwithstanding this his *Antidote*.

## COROLL.

“lively gathered by the *Sicilian Hunters*, and carried about “with them in a girdle.” SCHRODER also, in *Pharmac. Libr. V. Class I. Art. 17, n. 7*, mightily commends them for many diseases; and they are said by other AUTHORS also, to be an *Antidote* against *Poisons* and *venomous diseases*, preferable to the treasures of Kings. Consult FREDER. HOFMAN, in *Clav. Schrod. ad dictum locum*, also REJES, *Camp. Elys. Jucund. Quæst. quæst. 67*. But ETMULLER refuses to give credit to any of them, in his SCHROD, *Dilucid. ad dict. loc.* affirming, “that it is a Fable of the Ancients that “these tears are *alexipharmic*, and that they are of no use in “Medicine” But however it is, the use of them at present seems to be quite abolished.

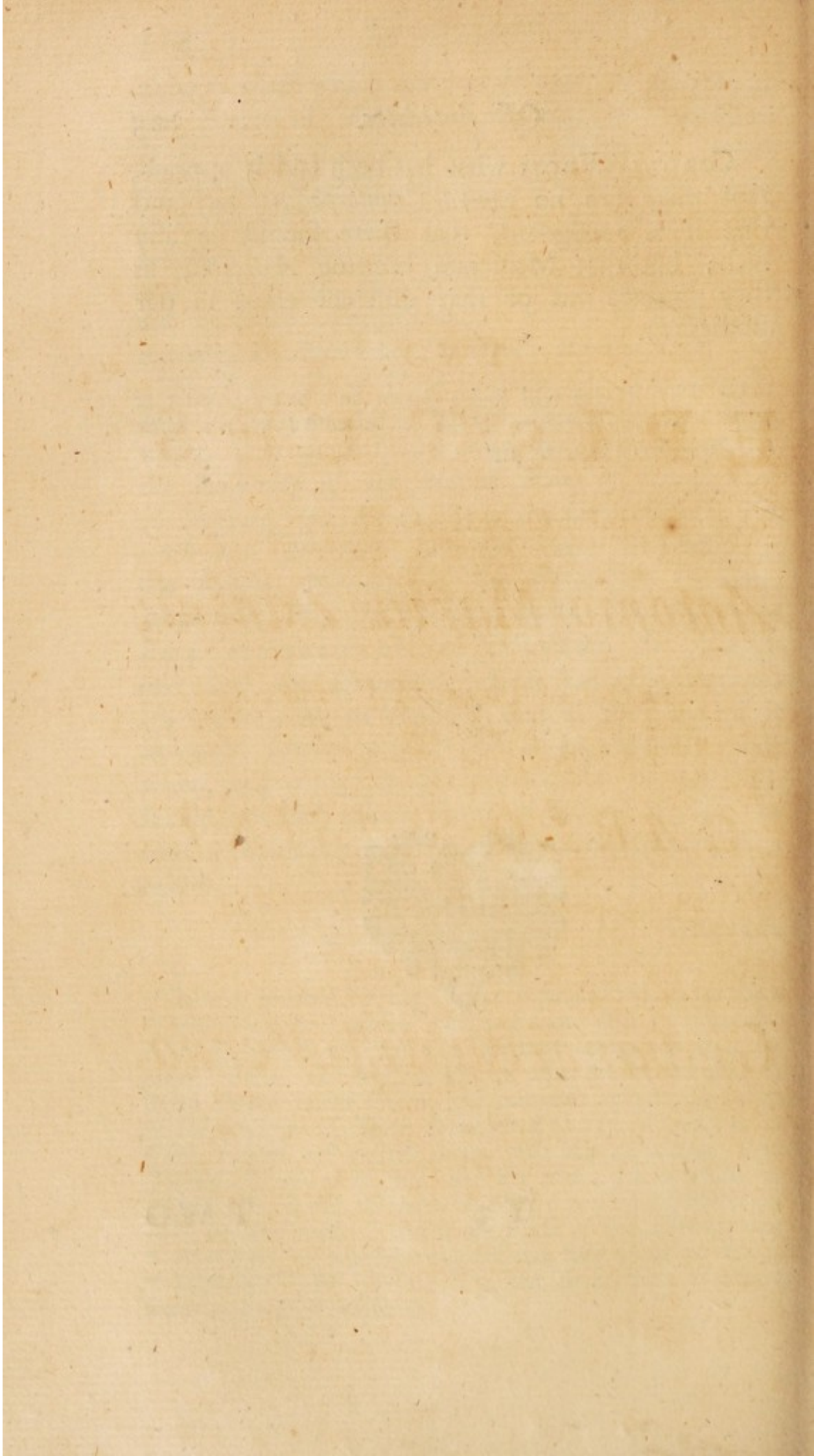


COROLL. FROM what has been said it appears, that there are no *general Counterpoisons*, nay and that it is repugnant, that there should be any such; but that Medicines become *Antidotes*, as they produce this or that different effect in our Bodies (*b*).

(*b*) The Reader will find a larger and better account of *Poisons* and their *Antidotes*. in the celebrated AUTHOR's *Institut. Med.* sect. 1119, & seq.









TWO  
EPISTLES:  
ONE OF

*Antonio Maria Zanini,*

Doctor of Physic of *Verona* ;

And the other of

*CARLO PASINI,*

Philosopher and Doctor of Physic,

To the Celebrated

*Giovanni Battista Verna,*

Physician and Patritian of *Lanciano*.



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THE  
P A R I S  
BOOKSELLER  
TO THE  
READER.

*Candid Reader,*

I WAS favoured with these *two Epistles*, which I here present to you, by the celebrated PETRO ANTONIO MICHELOTTI, during his abode in this *City*, on purpose that I might add them to the end of some work of the learned BOERHAAVE, being of great excellence in themselves, and containing very honourable mention of our celebrated AUTHOR, and his works.

To



To the Learned

*Giovanni Baptista Verna,*

Doctor of Physic and Patritian of *Lanciano,*

*Antonio Maria Zanini,*

Doctor of Physic of *Verona,*

Sends Greeting:

*Learned Sir,*

**L**ORENZO BASILIO has without difficulty consented, and acquiesced in your excellent advice, so often communicated to me in your letters; and has readily acquitted himself of the promise, which he made you, and that with a larger interest than you yourself required. He has made a collection of all the works of your favourite HERMAN BOERHAAVE, and committed them to the Press; and has added besides, at the end, some inaugural orations, which before were scattered about, like the *leaves* of the *Sibyll*. He is a very nervous and solid Author, not trifling about words or systems, but touching only the Nerves of Science, like another VERULAM, and shews sufficiently that he is a Man of much study and labour. If any thing occurs to you, you will be pleased to lay



lay your commands upon me : the learned world will owe to you, that BOERHAAVE appears in public, in an *Italian* dress ; and the *Dutch* will own their obligations to you, for having taken such care of the glory of their Countryman. Add to this, that in the foreign editions, if you except the *Leyden* one, this great Author appears lame, mutilated, and in an ill dress. You ask me about the course of my studies ? truly I am generally pretty earnest, only a fit of idleness sometimes steals upon me. I am wholly engaged upon EROTIANUS, whom I have crouded with so many new and obsolete words of HIPPOCRATES, that he is grown insensibly into a vast bulk. HESYCHIUS went before me, according to the advice of my SCALIGER ; and VALERIUS shewed the way to HARPOCRATIUS, taking words from ISOCRATES, HERODOTUS and THUCYDIDES, who were of the same age with HIPPOCRATES, PHILIP MAUSACUS of *Aix*, and HENRY VALESIIUS of *Paris*, being my Guides and Masters. Is it not evident that CORNARIUS, if you consider him well, rather steals from FUCHSIUS, than interprets ? And that FOESIUS does not always give us the true *Latin* of HIPPOCRATES ? For what else is in *Perfrigeratis* *Ἐπαγεῖν ἐν χαρτεῖς* ? and in *Pulmoniacis* *Φωίδες* ? and innumerable others ? but this only by the by. I have brought the *occulta Acutorum funera* to perfection, not without great labour ; but I had rather my works should perish with me, than cast such things before the ignorant and squabbling pretenders. The Dogs bark on my right Hand and on my left, to make use of the complaints of ÆNEAS SILVIUS in his Epistles. It is better for me to sing to my good genius and the Muses in my own study, than to be exposed to the biting of mad Dogs. You are cu-  
rious



rious to know what I think about our Physicians, who practise in this most populous city? I will tell you freely. The greatest part of them, to speak in one word with ARISTOPHANES, ἀερόβῳται, and really Νεφέλας ξένει: they compose, labour and delight in their *hypotheses* in their own studies; and adhering to *systems*, reduce very few things to practice from the dictates of nature, quite abhorring our ANCIENT FATHERS: their desks resound and thunder out *machines*, τεχνολογίσματα, *structures* and *schemes*. These however are tolerable; but the other is intolerable, with EURIPIDES,

—Κεῖνο δ' ἐκ ἀνασχετόν  
Ἐῖαιεν οὐδ' ἄλγῳ χαλῶντα τοῖς κακοῖσιν.

S. RINALDO DULIOLI, being tied to both by a common link of friendship, the late professor of *Padua*, a great friend of BOERHAAVE, whilst he lived in *Holland*, often consulting with him about the most weighty affairs, went a few days ago to *Bologna*, taking leave of HYGIA, APOLLO, and our troubles and labours, much to the grief of all, being himself filled with riches and honours: what can we now hope for, when he is gone, and has *fore-sworn the medical Muses*? he desired me to send you his compliments, and to tell you that he wishes you all prosperity. We have a long time been impatient for your lubrications *de Viventium Medicorum Fatis*, which you have so often promised both publickly and privately, of which we have the greatest expectations. But it is time to conclude. May you enjoy all happiness, and not fail to oblige me with a frequent correspondence, though so great a space both of sea and land is interposed between us.

Venice, April 1, MDCCXXII.

To



To the Learned

*Giovanni Baptista Verna,*

Physician and Patritian of *Lanciano*,

**CARLO PASINI,**

Philosopher and Doctor of Physic,

Sends Greeting.

YOU have been informed by the letter of ANTONIO MARIA ZANINI that I congratulate you on the new edition of the famous HERMAN BOERHAAVE's Physical Works, which has lately been published by LORENZO BASILIO our Bookseller, according to your advice. But I cannot help being grieved, that BASILIO, in printing these Works, did not ask the advise and assistance of some excellent Gentlemen, who profess the rational and true Physic, in this noble city. For as the Masters of this *science of healing* are able both perfectly to understand, and clearly to explain these *Physical Works* of BOERHAAVE, you your self LEARNED SIR, cannot but know, that they could have added to the *Basilian* edition, of which I am speaking, a preface concerning the excellence



excellence and usefulness of BOERHAAVE's writings ; and also some annotations, that would have been of the greatest service to such young men, as desire to learn the doctrines of that learned WRITER, and at the same time would have done honour to the AUTHOR himself. And that you may plainly see there are most noble Physicians in this our famous city, who could easily have done what I mention, I must desire you to observe, that the greatest part of them are accustomed diligently to examine, by experiments and just observations, what nature can do or suffer, both in a good and bad state of health, which the MASTER has shewn in *diseases* : and that they are accustomed also to reduce all the powers, motions, and actions of our Bodies, and all the faculties and operations of *Medicines* to rational Mechanics, by the assistance of an exact Anatomy, experimental Chemistry, and art of computing. Of this let GIACOMO BRACHI, BERNARDINO ZENDRINI, DOMINICO SANOTORINI, HIERONIMO ODDONI, LEONARDO DORO, GIUSEPPO GRANDIS, ANDREA ROSSETTI, GIACOMO MARCHI, Men famous for the knowledge of Physic and Eloquence, be my Witnesses : I call to witness also (to pass over other Persons of great merit, for brevity sake) PEDRO ANTONIO MICHELOTTI, who in his last published work, *de separatione Fluidorum in Corpore Animali*, and in his Animadversions on the most learned Doctor JAMES KEILL's *fifth Essay on Muscular Motion*, has laid the chief foundations of the *Apollinean* art, grounded on a sound Anatomy, and sublime Mechanics : by the help of which who can deny, that many things which are laid down as *data*, by the most ingenious BOERHAAVE, in his *Institutiones Medicæ*, but not demonstrated, and belonging to the motion of the Heart,



Heart, Blood, and Muscles, to the Respiration, to the Pressures, Velocities, Fluidities and Secretions of the Liquors, and to the Animal Spirits, may be easily demonstrated? especially of those who know how to compare the excellent discoveries of the above-mentioned Philosophers. If you consider all these things attentively, and judge them sincerely, I do not doubt but you will immediately confess, that this Greekling ZANINI has written to you unjustly, and with a liberty not to be born, though veiled a little with Greek, *that the greatest part of our Physicians tread in the Air, and catch at Clouds, and exhibit subtile disputations, or niceties to their Auditors, that are fit only for their own desks: and that they recal but few things to practice from the dictates of nature.* To such a Man belongs Βοιωτέιον ἔς; or rather Ἀσυνᾶς ψῆφος. Nay since he pretends, that *we quite abhor the ancient Fathers,* I beg you would consider, whether it is he, or we that most obey the precepts of HIPPOCRATES. For we diligently observe what HIPPOCRATES recommended to his Son THESSALUS, Ἰσθρῖν δὲ μελέτω σοι, ὦ παῖ, Γεωμετρικῆς, καὶ Ἀριθμητικῆς, &c. that is, *Be very studious, my Son, in the knowledge of Geometry and Numbers. For they will not only render your life illustrious, and fit for many things in the state of human affairs: but will also cause your mind to be more quick and clear, in obtaining the advantage of all those things, the use of which is required in Physic.* ZANINI on the contrary, condemns these and such like, and makes a strange exclamation, forgetting what is written by the same HIPPOCRATES, in his Epistle to DIONYSIUS; Ἐγὼ δὲ εἰμαι ἔδὲ νόσον αὐτὴν εἶναι, &c. that is, *I do not think that to be a disease, but immoderate learning, which indeed is not immoderate, but thought so by the ignorant, for immoderate virtue*



is never hurtful. For the excellence of a disease raises an opinion of it's self, because of the ignorance of those who judge of it. For every one judges that to be superfluous which abounds in another, and is wanting in himself. For thus the coward thinks fortitude to be impudence, and the covetous Man has the same opinion of magnanimity. But do we recall but few things to practice from the dictates of nature! What? is it not the most perfect genius of nature, if any one buys a like ZANINI? so say the popular Empirics. And if you should know that some of these being accustomed to weigh even the wisest opinions of Physicians by unsuccessful events, have rashly pronounced, more than once, both here and in other places, before ingenious Doctors of Physic, that the most experienced BOERHAAVE is generally mistaken in weighing and considering the disorders of the human Body, you would be astonished, that ZANINI should reckon them among those who are the most fond of BOERHAAVE. But as the confidence of those Empirics has been an offence to all who know the great excellence in practice of that wonderful Man, confirmed by the most established reputation, both among his own People, and in foreign Nations; so none can help laughing at those words in the *Basilion* Epistle: HERMAN BOERHAAVE being now brought over from Holland, implores your favour and protection: as if the works of BOERHAAVE were now first imported into *Italy*, or as if it became so great an AUTHOR, who has been long approved by the most learned and most famous *Italians*, and often justly and deservedly commended in printed Books, to fly for refuge and protection, as a suppliant, to a Physician of such a rank. In the last place I would inform you, most learned VERNA, that when I lately made mention



mention to the *Fellows* of the most illustrious College of *Venetian* Physicians, of good ZANINI's lamenting his misfortune, and pitying the common danger of our Patients, who are deprived of that great Physician, the Seniors could scarce refrain from laughing, and the Juniors burst into a loud laughter, or to use the words of PERSIUS,

*Ingeminasse*

— *Tremulos naso crispante cachinnos.*

*Venice, April 24, 1722.*



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