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Chap. V. The humours, and general affections of the body.

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27. *Christ. Fred. Garmanni. Homo ex Ovo. Chemnitzii.* 1672. in 4o. n. 86. p. 5049.
28. Of the *Formation of Fetus's* by *S. Gieronymo Barbato*, Publick Professor of Practical Physick at *Padua*. n. 74. p. 2224.
29. *Tractatus 5 Physico-Medici, de Sale Nitro & Spiritu Nitro-Aereo;* n. 105. p. 101. De *Respiratione Fetus in Utero & Ovo, &c.* Auth. *Job. Mayow* L. L. D. Oxon. 1674. in 8vo.
30. *New and Curious Observations of the Art of Curing the Venereal Disease, &c.* Written in *French* by *M. de Blegny*; *Englisht* by *Walter Harrys*. M. D. Lond. 1676. in 8vo. n. 125. p. 622.
31. *Tuta ac Efficax Luis Venereæ, sæpe absque Mercurio ac semper sine Salivatione Mercuriali, curandæ Methodus.* Auth. *Dav. Abercromby*. M. D. Lond. 1684. in 8vo. n. 160. p. 620.

## C H A P. V.

*The Humors, and General Affections of the Body.*

I. IN the beginning of the Year 1683. I first discovered the *Visible Circulation of the Blood* in the *Water-Newt*; which, I perceive, *Dr. Gardeden* has since hit upon, and mentions in a Letter to *Dr. Middleton*, July 17. 1685. I frequently shew'd it, both on the outside without Dissection, and in the inward Vessels, to several Curious Philosophers; particularly *May 26. 1684.* I opened (before our *Society at Dublin*) a *Water-Newt*, which I take to be the *Salamandra* or *Lacerta Aquatica*; in the Body of this Animal there are two long *Sacculi Aerei*, in which the *Blood-Vessels* are curiously Ramify'd. To these *Blood-Vessels* applying a *Microscope*, I shewed the *Circulation of the Blood, ad Oculum*, as plainly as Water running in a River: and more Rapidly than any common Stream. The same Experiment I repeated again before them on the 2d of *June* following, and to those that had good Observing Eyes, the *Circulation* was as *Visible* outwardly on the Hands and Toes, as in the Vessels within. But certainly the Appearance in the Vessels on the two forementioned *Sacculi*, with the Beating, Emptying and Filling of the Heart, is most surprising.

*The Visible Circulation of the Blood; by Mr Will. Molyneux. n. 177. P. 1236*

II. In a Sheep weighing alive 118 *l.* we found  $5\frac{1}{4}$  *l.* of *Blood*: which is less than  $\frac{1}{22}$  part of the Weight of the Sheep. In a Lamb weighing 30  $\frac{1}{2}$  *l.* when Living, there was but  $1\frac{1}{2}$  *l.* of *Blood*: which is nearly  $\frac{1}{25}$  part. In a Duck weighing alive 2 *l.* 14. Ounces 50 *Gr.* we found an Ounce and half and 53 *Gr.* of *Blood*: which is less than  $\frac{1}{28}$  part. In a Rabbit weighing 10 Ounces, 7 *Dr.* and 50 *Gr.* we found 2 *Dr.* 57. *Gr.* of *Blood*: which is about  $\frac{1}{35}$  part.

*The Quantity of Blood in Men, and the Celerity of its Circulation; by Dr. Allen Moulin. n. 197. P. 453.*

In the Right *Ventricle* and *Auricle* of the *Heart* of a *Dog*, I found 6 Ounces of *Blood*, after that I had injected into the *Jugular Vein* a Liqueur that

Coagulated the *Blood*; I found a greater quantity of *Blood* in the *Heart* of another Dog, whom I treated after the same manner. The *Hearts* were much Distended by the *Blood* found in them. I shall therefore suppose that 4 Ounces only were received at a time by these *Hearts* without Force, that is Naturally. But I shall suppose a *Man's Heart*, (tho' much larger, and has much larger Vessels than those I speak of) to receive but 4 Ounces at each *Diastole*: and then Allowing 75 Pulses to every Minute, there will be 4500 in an Hour, and 18000 Ounces of *Blood* transmitted in that time.

Now if we shall suppose that a *Man's Blood* bears the same Proportion to his Weight, as that of any of the aforesaid Animals had to its Weight, which in a Lamb was the greatest, being  $\frac{1}{20}$  part, it will follow that the quantity of *Circulating Blood* in a *Man* weighing 160 l. will not exceed 8 l. or 128 Ounces; according to which Computation the *Blood* will *Circulate* 140 times in an Hour. But let us suppose that instead of 8 l. the Mass of *Blood* in such a *Man* be 12 l. it will follow, that it will *Circulate* between 93 and 94 times in an Hour. From this *Celerity* of the *Circulation* of the *Blood*, we may give an Account of the Sudden *Refectio*n with Victuals, and particularly such as are liquid; we may also account for the quick passing of *Urine*, from the same thing; and also the quick Motion of the *Chyle* into the *Breasts* of *Nurses*; without supposing unknown Passages, from the Stomach or any other part, into the *Bladder* and *Breasts*.

Anatomists commonly suppose no more than *Half an Ounce* of *Blood* to get into the *Heart* at one *Diastole*; and the whole Quantity of *Blood* in the *Body* to be between 15 and 25 lb. by which it may appear how their Computations and mine differ.

A Method of  
Transfusing  
Blood; by Dr.  
Lower. n. 19.  
352. n. 20.  
p. 353.

III. 1. First, take up the *Carotidal Artery* of the Dog or other Animal, whose *Blood* is to be *Transfused* into another of the same or a different kind, and separate it from the *Nerve* of the 8th Pair, and lay it bare above an Inch. Then make a strong Ligature on the upper part of the *Artery*, not to be untied again: but an Inch below, *viz.* towards the *Heart*, make another Ligature of a running Knot, which may be loosen'd or fasten'd as there shall be Occasion. Having made these two Knots, draw two Threds under the *Artery* between the two Ligatures; and then open the *Artery*, and put in a Quill, and tye the *Artery* upon the Quill very fast by those two Threds, and stop the Quill with a Stick. After this, make bare the *Jugular Vein* in the other Dog about an Inch and a half long; and at each end make a Ligature with a running Knot, and in the space betwixt the two running Knots draw under the *Vein* two Threds, as in the other: then make an Incision in the *Vein* and put into it two Quills, one into the *Descendent* part of the *Vein*, to receive the *Blood* from the other Dog and carry it to the *Heart*; and the other Quill put into the other part of the *Jugular Vein*, (which comes from the *Head*) out of which, the 2d Dog's own *Blood* must run into Dishes. These 2 Quills being put in and ty'd fast, stop them with a Stick, till there be Occasion to open them.

All

All things being thus prepared, Fasten the Dogs on their sides towards one another so conveniently, that the Quills may go into each other. After that unstop the Quill that goes down into the first Dog's *Jugular Vein*, and the other Quill coming out of the other Dog's *Artery*; and by the help of two or three other Quills, put into each other, according as there shall be Occasion, insert them into one another. Then slip the running Knots, and immediately the *Blood* runs through the Quills, as through an *Artery*, very impetuously. And immediately, as the *Blood* runs into the Dog, unstop the other Quill, coming out of the upper part of his *Jugular Vein* (a Ligature being first made about his Neck, or else his other *Jugular Vein* being compressed by ones Finger) and let his own *Blood* run out at the same time into Dishes (yet not constantly, but according as you perceive him able to bear it) till the other Dog begin to Cry, and Faint, and fall into *Convulsions*, and at last Dye by his side.

Then take out both the Quills out of the Dog's *Jugular Vein*, and tie the running Knot fast, and cut the *Vein* asunder, (which you may do without any harm to the Dog, one *Jugular Vein* being sufficient to convey all the *Blood* from the Head and upper Parts, by reason of a large *Anastomosis*, whereby both the *Jugular Veins* meet about the *Larinx*.) This done, sow up the Skin and dismiss him, and the Dog will Leap from the Table and shake himself, and run away as if nothing ailed him.

In the performing of this Experiment, these Circumstances are to be Observ'd. 1. That the Animals be fasten'd at such a convenient Distance, that the *Vein* or *Artery* be not stretched. 2. If the Pulse fails beyond the Quill in the *Jugular Vein*, you must draw out the *Arterial Quill*, and with a Probe open the Passage again in both of them, that the *Blood* may have its free Course.

2. Instead of a Quill, take a small crooked Pipe of Silver or Brass, so slender that the one end may enter into a Quill, and having at the other end, that is to enter into the *Vein* and *Arterie*, a small knob, and for the better fastening them to it with a Thred; for this is much more easy to be managed than a Quill.

By .....  
n. 20. p. 356.

IV. 1. It may be considered, in the Experiments of *Transfusion*, that the *Blood* of the *Emitent* Animal may, after a few Minutes of time, by its *Circulation*, Mix and Run out with that of the *Recipient*. Wherefore to be assured in these Tryals, that all the *Blood* of the *Recipient* is Run out, and none left in him but the *Adventitious Blood* of the *Emitent*, two or three or more Animals may be prepared and administr'd, to *Bleed* them all out into one.

Considerations  
concerning Trans-  
fusion of Blood;  
by ..... ib. p. 357.

2. It seems not irrational to guess beforehand, that the *Exchange* of *Blood* will not alter the Nature or Disposition of the Animals, upon which it shall be practis'd; though it may be thought worth while for Satisfaction and Certainty, to determine that point by *Experiments*. The Case of *Exchanging* the *Blood* of Animals seems not like that of *Grafting*, where the Cyons turns the Sap of the Stock, Grafted upon, into its Nature; the Fibres of the

Cyons to training the Juice, which passes from the Stem to it, as thereby to Change it into that of the Cyons, whereas in this *Transfusion* there seems to be no such Percolation of the *Blood* of Animals, whereby that of the one should be *Changed* into the Nature of the other.

3. The most probable use of this Experiment may be conjectured to be, That one Animal may Live with the *Blood* of an other; and consequently, That those Animals that want *Blood*, or have corrupt *Blood*, may be supplied from others with a Sufficient Quantity, and of such as is Good: provided the *Transfusion* be often repeated, by reason of the quick expence that is made of the *Blood*.

*Experiments of Transfusing Blood; by Dr. Lower. n. 20. p. 356.*

*The Transfusion of the Blood of a Calf into a Sheep by the Veins only, by Sir Edm. King n. 25. p. 449.*

V. 1. I once Bled a Mastive into a Curr, and the little Dog Bled out at least double the Quantity of his own *Blood*, and left the Mastive Dead upon the Table: and after he was unty'd, he ran away and shook himself, as if he had been only thrown into Water.

2. I took a Calf and a Sheep, both of the larger sort, and having prepared a *Jugular Vein* in each, I planted my Pipes and Quills as is usual, both in the *Jugular Vein* of the Calf (designed to be the *Emittent*) and in that of the Sheep (intended for the *Recipient*). Then I took out of the Sheep 49 Ounces (*Averdupois Weight*) of *Blood*, before any other *Blood* was let in; about which time the Company concluding the Sheep to be very Faint, and finding the *Blood* to run very slowly, I stopped the *Vein* of the Sheep, and unstopped the Pipe in the Calf, letting run out 10 Ounces into a Porringer, which was done in about 40" of a *Minute*. Then I conveyed Pipes from the *Emittent* Calf's *Vein* into the *Recipient* Sheep's *Vein*, and there ran a good free stream of *Blood* for the space of 5 *Minutes* (though perhaps less swift than the first 10 Ounces.) And not to be deceived in the running, I did often strike with my Finger the upper part of the *Emitting-Vein*, and thereby easily felt every stroke answer'd on the *Recipient-Vein*, just like a Pulse. And now supposing that by this time, (*viz.* the lapse of 5 *Min.*) the Sheep had receiv'd as much, if not more *Blood* than it had lost; we stopp'd the Current of *Blood* from the Calf, and clos'd also the *Vein* of the Sheep; and then having unty'd her, and set her down in the Room, she went about and appear'd to have as much Strength, as she had before the loss of her own *Blood*. Then resolving to *Bleed* the Sheep to Death, we bound her the 2d time, and open'd the *Emittent* part of the *Vein* again; whereupon having Bled about 60 Ounces, she fell into *Convulsions*; and after the loss of about 5 Ounces more, she Dy'd upon the place, And being Dress'd by the Butcher, there did not, in all the usual places, appear above 3 Ounces of *Blood*; and the whole Sheep look'd of a lovely White.

We resolv'd also to see the Calf bleed to Death: But he having Bled 10 Ounces, and then for the space of 5 *Minutes* more into the Sheep and rested a good while, the *Blood* by that time began to Coagulate in the *Vein*; which made me open the *Carotid Artery*, letting thence run out about 25 Ounces of *Blood*, of a very lovely and vivid Colour, vastly excelling therein the *Blood* of the *Vein*. The Calf, when Dress'd, had, by the Information  
of

of the Butcher, as little *Blood* as the Sheep; and we saw him look Whiter than usually they do in the ordinary way of Killing.

2. I took out 45 Ounces and better, of *Blood*, out of the *Jugular Vein* of a Sheep, by which time we found her exceeding Faint. Then I convey'd *Blood* from the *Jugular-Vein* of a Calf into that of the Sheep, for the space of 7 Minutes, when we did believe, by the continuance of a good stream from the Calf, that the Sheep had already receiv'd more *Blood* than she had lost. Whereupon we set her free and she appear'd not at all concern'd at what she had endur'd in the Experiment, and continu'd lusty and strong. We then *Bled* the Calf to Death, and receiv'd from him 6 Porringers full of *Blood*, after the Sheep had been supply'd, each Porringer containing  $11\frac{1}{4}$  Ounces of Water. The Sheep lost 4 of the same Measures full of *Blood*; which being supply'd by that of the Calf, we reckon that the Calf lost 10 such Measures in all.

3. I procur'd an Old Mungrel Curr, all over-run with the *Mainge* of a middle Size, and having some Hours before fed him plentifully with Cheese-parings and Milk, I prepar'd the *Jugular Vein*, as we use to do the *Carotid Artery* of the *Eminent Animal*. Then I made as strong a Ligature upon the Dog's Neck as I durst, for fear of Choaking him, to the end, that the *Venal Blood*, which is much more sluggish in its Motion and Evacuation than the *Arterial*, might be *Emitted* with the greater Advantage of *Impetus*. Then I took a young Land-Spaniel, of about the same bigness, and prepar'd his *Jugular Vein*, as is usually done in the *Recipient Animal*. Having thus prepared them both, and placed them in a convenient Posture one to the other, I let slip the running Knots, and by frequent Compression of the Neck (besides the Ligature I had made) by reason of the tardy Running of the *Venal Blood* out of the *Emittent*, *Transfus'd* about 14 or 16 Ounces of the *Blood* of the *Infected*, into the Veins of the *Sound Dog*, as near as I could guess by the quantity of *Blood*, which ran into a Dish from the *Recipient*; supposing the *Recipient Animal* to lose near about the same Proportion to what the *Emittent* supplies.

The Effect of this Experiment was, no alteration at all, any way to be observ'd in the *Sound Dog*. But for the *Maingy Dog* he was in about 10 Days or a Fortnights space perfectly *Cured*: Which might with probability enough, I think, have been expected from the considerable *Evacuation*, he made; perhaps the quickest and surest Remedy for the *Cure* of that sort of Disease he was *Infected* with, both in Man and Beast.

4. Mr. Gayant *Transfus'd* the *Blood* of a Young Dog into the *Veins* of an Old, which two Hours after, did Leap and Frisk; whereas he was almost Blind with Age, and could hardly stir before.

5. Since the 9th of March 1667, we have *Transfus'd* the *Blood* of 3 Calves into 3 Dogs. After which the Dogs (all of them) did eat as well as before: And one of the 3 Dogs, from whom so much *Blood* had been drawn the Day before that he could hardly stir any more, having been supply'd the next Morning with the *Blood* of a Calf, recover'd instantly his Strength, and shew'd a surprizing Vigor.

*The Transfusion of the Blood of a Mangy into a Sound Dog; by Mr. Tho. Coxe. n. 25. p. 451.*

*The Transfusion of the Blood of a Young into an Old Dog; by Mr. Gayant. n. 26. p. 479.*

*The Transfusion of the Blood of Calves into Dogs; by M. Deane. n. 25. p. 453.*

A very Plentiful  
Transfusion, ex-  
perimented upon  
a Bitch; by ...  
... n. 28.  
p. 521.

6. Several successful Experiments have been made in *London*, of very Plentiful *Transfusions*; and among others (to mention a Signal one) that upon a *Bitch*, which lost in the Operation near 30 Ounces of Blood, and was recruited accordingly. This Animal does not only survive to this very Day, but had another more severe Experiment soon after try'd upon her, by which her *Spleen* was cut out, without tying up the *Vessels*, whence that *Viscus* was separated: Since which time she took Dog, (even before the *Wound* was heal'd up) was with Puppy, and brought forth Whelps, and remains well and jocund. So that it is not too hastily to be concluded, that large *Transfusions* are Dangerous.

The Transfusion  
of the Blood of  
4 Weathers into  
an Horse; by M.  
Denys. n. 30.  
p. 559.

The Transfusion  
of the Blood of  
one Lamb into  
another; by S.  
... n. 42.  
p. 840.

7. M. *Denys* writes from *Paris*, that they had lately *Transmitted* the Blood of 4 Weathers into a Horse of 26 Years old, and that this Horse had thence receiv'd much Strength, and more than an ordinary Stomach.

8. May 8. 1677. at S. *Cassini's* in *Bononia*, there was open'd the *Carotid Artery* of a Lamb, when the Blood was let run as long as it could, into the Right Branch of the *Jugular Vein* of another Lamb, from which there had before been drawn so much Blood as was judg'd it could be supply'd with from a Lamb of the like bigness, whose Blood should be let out till it Dy'd. After this, there were made two Ligatures pretty near to one another, in the *Veins* of the Lamb that had Received the Blood; and this *Vein* was quite cut thorow between the two Ligatures. This done, the Lamb was unty'd, and went about without any appearance of Feebleness; and its Wound being heal'd up, it grew like other Lambs. But the 5th of *Jan.* 1678, it Dy'd; and its *Stomach* was found full of *Corrupt Food*. Its Neck being Dissected, to see what had happen'd to the *Vein* Cut through, it was found, that it had joyn'd it self to the next Muscle by some Fibres, and that the upper part of that *Vein* had a Communication with the Lower, by the means of a little Branch, which might in some manner supply the Defects of the whole Trunk.

The Transfusion  
of the Blood of  
a Lamb into a Spaniel;  
by S. ...  
n. 42. p. 841.

9. May 20. 1668. at S. *Griffoni's* at *Udine*, the Blood of a Lamb was *Transfus'd* into the *Veins* of a Spaniel of a middle Size of that Kind, 13 Years Old, who had been altogether Deaf for above 3 Years, so as what Noise soever was made, he gave not any sign of hearing it. He walked very little, and was so Feeble, that being unable to lift up his Feet, all he did was to trail his Body forward. After the *Transfusion* practis'd upon him, he remained for an Hour upon the Table, where he was yet unty'd; but afterwards Leaping down, he went to find his Masters that were in other Chambers. Two Days after he went abroad, and ran up and down the Streets with other Dogs, without trailing his Feet, as he did before. His Stomach also return'd to him, and he began to eat more, and more greedily than before. But that which is more surprizing, is, that from that time he gave signs, that he began to Hear, returning sometimes at the Voice of his Masters. The 13 of *June* he was almost quite Cured of his Deafness, and he appear'd without comparison more Jocund than he was before the Operation. At length, the 20th, of the same Month, he had wholly recover'd his Hearing; yet thus, that when he was call'd he turn'd back, as if he that had call'd him had been very far off. But that happen'd not always; in the mean time he heard always when he was call'd.

VI. I think, that a Silver Tube with a Silver Stopper, somewhat blunted at one end and flattened at the other for conveniency of handling, us'd already upon Beasts with good Success, is very proper for the *Transfusion of Blood into the Veins of Men*. The Operation may be thus perform'd; After the *Artery* is prepar'd in a *Lamb, Kid,* &c. Let a Ligature be made upon the *Arm,* &c. of a *Man* (hard enough to render the *Vein* Turgid;) in the place you intend to insert the lesser end of the Silver Pipe, which is so fitted that the Silver Stopper, thrust into the Tube, reaches somewhat, by its blunt end, beyond one of the ends of that Tube. This done, divide the Skin of the Part in the same manner that is us'd in Cutting an Issue, just over the *Vein* to be open'd. Then with a fine Lance open the *Vein*; or if you please, in case the *Vein* lie fair and high (especially if the Skin be fine) you may open both together, according to the usual way of *Letting Blood*. Which done, let an Assistant clap his Finger, or a little Brouster prepar'd before-hand, or the like, upon the *Vein* a little below the Orifice, to hinder the *Blood* from Ascending. Keeping that Position, insert the blunt-ended Tube upwards into the *Vein*; when it is in, hold it and the Skin close together between your Finger and Thumb. Then pull out of the Tube the Stopper, and insert the Pipe by which the *Arterial Blood* is to be *Infus'd* from the *Eminent Animal*; managing the remainder according to the known Method of this Experiment.

*A Method of Transfusing Blood into the Veins of Men; by Sir Edm. King. n. 28. p. 522.*

VII. The Experiment of *Transfusing Blood* into an *Human Vein*, was perform'd upon Mr. *Arthur Coga*, Nov. 23. 1667. after this manner: Having prepared the *Carotid Artery* in a young Sheep, we made an Incision in the *Vein*, observing the Method above-mention'd, without any Alteration but in the shape of one of our Pipes; which we found more convenient for our purpose. And having Open'd the *Vein* in the *Man's Arm*, with as much ease as in the common way of *Vena-Section*, we let thence run out 6 or 7 Ounces of *Blood*. Then we planted our Silver Pipe into the said Incision, and inserted Quills between the two Pipes already advanc'd in the two Subjects, to convey the *Arterial Blood* from the Sheep into the *Vein* of the *Man*. The *Blood* ran freely into the *Man's Vein* for the space of 2 Minutes at least; so that we could feel a *Pulse* in the said *Vein* just beyond the end of the Silver Pipe. The *Patient* said, he did not feel the *Blood Hot*, (as was reported of the Subject in the *French Experiment*) which may very well be imputed to the length of the Pipes, through which the *Blood* pass'd, losing thereby so much of the *Heat*, as to come in a Temper very agreeable to *Venal Blood*. That the *Blood* did run all the time of those two *Minutes*, we conclude from thence. *First*, Because we felt a *Pulse* during that time. *Secondly*, Because when upon the *Man's* saying, he thought he had enough, we drew the Pipe out of the *Vein*, the Sheep's *Blood* ran through it with a full stream; which it had not done, if there had been any stop before, in the space of those two *Minutes*; the *Blood* being so very apt to *Coagulate* in the Pipes upon the least stop, especially the Pipes being as long as 3 Quills. From the Quantity of *Blood*, which

*Transfusion Practis'd upon a Man in London; by Dr. Richard Lower and Sir Edmund King. n. 30. p. 557. Vid. Sup. Sect. VI.*

run

run through the Pipe into a Porringer, we judg'd that about 9 or 10 Ounces was receiv'd into the *Man's Veins*. The *Man* after the *Operation*, as well as in it, found himself *very Well*.

The effects of several Liquors mixt with the Blood, Warm from the Veins; by Mr. Rob. Boyl. n. 29 p. 551.

VIII. 1. In the Year 1664. I mention'd to the *Royal Society*, an odd Experiment I had formerly made upon *Elood* yet Warm, as it came from the Animal; viz. that by putting into it a little *Aquafortis*, or *Oyl of Vitriol*, or *Spirit of Salt*, (these being the most usual *Acid Menstruums*) the *Elood* not only would presently lose its pure Colour, and become of a dirty one, but in a trice be also *Coagulated*; whereas if some fine *Urinous Spirit*, abounding in *Volatile Salt*, such as the *Spirit of Sal Armoniack*, were mingled with the Warm *Elood*, it would not only not Curdle it, or imbase its Colour, but make it look rather more *Florid* than before, and both keep it *Fluid*, and preserve it from Putrefaction for a long time. This Experiment I devis'd, among other things, to shew the Amicableness of *Volatile Spirits* with the *Elood*.

By Mr. Oldenburg. ib.

This Experiment was publickly related by Mr. Boyle to the *R. Society* in Dec. 1664. as appears by their *Journals*.

Liquor injected into the Veins of Dogs; by S. Fracassati. n. 27. p. 490. Aqua-fortis.

IX. 1. S. Fracassati Professor of *Anatomy* at *Pisa* in *Italy*, having *Infus'd* into the *Jugular* and *Crural Vein* of a Dog some *Aquafortis* Diluted, the Animal dy'd presently; and being open'd all the *Elood* in the Vessels was *Fixed*, but that in the Guts not so well. It was also observ'd, that the great Vessels were Burst, perhaps by an Effort of Nature; even, as in the greatest part of those that Dye of an *Apoplexy*, the Vessels of the *Lungs* are found Broken. Upon which Experiment, the Author maketh these Reflections: *First*, That an *Apoplexy* being often caus'd by a like *Coagulation* of the *Elood* (as hath been observ'd by the opening, made of sundry Persons, who Dy'd of that Distemper) it might be Cured by a timely *Infusing* some *Dissolvent* into the *Veins*. *Secondly*, That it is likely, that that useful Secret, by which M. de Bills Dissected Animals without any *Effusion* of *Elood*, consists in some such *Infusion*.

Spirit of Vitriol.

2. There was afterwards *Infus'd* into another Dog some *Spirit of Vitriol*, which had not so present an Effect; for the Animal complain'd a great while, and Foam'd like *Epilepticks*, and had its *Respiration* very thick; and observing the beating of his Breast, one might easily judge, the Dog suffer'd much: who Dying at last, his *Elood* was found *Fixed* in the *Veins*, and Gummy, resembling Soot.

Oyl of Sulphur.

3. Then there was *Inject'd* into a Dog some *Oyl of Sulphur*: But he Dy'd not of it, though this *Infusion* was several times try'd upon him. And the Wound being Clos'd, and the Dog let go, he went into all the Corners of the Room searching for Meat, and having found some Bones, he fell a Gnawing of them with a strange Avidity, as if this *Liquor* had caus'd in him a great *Appetite*.

Oyl of Tartar.

4. Another Dog, into whose *Veins* some *Oyl of Tartar* was *Inject'd*, did not escape so well: For he complain'd much, and was altogether Swoln, and then Dy'd. Being open'd, the Spectators were surpriz'd to find his *Blood* not Curdled

*Curdled*, but on the contrary more *Thin* and *Florid* than ordinary; which seems to hint, that too great *Fluidity* of the *Blood*, as well as its *Coagulation*, may cause *Death*.

X. 1. In *Autumn* 1690. I *Injected* into the *Jugular Vein* of a *Dog*, about  $\frac{1}{2}$  an *Ounce* of *Crude Mercury*, and observ'd the *Dog* soon after to have a *dry short Cough*, which by pretty intervals seiz'd him. About 2 *Days* after I found him troubled with a great difficulty of *Breathing*, and making a *Noise* like that of a *Broken-winded Horse*; there was no *Tumor* about the *Root* of his *Tongue*, nor any *Swelling* in the *Maxillary* or *Parotide Glandules*, neither was he observ'd to *Drivle*, though I order'd him warm *Broth* in *Expectation* of a *Salivation*. The 4th *Day* after the *Injection* of the *Mercury* he *Dy'd*, being for the 2 *Days* before so troubled with an *Orthopnœa*, that he could *Sleep* only when he lean'd his *Head* against something. I open'd him, and found about a *Pint* of *Bloody Serum* *Extravasated* in the *Thorax*. I found also the outside of the *Lungs* in most places *Blistered*; (for what I at first took to be some *Preternatural Dilatations* of the *Vesiculæ* of the *Bronchiæ*, were only *Blisters* or a *separation* of the common *Integuments* of the *Lungs* from their *Substance*;) some of these were larger than a *Rouncival-Pea*, others were smaller; but most of them contain'd *Mercurial Globules*, to be seen, even without opening, in several of them, thro' the outward *Skin*. Several of them I found broken, and upon a little *Pressure* observ'd the *Mercury* to run out, and with it a little *Sanies*; but upon a pretty strong *Pressure*, I observ'd that a great quantity of that *Sanies* issu'd out. When I open'd the *Right Ventricle* of the *Heart*, I found some *Particles* of the *Quick-silver* in the very midst of the *Coagulated Blood* lodg'd there: And in that also, contain'd in the *Arteria Pulmonalis*. I observ'd moreover *Blood*, *Coagulated* after a very different manner (which I want words to express) from what I have seen at any other time, notwithstanding the various *Methods* I had used to *Coagulate* it, and this in the *Interstices* between the *Columnæ* of the aforesaid *Ventricle*; and in this a greater quantity of *Quick-silver* than any where else in the *Dog*. This *Coagulum* was in the *Vertex* of the *Ventricle*, adhering pretty closely to the *Columnæ* and *Parietes*. Opening the *Left Ventricle*, I found a very tenacious *Blood*, *Coagulated* and sticking firmly to the great *Valve*, including the *Tendons* of it, and a little resembling a *Polypus*. In this *Ventricle* I searched diligently for *Mercury*, but found none; whence it may appear, that the *Mercury* pass'd no farther than the *Extremities* of the *Arteria Pulmonalis*. This occasion'd the aforesaid *Blisters*, and forced its way through the common *Coat* of the *Lungs*. I also open'd the *Aspera Arteria* down to the very *Bronchiæ*, but could find no *Mercury* in it, though I search'd diligently for it. Each of the *Subdivisions*, as well as *Divisions*, of the *Bronchiæ* was fill'd with a *Sanies*, which when I wash'd away, I found *Globules* of *Mercury* in many places under the *Bronchiæ*, and upon *Examination* they prov'd to be in the *Arteria Pulmonalis*, I have press'd these *Globules* backwards and forwards, and made some of them get out at the holes made in the *Vesiculæ* or *Blisters* above describ'd.

From hence may appear the danger of using *Mercury* in Human Bodies, so as that it may get into the *Mass of Blood*, especially into the *Lungs*; they wanting that brisk strong Motion which the *Muscles* have in other Parts, which are able to force it along with the *Blood*, in order to the raising a *Salivation*. Their Lax Spongy Texture makes them extremely unfit for clearing themselves of so troublesome a Guest as *Mercury* is. That it has this Effect on Human *Lungs*, is plain from what we daily see in Persons that have been often *Fluxed*, who are afterwards observ'd to Dye of *Consumptions* that will not give way to *Medicine*.

By Dr. Chr. Pitt.  
n. 220. p. 184.

2. Dissecting a Chance Dog, that had *Mercury Injected* into one of the *Jugulars*, (but how long it had been in his Body I cannot tell) I found it thrown out of the *Blood* into the *Cavity* of the *Abdomen*, as likewise some appearance of it in the other *Cavities* of the Body. All the *Glandules* were very Turgid and full of Liquor, especially in the *Ventricles* of the *Brain*, and all round there was a great Quantity of *Serum*. This may be call'd a true *Hydrocephalos*.

Medicated Li-  
quors Injected  
into Humane  
Veins; by Dr.  
Fabricius. n. 30.  
p. 564.

XI. 1. We have *Injected*, by a Syphon, about 2 Dr. of a *Laxative Medicine* into the *Median Vein* of the Right Arm of 3 Patients in the *Hospital* at *Dantzick*. One of the Patients was a Lusty Robust Soldier dangerously Infected with the *Venercal Disease*, and suffering grievous Protuberatings of the Bones in his Arms. He, when the *Purgative Liquor* was *Infus'd* into him, complain'd of great Pains in his Elbows, and the little *Valves* of his Arms did swell so visibly, that it was necessary by a gentle Compression of one's Finger to stroke up that Swelling towards the Patient's Shoulders. Some 4 Hours after, it began to work, not very troublefomely, and so it did the next Day, insomuch that the Man had 5 good *Stools* after it. Without any other Remedies those Protuberances were gone, nor are there any Footsteps left of the above-mention'd Disease.

The two other Tryals were made upon the other Sex. A Marry'd Woman of 35, and a Serving-maid of 20 Years of Age, had been both of them from their Birth very grievously afflicted with *Epileptick Fits*, so that there was little hopes left to Cure them. They both underwent this *Operation*, and there was *Injected* into their *Veins* a *Laxative Rosin*, Dissolved in an *Anti-Epileptical Spirit*. The first of these had gentle *Stools* some Hours after the *Injection*, and the next Day; the Fits, recurring now and then, but much milder, are since altogether vanish'd. As for the other, *viz.* the Maid, she went the same Day to *Stool* 4 times, and several times the next; but by going into the Air, and taking Cold, and not observing any Diet, cast her self away.

'Tis remarkable, that it was common to all three to *Vomit* soon after the *Injection*, and that extremely and frequently.

Medicines Inje-  
cted into Humane  
Veins; by . . . .  
n. 39. p. 766.

2. M. Smith, hath adventured to open a Vein and *Infuse* some *Medicines* into the *Blood* of two Persons in the *Hospital* at *Dantzick*, desperately Infected with the *Pox*; whereof the one Recover'd, and the other Dy'd. Afterwards (*viz.* Jul. 1668.) the same Physician together with M. Scheffeler

ler repeated the Experiment, by *Infusing Altering Medicines* into the *Veins* of the Right Arms of 3 Persons. The one Lame of the *Gout*, the other extremely *Apoplectical*; and the 3d, reduc'd to Extremity by that Odd Distemper, the *Plica Polonica*. The success of this, as M. *Hewelius* (who was the only Person admitted to be present at the *Operation*) informs me, was, That the *Gouty* Man found himself pretty well next Day, and shortly after went to Work, it being Harvest-time, and has continu'd well ever since, leaving the *Hospital Aug. 17. 1668*, and professing himself Cur'd: The *Apoplectical* hath not had one *Paroxysme* since; and the several Sores which the *Plica Polonica* had occasion'd, are Healed, and both these Persons are able to Work.

XII. It is commonly observ'd, that when any *Blood* is become *Cold* in a Dish, that part which is beneath the Superficies appears much Blacker, than that on the Top. *S. Fracassati* maintains, that this Blackish Colour comes from hence, that the *Blood*, which is underneath, is not expos'd to the *Air*, and not (as it is vulgarly suppos'd) from any Mixture of *Melancholy*. To prove which, he assures, that upon its being expos'd to the *Air*, it changes Colour and becomes of a *Florid Red*.

*An Observati-  
on upon Blood  
grown Cold; by  
S. Fracassati.  
n. 27. P. 492.*

XIII. Take a Quantity of *Filings* of *Copper*, fresh made, and place them in a *Glass Vial*, whose Bottom is broad and even, and then pour on an *Urinous Spirit*, either of *Sal Armoniack*, or of *Urine* it self, not made with *Quick-Lime*. 1. The *Glass* should not be fill'd up much above one half-way, and then must presently be so exactly stop'd that no *Air* be capable of intruding. You may then observe for 4, 5, or 6 Days the *Tincture* will be growing Deeper and Deeper, and then will keep a stand for 2 or 3 Days, more or less, and afterwards will gradually decline until it become quite Pale, and void of all Colour, When it is in this state, the easiest way of performing the *Experiment* for your own satisfaction, is to decant this *Clear Spirit* into a *Glass* so as to leave all the *Filings* behind, and that will demonstrate that the *Filings* did not give this *Tincture de novo*, but that it belongs to the Influence of the *Air*. But in case you are furnish'd with an *Air-pump*, and can pour off this *Pallid Liquor* in a *Vacuo Aeris*, and there stop it up securely, you may then preserve it so long as you please, and exhibit it to advantage. You may also observe, that so soon as you let in the *Air*, the upper Superficies immediately *Tinges* first, and so Descends deeper and deeper until it has penetrated the whole, and this it does the sooner, if the *Glass* be wide, and the *Liquor* by consequence have a large Superficies: Or if you pour it out of one *Glass* into another, the *Air* makes a more sudden *Change* of the whole.

*Some Effects of  
the Air upon  
Blood, Explain'd  
by an Experi-  
ment of the  
Change of Colour  
in a clear Liquor  
upon the Admi-  
sion of Air; by  
Dr. Fred. Slare.  
n. 204. P. 398.*

That this *Liquor* should lose its *Tincture* is not to be wonder'd at, for even *Ink* it self by standing still will lose much of its *Tincture*; and so do the *Tinctures* of many *Minerals*: Nor can we expect that there should be any *Precipitation* discernable at the bottom of the *Glass*, if we consider, that 2 *Gr.* of *Copper* will give a Deep Colour to 3 *Ounces* of *Urinous*

Spirit. But this is surprizing, that since our *Menstruum* (that is our *Spirit*) is divested of its *Veneréal Particles* which gave the *Tincture*, and is become as *Clear* as Rock-water, and being separated from its *Metalline Filings*, does yet upon the approach of the *Air* immediately afford a very *Blue Tincture*. This indeed plainly shews, that there must be conceal'd in the Pores of the Liquor, such Particles as are of a *Cupreous* Nature. But how may this come to pass? To which I answer, I cannot be so vain to think, that the *Air* gives the Matter of the *Colour* to the *Spirit*, but that it conveys into it such Particles as do Stimulate and give Motion to the *Menstruum*, and enable it to Dissolve those Particles thoroughly, that for want of more *Air* had not been fully broken in pieces.

In the next place, I discover two very differing sorts of Matter that our *Urinous Menstruum* acts upon in this *Experiment*. One I call a *Sulphureous* Matter, which gives the *Blue* Colour, and does let it fall again; and another which deserves the Name of *Saline*: but though it be taken up into our *Tinging Spirit*, does yet notwithstanding afford no *Tincture* whilst secluded from the *Air*. This was made to me very plain and clear, for having found out a way to separate a White Slimy Substance out of our clear Liquor, I then Destroy'd the *Experiment*, so that when expos'd to the *Air* the *Menstruum* would no more give the least *Tincture*. For a farther Confirmation, this White *Saline* Substance being in a small quantity Dissolv'd into any proper *Urinary Menstruum*, exhibits the *Experiment* set down to advantage, and gives a much Finer and Brighter Colour than what is drawn from *Crude Copper*, or from the *Sulphureous* parts.

The great Interest the *Air* has in this *Experiment*, made me think of applying it to the great *Change* that is made upon *Blood*: For it is obvious to every Body, that there is a great difference in Colour betwixt the *Venal* and *Arterial Blood*; the *Venal* as soon as it is let out of the *Vein* is observ'd to be of a dark Complexion, and requires some time to be expos'd to the *Air* before it obtains a *Florid Red*, and that only Superficies which is contiguous to the *Air*, does for a good while become *Red*; for I have turn'd up a Cake of *Blood* 24 Hours after it had been let out, and found it of a very Dark and Opaque Colour, but the *Air* has immediately given it a Bright and Florid *Red Tincture*. This so manifest a *Change*, made by Virtue of the *Air*, is contrary to the Opinion of those Anatomists, who would have *Respiration* to be chiefly to promote the *Circulation* of the *Blood*, and that great *Apparatus* of *Air-Vessels* to be for a Fan to Cool the Mass of *Blood*, and that the *Air* returns unalter'd, and not capable of making any great Alteration, being deny'd any Ingress into or Mixture with the *Blood*. But the Observation is certain and unerring, that the *Venal Blood* as it passes the Right *Ventricle*, at its entrance into the *Lungs*, is of a very Opaque and Blackish Complexion, and in its passage through the *Lungs*, before it comes to the Left *Auricle*, is *Changed* into a very Florid and Bright *Red*. And I have often observ'd that Persons that have Vomited *Blood*, upon a Rupture of some Capillary Vessels of the *Lungs*, have sent up a very Froathy or Spumous *Blood*, and at the same time of a bright Scarlet *Red*: That it was Froathy, argues that the *Air* had

had incorporated with it; that it was *Red*, was due to the Tinging Power of the *Air*. To expect that this *Change* should be made in the *Heart* by any Local Ferment, or *Flamma Vitalis* is fruitless; because we find it perform'd before its arrival there; the Structure of the *Heart* denoting that Engine to be principally made for Projecting the *Blood*, in order to a Circulation through those various *Arteries*, or Pipes, which are branched from the *Heart*. Let us therefore examine the Structure of the *Lungs*, and we shall soon discover it to be a *Pneumatick* Engine made principally for taking in *Air*, and that in great Quantities. It's true, we may call the *Lungs* a Contexture of *Veins*, *Arteries*, *Nerves*, *Lymphæ-ducts*, &c. and that these do very much make up the *Parenchyma* (as some do use the word) of the *Lungs*; but yet we shall find the great bulk of the *Lungs* to be *Vesicular*: It seems to me to be a Continuation of the *Aspera Arteria*, or Wind-pipe, divided and subdivided into many Branches, and these still spun out into lesser and lesser Pipes, all of them Hollow; the farther they Run the Thinner their Sides do grow, which upon the *Inspiration* of the *Air* do Swell up and grow Round, and upon *Expiration* do fall something Flaccid, and abate something of that Figure, as the Microscope does plainly represent.

It is therefore more than probable, that the *Air* should insinuate it self into this Machine which is so truly adapted to receive it, and that in great Quantity; for in each *Inspiration* the *Lungs* are stretch'd at that rate, as to take up double the Room they do in the State of *Expiration*, or in their Compressed State; and even in this State the *Air-Bladders* are not fully Evacuated, but contain *Air* for good purposes. Nor can it be pretended, that any Augmentation is due to the *Expansion* of the *Blood-Vessels*, or any other which do not Swell beyond their usual Tension in each *Inspiration*. The *Sanguiferous-Vessels* are divaricated through all the *Lobes* of the *Lungs*, and do give a very close attendance to each *Vesicula* (for there is not the least *Vesicula* but has a *Capillary Vessel* which intimately insinuates into it) in order to receive some considerable Benefit from it; and this appears to the Eye; for in an Instant a dark and foul Blood is *Changed* into a Bright Florid *Red* Colour. Nor is the *Air* thus Infus'd into the *Lungs* for a bare Colour, and of no farther consideration: But I am apt to believe the great *Fermentations* of the *Blood* the Cause of the *Motions* and *Actions* of the *Muscles*; the *Animal Spirits* themselves, the great Spring of *Motions*, deriving their Energy and Powers, if not Nature, from hence. But *Corollary*. 1. That the *Air* is full of *Volatile Salts*, none will deny; but that these *Salts* must bear the Name of *Nitrous Salts*, is called in Question by this, and some other Experiments I have made. *Nitrous Salts* seem to me not to have any property of *Volatile Salt*. *Nitre* is a Salt of so *Fix'd* a Nature, that it will continue melted in a very strong Fire, with scarce any Evaporation; but if you put into it Charcoal or Brimstone, or give it an Accension, by another *Encheiresis* you may obtain a great Quantity of as *Fix'd* a Salt as any Concrete whatever affords; so that to me Gold seems not of a more *Fix'd* Nature.

*Corol.* II. A Standard of *Volatile Salts* should be settled, at present I can think of none better than *Water*: That *Salt* which in *Distillation* is more

*Fix'd*

Fix'd than *Water*, ought not to be reckon'd among *Volatile Salts*. This Standard will be justify'd by good Measures, grounded on Experience: For all *Salts* that are truly *Volatile*, as far as I could observe, are really *Lighter* than *Water*, that is, in a *Chymical* Sense, do with a less Degree of Fire *Sublime* in our Glasses, or come over the *Helm*, than *Water* does, This I find justify'd in our *Volatile Salt* of *Amber*, erroneously so call'd, for it does not come up to our Standard of *Volatility*, and is really no *Volatile Salt*; as will be made appear: If you take this suppos'd *Volatile Salt*, and *Distill* it in a *Retort*, or *Head and Body*, with common *Water*, the *Water* will *Ascend* in such a Degree of Fire where the *Salt* will not, for you must increase your Fire considerably to make it Rise after the *Water* is gone, and has left the *Dry Salt* at the *Bottom*. This made me enquire farther into the Properties of this *Salt*, which did not at all correspond with *Volatile Salts*, (for all true *Volatile Salts* are *Alkalies*) but on the contrary would Ferment with them, and quite destroy the property of true *Volatile Salt*, by bringing them to a dull *Inspid Salt*, which some call *Sal Neutrum*; and also by Fixing their *Volatile* Nature, not only in putting them by the Standard of *Volatility*, but also does quite destroy their *Spiritous* and *Stimulating* Smell, by Virtue of which they have been always deservedly esteem'd such Excellent *Cephalick* Medicines. Therefore examining this *Salt* yet a little farther, you will plainly prove it to be an *Acid*, that Corrodes *Iron*, turns Syrup of *July-flowers* Green, destroys the Tincture of *Lignum Nephriticum*, and does not Ferment with common *Acids*; so that it plainly belongs to the Tribe of *Acids*, and should be struck out of the Catalogue of *Volatile Salts*; and perhaps, out of the Number of *Specifick Cephalicks*, and rather to be degraded amongst the *Diureticks*, and even in that Rank to have but an inferior Station; for it seems to me to be but a Dull Medicine, and more valuable for its Price than great Vertue, especially if quite Divest'd of all its *Oyl*, in which the great *Cephalick* and *Cordial* Vertues must needs be own'd to consist.

*Corol. III.* That *Volatile Salts* have a great Property to draw *Tinctures*, and do particularly advance those Colours that are dispos'd to be *Red*: For tho' the *Spirit of Wine* be a very *Catholic Menstruum*, and draws a very deep Tincture of *Cochineel*, yet we have often observ'd, that if we put to this Tincture, when highest, a small proportion of *Volatile-Salt*, that would advance it to a great, even a double Degree. Thus I have observ'd it to advance the Tincture of *Arterial Blood*, and which is very Curious, if you Dissolve it in your *Blood* whilst you are Bleeding at one of your Veins, that *Blood* will become very *Florid*, and like *Arterial Blood*. Therefore since *Nitrous-Salts* produce none of these Tinging Effects; this *Corollary* seems much to favour the Notion, that the Effects of the *Air* upon the *Blood*, may be due to such *Salts* as are of a *Volatile-Alkalifat* Nature.

*Corol. IV.* *Contagious Diseases* are Communicated by the *Air* Inspired at the *Lungs*; and this seems more probable, than what *Dr. Needham* and others have endeavour'd to make out, with more Difficulty, in attributing the same Effect to the *Air* taken in our Meat by *Mastication*, and swallow'd down  
in

in our Drink and communicated to our *Chyle*, from thence to our *Blood* and *Spirits*. But this way a very small Quantity of *Infected Air* is Communicated, if we compare it with what is Communicated to the *Lungs*: For in each *Inspiration*, Human *Lungs* of an ordinary Size do at least take in such a Quantity of *Air*, as will fill up a Quart Bottle, and in the space of a *Minute* I have made 12 *Respirations*, (when I was very sedate, and drew in my *Breath* very treatably) and in that time by consequence took in as much *Air*, as would fill up a Vessel capacious enough to hold 3 *Gallons* of Water; and its plain, that the *Air Expir'd* returns much alter'd, forasmuch as the *Breath* or *Halitus* returns *Impregnated* with a moist Vapour, and such a one as does many times indicate the Temper of the *Blood*. From this *Halitus* Impostumations of the *Lungs* are frequently predicted: Such as have *Sulphureous Blood* shall Emit no very pleasing but Rancid Exhalations. Nor does the *Blood* only clear it self of some Vapours in *Expiration*, but also Imbibe and Impregnate itself with such Particles as are necessary to maintain *Life* in *Inspiration*: For a Man could not subsist long in a Tun of *Air*, should he be kept close in so capacious a Vessel; as we have found by Experiments made with several *Respiring* Animals, Dogs, Cats, and Birds, &c. that these would soon Dye there; so that we need constant supplies of vast Quantities of Fresh *Air*, which makes me believe that those Particles separated out of the *Air* by the *Lungs* are very sparingly deliver'd or mix'd with the common *Air*, but yet with this Difference, that the more Compress'd the *Air* is, the more it contains of that *Vivifying Salt* or *Spirit*; and on the contrary, the more Rarify'd, the less is found: For we are told by the Experience of such as have been on the *Pike* of *Teneriff*, that their Breathing is more difficult there, than at the Bottom where the *Air* is more Compressed. And we have found Birds and Mice, &c. would *Live* as long again in a Vessel where we had crouded in, by a *Syringe*, (or any other Condensing Engine,) a double Quantity of *Air*, as they did where they were confin'd only to common *Air*. To conclude, since the *Vivifying* Particles in the *Air* seem to be very sparingly Disseminated through it, I am apt to believe, that the Noxious and *Pestilential* are more Sparingly scatter'd up and down (the Author of Human Nature having taken more care for its Preservation than for its Destruction;) and therefore it may much better be infer'd from the Premises, That *Contagious Diseases* must needs be Communicated to the *Blood* by *Inspiration* into the *Lungs*, rather than any other way.

XIV. 1. A Curious Person writes from *Paris*, that there they had, in the House of a Physician, newly open'd a Man's *Vein*, wherein they found *Milk* instead of *Blood*. *White Blood; by M. . . . . n. 6. p. 100.*

2. A Maid, after eating a good Breakfast about 7 in the Morning, was let *Blood* about 11 the same Day in her Foot; the first *Blood* was receiv'd in a *Porringer*, and within a little while it turn'd very *White*; the last *Blood* we receiv'd in a *Sawcer*, which turn'd *White* immediately, like the *White* of a *Custard*. Within 5 or 6 Hours after I chanced to see both, and that in the *Porringer* was half *Blood* and half *Chyle*, swimming upon it like a *Serum* *By Dr. Lower. ib. p. 117.*

as *White* as Milk, and that in the Sawcer all *Chyle* without the least appearance of a Drop of *Blood*; and when we heated them distinctly over a gentle Fire, they both Harden'd, as the *White* of an Egg when'tis heated, or just as the *Serum* of *Blood* doth with heating, but far more *White*. This Maid was then in good Health, and only let *Blood* because she never had her *Courses*, yet of a very *Florid* Clear Complexion.

By Dr. H. Beal.  
n. 8. p. 139.

3. About 20 Years ago Mr. *Tho. Day*, (an Apothecary in *Cambridge*) told me, That himself let a Man *Blood* in the Arm, and the *Blood* was as *White* as Milk; as it run out of his Arm, it had a little dilute *Redness*, but as it fell into the Vessel it was presently *White*; and it continu'd like Drops of Milk on the Pavement, wherever it fell. The Conjecture which Dr. *Eade*, a Physician there, had of this appearance, was, that the Patient had much Fed on *Fish*; affirming withal, that he had soon been a *Leper*, if not prevented by *Physick*.

The Constituent  
Parts of Humane  
Blood; by Dr.  
Raym. Vieussins,  
n. 241. p. 224.

XV. 1. Cum mihi *Rex*, ob edita in *Lucem Opera* quædam *Medica*, Pensionem Annuam *Librarum* mille ad *Vitam* liberaliter concessisset, ne Principis omnium *Maximi* Favore atque *Gratia* indignus videri possem, statim me totum contuli ad amplam accuratamque *Morborum Internorum Historiam* contexendam. In ipso vero *Limine* hujus *Operis*, estatuendum atque clare demonstrandum duxi, quæ sit *Essentia*, quæ *Vis* eorum *Corporum* quibus *Sanguis* constat, tum, quod majus est, quæ tandem inter illa reperiatur proportio quantitatis, In *Sanguine* igitur contemplando curas omnes meas defixi, & *Cl. Boylæi* nunquam satis laudandi *Vestigiis* in hoc *Suscepto* meo insistendo, & ulterius quam ille progredi, si possem, conando quod diu multumque optaveram, vixque sperare ausus eram, id tandem, quamvis non sine gravibus longisque *Laboribus*, consecutus sum. Quò jam *Chymici*, *Medicique* illi (absit verbo *invidia*) prorsus Errasse mihi videntur, qui illud quod è *Sanguine Sal* elici solet, merum *Sal Acere* seu *Alkalinum* esse, nullaque *Industria* verum *Sal Acidum* ex illo educi posse, hæctenus crediderunt. Ii pariter tum *Chymici* tum *Medici* erravere, qui eam, quam à *Natura* partes *Vivifici* hujusmodi *Liquoris* inter se habent, proportionem *Quantitatis*, nullâ reperiiri posse *Arte* ab elapsis tot *Seculis* judicaverunt.

Equidem Scio, & fateor, *Sal* sive *Volatile*, sive *Fixum*, *Ignis* vi extractum è *Sanguine*, *Fermentationem*, quod aiunt, cum *Fluoribus* quibus *vis Acidis* etiam mitioribus pati: præterea id ipsum *Sal Sublimatum Corrosivum* dissolutum præcipitat, & *Syrupum* *Violaceum* *Viridem* facit, ut nemo nescit, adeoque multas *Salino-acres*, seu *Alkalinas* habet particulas, quibus hæc præstat; sed *Salinas* quoque *Acidas* non paucas complectitur, ut adducendis modo in medium *Experimentis* constabit certo certius. Quamobrem illud esse à *Natura* sua verum *Corpus Salsum*, exploratum deinceps omnibus erit, ac cognitum, nec non extra omnem omnino *Contraversiam* positum. *Corpus Salsum*, cum dico, conflatum intelligo ex partibus quidem *Salino-Acribus* & *Salino-Acidis*, sed *Salino-Acribus* longè pluribus ex quo illud consequens est, ut integrâ inviolatâque *Naturâ*, *Salino Acidæ* majore *Salino Acrium* copiâ atæ, & quasi *Sepultæ* delitescant.

Cum

Cum *Sal Acidum*, sub forma scilicet *Spiritus Acidi*, eruere vellem, si fortè possem, è *salso Sanguinis*, quod jam diu in Innatum & Adventitium, seu ab Alimentis potissimum suppeditatum, divisi; Libras 50. ejusmodi Liquoris, prius Æneo in Vase Ignis vi, quantum par erat, exsiccati, per totas 24 horas in Fornace Figuli torrui, seu, ut aiunt, Calcinavi; adeoque illas ad tres *Uncias & Drachmas 7* Cineris Grifacei redegì: Ex hoc Cinere, Gustui valdè Aspero, cum *Spiritibus Acidis* fermentescente, & Tincturæ Florum Malvæ Viridem Colorem inducente *Lixivium* confeci, ex quo *Unciam* unam *Salis Fixi* candoris penè Nivei, eduxi: *Salis* illius, quod, ut supradictum est, cum omnibus *Spiritibus Acidis* Fermentescebat, Sublimatum Corrosivum dissolutum præceps agebat, & Syrupum Violaceum colore Viridi tingebat, 7 *Drachmas & 42 Grana 3* circiter *Unciis* Boli siccissimi admiscui: Ex mixto hujusmodi *Retortâ* Luto munitâ incluso Igne, aiunt, *Reverberii* extraxi *Semiunciam & Grana 18* *Spiritus*, colorem *Spiritus Sulphurei* quodammodò imitantis, & ipso *Spiritu Aceti* Acidioris Linguae Judicio.

*Spiritus* ille plurimum Fermentatur, non solum cum Oleo & *Sale Fixo Tartari*, verùm etiam cum *Sale*, sive *Fixo*, sive *Volatili*, & subrufo *Spiritu*, quæ Ignis vi extrahuntur è *Sanguine*. Præterea ipsemet *Spiritus* Rubefacit Syrupum Violarum, Tincturam Heliotropii, & Florum Malvæ. Quare Liquidò constat *Sal* ex *Sanguine Humano* extractum, debere credi verum *Salsum*; id est *Salsum* ac quoddam *Acre Acidum*. Quod omnia inter *Salsa* perfectam cum solo *Sale Fixo Tartari*, en nullam cum *Sale Marino*, sive odore sive Sapore, sive Dentium stupefaciendorum vi, sive aliis quibusvis Effectibus suis, Similitudinem habere videtur ut experientia demonstrat. Unde patet ulteriùs Extractionem *Salis Acidi* ex eodem *Sanguine*, difficilem adèd hætenus ab omnibus Existimatam, reipsa fieri, si docta peritaque manus non desit.

Extracto & quasi per vim avulso *Spiritu* illo, de quo jam dixi, ex intimis Visceribus *Salis Fixi*, ubi conclusum penitusque obrutum latitabat, sub forma Solidi quidem Corporis, sed tamen in partes exiguissimas divisi, confectum est à me *Lixivium* è residuâ in fundo Vasis Materiâ, ex quo binæ *Drachmæ* cum dimidia & *Grano* uno *Salis Fixi* Grifacei subalbescents eductæ fuere: Istud *Sal* cum nullo liquido *Acido*, saltem ad sensum Fermentescebat, si *Oleum Vitrioli* excipiatis; id tamen ut *Sal Acre*, sive *Alkalinum* purum, aut fere purum, spectandum est; quoniam ad id, quod jam particulas suas *Salino Acidas* omnes, vel ferme omnes, deposuit, accedit istud præterea, quod Syrupo Violaceo priùs nonnihil excalesceto, & Tincturæ Florum Malvæ Viridem tribuit Colorem, *Sublimatum Corrosivum* dissolutum præcipitat, & cum *Oleo Tartari* nullo modo Fermentatur. Adde quòd nec vel tantillum immutat colorem Tincturæ Heliotropii, quam tamen *Acida* omnia, cum solida tum liquida, Rubefaciunt.

Quodam elapso tempore, postquam è *Fixo Sanguinis Humani Sale Spiritum Acidum* elicuisssem, Viridis recordatus sum Coloris, quem assumpserunt ultimæ Guttæ *Spiritus* Subrui hujusmodi Liquoris, cum illum à duobus jam elapsis Annis ex Alembico Æneo distillarem. Viridis autem, planeque Porraceus Color Guttarum illarum Subrui *Spiritus Sanguinis*, meâ quidem Sententiâ, suam ducebat Originem è quibusdam *Vstrioli* particulis *Salino Acidis* Ignea vi

ex Ære Alembici, avulsis, & ipsis intimè admistis: Cum primum recordatio hujusce Coloris animum subreplisset, hæc non levem mihi peperit anxietatem; quoniam per hunc Casum, quem verissimum etiam atque etiam Testor, vix dubitare mihi licuit quin *Sanguis* à me in Vase Æneo exsiccatas, antequam in Fornace Figuli torreretur, permultas ex Ære, Igne avulsas, partes *Vitrioli Salino-Acidis* intra textum suum interius admisset, quæ cum partibus ejus *Salino-Acribus* strictissimo, ne dicam indissolubili, Nexu copulatæ *Salum* efformaverant corpus, è quo *Spiritus* meus *Acidus* elicitus fuerat.

Cum hæc apud me, anxius sanè, aliquandiu meditatatus essem, & multum dubitarem an ex *Sanguine Humano*, qui nullo extraneo *Sale Acido* gravidus esset, Liquor Acidus educi posset, rei tanti momenti veritatem indagare, & mecum, si quis esset, errorem detegere statui, Quamobrem *Salis Fixi* è *Sanguine Humano* à me in Vasis Figulinis exsiccato eruti, *Unciam* unam exactissimè miscui cum *Unciis* tribus *Boli* siccissimi, & tenuissimum in Pulverem redacti; mixtum hoc in *Retortam* Luto, uti solet, obductam immisi; hanc deinceps in *Chymica* mea *Officina Reverberii* Furno impostui, & *Cervici* ejus adhibito aptatoque Excipulo, atque juncturis *Vesicâ* Suillâ madefactâ operitis, & ritè obturatis, Igne primùm lento, ac deinceps gradatim, quantum oportebat, aucto *Phegmatis Drachmam* semissem cum *Granis* 10. Extraxi, *Drachmas* vero 3. *Spiritus Acidi* primum Extracto *Spiritus* prorsus similis: Hicce *Spiritus* dentes plurimum stupeficiens Gustus judicio inter Liquores omnes *Acidos* ferè *Acidissimus* mihi videtur, & omnes omnino habet dotes, quas *Spiritus Acidum* primò è *Sanguine* elicitum habere diximus. Felicissimus hic meditationum mearum Laborumque meorum successus, qui totam mentem meam blandâ profectò lætitiâ perfudit implevitque, concepta omnia circa Extractionem *Salis Acidi* è *Sanguine* dubia mihi abstulit penitusque delevit.

Demum è Residuâ in funda Vasis Materia *Lixivium* confeci, ex quo *Drachmas* 5 *Salis Fixi* subalbescens Extraxi. Hinc manifestè patet me totum non elicuisse *Spiritus Acidum*, quem elicere potuissem è *Sale Fixo*, quod una cum *Bolo* in cavitatem *Retortæ* intruferam: Id autem ex animo sic factum est, ne scil. *Sal Fixum*, cujus Analysin rursus institueram, omnibus suis partibus *Salino-Acidis* prorsus exuretur. Et vero illud omni suo *Sale Acido* exuere nolui exploraturus subinde an quodammodo discreparet à *Sale Fixo*, è quo primum *Spiritus Acidum* eduxeram, imò & tantum eduxeram quantum suppeditare potuerat. Verùm nullum omnino inter bina hæc *Salia* Discrimen observare licet. Siquidem ambo levem Colorem Viridem prorsus similem tribuunt *Tincturæ* Florum *Malvæ*; & licet nullam, saltem sensibilem, patiantur Fermentationem, cum *Spiritus Nitri* aut *Vitrioli* aut quivis alius hujusce generis, ipsis affunditur; vehementer tamen, & æqualiter Fermentescunt, cum unâ vel alterâ *Olei Vitrioli* guttâ irrigantur. Ex his certo certius patet *Sal Fixum Sanguinis Humani* in Vase Æneo exsiccati, è quo primâ vice *Spiritus Acidum* extraxeram, nullis partibus *Vitrioli Salino Acidis* gravidum fuisse; proptereaque, nequaquam dubitandum est, quin prima *Spiritus Acidi* è *Sanguine Humano* Extractio undequaque vera extiterit.

Venit fortasse hoc loco in animum, *Sal Acre-Acidum*, & *Spiritus Acidum* educta è *Sanguine* non trahi ex hoc *Liquore* Virtute Ignea, sed ex Igne ipso, tanquam è Materia, nunc primum gigni ac effici: sed experto credite. È *Sanguine* persæpe ipsemet puro calore *Solis* ardore elicui subrufum *Sal Saporis* illo *Acrioris*, qui in *Sale* Ignis vi extracto percipitur; quam majorem, ut ita dicam, *Acritudinem* continuò Aciditas Linguae manifesta subsequitur: ac prioris quidem Experimenti hæc ratio est, quod *Sol* illius *Salis* acumina parum, Ignis vero multum, obtundit; posterioris autem hæc, nimirum quod *Sal Acidum Volatile*, cujus vi *Sanguis* naturaliter Fermentescit, arctissime copulatur cum particulis *Salino-Acribus Sanguinis* ipsius paulatim refrigerantis ubi è Vasis suis emissus est. Hi porro diversi *Sales* mutuò implexi difficiliter longè à se invicem separantur calore *Solis* benigno & dulci, quam violento Ignis ardore. Hinc fit, ut *Sal* illud, de quo nunc Sermo habetur, *Acre-Acidum* sapiat, & vix cum *Spiritibus Acidis* Fermentetur, si *Vitrioli Oleum* excipiat.

Nunc accipite quâ Viâ, quibusque Adjumentis consecutus sim tandem justam illam, necnon exactam, Proportionem Quantitatis, quam Corporibus illis quibus *Sanguis* constat, Natura tribuit. Primum igitur non unius aut alterius *Hominis Sanguinem*, sed multorum, eorumque non Sanorum modò sed *Ægrorum*, non ejusdem sed diversi ac dissimilissimi Temperamenti, ad exactas Analyseos Regulas ita examinavi, ut ejusmodi *Liquoris Principia*, alia ab aliis, separaverim, & quidem absque ullâ Substantiarum jacturâ. Illud enim tantum videbatur jam esse reliquum, ad habendam Quantitatem respectivam illorum Corporum, ut singula seorsim revocarem ad *Trutinam*; sed profecto plus aliquid requirebatur. *Phlegma* enim, *Spiritus* subrufus, & *Oleum* factidum secum partes *Salinas* trahunt, quas neque separare licet, adeòque nec ponderare. *Phlegma* igitur quoddam excogitavi, & composui, omnimodam habens similitudinem cum vero *Phlegmate Sanguinis*, quod deinceps appellabo Naturale, quamvis Arte *Chimica* extractum; miscui videlicet pondus dimidii *Grani Salis Volatilis* è *Sanguine Humano* educti, cum duodecim *Unciis* Aquæ Fontanæ distillatæ: Ac quamvis duæ illæ moles ita inter se essent 11525 ad 1, tamen Aqua tota sic *Salis* tantilli Vim sensit, ut statim quidem levissimum Candorem, & exiguissimum Fætorem quemdam induerit; mixta vero cum *Syrupo Violaceo* ipsum post aliquot horas *Viridem* effecerit, & *Sublimatum* Corosivum dissolutum præcipitaverit.

Hinc mihi primum oborta ingens admiratio Naturæ, Materiam ultra quam credi potest dividens; deinde spes bona inveniendi quæsitum *Phlegma*. Nec fefellit Spes; molitus enim multa nequicquam animadverti denique 12 *Unciis* Aquæ Fontanæ evadere omnino similes Colore, Odore, Sapore, & Substantiæ modo, *Phlegmati* Sanguinis Naturali, si ejus quod dico *Salis Granum* unum cum Quadrante intra illas dissolvatur. Verum quo magis illam binorum hujusmodi *Phlegmatum* similitudinem explorarem; sumpsi utriusque moles duas perfecte æquales, quas affudi seorsim duabus æqualibus inter se molibus *Tincturæ Florum Malvæ* inclusis seorsim duobus *Vasculis Vitreis* æqualis prorsus Diaphaneitatis, Magnitudinis, & Figuræ: Tum verò utrique *Tincturæ Viridis* Color repente accessit, & quidem alter



alteri adeo similis, ut nihil omnino esset, vel certe deprehendi posset, inter utrumque discriminis. Ad hæc sumpsit ejusdem utriusque *Pblegmatis* Guttas 12 quas singulas immiscui singulis 24 Guttis *Sublimati Corrosivi* dissoluti contentis item duobus Vasculis vitreis ejusdem prorsus Diaphaneitatis, Magnitudinis, & Figuræ; ecce autem eæ *Sublimati Corrosivi* Guttæ omnes eodem penitus ad sensum Candore, Lacteo scil. effectæ visæ sunt, atque mox in Pulverem Candidum æqualem æqualiter Præcipitatæ. Patet igitur Luce clarius illa *Pblegmata* ita esse inter se paria, ut nihil magis; quare cum artificiale *Pblegma* unum tantum habent *Salis Volatilis* Granum cum quadrante, Naturale 12 Unciarum tantundem quoque habet in se, nec plus, nec minus.

Quoniam verò Arte Natura rimanda est, & notis ignota investiganda, per confectum Industriâ *Spiritum* quemdam subrufum aggressus ad indagandam *Salis Volatilis* Quantitatem *Spiritus* Subrufo naturali ingenitam; post multa prius frustra tentata, repetitaque Experimenta, tandem animadverti ex 27 Granis *Salis Volatilis Sanguinis* in *Drachma* una *Pblegmatis* ejus dissolutis existere Liquorem Colore, Odore, Sapore, modoque Substantiæ, penitus similem subrufo *Sanguinis* ipsius *Spiritus*, qui nihil est aliud, quam *Pblegma* gravidum *Sale Volatili*, & propter acuminate *Salis* ejusdem particulas, & paucum sibi admixtum *Sulphur*, asperum & graveolens, imo & idoneum ad effectus infra memorandos.

Plenam porò, atque perfectam in omnibus inter illos duos Liquores (quorum primum Artificialem, alterum vero Naturalem *Spiritum* subrufum appello) similitudinem probare volens, in singulas duas eorum moles æquales vitreis Scyphis contentas injeci 4 Guttas *Spiritus Vitrioli*; unde æqualis omnino ex utraque parte secuta est Fermentatio: Deinde in duos Scyphos vitreos Diaphaneitate, Magnitudine atque Figura pares, quorum uterque 20 Guttas Tincturæ Florum Malvæ continebat, utriusque Liquoris Guttas 5 instillavi; unde statim extiterunt in utraque Tinctura pulcherrimi Colores duo Virides, *Smaragdi* instar, & ita similes; ut quantumvis intentos Oculos grato errore deciperent. Denique Guttas 6 unius cujusque *Spirituum* eorundem in Vascula duo infudi, quorum singula 40 Guttas *Sublimati Corrosivi* dissoluti habebant; unde duo emerferunt Colores Candidi perfectè similes, peractaque prorsus similis Præcipitatio in pulverem Coloris Candidi aliquantulum Rufi.

Ex jam dictis perspecta penitus, nec non explorata manet omnimoda similitudo, inter duos *Spiritus* Subrufos supra memoratos; Artificialem nempe, atque Naturalem: Quamobrem quantum una *Drachma* Artificialis *Spiritus* continet in se *Salis Volatilis Sanguinei* (continet autem Grana 27) tantum præcisè quælibet *Drachma* *Spiritus* illius Naturalis Sinu suo complectitur.

Dum perfectam Cognitionem Quantitatis *Salis*, quod *Oleum Fætidum Sanguinis* ex Alembico Vitreo distillati secum aufert, mihi comparare meditabar, peculiarem *Olei Fæidi* Analysin institui. Hujus *Olei Unciam* unam cum *Unciis* tribus *Boli* siccissimi, & in Pulverem subtilissimum redacti, exactissimè miscui: mixtum illud in Globulos exiguos divisum in parvam Retortam Luto munitam intrusi; eamque deinceps Retortam Cervici ejus convenientis magnitudinis

rudinis Excipulo, ut decebat, adhibito aptatoque, in Furno Reveberii collocavi, factisque ritu solito reliquis faciendis, Igne lenissimo *Drachmam* semissem cum *Granis* 10 *Pblegmatis* limpidi à *Bolo* suppiditati primum elicui; mutatoque Excipulo, statim atque prima Gutta *Spiritus* Subrufi sese mihi in conspectum dedit, & altero in locum illius substituto, utque par erat concinato, *Unciam* semissem cum *Drachma* semisse & *Granis* 12, *Spiritus* Subrufi, *Spiritus* Subrufo Artificiali superius memorato prorsus similis, Igne paulo Intensiori quàm antea eduxi; postmodum *Olei* Colore, modoque Substantiæ, omnimodam similitudinem habentis cum *Bile*, intra *Vesicam Felleam* naturaliter recondiã *Drachmas* duas & semissem cum *Granis* 21, Igne Intensissimo erui. Antequam ulterius progrediar hîc obiter notari velim, id discriminis esse inter *Spiritum* Subrufum & *Oleum*, de quibus nunc agitur, quod *Spiritus*, utpote solùm è *Pblegmate Saleque* conflatus, Ignem extinguat, ut patet dum illius Gutte quædam Carboni accenso affunduntur; *Oleum* verò, quippe quod *Sulphureis* & *Salinis* tantum partibus constat, æque cito ac Pulvis Pyrius ferè accedatur, rotumque in Flammam amplissimam valdeque nitidam abeat, cum primum Igni admovetur.

Demum ex *Lixivio* à me confecto è residua in fundo Vasis materia *Grana* 8. extraxi *Salis Fixi* Nigricantis, Aëris humiditatem facilè suscipientis, & Linguam vehementer exasperantis atque pungentis, quod cum *Spiritibus Acidis* Fermentescibat, & *Tincturam* Florum Malvæ Viridem efficiebat. Ex jam dictis facilè atque manifeste colligi potest *Unciam* illam *Fætidæ Olei Sanguinis* cujus *Analyfin* exactissimam institui, 19 tantum *Grana* Terræ continere, quæ cum *Bolo* mixta remansere.

Et vero cùm inter *Spiritum* Subrufum ex *Oleo Fætido Sanguis* elicium & *Spiritum* Subrufum, tum Artificialem tum Naturalem, de quibus antea Sermonem habui, nec Colore, nec Odore, nec Sapore, nec Substantiæ modo, nec Effectibus ullis, aliquid interfit discriminis, ad firmiter credendum adducor unumquamque *Spiritus* Subrufi, de quo nunc agitur, *Drachmam*, ut & *Drachmam* quamlibet *Spiritus* Subrufi Naturalis è *Sanguine* ipso eliciti, *Grana* 27 *Salis* continere.

Quod attinet ad *Quantitatem Salis* impliciti, nexuque indissolubili copulati, cum ramosis particulis *Olei* ex *Oleo Fætido* Liquoris Humanæ Vitæ Fontis educti; hæc facilè, meo quidem iudicio, detegi potest; etenim cùm hocce *Oleum* Fætoze & Acrimoniã prorsus imitetur *Spiritum* Subrufum, qui ex eodem quo ipsemet *Oleo Fætido Sanguinis* educitur, ac præterea *Tincturam* Florum Malvæ eodem planè modo Viridem faciat, necessum est ut unaqueque illius *Drachma Grana* 27 *Salis Volatilis* intra textum suum interius recondat, quæ illud Fætoze, Acrimoniã, & *Quantitate* illã quã *Tincturæ* Florum Malvæ Viridem tribuit Colorem, prorsus simile reddant *Spiritus* huic Subrufo, qui in *Distillatione Olei fætidæ Sanguinis* ipsi præit.

Habitã ergo jam, planèque cognita, ex superioribus *Quantitate Salis Volatilis*, quam sive *Pblegma*, sive *Spiritus* Subrufus, sive *Oleum Fætidum Humanæ Sanguinis*, secum ferunt cùm distillantur, nemini prorsus jam potest esse, non dicam ignota, sed ne dubia quidem, ullo modo, iusta illa *Proportio Ponderis*, seu *Quantitatis*, quæ à *Natura* inter ea inest corpora quibus

*Sanguis*

*Sanguis Humanus* constat; separari enim à se invicem profecto possunt, & quidem sine ulla Imminutione Substantiæ: Separavi enim ipsè successu plane felici; possunt pariter semel separata ponderari, adeoque justa singulorum Quantitas ex Pondere haberi potest. Audire vero mihi videor sic fortasse Objicientes; *Sal extractum è Sanguine*, ac præsertim *Volatile*, Fatidum est; retinet igitur in se *Sulphureas* multas Particulas, quarum nec Ponderus propterea nec vera potest haberi Quantitas. Hoc quidem apposite mihi Objectum fateor. Verum quod in *Sale Sanguineo* reperitur *Sulphuris*, ita exiguum est, ut nullius momenti esse videatur.

Visum præterea est hic pauca referre de Instituta, tribus circiter abhinc Annis, peractaque accurate à me *Bilis* Analyfi. Quinta enim decima *Feb.* 1696. ex ea prodire coegi *Phlegma* quoddam ita limpidum, atque pellucidum, ut inter Liquida nullum magis, deinde Liquorem Lacteum instar Lactis ipsius candidum elicui, tum alia quædam Corpora, quæ hic prætereo; demum obtutibus omnium circumstantium illud exposui *Phlegma* & Aquam illam Lacteam, quæ penes me adhuc est integra, & omnis expertæ Corruptelæ, sed non jam ejusdem Candoris i. Magna mihi apud meipsum de hujusmodi Aqua fuit Quæstio, eoque tandem meditando adductus sum, ut plane crederem *Chylum* ex *Bile* in *Tenuibus Intestinis* diffusà *Volatile* haurire *Sulphur* onustum *Sale Acri* similiter *Volatili* partibus suis *Salino Acidis* ferè exuto, adeoque admodum leni; nec dubitavi asserere *Sulphure* illo, *Sale Acri-Acido* lenissimo gravido ac velut condito, *Chylum* albescere, disponi ad Fermentescendum in Cavitatibus Cordis, & ad Formam *Sanguinis* facilius accipiendam præparari.

Unde consequens est *Bilem* ab *Hepate* ad *Intestinum Duodenum*, *Choledochi* Meatus interventu, naturaliter amandatam, novum singulis diebus, extra omne dubium suppeditare Fermentum, *Massæ Sanguineæ*, quod nativis illius Fermentis (dummodò ipsa Naturalis ab Indole sua non desciverit) Vigorem inspirat, & eorum jacturas reparat; atque adèd Fermentationis Naturalis ejusdem Liquoris perennitati mirum in modum confert. Quam mentem meam, si non penitus certum admodum certè probabilem, sequenti Experimento confirmavi. In *Drachmam* unam *Bilis* tepidæ recens è *Vesica Felle* *Verve* cis extractæ & intra collum Infundibuli vitrei contentæ, *Uncias* 8. Aquæ Fontanæ imbutas exiguo *Vitrioli Spiritu* injeci; statimque aqua illa Albedinem assumpsit ferè Lacteam, majorem assumptura, si 4 *Salis Absynthii Grana* ipsi admisivissem.

Postquam vero Experiendi finem feci, monui quod priùs compereram, nimirum *Phlegma* quoddam, elicium ex Pane, quod secum aufert in Distillatione *Sal Acidum Volatile*, si qua par est copia in *Bilem* projiciatur, Lacteam quamdam, soliditatem, Lacteamque Colorem accersere. Illud *Phlegma* Tincturam *Heliotropii*, & *Florum Malvæ* Rubefacit; sed, quod majus est, *Rufus* Panis ejusdem *Spiritus* cum *Sale*, tum *fixo* tum *Volatili Sanguinis* diutiùs Fermentescit, quam quivis alius *Fluor Acidus*. Unde maximum, ne dicam inexpugnabile desumitur Argumentum dicendi magnam ex Pane, quo potissimum vescitur *Homo*, *Salis Acidi* copiam educi, quod una cum *Acido-Nitro-Aereo* jamjam memorati Liquoris Fermentationi excitandæ, atque sustinendæ, plurimum conducit.

2. Ne Nobis, tuam huc transmissam *Chymicam Sanguinis Analysin* & superstructas Meditationes candidè ad Examen revocantibus, ullæ occurrant Ambages, patiaris, rogamus, ut protensum ordinatumque tuorum Experimentorum progressum in duo potissimum restringamus Problemata, quæ nostræ hujus Responsionis Scopus erunt: Quærentes Scilicet prius, An præter *Sal Acre*, & *Alkalinum*, *Volatile*, & *Fixum*, ullum *Sal Acidum*; & an qui tuâ Industriâ ab *Humano Sanguine Spiritus Acidus* elicis, eidem circulantî *Sanguini* præextiterit? Postorius verò, Num *Proportio*, quam partes *Sanguinis* à Natura inter se Quantitatis, & Ponderis, habent, ullâ Arte ad certas Regulas reduci possit?

Quantum ad prioris attinet Problematis Solutionem, tecum fatemur solidum esse Errorem, *Sal Acidum* à *Sanguine* separari non posse: qui enim hoc negant, supponunt *Acidum Sanguini* non inesse: Esse autem vel ipse docuit *Hippocrates*; & quod omni plus valet Auctoritate, multæ rationes, atque obvia plurima Experimenta apertissime convincunt. Etenim *Sal Marinum*, aliaque multigena *Salia Acida* passim cum Cibis & Potibus intra Sanguifera infundimus, quæ, quanquam in Statu Naturali majori ex parte dulcificata Volatilizentur per *Alkalina*, sæpe tamen fit, ut in Morbis, ad nativum Fixationis Statum restituta, fecernantur à *Sanguine*, & extra Corpus deriventur sub forma *Sudoris*, *Salivæ*, *Urine*, aut aliorum Ichorum, ad Gustum evidentissime *Acidorum*. Neque ullus dubitationi locus esse videtur, quin *Sal Marinum*, quod inter *Acida* reponitur, Sanorum etiam *Sanguini* inexistat; si enim portio aliqua *Cruoris* è *Vena* profiliens; super Talci laminam extendatur, ac sponte exsiccanda relinquatur, curiosum exhibet Spectaculum illam cernenti per *Microscopium*, duplex enim *Salis* Species occurrit, una quidem Figura *Salis Communis*, altera verò *Salis Volatilis*. Quinimo *Sanguis* in Furno exsiccat, Ignique admotus, Flammam concipit cum Strepitu, Crepituque, *Marini Salis*, ut notat Clarissimus *Boyleus* in *Hist. S. H.* qui ad *Tit. 22.* ejusdem *Historiæ* pressius loquendo, scribit se valida Calcinatione tres aut 4 *Drachmas Salis Fixi Sanguinis* extraxisse, quod comperit, ut expectabat, ad instar *Marini Salis*. Jure igitur constante, vel ad Oculum, existentia *Salis Acidi* intra *Sanguinem* concludi merito potest, idem *Sal Acidum*, obstetricante *Chymicâ*, ab eodem *Sanguine* extrahi posse. Accedit, quod cum nullus sit, vel Hospes in *Chymia*, qui *Fetidum Oleum* à *Sanguine* excludat, nullus pariter *Acidi* existentiam in *Sanguine* poterit inficiari, cum Naturalem *Olei* compositionem *Sulphureum Acidum* ingrediatur.

Dubium solummodo quod hac super re nobis adhuc superest, illud esse videtur, an Liquidum, quod tu *Sal Acidum* particulari *Analyse* ex *Fixo Sanguinis Sale* fecerni posse demonstras, & *Spiritum Irritantem*, atque ipso *Spiritu Aceti Acidiores* esse pronuncias, in totum atque integrè sit ex *Sanguine*? An potius aliis incurrentibus, vel admixtis in ipsa præparatione corporibus, aliquid suæ *Aciditatis* debuisse affirmandum sit? Quanquam enim nonnulli ex *Chymicis*, cæcâ quadam in Parentes fide, constantissimè tueantur Ignem, in *Spagyricis Distillationibus* rebus ipsis admixtum illarum *Texturis* haud irretitum iri; Ingenuus tamen atque æque *Experientissimus Boyleus*, de *Chymica Sanguinis Analyse* agens, aperte fatetur, sibi non constare, num frequen-

The Opinion of  
the Coll. of Phy-  
sicians at Rome  
concerning Dr.  
Vieussens's Ana-  
lysis of Humane  
Blood; by Jo.  
Maria Lancisi.  
In 264. P. 599.

Lib. de Vet. Med.

Chym. Sect. Hist.  
S. H. Part. 4.

tibus

tibus Destillationibus, particulæ quædam Ignis non possunt identidem associari particulis Destillati Liquoris. Er cum nemo sit qui ignoret, Ignem esse *Acidum Sulphureum*, nemo sane hac de re ab omni se liberare poterit suspicione, *Spiritum Acidum*, qui à *Sanguine Calcinato* mediante Igne Reverberii elevatur, aliquam saltem suarum constituentium partem Ignis Miscelæ nequaquam debere. Nequæ vero hujusmodi Objectum diluitur per illud, quod tu subdis tentatum Experimentum Calcinandi *Sanguinem* ad nudos *Solis Radios*; Ji enim, & probe nosti & Ignis sunt, & Ignem accendunt. Quid! quod Cineres, post Calcinationem libero Aëri expositi, ab *Acido* ambientis *Salem* multum possunt mutuari.

Sed mittamus hæc; ponentes pro certo, quod circa Ignis apud Corpora Destillata mixtionem, & circa haustum *Acidi Spiritus* ab Aëre, nos adhuc tenet in ancipiti. Ad id veniamus, in quo omnes Chymici unanimiter consentiunt, & tu quoque Cl. Vir, in Scheda Prælo commissa publicè profiteris Terræ omnes Bolares *Spiritu* gaudent *Acidulo*, quo fit, ut si ipsæ seorsim à quovis alio Corpore, per Retortam Destillentur, *Acidum Spiritum* de se emittunt. Quis igitur attente animadvertens modum quo tu *affixo Sanguinis Sale Spiritum*, *Aceti Spiritu Acidio*rem separas, maximo statim jure non suspicabitur, *Acidissimum* hunc *Spiritum* non solum *Sanguinei Salis Fixi*, sed duplæ majoris *Boli* partis, qua in Destillatione admiscet, prolem habendam esse? Atque ea quidem ulteriori cum ratione qua Chymici solent ex Marino Exempli causa, *Sale* eo copiosiore *Acidum Spiritum* elicere quo majorem *Boli* molem eidem admiscuerunt. Adeo vera sunt, & *Boli* miscelam ad *Acidi Spiritus* productionem, ac multiplicationem plurimum conferre; & neminem certe affirmare posse, id quod à Mixtura *Fixi Sanguinis Salis* ac *Boli*, Chymicis ex Organis profluit totum ab alterutrius Textura solummodo derivare.

Sed inquis, Vir Clarissime, si vos firmum ratumque habetis *Humano Sanguini Marimum* præ cæteris *Sal* naturaliter inesse, inodum saltem ostendite, quo citra novi corporis additamentum, *Acidus Spiritus* ab eodem elevari possit? Profecto, ne tecum tenaciores videamur nostrorum Experimentorum, quam Viris congruat ad Libertatem natis fatemur, nos, animo revolventes, *Bolum* destillandis *Acris Salibus* eam causam admisceri, ne Igne fundantur, fusaque *Spirituum* Ascensum præpediant, statim cogitasse, num *Boli* locum in extrahendo *Acido Sanguinis Spiritu*, ipsa *Damnata Sanguinis Terra*, *Salium* particulas utcumque disgregans, satis tenere posset. Qua de re diligentissimus ex Nostris Artifex *Franciscus Pirotti* sumpsit Fœcis illas obscuras, lucidasque *Sanguinis*, quæ post Destillationem omnium partium *Volatilium* in Retortæ fundo inveniuntur, quæque *Marino* præsertim *Sale* sunt gravidæ, easque in Vitream humilioremque Retortulam solas transfundit: Ita enim, reliquis ex Arte concinnatis, spe nostra minime fuimus frustrati, nimirum Igne Reverberii fumus ascendit, qui resolutus est intra Recipientis fundum in Guttulas Liquoris moderatè *Acidi*, cum aliis *Acidis* nullo modo, est cum Alkalicis evidenter Luctantis; in qua certe Operatione dubitari non potest, quin *Acidum* quod à prædicto effluit Capite Mortuo, sit ipse *Sanguinis* Incola, cum nullum corpus Advena, præter Ignem, eidem admixtum fuerit.

Neque

Neque idcirco in Controversiam ponimus *Acidissimum* illum, tua Industria elicitum *Spiritum*, ut superius obiter tetigimus, aliqua saltem ex parte ab ipso *Sanguinis Sale* profectum fuisse. Etenim tecum sentimus, *Sal Fixum Humani Sanguinis* non esse unius simplicis Naturæ, sed Androgynum, mixtum nempe ex *Acido & Alkali*. Et quoniam ea est *Fixi Salis Alkalici* Textura, ut Igne Reverberii strictissime cohærens, Vitrificetur potius quam Atomum de se elevari sustineat; & monet etiam *Hoffman* exinde eadem facile tollitur difficultas, quæ circa Distillationem *Fixi Sanguinis Salis* minus in Chymia peritis occurrere posset; scil. unde fiat, ut ex Cinere *Humani Sanguinis*, apparenter *Alkalico Acidus* tamen *Spiritus* sublimes: Partes siquidem *Salis Alkalici* Fixantur magis, & pene Vitrificantur in Retorta, dum reliquæ *Acidi Salis* particulæ elevationis motum acquirunt.

Alterum jam nos *Problema* sollicitat, cujus porrò Solutionem quanquam Ingenium tuum miris modis, ac repetitis Experimentis summoque Labore, tentare aggressum fuerit, nihilominus, num omnis ideo superata sit, aut superari possit Difficultas, maximopere dubitamus. Etenim quanquam *Proportio* partes inter Constituentes & Massam ipsam integram *Sanguinis* revera inveniat in singulis Individuis Individuam operationem, attamen unam Universalem certamque istius *Proportionis* Normam, quæ cunctis congruat singularibus *Sanguinibus*, inveniri posse, vero simile magis quam verum arbitramur. Et sane multa sunt Argumenta, nostro quidem Judicio, quæ hujusmodi *Proportionem* nobis in aperto venire posse, omnino impossibilem reddunt. Primo quidem apud omnes *Mechanicos & Arithmeticos* indubitatum est Axioma, veram *Proportionem* Ponderis Partium ad Totum, seu è converso Aggregati ad Aggregantia, haberi non posse, quin certo nobis constet Ponderus Totius & Partium, seu Ponderus Aggregati & Agregantium. Sed hic, exuta quavis præoccupatione, neminem certe putamus futurum liberæ Mentis, qui non cognoscat, & fateatur, difficultatem & impossibilitatem evidentix istorum Ponderum, Etenim quantum spectat ad Totum nempe *Sanguinem*, quis est, qui non videat certam ac determinatam *Cruoris* mensuram eandem in omnibus haud inveniri, cum vel in singularibus ægre satis inveniatur? Quo fit, ut Scriptorum aliqui Libras *Cruoris* 8. alii 20. alii 22 alii plures alii minores, admittant in *Homine*. Neque verò hujusmodi difficultas extrahendi verum *Sanguinis* Ponderus, ulla Arte vinci potest, cum non tantum variant ac diversificentur ab invicem continentium canalium Diametri in singulis individuis: Sed quod pluris est, totus ac universus *Sanguis* ab *Homine*, etiam si sauciatus fuerit in jugulo, exhauriri nequit, ac proinde ad Lancem venire non potest. Tot enim sunt Canaliculæ Obliquitates, Viscerum Anfractus, ac præsertim tanta est Vasorum *Venæ Portæ* amplitudo, quæ à *Cavæ* ramis, toto *Hepatis* interposito aggere, distat, ut multus sit *Sanguis* qui vel in ipsis mactatis & per pedes suspensis Animalibus superest in Abdomine.

Neque vero ad infirmandum Robur nostri Argumenti valet subterfugium, quod nempe ad obtinendam scientiam *Proportionis*, totum inter & partes, satis sit nosse particulare Ponderus unius Molis, Toti similis, & nosse deinde particularia Pondera Principiorum dissimilium, sed Aggregantium unam

molem Toti similem: *Scil.* quod in Casu Nostro æque benè attingere possimus normam *Proportionis* quæ *Sanguinem* inter & sua Principia intercedit, si exacte Sciverimus verum Ponderus alicujus saltem molis *Sanguinis*, simulque noverimus particularia Pondera dissimilium Principiorum, eandem molem Aggregantium etenim (quidquid sit de Validitate istius Hypothesis in Fluidis, certam Gravitationem Specificam habentibus) maxima difficultas versatur, in determinando vero Pondere unius molis *Sanguinis*. Toti similis, & indetegenda eadem in singulis *Proportionem* Principiorum dissimilium sed Aggregantium supra dictum molem *Sanguinis*. Et prius quidem, quia *Specificæ* Gravitas *Humani Sanguinis* difficilior, quam quis sibi fingit, stabiliri potest, ut ad rem nostram post *Sanctorium* scribit *Boyle*; ea enim variat eodem in *Homine*, diverso Anni & Diei tempore, vel quod majori minorivé ab assumpto Cibo intervallo extractus fuerit. Quid non etiam *Arteriosus* à *Venoso*, & *Venosus Cava* à *Venoso Portæ* multo *Specificæ* Gravitationis discrimine inter se distant? Non igitur certo constare nobis potest, vel Ponderus Totius *Sanguinis* in omnibus aut in singulis *Hominibus*, vel *Specificæ* Gravitas cujuscunque molis ejusdem Fluidi.

Posterius vero multo adhuc minus haberi potest, aut determinari Ponderus singularum Partium, Aggregantium vel universum *Sanguinem*, vel particularem ejusdem molem, quia fieri non potest quin ejusmodi Partes, seu Chymica Principia, additione novorum corporum, Igne nimirum, Bolo, aut Acre, vel detractone nativarum particularum, insensibiliter in Auras avolantium, pristinum propriumve Ponderus, ac proinde veram inter se *Proportionem* admodum variant. Ex quo factum legimus, ut, cum præcitatus diligentissimus *Boyle* studuisset accuratam *Humani Sanguinis* Destillationem, at tamen postquam sigillatim Extracta illinc corpora Ponderasset, evidentem in iisdem multarum *Drachmarum* defectum observaverit: atque idcirco Paradoxum jure vocat, quod Chymici nobis imponere satagunt, in Destillationibus accurate factis, separata corpora ad Totius Ponderus exactissimè recurrere. Neque vero dum hæc asserimus, *Boyllii* aliorumque Ingenuorum Scriptorum Fidei duntaxat innitimur; tentata namque per nos etiam sedula, quantum fieri potuit, Spagyrica *Humani Sanguinis* Anatome, separatæ partes Ponderus Toti æquale minimè reddiderunt. In *Unciis* enim 7. & *Drachmis* 7. *Sanguinis*, post Destillationem plus *Semiuncia* desideratum est; id quod proculdubio tuis etiam in Experimentis contigisse suspicamur.

Cum igitur ut verum neque Totius neque Partium *Sanguinis* Ponderus nobis liquido constare possit, nulla pariter vera *Proportio*, quæ illa inter corpora intercedat, nobis cum spe aliqua quærenda superest.

Accedit deinde impossibilitati ex parte Artis, certum Ponderus Totius & Partium *Sanguinis* attingere nequeuntis, ea impossibilitas quæ oritur ex parte Naturæ ipsius *Sanguinis*: Qui cum Indole non sit idem in singulis, frustra ab eodem *Proportionem* petimus quæ omnibus *Hominibus* congruat, & commensuretur. Differt enim Natura à Natura, ut aiebat *Hippocrates*, nempe juxta diversa Alimenta, Ætates, Regiones, Anni Tempestates, Sexus Animi Pathemata, Corporis Exercitationes, ac potissimum Viscerum Structuras, ac Fermentorum Vires, diversa oriuntur in *Hominibus* Temperamenta, quæ  
varium

varium longèque diversum in uno quam in altero *Sanguinis* Componentium excessum, aut defectum, (quod idem est ac *Proportionem* dixisse) & significant & supponunt. Exinde fit, & Hominum, tum Mores cum Morbi, tanto Intervallo inter se non modo distent, sed commutentur. Neque vero multis opus est Argumentis, ad probandam facilem Variationem Componentiam massam *Sanguinis*, in uno quam in altero individuo, cum, te afferente, vel unicum *Granum* cum *Quadrante Salis Volatilis Humani Sanguinis* integram *Libram* Aquæ destillatæ perturbare, & novam in eadem *Proportionem* 1 ad 11525 inducere apta fuerit. Hæc sane multorum inter *Sanguinis* Discrimina, quæ nemo sensatus inficiari potest, abundè confirmantur ex Vino & Lactè, quæ cum sint Fluida Heterogenea, & *Sanguini* admodum Analoga, à Regione solo, Anni tempore, atque Ætate, suis in Componentibus eo usque alterantur, ut nullam, certe Veram, *Proportionis*, Regulam, quæ singulis competat, possint admittere.

Postremo enixè petimus, ut relictis generalibus Hypothesibus, sedulo perpendas expositum à te *Proportionem Drachmæ Salis Fixi ad Lib. 50. Sanguinis*, ex quibus *Sal* extractum fuit, (mittimus enim hic tot *Libras Cruoris* non unius, sed plurimorum Hominum, fortè etiam ægrotantium, è *Venis* fluxisse, quod multum alterare potest Normam *Proportionis* Naturalis) eamque *Proportionem* compares cum illa *Scrupulorum* quinque ejusdem *Salis Fixi* ad solam *Libram* unam *Sanguinis* à laudatissimo *Boyleo* diligenter exposita; comperies enim, mirum dictu! Non solum *Proportiones* istas non esse similes, sed ita inter se differre, ut *Proportio Boyleana Salis Fixi ad Sanguinem* superet fere decies *Proportionem Salis Fixi ad Sanguinem* per te enunciata. Quid! Quod hic *Romæ Proportionem* ab utroque Vestrum longè diversam invenimus. An vero hujusce Discriminis causa referenda sit integre in diversas *Sanguinum* Indoles; an etiam in varias præparandi formas, ac vias quibus *Londini, Monspelii, ac Romæ* itum est, aliorum esto judicium. Interea, satis nobiserit hoc non minuere Argumenti pondus, quod utrinque validissime urget: Vel enim in diversa *Sanguinem* Temperamenta, vel una etiam in diversa Artificia refundantur Discrimina, perpetuo ipsa insuperabilis *Varietas* infidam reddit quæsitam à Nobis *Proportionem*.

XVI. A Child (about a quarter of a Year old) at *Littlehal* in *Shropshire*, about *Candlemass* 1674 was taken with a *Bleeding* at the Nose and Ears, and behind the hinder part of the Head, where there was nothing at all of any Sore. This lasted for 3 Days; at the end of which, the Nose and Ears ceased *Bleeding*: But still *Blood* came, as it were Sweat, from the Head. Three Days before the Death of the Child (which was the sixth Day since she began to *Bleed*) the *Blood* came more violently from her Head, and stream'd out to some distance from it: Nor did she *Bleed* only there, but upon her Shoulders and at the Wast, in such Quantities, that the Linnen next her might be wrung, it was so wet; and every Day requir'd clean Linnen. She for 3 Days *bled* also at the Toes, at the bend of her Arms, at the Joynts of her Finger of each Hand, and at the Fingers ends; and in such measure, that in a quarter of an Hour the Mother hath catch'd from the

A strange kind  
of Bleeding, in a  
little Child: by  
Mr. Sam. de  
Gard. n. 109.  
p. 193.

droppings of the Fingers, almost so much as the hollow of her Hand would hold. All the time of this *Bleeding* the *Child* never *Cryed* vehemently, but only *Groan'd*; though about 3 Weeks before, it had such a violent fit of *Crying* as the Mother said, she never heard. After the *Child* was *Dead*, there appear'd in those places where the *Blood* came, little Holes like the prickings of a Needle.

This Account I had from the Mother of the *Child*, who is a very sober Woman; and she told it me with Tears. She also told me, That the *Blood* was not thin like Water, but of that thicknes as *Blood* usually is; and that she and others believed, there was little or no *Blood* left in the Body of the *Child*.

A Periodical  
Evacuation of  
Blood at the end  
of the Fore-Fin-  
ger; by Mr. Alh.  
n. 171. p. 989.

XVII. *Walter Walsk*, an Inn-keeper in *Trym*, born in *Ireland*, of a Temperate Dyet, Sanguine Complexion and pleasant Humour, in the 43 Year of his Age. Anno 1658, about *Easter*, was seiz'd with a great Pain over all his Right Arm; a great Heat, and Redness in his Right Hand; and a prickling in the point of the *Fore-Finger*; whereon there appear'd a small *Speck*, as if a little Thorn had run in: And supposing it such he open'd it, whereupon the *Blood* spun out in a violent but small Stream. After it had spent its Violence, it would cease for a while and only drop, and then spring out with Violence again, continuing thus for 24 Hours; till at last he fainted away, and then the *Blood* stanch'd of it self, and his Pains left him. From that time during his whole Life, (which continu'd 12 Years,) he was frequently troubled with like Fits; seldom having a respite of 2 Months; and they never return'd oftner than in 3 Weeks. He rarely *Bled* less than a Pottle at a time; the oftner the Fit came the less he *Bled*, and the more rarely it assaulted him, he *Bled* the more; whenever they endeavour'd to stanch the *Blood* it rais'd most exquisite Tortures in his Arm; no Remedies that were ever us'd proved in the least effectual; he had no other Distemper that troubled him; neither Season nor Weather wrought upon him; he had no outward Accident that at first brought the *Bleeding*; Drinking more than ordinary made him more apt to *Bleed*; he had no Child after his first seizure. These frequent Fits brought him at last very low, insomuch that towards his latter end he *Bled* but little, and that too but like Diluted Water. He dy'd of this Distemper on Feb. 13. 1670.

An Eruption of  
Blood at the  
Glandula Lac-  
rymalis; by  
Dr. Clopt. Ha-  
vers. n. 208.  
p. 51.

XVIII. An Ictericall discontented Woman, having a desire to Dye, wholly rejected the help of Medicine, and within 3 Months being well nigh her End, there happen'd an *Eruption* of *Blood* out of the *Glandula Lacrymalis* of one of her Eyes, without any External Injury. There was an Evacuation of  $\frac{1}{2}$ ij. of *Blood*, within the space of 30 Hours. About a Week after the same Sluce was open'd again, and she *Bled* till she Dy'd.

An admirable  
Effence for  
Stanching Blood;  
by M. Denys.  
n. 94. p. 6039.

XIX. Here [in *France*] hath been found out an admirable *Effence*, which being apply'd to any *Artery* whatsoever, stops the *Blood* instantly, without any need of Binding up the Wound. We first Experimented it upon *Dogs*,  
of

of whom I've cut the *Crural* and *Carotid Arteries*, and the Thigh it self; and the *Blood* stopp'd in a little while; the Wound healing without any *Scar*, *Suppuration*, or *Cicatrice*. We have also made Tryals upon *Men*, of whom the *Temporal Arteries* were open'd; and upon others, whose Hands and Face had been cur, and it succeeded with them as well as it did upon *Dogs*.

This *Liquor* works not only outwardly, but also being taken inwardly; for it stops the loss of *Blood in Fæminis*, inveterate *Fluxes of Blood*, open *Hæmorrhoides*, and other *Hæmorrhagies*.

XX. 1. *May 30. 1673.* A *Dog* had the Skin of his Neck slit open, and flay'd by Mr. *Serjeant Wiseman*, so that the *Jugular Vein* lay bare. He then with his *Lancet* open'd it, and immediately apply'd to it a *Button-pledget* of *Lint* dip'd in the *Styptick* sent from *France*. This being done, he took up the *Muscles* on the other side of the *Throat*, and divided them till he came to the *Carotid Artery*. This he likewise open'd with his *Lancet*, and apply'd a *Pledget* after the manner aforesaid. These *Pledgets* being kept on by pressure of the *Thumb* about a quarter of an *Hour*, were then taken off. The *Vessels Bled*, but not freely: Whereupon the *Pledgets* were chang'd for fresh ones, and kept on a quarter of an *Hour* more; being then first let loose, and afterwards taken off, the *Vein* and *Artery* were knit and folder'd together.

Experiments  
made with this  
Liquor; by Dr.  
Walt. Needham.  
n. 95. p. 6052.

2. The same Day a Patient, whom *Serjeant Wiseman* had newly Dress'd with a *Cautick Stone* in the Neck (upon some *Scrophulous Swellings*) was brought back to us in a *Coach*, having *Bled* all the way, to the wetting almost of a whole *Sheet*. The *Vessel* lay so deep that it was hard to reach it. However Mr. *Wiseman* dipp'd two *Pledgets* in the *Liquor* aforesaid, and thrust them into the two *Orifices* whence the *Blood* came. It was immediately stopp'd, and the Neck Dress'd up without any considerable *Bandage*.

3. 1. The same Day a *Young Woman's Breast* being cut off, by the same *Chirurgion*, the *Arteries* were stop'd by holding the like *Pledgets* in the *Mouths* of them whilst the *Dressings* were fitted for the *Breast*. The *Pledgets* being then thrown off, the *Blood* continu'd *Stanch*, and the *Mouths* of the *Arteries* remain'd close.

2. The *Woman*, whose *Breast* I cut off, *May 30. 1673.* labour'd under a *Cancer Ulcerated*. She was weak and much indispos'd by reason of the frequent *Bleeding* from a *Vessel* out of our reach. About 2 *Hours* after the *Account* given above by Dr. *Walter Needham*, she was taken with a *Vomiting*, and her *Breast Bled*. I was sent for, and found her *Swooning*. I took off the *Dressings*, and perceiv'd one of the *Arteries* to *Bleed* a little. I apply'd the *French Essence* and stop't it; but doubting the ill consequence, if it should *Bleed* again in the *Night*, I secur'd that *Artery* by the *Touch* of a *Hot Iron*.

By Mr. Rich.  
Wiseman. Ib.

4. *Jun. 11. 1673.* A *Dog's Crural Artery* was cut quite cross with an *Incision-Knife*, before the *R. Society*, by Dr. *Needham*. The *Blood* gushing out copiously, a *Lint* dip'd in the same *Liquor* was apply'd to the *Wound*,

By Dr. Walt.  
Needham. Ib.  
p. 6053.

Wounds; and held upon it a little while; when, by reason of the great Glut of *Blood*, that could not be well wip'd away for want of a Spunge, (which made the Experimenter conjecture the Application had not been exactly made) the Lint was chang'd for a fresh one dipp'd in the *Liquor*, and kept on about half an Hour, and being then let loose, the *Blood* was soon stanch'd; whereupon the Dog being unbound, lick'd the Wound, and walked away without any Ligature.

By M. Denys. 5. Jun. 18. 1673. Mr. Denys himself being come to London, made another Tryal before the R. Society. In the *Crural Artery* of a Dog was made an oblique wide Cut, and the *Liquor* in the usual manner being apply'd to it, the *Blood* was stanch'd in 7 Minutes, and the Dog being then let loose, but yet kept quiet for 23 Minutes longer, he then arose and let fall the apply'd Compress, and went away without any Bandage.

By..... Ib. 6. Jun. 20. 1673. Two Calves, of the bigger sort, were brought into the Banqueting-House by the King's Command. The *Crural Artery* of one of them being laid bare, it was Cut open long-ways with a Lancet, and presently a Lint dipp'd in the said *Essence* apply'd to the Wound. The *Blood* was stopp'd in about a quarter of an Hour: But the Animal being big and strong, and striving continually to get up, the *Artery* broke out again; whereupon a fresh Lint dip'd in this *Healing Water*, was laid on again. The *Blood* was at length so stopp'd, that about the end of 2 Hours the Beast arose, walked about the House without loosing any *Blood* more, though the Wound had no Bandage on it. Of the other Calf, the Butcher Cut off quite one of his Legs, as high as he could, and the *Blood* rushing out impetuously, a Compress of Lint dipp'd in the *Essence* was presently apply'd to the Part. Here more care was taken than before, of keeping the Animal quiet; and about the end of a quarter of an Hour the *Blood* was found perfectly Stanch. Several of the King's Physicians and Chirurgions did examine the Wounds, after the *Blood* was stopp'd, and found them clear without any *Escarr*: and his Majesty, who was present at these Experiments, declar'd himself publickly to be very well satisfy'd with it.

By..... n. 95. p. 6079. 7. The King having given order that Mr. Denys should be desir'd to communicate the Secret, a quantity of it was made in his Majesty's own Laboratory, of which Tryals were made upon 3 Calves in Whitehall, Jul. 12. 1673. a Leg of each of them being Cut off, as high as was possible, and the *Blood* of them stopp'd with this new *Liquor*, to the admiration of all the Spectators. For this *Water*, having been prepar'd with more exactness than ever, the Effect of it was so quick and powerfull, that the *Blood* was stopp'd in 4 Min. of time; the Calves by their Motion making the Pledgets to fall off, that had been put on the Parts Cut, and not a Drop of *Blood* appearing.

By..... n. 95. p. 6074. n. 96. p. 6078. 8. 1. Jul. 1673. The Leg of a poor Woman (labouring under an inveterate *Scurvy* and the Kings-Evil, in the Hospital of St. Thomas) was Cut off, because of a Malignant Ulcer, not suffering her to sleep Day or Night. Immediately afterwards, the *Arteries* were Dress'd with some Linnen Pledgets dipt in the *Astringent Liquor*, with a Compress upon it, and a Bandage keep-

ing all close against the *Arteries*. The Success was, that the *Blood* was *Staunch* without any other Dressing. And instead of complaining, as those are wont to do who have a *Limb* Cut off, and the Mouths of whose *Arteries* are Burnt with an Hot Iron, or a *Cauftick*, to stop the *Blood*; this Patient lookt very Cheerful, and was free from Pain, and Slept two Hours after, and also the Night following, and from that time found her self still better and better, without any return of *Bleeding*, or any ill Accident.

2. Jul. 5. 1673. In the same *Hospital*, the Leg of a Seaman was Cut off, because of a *Wound*, accompany'd with a *Fracture*, made by a Cannon Bullet. After the Part was Dress'd, as above, with Linnen dipp'd in the *Essence*, the *Blood* was stop't in less than half a quarter of an Hour. There was made a Bandage, that press'd the Linnen against the Cut *Arteries*; and without any other thing the Patient found himself so eas'd of the Pains he felt before, that he Slept two or three Hours after, and all the Night following.

Next Morning, the Dressings of the Woman as well as the Man, were taken off in the presence of the Physicians and Chirurgions, who were sent by the King to see the Operations; and they all did acknowledge, that no Wounds could look more Fair and Ruddy; there appearing no *Escarr* at all, nor any more *Blood* than if there had never been any *Veins* or *Arteries* open'd in that Part.

9. The *Royal Styptique* Liquor was used in the Engagement against the *Dutch*, 1673. by the Chirurgions of the Earl of *Ossory*, Sir *Edward Spragg*, and Sir *John Berry*, and others, with admirable Success. A very good Physician in *Tarmouth*, several credible Persons also in *London* and other places, (some of whom have taken it inwardly themselves) do give the like Commendation of it, for stopping *Bleeding* upon *Erruption*, or *Apertion*, of a *Vessel* in the *Lungs* or other *Internal Parts*.

By ...  
n. 97. p. 6115.

XXI. 1. A large Dog being provided, an Aperture was made through the common *Integuments* of his *Abdomen*, whence the *Small-Guts* were extruded; after an Incision made in one of them according to its length, they were again reduc'd; the *Wound* in the *Abdomen* being stich'd up, a Solution of this *Powder* was apply'd; the *Dog* continu'd without any ill Symptoms, and became perfectly well in a few Days after. The like Experiment I have made on another *Dog*, who in like manner recover'd without the Application of any Medicine.

Experiments  
made with Mr.  
Colbatch's Styp-  
tick; by Mr.  
Will. Cowper-  
n. 208. p. 42.

2. The Leg of a Dog was Amputated 3 Inches above the *Patella*; the expece of *Blood* from the *Arteries* was great, which did partly proceed from the unaptness of the Applications which were prepared; but after two or three Attempts the *Flux* of *Blood* was stop't, and such a Bandage made use of as was necessary only to keep on the Dressings: The *Dog* continu'd without any considerable *Flux* of *Blood*, and the next Day he was found on his three *Legs*.

3. The Diseas'd Arm of a Man in *St. Bartholomew's Hospital* was Amputated above the *Elbow*; but for above a quarter of an Hour's time many  
succesless

successless Applications of this *Styptick* were made, and at length a small Tent dipt in the *Powder* it self, inserted into the Extremity of the *Bleeding Artery*, before the *Flux of Blood* would admit the Application of Bandage. Five *Hours* after, a fresh *Flux of Blood* appear'd, and strict Bandage was apply'd. The same Morning the above-mention'd Amputation was made: a Boy about 12 or 14 Years of Age had his Leg also taken off below the Knee, to whose Stump divers successless Applications of this *Styptick* were also made, before it was bound up, and in less than an *Hour* after, a fresh *Flux of Blood* happen'd, and strict Bandage was added. Some *Hours* after these Operations, both these Patients suffer'd extravagant Pains: Three Days after the Applications were taken off; and had any Person, a stranger to what had been done, seen the Stumps, he would have suppos'd nothing less than an *Actual Cautey* had been apply'd, or could have occasion'd such large *Escarrs*, and so Horrid an appearance; which did sufficiently denote this *Vulnerary Powder* to be a *Violent Caustick*.

Tryals of *Stypticks* on the Bodies of *Quadrupedes* have been commonly practis'd to commend them to the Publick; but it is not without cause that Pretenders to such Remedies have made choice of younger Animals, as *Dogs* and *Calves*, &c. for that purpose. But since the only Standard of their Use is their Success on the *Humane Bodies*; we ought to make our Experiments on those Animals, whose Magnitude and Age bear a Proportion to it. For, nothing is more obvious in Wounding the *Arteries* of living Animals, than that the Protrusion of their *Blood* bears a Proportion to their Bulk; And in Dissection, the *Arteries* of the *Fetus* are remarkably thinner than those of an *Adult*; and those of *Aged Bodies* grow still thicker, and frequently become *Cartilaginous*, and at length entirely *Bony*; of which *Dr. Tyson* and my self have several Pieces.

Some Animals  
having Lungs,  
yet wanting the  
Arterious Vein;  
by Dr. Swam-  
merdam. n. 94.  
p. 6020.

XXII. In nuperis meis Sectionibus Animalia quædam deprehendi, quibus licet uterentur *Pulmonibus*, *Vena* tamen *Arteriosa* fuerit à Natura denegata, sic ut *Sanguis* immediate è *Corde*, præviam nullam in *Pulmonibus* Circulationem; aut Conquassationem passus, per totum Corpus distribueretur. Nemo enim, opinor, *Ranis Pulmonis* denegabit, postquam Exercitissimus *Malpighius* tam curiosa tamque notabilia de his divulgavit, atque Solertissimus *Gualterus Needham Pulmone* manifesto eas donari atque *Respirare* annotavit: In his tamen Amphibiis *Vena Arteriosa* desideratur. Quare nec eorum *Sanguis* ullo modo per *Pulmones* Circulatur, in iisve cribratur, verberatur, aut comminuitur; cum mox ex simplici eorum *Cordis* Sinu per totum Corpus, *Pulmonibus* intactis relictisque, dispescatur. Quod certe haud debile mihi Argumentum videtur, quo, inter alia, *Hepati* suum *Sanguificationis* Munus restituere aliquando conabor.

*Arteria* tamen manifesta (*Bronchiali*, seu potius *Pulmonali* Analoga) in *Ranarum Pulmonum* succingente tunica adest, quæ mirandum in modum, ac Retis Mirabilis ad instar, per eorum Superficiem tenditur, atque minutissimis suis propaginibus sensim ad interiores *Vesiculas* progreditur; ubi, (ut Ego quidem arbitror,) cum *Vena Pulmonali* Anastomasin patitur, etiam Oculis

*Oculis manifestam. Venosum illud Vas Arterioso duplo majus: In Pulmonum cavo, ac præcipuè in Vesicularum ejus Oris ac Limbis situm est, a quo omnibus Cellulis, imò & ipsi Tunicæ succingenti, Capillaribus, ac fere invisibilibus Ramusculis prospicit.*

Animalia, quæ suspicor eandem cum *Ranis Pulmonis* structuram obtinere, sunt *Bufones, Lacertæ, Serpentes, Chamaleontes, Testudines, Salamandræ Aquaticæ*, & si quæ sunt alia *Pulmonibus Membranosis* instructa.

XXIII. In the Year 1685. a Servant to my Lord *Culpeper*, got a Fall, which caus'd him a Heavy Pain in the Breast for a while. About a Month after this Accident, a Musket burst in his Hands, and gave so violent a Recoyle against his Right side, that it made him Spit Blood immediately, and continu'd for 6 Months. A Year after, he began to feel a Pulsation on that side, and then he Spit Blood again, which continu'd, but only on the Spring and the Fall, till he Dy'd. He Bled likewise by the Nose twice a Year, for a Month every time. In 1695, or 1696, a Tumor began to appear under the Right Nipple, which growing by little and little, came to an extravagant Bigness, and at last after using some Emollient Oyntments upon it (of his own accord) it broke suddenly, and he soon after Dy'd. Mr. *Lafage* open'd the Body, and found that two of the *Cartilages* of the Ribs were worn off, by the continual Pulsation of the Tumour; part of the *Sternum Bone* was also worn off, by the same cause. The Dilatation of the Artery began precisely on its Trunk next to the Heart, before it divideth it self into the *Ascending* and *Descending* Trunks; and tho' there is but a little place, yet it did Dilate it self so excessively, that the Bag did fill up the whole Cavity of the *Thorax* on the Right-side; and press'd the *Lungs* so much, that they were thereby much diminish'd; the Bag by the outside did adhere to the *Media-stinum*, to the *Diaphragma*, the *Pleura*, and to the *Sternum*, in which it had digg'd two great Holes, so strong was the Impulsion; The inside of that Bag was lined, almost all over, with *Bony Laminæ*, some larger some lesser, like so many Shells; The Heart was mightily relax'd, in so much that it was twice as large as it ought to be; and amongst its Fibres there were some Stones, like them which are sometimes found in the *Lungs* of *Scrophulous Bodies*.

Fig. 63. A, The Heart. B, The Aorta, next to the Heart, where the *Aneurisma* began. CC, The same Dilated, making the Bag of the *Aneurisma*. D, The Descending Aorta. EE, The two *Axillary Arteries*. FF, The two *Carotid Arteries*.

Fig. 64. A, The Heart. bbb, The *Valvulæ Semilunares*, in the Bag. C, The Aorta Descendens. D, The Orifice of the Aorta into the Bag. EE, The two *Axillary Arteries*. F, That part of the Bag where it broke. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. The *Bony Laminæ* in the inside of the Bag.

Fig. 65. a, a, a, The *Sternum Bone*. B, Its superior part. C, Its inferior part. DD, Its Right-side. EE, Its Left side, in which the *Cartilages* of the Ribs GG, were wanting. HH, The place of the same Bone worn off by the *Aneurisma*.

An Aneurisma of the Arteria Aorta; by Mr. Lafage. n. 257. p. 696.

Explanation of the Figures. Fig. 63.

Fig. 64.

Fig. 65.

*A Communication of the Ductus Thoracicus with the Emulgent Vein; by M. Pecquet. n. 25. p. 463.*

XXIV. In the Dissection of a Woman, who Dy'd some few Days after she was brought to Bed, M. Gayant having discover'd the *Ductus Thoracicus* upon the 7th and 8th of the *Vertebra's* descending from the Back, inserted a Quill into the said *Ductus*, and having ty'd it upon the Quill, he did blow into it: whereupon the *Ductus* was fill'd with Wind from the Quill unto the *Subclavial Vein*. This Wind issued at the *Ascending Cava*, which had been cut: To prevent which, I compress'd with my Fingers the *Vena Cava* and the *Ductus Thoracicus* together, and M. Gayant having blown afresh into it, we perceived that the *Emulgent Vein* was, on the Left Side, fill'd with Wind, and that thereupon the Body of the *Vena Cava* also fill'd itself from the *Emulgent* unto the *Iliques*. This Wind seem'd to us to come from the Left *Kidney*, and to insinuate it self into the *Emulgent Vein*, and thence into the *Cava*. To clear this the more we lifted with the Hand the *Lungs*, that fill'd the Left Cavity of the *Thorax*, and having cleans'd this Cavity with a Sponge, M. Gayant did blow into the *Ductus Thoracicus*, whilst I compress'd the *Vein* and the *Ductus* with my Fingers upon the 3d *Vertebra*, descending from the Back; And we saw the Wind insinuate it self under the *Pleura*, by a Trace, which rais'd it suddenly as often as we did blow. This Trace appear'd from the 4th *Vertebra* descending into the *Diaphragm*, and made us conclude that there was under the *Pleura* a Channel of Commerce coming from the *Ductus Thoracicus*, and passing to the *Emulgent Vein* by this Cavity of the *Thorax*.

*Vid. in Sect. XXV. 2. F.*

This Channel of *Communication*, we perceived to come from the *Ductus Thoracicus*, at the place of the 4th *Vertebra* of the Back. But to be surer of it I compress'd with my Fingers the *Ductus* upon the 5th descending *Vertebra* of the Back; and M. Gayant having blown into the Quill, which was upon the 7th, the Wind pass'd not to the *Kidney*, nor to the *Emulgent Vein*; Which made us conclude, that the *Communication* was not beneath the 5th *Vertebra*. Then I compress'd with my Fingers the *Ductus Thoracicus* and the *Vena Cava* upon the 3d descending *Vertebra*; and the *Emulgent* swell'd when M. Gayant blow'd into the Quill: Which gave us more strongly to believe, that the place of the *Ductus Thoracicus*, whence goes the Channel of Commerce with the *Emulgent*, was between the 3d and 5th *Vertebra* of the Back. And to be yet more assured thereof, M. Gayant split the *Ductus Thoracicus* upon the 3d *Vertebra* of the Back, and having blown into it at the Quill, the Wind came out at the *Axillary Vein*, and the *Ascending Cava*; but the *Emulgent* swell'd not at all.

*r Blood passeth where the Air will not.*

We also made the following Experiment, which seem'd very Curious. M. Gayant having blown into the *Aorta*, whereof all the Branches that had been Cut were ty'd up, it swell'd immediately, and the *Emulgent Artery* grew Tumid at the same time: But the Wind, that was protrud'd thorow the *Emulgent Artery* into the Left *Kidney*, return'd not into the *Emulgent Vein*; which taught us, that the *Blood* often passeth where the *Air* does not. For the *Blood* of the *Emulgent Artery*, which goes to the *Kidney*, returns thorow the *Emulgent Vein* into the *Vena Cava*, pursuant to the Rules of the *Circulation*.

lation of the *Blood*: But in this Experiment the *Wind* could not pass that way. And we had another proof thereof in the *Lungs* of a Woman which we formerly Dissected, where we saw, that the *Air*, which was propelled thro' a Quill into the *Vena Arteriosa* (which is the *Artery* of the *Lungs*) return'd not thro' the *Arteria Venosa* (which is the *Vein* thereof) into the *Left Ventricle* of the *Heart*, though by the *Circulation* the *Blood* pass there with ease; and even *Milk*, which having been let in by this *Vena Arteriosa* return'd easily the same way.

XXV. 1. The discovery made about 20 Years since by M. Pecquet of the *Ductus Thoracicus*, seem'd not sufficient to clear up all the Difficulties to be met in the New Opinion, which this Channel hath occasioned, concerning *Sanguification*.

*A Communication between the Ductus Thoracicus and the inferior Vena Cava; by M. Pecquet, n. 83. p. 5007.*

It might be said, among other things, that there appears no Reason why Nature should carry the *Blood* into the *Sub-clavials*, and thence make it descend by the Trunk of the *Vena Cava*, (A) unless it be to keep the *Chyle* from entering all at once, and altogether pure, into the *Heart*; and that the Mixture which is made of the *Chyle* with the *Blood* along this way, may dispose the *Chyle*, by a kind of *Contagious Fermentation*, the more easily to receive the *Character* of *Blood* in the *Heart*: But that this might be more conveniently done, the *Ductus Thoracicus* being inserted into that Trunk of the *Vena Cava* which ascends to the *Heart*, because that this way is shorter, and is equally favourable to this Commixture.

It might also be objected, that supposing this Commixture were of Importance, the *Ductus Thoracicus* should communicate with the Inferior Trunk of the *Vena Cava*, as well as with the Superior, to the end that the Moiety of the *Chyle* being mixt with the *Blood* that comes from on high, and the other Moiety with the *Blood* that comes from beneath, (B) it might the more easily be Altered by this Commixture. And this Objection seem'd the more Rational, because it being very likely that the *Blood*, which returns from the Parts in which it hath received some Impression in penetrating their Porosities, Communicates to the *Chyle* these same Dispositions; there was Reason to desire, that the *Blood* which reascends, might in some degree impress the peculiar *Character* of the inferior Parts, as that which comes from the upper Parts impresses upon it that which belongs to it. (C) Add hereunto, that the *Blood* which reascends to the *Heart*, must be more perfect than that which descends; because it comes from being purify'd in the *Liver*, *Spleen*, and *Kidneys*; so that it is capable to give (D) to the *Chyle* good Impressions. (E) Lastly, it might be said, that, supposing it be necessary that not only a Proportion of the *Chyle* pass through the *Heart*, to give it some kind of Refreshment, but also that all the *Chyle* be convey'd thither for to be converted into *Blood*; the small Orifices, which the *Ductus Thoracicus* hath in the *Sub-clavials*, seem not to be large enough for that purpose.

The Observations that have been lately made, by searching carefully the Passage of the *Ductus Thoracicus* in the Body of a Woman, did shew, that

these Difficulties were well grounded. For, it hath been found by divers Experiments, made about this matter, that there Ascends at least so much Chyle through the Trunk which is beneath the Heart, as there descends through that which is above it.

*Vid. Sup. Sect.*  
XXIV.

These Experiments confirm those which were made some Years ago : And are clearer and ampler than the former. For the *Communication* which the first time appear'd to be only with the *Left Emulgent Vein*, hath been found this second time not only with this *Vein*, but also with the two *Lumbar Veins*, which are insert'd in the Trunk of the *Inferior Vena Cava*. The manner of finding this *Communication* was thus ; After there had been shew'd the *Commerce* of the *Ductus Thoracicus* with the *Right Ventricle* of the *Heart*, by an Injection of *Milk*, which having been Syring'd into the beginnig of this Channel, issued in great quantity through this *Ventricle* ; we ty'd the Trunk of the *Vena Cava* above the *Heart*, so that nothing might pass that way ; and the Trunk of the *Emulgent* and that of the *Vena Cava* having been open'd above, longwise, some *Milk* ready to boyl, was (G) inject'd into the *Emulgent* through the *Left Lumbar Vein* (which we have ever observ'd to come from the *Emulgent*,) and at the same time we saw it come away through the other *Lumbar*.

This Experiment having been several times repeated without our being able to see the Track, which we had formerly observed under the *Pleura* ; we resolv'd to attempt a more easie, and more certain Method of discovering this Branch, than the usual Dissection of the *Vessels* (H). This way was to Syringe into the Trunk of the *Ductus Thoracicus* a Composition that might run into it being Hot, and which by being Refrigerated might become Solid enough to afford a greater facility to follow and trace the Channels, in the Cavity of which it should be thus harden'd. And this Design succeeded in part : For the Composition fill'd the whole *Ductus Thoracicus*, and ascended as far as into the *Sub-clavial* ; but there pass'd nothing into the Channel that makes the *Communication* sought for, though care was had to warm the ambient Parts by several Injections of warm *Milk*, to the end that the Composition might not harden before it had penetrated into all the *Conduits* : We also try'd to inject the same Composition through the *Lumbar* that issues out of the Trunk, if its *Valves* would permit it ; but they stopp'd all that we endeavour'd to make pass that way, and neither the *Milk* nor the *Wind* would ever enter there. (I) by this Contrivance we very distinctly saw the Figure and the whole Structure of the *Ductus Thoracicus*, and we found, that that *Ductus* did ascend unto the Right Side of the *Heart*, keeping one and the same size, which was no more than  $\frac{1}{2}$  of an Inch ; that afterwards it was enlarg'd to  $\frac{1}{6}$  of an Inch in *Diameter* ; that in this enlargement its *Tunicle* on the Right Side of the *Vertebra* was, as 'twere, pierc'd by 4 small Holes, distant  $\frac{1}{2}$  of an Inch from one another, and all dispos'd in a Row : into which Holes the said Composition had not been able to penetrate ; that the same *Ductus*, after having re-taken its first Size, had two *Appendixes* fashion'd like *Sacks* ; that there was yet a 3d. *Appendix* beneath the *Dilatation* ; that the first and highest *Appendix* was of the form

form and bigness of a small *Phaeolus*; that the 3d, which was beneath the Dilatation, was like to the 2d; that they had a streight Orifice; and that the last was full of *Chyle*, conspitate, so that the Composition could not enter there, as it had done into the other.

2. A, This Reason for inserting of the Trunk of the *Ductus Thoracicus* into one place alone, is as good as any that are afterwards given to prove the contrary. For all Proofs of this Nature are but loose Conjectures at best: the Matter admitting of no other Demonstration than what is *Ocular*.

Annotations;  
by Dr. Needham  
Ib.

B, Till the Lower Infertion be shewed, we are bound to believe, that Nature thought the single Commixture of *Blood* and *Chyle* sufficient. The re-inforcement of that Objection answers itself, being proposed in no other Terms than (*it seems very likely*;) the whole Conjecture having yet but very slender Foundation in Philosophy. And if there be any thing in the Notion of impressing *Characters*, it is more attributable to the *Lympha*. See beneath at D.

C, That the *Blood* which re-ascends to the *Heart*, is purer than what descends from the *Head*, &c. is a Notion that will not easily be granted: neither can it be made out by Experiment. I have my self compared the *Blood* of the *Jugular Vein* with that of the *Crural* in a Dog, and found no difference. The Separations made by the *Kidneys* and *Liver* (if they prove any thing) prove the Ascending *Blood* to be thicker than the Descending; it having lost in those places much of its *Serum* and *Lixivial Salts*, which are the great Instruments of Attenuation. But withal it is to be consider'd, that the *Blood* which Ascends from the *Heart* to the *Head*, parts with much Excrement in the *Glandulae Salivales*, and *Nostrils*, and the whole *Throat*; the Quantities of which are much greater than will easily be imagined. There is likewise a great Separation made in the *Brain*; which whether it be of the Purest and best *Spirits* of the *Blood*, so as to leave it depauperated; or only of a *Nutritious Serum*, such as is made in all the *Solid Parts*, is hard to say. Only this may be certainly said, that the *Lympha* does wholly exonerate itself into the *Sub-clavial* and *Jugular Veins* near the place of the Infertion of the *Chyle*; whereby the whole *Chyle* is diluted, and the Mixture of it and the *Blood* facilitated. Which very *Phenomenon* is a greater Argument to prove, that the *Chyle* does wholly enter by that Passage, than any can be produced on the other side. For we see, all the *Lympha*, not only of the *Liver* and *Intestines*, but also of the *Lower Limbs*, to pour it self into the *Receptaculum Chyli*, and not into any of the *Lower Veins*: Whereas the *Lymphaticks* of the *Head*, *Neck* and *Arms*, think it sufficient to meet the *Chyle* at the place of its entrance; which same thing might have been done by the *Lower Lymphaticks*, had they any *Chyle* to meet: The principal use of the *Lympha* seeming to be, to serve the Uses of the *Chyle* and its Mixture with the *Blood*.

D, What Impressions are made on the *Blood* by the *Liver*, *Spleen*, *Kidneys*, &c. is uncertain: but if there be any such made, the *Liver* and *Kidneys* do so readily exonerate themselves into the *Vena Cava*, that the Impressions, be they

they what they will, are quickly convey'd to the *Heart* without any great Diminution of them. And whereas the Author mentions the *Characters Impressed* from Parts, those, (if any such be) may more justly be supposed to be convey'd in the *Lympha*, which Liquor seems to be a Product of those Parts curiously elaborated in the very Substance of them.

F, What is sufficient and not sufficient, must be judg'd of by Nature, and not by us. Yet if we consider the time that is spent in carrying the *Chyle* up into the *Blood*, it is easie to believe, that a much greater Quantity of Liquor may be discharg'd by that *Ductus*, than is usually pretended to.

*Vid. Sup. Sect.*  
XXIV.

F, What those Experiments are, we should be glad to know. But the Experiment of 1667. (if I rightly remember it) was only a *Lusus Naturæ*, found by M. *Pecquet*; which I therefore call so, because neither he, nor any one else hath found it since. Whereas the *Vasa Lactea*, and the ways of ordering them, are so well known, that if any such thing were, it could not long be hid.

G, An Injection into the *Lumbary Vein*, with its Effects mentioned, can prove nothing but the *Inosculatio* of the two *Lumbary Veins* with each other: which is acknowledged to be such in all the *Capillary Vessels* of the same kind, *viz. Veins with Veins*, and *Arteries with Arteries*. But the thing requir'd here is, the passage from the *Receptaculum* to the *Lumbary Vein*, or to any other *Vein* besides the *Subclavial*.

H, The way of Syringing a Liquor which is apt to *Coagulation*, into the *Ductus Thoracicus*, &c. I think to be needless and unprofitable as to this Inquiry, when there is a more easie Experiment to be made, which is more Demonstrative, *viz.* open a Dog at a convenient distance of time from his Feeding, and then tye a Ligature upon the *Ductus Thoracicus* nigh the *Subclavial*: your *Receptaculum Chyli* will continue full 48 Hours, or longer if you please: So that if there be any such *Ductus*, it must remain likewise full with its own natural Liquor, and be all that while Visible. But if there were any such *Ductus*, it would in a quarter of the time empty the whole *Receptacle*; whereas upon a Ligature you'll find the clean contrary, *viz.* all the *Lacteal Vessels* (that are acknowledg'd to be such) fully distended, Which is a full Demonstration, that they have no way of Evacuation by any other *Duct* than the *Thoracique*.

I, The other Use of the *Coagulating Injection* I applaud; though the same may be done by the Ligature abovesaid. However the Event of the Experiment, made by the Learn'd *Pecquet*, makes against the Opinion of a *new Ductus*, and not for it.

The true Use  
of the Lymphatick-Vessels; by  
M. Louys de  
Bills. n. 40.  
p. 791.

XXVI. The *Lymphatick Vessels* have two *Coats*, betwixt which there are innumerable very small and very fine Filaments, resembling the Mosses of Trees, without any *Valves*, containing a *Nutritious Juice* convey'd into all the Parts of the Body, by a Motion thereof from the Center to the Circumference; but returning through the inner Pipes (furnisht with *Valves*) of the same *Water-Vessels*; at which time they are no more to be call'd *Water* or *Dew*, but *Ferment*, the Vessels deserving also the Name of *Ferment-Vessels*.

This

This *Ferment* serves to keep the *Blood*, and to *Ferment* the same, being convey'd into it by a Motion contrary to the former, *viz.* from the Circumference to the Center; which I have shew'd to many in the *Jugular Glandules* taken out of a Dog; wherein I shew'd them, that these *Lymphatick Vessels* carry their *Dewy Particles* about the *Glandules*, between the two *Tunicles*, and that in the lowermost end of these *Glandules* the *Ferment-Vessel* takes its beginning, being enclos'd in these *Dewy Vessels*, and so constituting the inner Pipe together with the *Valves*, which are of another Form, than hath been known hitherto.

To your *Quære*, Whether the said *Ferment-Vessels* discharge at last all their *Ferment* into the *Ductus Thoracicus*, thence to be carry'd directly into the *Heart*, there to increase and to *Ferment* the *Blood*; or whether they communicate their *Ferment* to other Parts also? I answer, that most of the Juice of the *Milky-Vessels* is discharged between the *Tunicles* of the *Veins*, *Arteries*, *Lymphaticks*, *Membrans*, and the *Vessels* in the *Mesentery*, to be convey'd into all the Parts of the Body, both Internal and External. For even in *Bearing-Females* the *Fruit* is not nourish'd by any *Blood*, but by the *Nutritious Juice* convey'd to it; as also by the *Moisture* contain'd in the *Amnion*, which is no *Urine* nor *Sweat*, as some imagine; we having lately seen in the House of Dr. *Stalpart* at the *Hague*, in a new born *Child*, that his *Urachus* had no Cavity at all, through which the *Urine* could pass out of the *Bladder* into the *Amnion*. The remaining and least part of the *Liquor* of the *Milky-Vessels* is transmitted through the *Ductus Thoracicus* by the *Jugular Vein* into the *Blood*.

Besides these *Vessels*, there are yet others that do not Exonerate themselves into the *Blood*, *viz.* the *Ductus Virsungianus*, which delivers it self into the *Duodenum*; and the *Ductus Salivales*, whereof the *Saliva* does no less, than the *Juice* in the *Ductus Virsungianus*, serve for *Ferment*, *viz.* the one in the *Stomach*, and the other in the *Intestines*. From whence you may easily conclude, not that I hold (as it seems I have been understood) that the least part in the *Ferment-Vessels* concurs to the making of *Blood*, but that the least part of the *Juice* in the *Milky Vessels* is discharged into the *Blood*.

Concerning the other *Quære*, Whether also the Distribution of this *Ferment* is made through the *Testicles*, *Kidneys*, *Breasts* and *Salival Glanduls*, &c. I answer, That the *Salival Glanduls* carry their *Spittle*, or *Ferment* into the Mouth; and that the rest which returns back through the *Testicles*, *Breasts*, and other *Glandules*, is carry'd to the *Cistern*.

XXVII. Vir. erat quasi 35 Annorum, Robustus, Temperamenti Biliofi, qui Decimis colligendis eo tempore occupatus, post Operam Laboriosiore Poros forsan cito nimis ex Rigore admisso occluserat. Prima ergo Morbi invasione Febrificavit, primo, Rigore & Horrore, dein Calore, & Doloribus vagis, (nunc in Ventriculo & Intestinis, mox in Pectore sævientibus) correptus. Verum hæc Symptomata cum aliis brevi permutantur; Materia enim Morbum committens se in Dorso omnem deposuit: Hinc immanis Lumborum Dolor ad Coxendicem usque sæviens; Et quidem tantus erat Dolor, ut sudores

A Convulsive  
Rheumatism; by  
Dr. Rob. Pitt.  
n. 208. p. 58.

Sympto-

Syptomaticos sic expresserit, ut a Capillis & Facie Guttæ catervatim stillarent. Præ Doloꝛe neque in Lecto procumbere, nec erectus stare, nec in Sedili sedere, potuit: Verum *Abdomine* ad Spondam Pedum fulcris protruso, *Dolorem Lumborum* compressione illâ aliquo modo fallere videbatur. Sed neque sic inclinato Corpore quietus (ut voluit) perstare usque potuit: Sed *Convulsi nibus* correptus primò erigebatur, cum Vultu miserabili, & ringenti Ore, dein in Humum retorquebatur (nisi adstaret aliquis qui Casum ejus præveniret) ubi immotus Cadaveris instar manebat, sese movere inhabilis, neque majori ad surgendum potentiâ donatus, quam si esset Infans. Brachia etiam & Crura ei prostrato rigeabant, ut nullo modo extendi retrahive possent. Os etiam *Convulsionibus* ita claudebatur, ut Cochleare vix admitteret. *Convulsiones* autem illæ, quibus Membra & Dorsum corripiebantur, per *Paroxysmos* redibant; non quidem Periodicos, sed nunc citius nunc serius redeuntes prout Dolor magis minusve sæviret. Sed eum ad positionem suam opꝛatam, Spondam sc. reducamus, ubi Vultu ita erat Composito, qui Risum sane cuiquam videnti facile moveret, nisi Recordatio earum quas sustinebat miseriarum Misericordiam potius excitaret. Sic autem Dies Noctesque Misellus Homo tres plus minus Septimanas transigebat, nunquam in Lecto discumbens, Insomnis ut plurimum, cum Doloꝛe summo, crebrisque *Convulsionibus*. Hæc sunt quæ in eo observare potui *Symptomata*; cætera sanus. Nulla erat *Vomituritis*, Pulsus fortis & æqualis; Lingua humida, & Pelliculâ albâ obducta; Sanguis per Venæ-Sectionem eductus, Sanguini *Pleuriticorum* similis; Urina ut Sanorum. Quid per primam septimanam factum sit, nescio; nisi quod Vena semel pertrunderetur; semel Clyster, & semel purgans Medicamentum administrarentur; & Vis satis magna *Laudani* sine Fructu exhiberetur. Sed incasum hæc omnia. Tandem me accersi curant, qui cum Ægram vidissem eo quo scripsi modo laborantem *Venæ-Sectionem* repeti jubeo, ad satis largam Quantitatem. Die proximo *Lenitivum* præscripsi, quod dum per sedem ad 3 4ve Vires operabatur, Æger *Rectus* obambulare potuit, nullis *Doloribus*, nec *Convulsionibus* lacessitus; quo tandem suo munere perfuncto, redeunt statim *Dolores* & *Convulsiones*, & ipse ad pristinam suam stationem Spondam sc. redit. Hoc tamen Animos addidit, *Purgationes* repetitas rem ipsam expedire posse, cum primum *Purgans* eas à Morbo Inducias daret. Die ergo sequenti *Resinam Falapii* & *Mercurium dulcem* exhibui (cum expertus essem quid in *Lumborum* Doloꝛe valeret hoc Medicamentum) sed præter Spem, ne semel quidem Deposuit Æger, quamquam ꝑj. Syr. è *Spin Cervinâ* adjecerim. Ut ergo duro huic nodo durum satis adaptarem Cuneum, *Purgantium* Dofin auxi, Syr. è *Spin. Cervin.* ad ꝑiij. ꝑiiijve alternis diebus adhibens. Sic tandem Alvus aperta est, & *Dolores* mitigare, & *Convulsiones* non ita crebro laceffere. *Serum Lactis* ut ad libitum hauriret permisi: Et cum Alvus *Purgantibus* responderet, *Laudanum* tutius & liberius exhibere potui, unde Requiem Spiritibus, à Morbo simul & Medicamentis exagitatis, conciliarem; nec tamen Materiam Morbum committentem ab eo incarcerarem. Sic tandem factum est ut à repetitis his *Purgantibus*, octo puto, aut decem, evanuit Dolor, & *Convulsiones* cessarunt, & ipse fartus tectus valet. Ego interim ut à *Recidiva* caverem, *Nervina* Medicamenta, quæ Sanguini & Spiritibus Vigorem imprimerent, adhibens;

bens; Eum vigetum vividumque & Onera Humeris sustinentem, nuper vidi. E memoria fere excidebat, Suras ei convalescenti intumuisse, qui Tumor his ultimis Medicamentis facillè cessit.

XXVIII. Dr. *Baynard* was always of Opinion, that the *Pains* in a *Rheumatism* were not caused from any *Saline* or *Acid* Particles in the *Blood*, &c. but rather from the *Clamminess* and *Density* extending the Channels through which it passes, which Extension produces those Sharp and Pungent *Pains*, which *Rheumatismick* Persons so generally complain of. For although the proper *Coats* of the *Veins* and *Arteries*, seem to be *Indolent* in themselves, yet those thin *Membranes* which oblide them are most exquisite of *Sense*, and full of *Lymphæ-ducts*, which being dilated and stretch'd cause an *Inflammatory Symptomatical Fever*, with continual *Sweats*; the *Blood* being *Glutinous* and *Siezy*, as in *Quinsies* and *Pleurisies*, and all other *Inflammatory Distempers*. The *Fever* being increased by the great store of *Alkalial Corrosive Salts* lodging in the *Blood*, causing *Thirst*, &c. and not diluted and washed off by *Urine*, which *Urine* is always thick, turbid, and high-colour'd, and almost, if not totally, devoid of any *Saline Impregnations*. To prove which, he sent 6 *Quarts* of a strong Man's *Urine*, in the heighth of a *Rheumatism*, to that Ingenious Artist Mr *George Moul*, who Chymically Anatomiz'd it, and found not above the 30th part of those *Salts*, usually found in such a Quantity of the *Urine* of a *Sound Person*.

The probable Causes of the Pain in Rheumatisms; by Dr. Edw. Baynard. n. 215. p. 19.

XXIX. Sit *A B*, Cylinder æneus Concavus, idoneæ Crassitudinis, cujus Diameter sit unius, Longitudo verò decem aut 12 *Unciarum*; parsque interna exquisitissimè lævigata, ut nimirum nulla Rimula remaneat; sique ei propè fundum, parvulum Foramen *O*; porò sit Operculum *E F*, (*Fig. 67*) Fundus *G H*, (*Fig. 68.*) illud duabus Cochleis, hic Cemento Metallico Cylindro nexus; adfit Fundo Nasus 1, 2, medio perforatus, & ejusdem parti externæ, ad modum Cochleæ, fiat Virga ferrea *N N*, (*Fig. 69.*) idoneæ Crassitudinis, & Longitudini Cylindri adaptata; ad ejusdem extremitatem Lamina Ænea *L M*, & propinquiùs duabus *Unciis* Cacumini altera *I K*; spatiumque intermedium ita Filis Lentis Oleo madefactis replendum est, ut perfectissime cavitatem Cylindri claudat; adfit tandem Manubrium *N*. Ex his partibus complexum haud dissimile est *Syringæ* Chirurgorum. Formetur etiam Cylinder Æneus *OPQR*, (*Fig. 70.*) magnitudinem Figuræ adæquans, duabus Alis *OS*, *PS*, per Axem perforatus tam magno foramine, ut ejusdem pars interna formâ Cochleæ Feminæ modificata, accuratè Cochleam Marem Nasî recipiat; porò augeatur Foramen ab *R*, & *Q*, usque ad *TT*; tandemque fiat Humerus *V V*, & formetur Lamina *W*, medio perforata, ut ei (*Humero*) conveniat & adhæreat. Porro formetur Conulus rectus, per Axem perforatus 1, 2, 3. (*Fig. 71.*) augeaturque foramen ab 1, 2, usque ad 4, 4; formeturque Humerus 5, 5, ut exquisitissimè conveniat cavitati Cylindri *T, T*, & ei strenuè adhæreat fiatque tandem Elater (*Fig. 72*) ex filo Æneo Helicis formâ circa Cylindrum, idoneæ Viris, & Pixidis 4, 4, *V, V*, Diametrum ferè adæquans, sed Pixide aliquanto altius, cum sibi relinquitur; Vol. III. M m habeat

The Pneumatick Engine apply'd to Cupping-Glasses; by Mr. Tho. Luffkin. n. 255. p. 288. n. 259. p. 408. Fig. 66. Fig. 67. Fig. 68. Fig. 69.

Fig. 70.

Fig. 71.

Fig. 72.

Fig. 73. habeat ad extremitatem infimam Laminam 7, 7, ejusdem magnitudinis, cum pars infima Corio molli Oleo armato vestienda est; ad occludendum Orificium Canalis. Iterum fiat ad Verticem *Cucurbitulae*, (Fig. 73.) perforatio rotunda, qui immérgatur Conus usque ad Alas S S; & Rimulæ aut Fissuræ repleantur Cemento, ex Resina Terebinthinâ & Calce composito. Tandemque fiat Operculum 6, 7, 6, 7, (Fig. 74.) ad Humerum 7, 7, Corio Oleo madefacto vestitum, quo Aer quam primum ex Vitro haustus erit (si Fissuræ utut parvulæ Valvulâ forte remanebunt) excludi potest. Hucusque in ejusdem Descriptione tempus trivi: nunc non de Uû & ad Morbosos Applicatione, quia Medicorum & Chirurgorum est; sed Uûs ratione, pauca subnectam.

Fig. 74. Cum Pollex strenuè applicatur ad Foramen, & Lamina 9, 9, (Fig. 75.) Manubrio attollitur ad 10, 10; at quia Aer antea tantum spatium 9, 0, 9, replevit, nunc ita Rarefactus aut Expansus est ut spatium 9, 9, 10, 10, (hoc est tricenties majus) occupat, quapropter Aeris Vitro inclusi Elasticitas, Elasticitates Elateris & Aeris Cylindro contenti superans, sursum obrudetur Lamina, aut Valvula, quæ aperta remanebit donec tanta Quantitas Aeris petit Cylindrum ex Vitro, ut complementi Aeris Vitro Elasticitas fiat equalis Elasticitatibus Elateris & Aeris nunc Cylindro contenti; ac aperto Foramine 0, Aeris externi pressurâ potenter occluditur valvula 1. Cæteris paribus, & tribus quatuorve Suctionibus plus minusve  $\frac{222}{1000}$  Aeris (secundum Elateris potestatem; & rationem quam habet Capacitas Cylindri ad Capacitatem *Cucurbitulae*) exhaustæ erunt: Et si Elasticitas *Aeris* eodem spatio sit ut Quantitas, Resistentia aut Pressura sub Vitro erit ad pressuram supra partes circumjacentes, ut Unitas ad mille; quia antequam Aer exhaustus erat Vitro, Resistentia aut Pressura sub Vitro eadem fuit cum illa supra partes extra Vitrum. Notatu dignum existimo, ut quanto major erit Cylinder eodem Elatere, tanto major *Aeris* Quantitas exhausta erit Vitro; quia Aer 9, 0, 9, in majus spatium extenditur, & consequenter minorem habet Elasticitatem; quapropter majorem habebit rationem Elasticitas *Aeris* in Vitro ad Elasticitatem *Aeris* in Cylindro & Elatere contenti, itaque major *Aeris* Quantitas Vitro extrudetur.

The Operation  
of a Blister when  
it Cures a Fever;  
by Dr. William  
Cockburn.  
n. 252. p. 161.

XXX. There is hardly any one who has not seen a *Blistering* Plaister, the great Ingredient whereof are *Cantharides* laid upon a fleshy Part, and after sometime, observed the *Scarf-skin* forced up with a Liquor, that Oozed and Issued out from within the Sphere of Activity of that Plaister: And if we consult the most of *Physick* Books the Account is no better. Little or nothing more is said, even by Authors of the first Form, than any one may observe every Day; supposing only that he thinks, that our Flesh, thus covered at any time with a *Blister*, is made up of many and divers Vessels, out of which the discharged Water may come. I have therefore endeavoured to find a Reasonable Account: *How the Raising of a Blister may Cure a Fever and its most terrible Symptom the Delirium, and that in 6, 8, or 10 Hours.*

To this end, I first employ'd *Microscopes* to look on the *Fly*, and its Powder; and to see if I could discover any *Sharp Instruments* in these Warlike and Wounding Creatures. But the *Fly* became a very delightful, but too large a Survey

Survey for me; and the Powder begot nothing formy Sight but a dark Cloud; and whatsoever else I found, I could meet with no *Arms*. I then turn'd half a Pound of *Cantharides* into a *Retort*, and there came over with the least Sand-heat, and in a very short time, vast Quantities of Bodies so very small, that I was not able to discern their Shape. And though I proceeded in the usual way, on the like Occasions, the whole Operation was perform'd very soon; and so *hastily*, that very little *Salt* stuck to the Neck of the *Retort*, and the *Volatile Salt* shot in most delightful *Chrystals* in the *Receiver*: And of the whole 8 Ounces of *Cantharides*, there were only two Ounces and 5 *Drams* left as a *Caput Mortuum* in the *Retort*. When the *Liquor* came to be Purify'd, the smallest Heat brought it over suddenly, *Oyl*, *Salt* and *Spirit*; so that they could not be parted, till by a repeated Operation with *Brick-dust*. I mix'd the *Spirit* with *Salt* of *Wormwood*, *Spirit* of *Harts-horn* and *Sal Armoniack*: But it did not *Ferment*, contrary to the Expectation of most Authors. Then I turn'd it over upon *Spirit* of *Vitriol*, where it did *Ferment* very strongly, and yet better with *Spirit* of *Nitre*; with which also I did mix the *Spirits* of *Sal Armoniack* and *Harts-horn*; but they neither *Fermented* so long, nor with so great an *Ebullition*: from whence 'tis evident, that it is not only *Alkaline*, but a great deal more than any one of these I have now mention'd.

The *Internal Use* of these *Flies* in Physick, having been lately Controverted with much Heat, I shall here give some *Hints* whereby to state the Question fairly; and such as if used as *Topicks* in the Controversy will soon put an end to it among Thinking and Sober People. The great thing Challeng'd is this, That we may see *Cantharides*, which have been reputed *Poyson*, now so *Corrected*, that they become not only Innocent, but prodigious Instruments of Health. For the clearing of this, first settle what a *Poyson* is; and next, since *Death*, or no *Circulation* of the *Blood*, is its Consequence, we must find as many Kinds of *Poysons*, and ways of *Dying* Natural, as there are ways of stopping the *Blood's Motion* in the Course of Nature or by Medicine; which is either, by its own *Rarefaction* to a Degree, its *Coagulation*, or lastly by *Letting it out* in such a Quantity that the remaining part gives not *Animal Actions*; and as all, or any of these, may be *sudden* or produce their Effects in *Time*, we shall have *Evident Poysoning* or *Poysoning for a Time*; of which we have many Histories. Again, it may be askt, of which of all those *Cantharides* are? and of all I believe they may be found entirely or most especially of the 3<sup>d</sup> sort. After this we shall be led naturally to enquire, if they be *Corrected*, or in plain English if they have left their *Wounding Power*; and this is the Fact, of which we may inform our selves, by applying a *Plaster* of *Cantharides* so *Corrected*, to a place exposed to *Air*. This will settle the Fact of *Correction*, and in Circumstances much to the advantage of the *Correcting* side, because there the *Skin* and *Vessels* are much *Harder*, than those to be met with within the Body; and if they *Blister* then, much more when *Internally* given. The possibility of their being *Corrected*, and of their becoming useful, may not be doubted of: But then it is our Reason, in this way, that must be judge. Add to all this the common Obser-

vation, that a common *Blister* sometimes makes *Bloody-Urine*, and compute what Quantities enter the *Plaster*; and then what Quantities of small parts may be sent from them that are thus mix'd; next Calculate what probable Distribution may be made of these parts to the *Kidney*; and then you'll find that Parts that are nearer, and as susceptible, must be *Wounded* too, and produce all the ill Effects that are suppos'd and commonly seen. But if all this can happen by so small a Quantity of the *Powder* that goes to the *Plaster*, and is confin'd by other *Viscid* Ingredients of it, what can be the Consequence of this *Powder* when it is taken inwardly, and in substance? But it is *Corrected*; and we are told with *Campbir*. The most unfit *Corrector*; so far as I can expect in Reason, or even imagine. But still our Reason may be frail; and so it may, and really is so, to a great Degree. But then to help it, I had two *Plaisters* apply'd, each of them with *Cantharides*, and one of them with as much *Campbir* as *Cantharides*. The next Morning, we found that *Plaster* wherein the *Cantharides* were mixt with *Campbir*, to have quite as good Effects as the other where there was none. The Consequence of which is, that if *Cantharides* said to be *Corrected* make a *Blister*, when apply'd to any External Part of the Body; that they are to be thought not to be *Corrected*.

But leaving these Particulars, I shall proceed to prove the way of a *Blister's* working when it Cures a *Delirium*, and a *Fever*. And here I shall only suppose.

1. That there are very *Mobile*, or *Volatile* parts in *Cantharides*, &c. that can be determin'd into our *Flesh*, with a Force sufficient to make their way thorow the sides of any *Vessels* that are in the *Lines* of their *Direction*, so long and in that proportion that their *Impressed Motion* does continue.

2. That all sorts of *Fluid Bodies* contain'd in the Cavities and Channels of these *Vessels*, may be transmitted, according to the Conditions of Separation of *Fluid Bodies* running in *Vessels* of that sort, and the Wideness of the *Emissaries* made by the *Wounding* Particles of *Cantharides*, or any such like *Blistering* Substance.

Next I should proceed to make some Suppositions, from the Nature of a *Fever* and a *Delirium*: But that I may be better understood, I shall first Hint some general things about them.

*Fevers* in respect of time, either remain after the same manner, from the Sickening till the Sick Person is freed of his Disease, or not: If the first, they are call'd *continu'd Fevers*; but if the Sick Person continues evidently in a sickly way, and yet has great Reliefs, and is respited from his Illness for a time, the *Fever* is said to *Intermit*, or that it is *Intermitting*. These Diseases are perfectly well discover'd by the *Quickness* of the *Pulse* which is the fault of the *Pulse*, and the *Pulse* cannot be so but by the *Faultiness* of the *Blood*, either in *Quantity*, *Quality*, or its *Motion*: Neither can it offend either in *Quantity*, or in *Quality*, but it affects its *Motion*. Hence we may suppose that a *Fever* is an universally Heighten'd *Circulation* of the *Blood*, and that a *Delirium*, *b. e.* that Unconnected, Incoherent, and Ridiculous way of *Imagination* and Expressing our selves in a *Fever*, is entirely the Effect of this greater *Motion*.

These

These things being supposed, the Question may be Stated thus ; How *Wounding* by *Cantbarides* makes our *Pulse* not so *Quick*, and consequently our *Blood* to have a more *Slow* and *Natural Motion*? That this great *Effect* does not proceed from the *Pain* of a *Blister* is *Evident*; because *Pain* very often brings a *Fever*. That the *Particles* of the *Cantbarides*, mixt with the *Blood*, should induce this *Quiet* by a peculiar sort of *Fermentation* they make in the *Blood* is very *precarious*; For I have shown in another place, from *Hints* of an *Eminent Member* of the *Royal Society*, and perhaps the greatest *Chymist* that ever lived, that there is no such thing as a *Chymical Fermentation* in our *Blood*. And the *Quantity* of *Lympha* that is thereby separated from the *Blood*, is acknowledg'd by most *Physicians* to be too weak a *Cause* for so great an *Effect*. I shall therefore proceed to enquire after a better *Solution* of this astonishing *Phænomenon*.

Vid. Sea-sick-  
nesses; Part 1.  
p. 47.

The *Pulse* is nothing but the side of an *Artery* that is distended by a certain *Quantity* of *Blood* that is determined thorow it's *Cavity*, by a certain *Motion* every time the *Heart* is *Contracted*, and that touches and *Beats* up our *Finger*, when we lay it on a place where we may be sensible of this *Affection* in the *Artery*. We say this *Pulse* is more *frequent*, not so much that it *Beats oftner* than any other *Bodies*, but that it *Beats quicker* in the same *Person* when he is said to have a *Fever* than before, when he was reputed to be in perfect *Health*; so that a *Physician* is obliged to know the *Natural Pulse* of every *Person*, before he can judge by the *Pulse*, that any one is *Sick*. And how that may be done I have shewed at length, in a *Book*, sometime ago. Howsoever in this our *Case*, the *Pulse* is *quicker*, and there is no *Pulse*, but when the *Heart* is *contracted*; and the *Heart* being a *Muscle*, and *Contracted* at every *Pulse*, is either the chief or only *Cause* that *Determines* and stretches the sides of *Arteries*, and makes a *Pulse*, or a very extraordinary measure of such *Distensions*: But it has the greatest share in *Propelling* the *Blood* round the whole *Body*, in respect of the *Help* of the *Arteries*, which they are supposed to give by their *Restitution*, after their extraordinary *Distension*. Be it how it will, both their *Actions* are by *Contraction*; (tho' afterwards I take no notice of that of the *Arteries*) and no *Contraction* in *Muscles* was ever supposed by any sober *Man* to be perform'd, but by an *Influx* of *Spirits* into the *Fibres* of the *Muscles* so *Contracted*. So that now our *Question* changes thus, How *Wounding* by *Cantbarides* makes the *Contraction* of our *Heart* weaker?

The *Contraction* of *Muscles*, and consequently of the *Heart*, being by the *Spirits* that flow into them, as I have said before; therefore whatsoever weakens the *Contraction* of any *Muscle*, (suppose the *Heart*;) must either be such a thing that can hinder the *Separation* of these *Spirits*, or intercept them in their *Channel* of *Conveyance* to that *Muscle*, after they are separated. The *Spirits* are known, by *Anatomical Experiments*, to be separated from the *Blood* in the *Brain*: now, whatsoever hinders the *Separation* of the *Spirits* from the *Blood*, must either hinder that *Rarefaction* of the *Blood*, that comes by being broke down into small parts, and makes them *Spirits* in their proper place, or the *Blood* of that fineness that is necessary for it to be perspired; *h. e.* a *Body* that affects the *Blood* so as not to *Separate Spirits*, must

be

be of a Nature to make its parts more *Compact* in their *Contact*; to have their *Contact* with a greater *Nisus*, and consequently to have its Parts less *Separable*. The next way is by affecting its *Motion* so that it discharges great Quantities out of the *Blood*; by these means the Quantity of *Blood* being lesser, it gives fewer *Spirits*, when it is broke down; and is not so capable to be so *Comminuted*, because of the parts of *Blood* not *Pressing* so much one upon the other, in the whole *Course* and *Time* of *Circulation*. Or, Thirdly, by some means that Affect the Parts that transmit these *Spirits*, so, that now no *Spirits* can be *Separated*, or in a smaller Quantity.

If we apply the *Wounding* by *Cantharides*, or its *Effects*, to all these ways, we shall find that in the *first* Consideration, the *Lympha* separated in a *Blister* is nothing at all concern'd, and that the *Stupendous Effect* might possibly be produced without any such *Discharge*. But if you go further, and suppose the *Cantharides* got into the *Mass* of the *Blood*, without any gathering of *Waters*, you cannot suppose that the parts of *Cantharides* that are so subtle, so *Alkaline*, and which, by other Experiments, make the *Blood* so *Fluid*, can be any great Enemies to the *Rarefaction* of the *Blood*, which makes *Spirits*, and fits them to be *Separated*; or any considerable Instrument in Lessening the *Rarefaction*, which is requisite and absolutely necessary, by the *first* Condition. Neither are they in their Nature fit Instruments for the *3d*; besides that, we find no Signs and no Marks of such an Interruption, either in the *Brain* or any where else. The *2d*. Condition for hindering so great a *Preparation*, and so great a *Separation* of *Spirits*, is the Effect of all *Evacuations*. So that, by the by, *Evacuation* is the great Indication for the Cure of a *Fever*, and is a great deal more evident than any *supposed Poyson*, or *Malignity* *supposed* to be discharged, by *supposed Alexipharmicks*, that are *supposed Antidotes*: Yet this Effect by an *Evacuation* is granted, and by the way of working will be found unable to discuss all the *Phenomena*, in doing it in so *short* a time as in the state of our Proposition.

Let us therefore enquire if a *Blister* that makes small *Wounds*, and *Cures* a *Fever* in a *short* time, can produce this its Effect in the only way we have left us; and that is by *Wounding* that *Channel* that carries those *Spirits* that *Contract* the *Heart*, give us a quick *Pulse*, and a *Fever*, with all its Attendants, *Deliriums*, &c. If this Supposition is allowed of, no doubt but that any the least Quantity of *Animal Spirits* let out by such *Wounds*, in a very little time, will proportionably weaken the *Heart's Contraction*, and give us a *slower Pulse*; which is all we want: and which is more, this *slower Contraction*, which is known by our *slower Pulse*, determining the whole *Circulating Blood* with less force, the Parts of *Blood* do not *Comminute* themselves so much as when the *Motion* was more *Rapid*; and, by consequence, there is not such a Disposition for *Separating* small parts in the *Brain*, that afterwards they may be *Derived* thorow the *Nerves* into the *Heart*. But moreover, the lesser *Motion* continuing for some little time, or 2 or 3 *Minutes*, in a *Velocity* something like our natural *Motion*: all the *Secretions*, which are perform'd in such *Degrees* of *Velocity*, will again begin to be done as before.

If therefore we can put little *Emissaries* on the *Nerve*, that is more especially concern'd in the *Heart's Contraction*, we shall hinder any *Preparation* in the *Blood* for *Separating* so great a Number of *Spirits*; which is one great *Requisite*: Nay, we shall make *Secretions* of that sort, and in that way as in time of *Health*; and if there be but *Secretions*, the *Contracting* Parts, and those to be broke down, shall have no such a close *Contact*, and therefore that extraordinary Quantity of *Spirits* shall not be *Prepared* in the *Blood*; and if they are not *Prepar'd*, they cannot be *Separated* from it; or a *Moderate Quantity* of *Animal Spirits* shall be convey'd into the *Muscular Fibres* of the *Heart*: or again, which is the same thing, its *Contraction* shall be *Natural*; And all this may be done, or begin to be done, in 2 or 3 *Minutes*.

But How we shall Apply a *Blister*, that may *Wound* the *Conveying Nerves*, is the only *Question* that remains. To do this we must remember, That the 8th *Pair* of *Nerves*, which serves for the *Heart's Contraction*, has its *Rise* from the sides of the *Medulla Oblongata* behind the *Processus Annularis*, by several *Threads* which joyn together, and go out by the same *Hole* that the *Sinus Laterales* discharge themselves into the *Jugulars*: And since the *Union* by the *Atlas*, is not so firm and compact as in the other *Vertebrae*, it is evident, that there is no extraordinary hindrance, why some of these *Wounding* parts may not come at that *Nerve*. But if you *Reflect* again, that this *Nerve*, or considerable *Branches* of it, run superficially enough on the *Neck*, you will have less difficulty to apprehend how some of them are *Wounded*, and to understand how these *Miraculous Effects* do *Happen*, and are *Produced*. Or, it is easy to understand how the small parts of *Cantharides* can wound the 8th *Pair*, or by *Wounding* its *Branches* derive from the *Nerve* it self, and *Lessen* the *Motion* of its *Liquor*. Or, 'tis not hard to *Apprehend* how *Wounding* by *Cantharides* hinders the *Disposition* of *Separating Spirits*, and *Intercepts* them in their way to the *Heart*; How they make its *weaker Contraction*, and a *slower Pulse*. Or again, it is evident, How the small *Emissaries* made in this way can *Cure* a *Fever*, and a *Delirium*, in a *shorter* time than is supposed in the *Proposition*.

From this *Discourse* we may deduce these *Corollaries*. 1. That the *Operation* of a *Blister* is great and suddain; That the *Wounding* of this *Nerve*, or a *Branch*, is so absolutely necessary for *Curing* a *Delirium* and a *Fever*, that whatsoever *Mischief* the applying of vast Numbers of *Blisters* over all the *Body* may do, yet the *Main End* is neglected, if you forget a large one *high* on the *Top* of the *Neck*. 2. That if there is no *Vesication* after the laying on a strong *Plaster*, it necessarily establishes a new and prodigious *Hardness* in the *Skin* and *Vessels*, and a *Thickning* of the *Blood* for a further *Total Stop*.

XXXI. About the beginning of *November*, 1693. after a constant Course of moderately *Warm Weather* for the *Season*, upon some *Snow* falling in the *Mountains* and *Country* about the *Town*, of a sudden it grew extremely *Cold*, and soon after succeeded some few *Days* of very *hard Frost*; whereupon *Rheums* of all kinds, such as violent *Coughs* that chiefly affected in the *Night*

*Observations on  
Epidemical Di-  
stempers; by Dr.  
Tho. Molineux.  
n. 209. p. 105.*

Night, great *Defluxion* of thin *Rheum* at the Nose and Eyes, immoderate discharge of the *Saliva* by Spitting, *Hoarseness* in the Voice, Sore Throats with some trouble in Swallowing, Whealings, Stuffings, and Soreness in the Breast, a dull Heaviness and Stoppage in the Head, with such like Disorders, the usual Effects of *Cold*, seized great Numbers of all sorts of People in *Dublin*.

Some were more violently affected, so as to be confin'd a while to their Beds, those complain'd of *Feverish* Symptoms, as Shiverings and Chills all over them that made several returns, Pains in many Parts of their Body; severe Head-aches, chiefly about their Fore-heads, so as that any Noise was very troublesome; great Weakness in their Eyes, that the least Light was offensive; a perfect decay of all Appetite; foul turbid Urine, with a Brick-colour'd sediment at the bottom; great Uneasiness and Tossing in their Beds all Night: Yet these Disorders, though they much frightened both the Sick and their Friends, usually without help of Remedy, would abate of themselves, and terminate in Universal *Sweats*, that constantly relieved. This more violent Degree of the *Cold* was more apt, I found, to fall on such as were given to Excess either in Eating or Drinking, or inclinable to a *Scrophulous* Disposition of Body, than on those that were more Temperate, and less subject to Obstructions.

When the *Cold* was but moderate, it usually was over in 8 or 10 *Days*: but with those in whom it rose to a greater Height, it continu'd a *Fortnight*, 3 *Weeks*, and sometimes above a *Month*; one way or other it universally Affected all kinds of Men; those in the Country, as well as City; those that were much abroad in the open Air, and those that stay'd much within Doors, or even kept close in their Chambers; those that were Robust and Hardy, as well as those who were Weakly and Tender; Men, Women, and Children of all Ranks and Conditions, the Youngest and the Oldest; though I think if it were favourable to any sort, it most spared those that were Aged, among whom I knew several, that were not the least troubled with it, yet it seiz'd so universally, that not one in 30, perhaps I might safely say more, escaped it.

As it first appear'd towards the Beginning of *November*, so it seem'd to arrive to its *Greatest Degree* of Violence, and spread most *Universally*, about the Middle of it; and by the Beginning of the *Month* following, it very sensibly *Abated*; so that very few then complain'd of their *Colds*. So that in the space of 4 or 5 *Weeks* it had its *Rise*, *Growth*, and *Decay*; and though from first to last it seized such incredible Numbers of all sorts of Men, I cannot learn that any one truly *Dyed* of it, unless such whose Strength was before spent by some tedious Fit of Sickness, or laboured under some heavier Disease complicated with it.

I find that about *November* and *December*, 1691. by some short Notes I took then, *Coughs* were more than ordinary frequent here in *Dublin*, though nothing comparable to what they were lately; they chiefly then Affected Young Children, whose *Coughs* usually turn'd to a violent *Chim-Cough*: Yet at this time, among all the variety of *Coughing* Children, I have not met with

with more than one, that was troubled with a *Chin-Cough*, and that too was but in a slight manner; Which Minute Differences in the ways of *Epidemick* Distempers operating in our Bodies, clearly shew, that their *Causes* cannot be ascribed only to the sensible *Alterations* of the *Weather*, or the manifest qualities of *Heat*, *Cold*, *Moisture* or *Dryness*, highly predominant in the Air, according to the vulgar Solution of them: but that they proceed from something more Nice and Latent than all this.

But to return to our *General Cold*; It was further remarkable for its *Vast Extent*. It seiz'd them at *London*, *Oxford*, and all other places of *England*, as *universally*, and with the same *Symptoms*, as it seized us in *Dublin*; but with this observable Difference, that it appeared 3 or 4 *Weeks* sooner in *London*, than in *Dublin*. It also reacht the *Continent* and infested the Northern Parts of *France*, as about *Paris*, *Flanders*, *Holland*, and the rest of the *United Provinces*, with more *Violence*, and no less frequency, than it did in these Countries: so that I believe no *Epidemick* Distemper was ever observed to extend so far.

No Example of any *Epidemick* Distemper seems in all respects to come nearer in Competition with our late general *Cold*, than the *Transient Fever* in 1688. This short sort of *Fever* was first observed in *Dublin* about the beginning of *July*, and it so *universally* seiz'd all sorts of Men whatever, that I then made an Estimate not above one in 15 escaped. It began, as generally *Fevers* do, with a *Chilness* and *Shivering* all over, like that of an *Ague*, but not so violent, which soon broke out into a dry *Burning Heat*, with great *uneasiness* that commonly confin'd them to their Beds, where they pass'd the ensuing Night very *restless*; they complain'd likewise of *Giddiness*, and a *dull Pain* in their *Heads*, chiefly about their *Eyes*, with unsettled *Pains* in their *Limbs*, and about the small of their *Back*, a foreness all over their *Flesh*, a loss of *Appetite*, with a *Nausea* or Aptness to *Vomit*, an unusual *Ill Taste* in their *Mouths*, yet little or no *Thirst*: And tho' these *Symptoms* were very violent for a time, yet they did not continue long: for about the 2d. *Day* of the Distemper, the Patient usually of himself fell into a *Sweat*, (unless 'twas prevented by letting *Blood*, which however beneficial in other *Fevers*, I found, manifestly retarded the Progress of this) and if the *Sweat* was encouraged for 5 or 6 *Hours* by laying on more *Cloaths*, or taking some *Sudorifick* Medicine, most of the Disorders before mentioned would entirely disappear, or at least very much abate. The *Giddiness* of their *Head*, and want of *Appetite* would often continue some days afterwards, but with the use of open *Fresh Air* they certainly in 4 or 5 *Days* at farthest recovered these likewise, and were perfectly well. This *Transient Disease* was so favourable, that not one in a *Thousand* Dyed of it: And by the middle of *August* it wholly disappeared; so that it had run its full Course through all sorts of People in 7 *Weeks* time. It also spread it self all over *England*, and rag'd as generally in *London* as in *Dublin*, and with the same Concurrence of *Symptoms*. But it begun to be taken notice of at *London* about the middle of *May*, and it continued there till the latter end of *June*; so that it did not shew it self here till it had wholly disappeared there. And it was very remarkable

markable that in *England*, as well as *here*, a short time before this *General Fever*, a slight Disease, but very *universal*, seiz'd the *Horses* too, and shewed it self by a great *Defluxion* of *Rheum* from their *Noses*; which shews the *Cause* of *spreading Distempers* to be so prevalent, that it works not only on the finer and more delicate *Composition* of *Humane Bodies*, but Affects even the more strong and gross frame of one of the most *Robust* Animal Productions in Nature.

From these *Histories* one may probably gather, that spreading *Epidemick Distempers* take their Progress from *East to West*. But this should be further confirm'd by more frequent Observations, before one may safely determine any thing in this matter. However this is certain, that the *Plague* and *Pestilential Fevers* Rage more frequently in the *East*, towards *Constantinople* and the *Levant*, than in these more *Western Parts* of *Europe*; as if that seem'd a more Natural *Clime* for their *Rise* and *Propagation*.

Exotick Diseases  
Propagated by  
Trade and In-  
fection; by Dr.  
Lifter. n. 165.  
P. 793.  
Plague.  
Small-Pox.

XXXII. 1. The *Plague* is properly a *Disease* of *Asia*, where it is *Epidemical*; and is never *Bred* amongst us, but comes to us by *Trade* and *Infection*.

2. The *Small Pox* also is an *Exotick Disease* of the *Oriental People*, and not known to *Europe*, or even *Asia Minor*, or *Africa* at all, till a *Spice Trade* was open'd by the later Princes of *Egypt* to the remotest Parts of the *East-Indies*, whence it *Originally* came, and where it Rages more cruelly at this Day than with us.

Gripping of the  
Guts.

The like I think of the *Gripping of the Guts*, that it is a peculiar *Disease* of the *West-Indies*, and Yearly received from thence, for this reason that it is none of the *Tormina Ventris* of the *Antients*; and therefore call'd by a *New Name*, by such as have writ of it; and also for that it is yet scarce known in any Part of the *North* of *England*, or *Midland Countries* thereof.

An Experiment  
concerning the  
Plague; by Dr.  
Jo. Bapt. Alpru-  
nus, Ph. Col.  
n. 2. p. 17.

XXXIII. No *Poison* is greater than that of the *Sickness*; our outward *Senses* are not Affected by it, and our *Understanding* does not comprehend it; 'tis *Aërial* and *Volatile*, and 'tis *Fixt* and *Coagulated* when it concretes into *Buboes*. Hence I conceived that the way for me to *Penetrate* into the most *Latent* quality of this *Pestiferous Venom* was by *Chymistry*; not with *Knives* but *Glasses*; not with *Iron* but *Fire*. This horrid undertaking (for the *Glory* of *God*, for the favour of my *Prince*, and the good of my *Neighbour*) I set upon without dread. Having lanced a *Pestilential Boyl* of *M. Godfrey Reshel*, I *Collected* the *Virulent Matter*, and putting it in a *Retort*, and Luting a *Receiver* to it very close, I applied *Degrees* of *Fire*; at first came over a *Water*, then a more *Fat* and *Oily Matter*; and at last a *Salt* Ascended into the *Neck* of the *Retort*. The *Fire* being removed and the *Glasses* separated, there came forth so great a *Stench*, that a *Thousand Wounds* exposed to the *Summer Heat* could not have parallell'd it. And though I thought I had sufficiently *Arm'd* my *Senses* against it, that is my *Ears* with *Cotton*, my *Nose* with *Pessaries*, my *Mouth* with *Sponges*, all dipt in *Vinegars* and *Treacles*, yet as if touched with a *Thunderbolt*, I was struck with a *Violent Trembling* of  
my

my Body. To make short, having broken the *Glass*, I gave some of this horribly stinking *Salt* to M. *Reshel* to Taste, and then I tasted it my self, and 'twas found to have an *Acrimony* as great as *Aqua Regis*.

Hence no wonder that so many are so afflicted with continual *Vomiting*, so that they can keep neither Meat nor Drink, since their Stomach is continually irritated to this Expulsion by a *Poisonous* quality so *Sharp*.

Hence no wonder, if from the *Sharpness* of this *Venom* agitating the Humours, and urging the expulsive Faculty to a continual perturbation of the Belly, a *Diarrhœa* is often caused, which follows the Patient to Death.

Hence no wonder, that from this *Sharp Matter*, such piercing *Pains* are felt in *Bubo's*, and such *Burnings* in *Carbuncles*.

Hence no wonder, why the best Remedies (and as it were the Anchors of Safety) are *Sudorificks*, allaying the *Acrimony*, and driving it out through the Pores; for I found those always which *Sweat*, were in a hopeful way of Recovery; but those which did not, were almost all taken off. I therefore ordered *Sudorificks* to be repeated every 8 Hours, and strengthening *Cordials* every Hour.

My usual *Sudorificks* for the better sort were, *Species Diamosci*, *Diambra*, *Librantes Pannonica Rubra*, *Extractum contrayervæ*, *Lapis Bezoar*, *Unicornu Marinum*, (my *Specifick Powder*) *Sal. C. O. volat.* *Succinum volat. conchæ* *Perlar. Volatil.* *Aqu. cord. temp. cum Moscho.* *Scorzon.* *Cardui Bened.* *Syr. Scordii*, *Corallor.*

For the Meaner sort, *Species Cord. temperat.* *Electuar. de Orvo*, *Antimon. Diaphoret.* *Bezoarticum minerale Foviale cum Aquis supradiet. & Syrup.*

My *Cordials* for the Richer sort were, *Confect. Alcherm. de Hyacinth. magist.* *Perla. Hyacinth. Granator. cum Aquis è toto Citro, Saxon. Salæ, &c.*

For the Meaner sort, *Corallia rubra contusa*, *Confect. Alcherm. in complet. cum Aquis tormentil. Cardui bened. &c.*

These were in general the Medicines used in this Distemper, but with Variety, according as the Age, Temperature, and Condition of the Patient required.

But because no *Alexipharmick* is sufficient in this *Contagion*, therefore grounding my Judgment upon the Principles of *Harvey* about the Motion of the Heart, and the Circulation of the Blood, and some other of *Bartholine* and others, I concluded this *Pestiferous Venom*, attracted by the Breath or Pores, by the Circulation of the Blood, to be carried to the *Axillary* and *Inguinal Glands*, &c. where if it long stagnates it Concretes into *Bubo's*, which tend to *Maturation*; but if it opens itself a way, and passes with the natural Motion of the Blood, and so is carried to the Heart, then *Death* ensues. Therefore not only for my self, but for two other Friends, I made *Incision* with a Lancet in *Inguine dextro & Sinistro*, and put in a *Cetum*, to the end, that by this artificial way the *Venom* might find a Passage. This I often tried with good Success, great quantity of Matter always voiding that way, but more notably when I was any way toucht with *Pestilential* strokes, or alterations. By the help of which, I kept my self in good Health, during the *Contagion* which Raged here at *Prague* in 1680.

*A Preservative  
against this Con-  
tagion.*

An Universal  
Preservative a-  
gainst Infection;  
by Dr. Jaco.  
Joh. Wenceslaus  
Dobrzensky de  
Nigro Ponte. Ph.  
Col. n. 2. P. 20.

XXXIV. Whosoever converses with Patients Affected with any *Disease* whatever, if he would preserve himself from *Infection*, must be sure, so long as he abides within the Sphere of their Steams, never to swallow his *Spittle*, but to spit it out. For this Author conceives that to be the Part which first and most easily Imbibes the *Infection*, and by that swallowed the *Infection* is carried, as by a proper Vehicle, into the *Stomach*, where it works those dismal and Fatal Effects.

This Sentence of his he grounds, both upon his own Experience long tried for his own *Preservation*, and on divers Reasons set down by way of Aphorisms from this *Hypothesis*; viz.

That most *Diseases*, especially *Pestilential Feavers*, are *Infections*; that this proceeds from a *Seminal Ferment*, which is emitted by the Patient by way of *Steams* into the encompassing Air, and so *Infects* all things within a certain Sphere or Distance; This drawn into the *Mouth* by the *Breath* is apt to *Infect* the *Saliva* or *Spittle*, which being swallowed *Infects* the *Stomach*; and so the rest of the Body; but being *Spit* out frees the Body from *Infection*. And therefore he conceives that Strong *Smelling* and Strong *Tasting* Substances, kept in the *Mouth* and chewed to promote *Spitting*, are of very good and necessary use for *Physicians*, *Chirurgeons*, and *Apothecaries*, &c. that are necessitated to visit *Infected* Persons.

An Hydropho-  
by; by Dr. Mart.  
Lifter. n. 147.  
p. 162.

XXXV. James Corton (of York) a very strong and well built Young-man, was *Bit* with a *Mad Dog* in the Right-Hand, the Wound heal'd of it self, and the thing was forgot. After about 5 or 6 Weeks, he complains of *Pain* all over his *Bones*, but especially his *Back* and round about his *Stomach*, looks very *Pale*, *Hollow-Ey'd*, &c. The 3d Day after this Complaint, viz. *Sunday Mar. 11. 1683*. he called for *Burnt Brandy*, drank it, went to Bed and Vomited it up; after this he had a *Restless Night*, and in the Morning found himself very Ill, with a strong *Rising* in his *Stomach*, and tho' no *Thirst*, yet an impotence to *Drink*, and even to Swallow his *Spittle*, which was Death to him as he often said. *Diascordium* and a Bottle of *Cordial Water* was brought to him by an Apothecary that Morning; the *Diascordium* he took, but was not able to *Drink* of the *Cordial* one Spoonfull. This on *Monday* Morning; about one a Clock that Day I first saw him, and found him upon his Bed, his *Pulse* very *slow*, and sometimes *unequall*, but not unless frighted from the *Rising* of his *Stomach*; his *Flesh Cold*, his *Tongue* not *Dry* but *Flexible* and *Moist*, a little *white*. I caused him to rise off the Bed, and set him full in the *Light*; and then because he mightily complain'd of I know not what *Sickness* about his *Stomach*, I offered him of the *Cordial*, but he *Started* and *Trembled* at the approach of it. This I exceedingly admir'd, wherefore I call'd for a *Glass* of *Wine* or *Water*, and a *Tumbler* of *Water* was brought me up, which I gave him to *Drink*; but he vehemently *started* at it, and his *Stomach* swell'd and *Rise*, after I know not what odd and strange manner; and I could then find his *Pulse* very *Trembling* and disturb'd. I still urg'd him to *Drink*, but as I put it forwards to his *Mouth*, he the more *Affrighted* drew back his *Head*, and *Sigh-  
ed*,

ed, and Eyed it with a most Gastly Look, not without Screeking and Noise; This soon convinc'd me that it was *Aquæ Pavor*. I forthwith order'd a *Vein* to be opened in the Arm which was *Bit*, caus'd the *Wound* to be Scarify'd and drawn with *Vesicatories*, and the same Plaster to be apply'd to the Neck and Legs and the inside of the Arms; I ordered the usual and famed *Antidotes* to be given him as of *Tberiaca*, *Cinis Cancrorum*, *Ruta*, *Agaricus*, &c. in *Bolus's*. For it is to be noted, that Solid things in a Spoon he could take, but yet not without much *Trembling* and *Fear*, and *Caution*, and an earnest Request that no Body would suddenly offer them to him, but give them into his Hand gently; and then he would by degrees steal his Hand Softly towards his Mouth, and of a sudden Chop the Spoon in and Swallow what was in it, *velut Canis ad Offam*; and this he did more *greedily* and readily than any other Man could do. Of these *Antidotes* in *Bolus* he took a *Dram* every *hour*, and always in this Manner, for at least a dozen times taking; and every like, *Drink* was proffered him in the Night, but he could not see it without *Horror*, and the same Motions from his *Stomach*. Nay, he did affirm that as oft as he by Chance swallowed any *Spittle* it went to his Heart, even as though he shou'd Dye that very Moment. This Night pass'd wholly without any *Sleep* or *Rest*.

*Tuesday* Morning I view'd his Blood, which was, both as to the *Serum* and *Cake*, well colour'd and in such Proportion as is usual in Healthfull Persons, and of good *Consistence*. He had now a *Violent Fever* upon him, and a very *Quick Pulse*. *Water* was offer'd him by my Order, but in vain, He begging he might Dye unmolested; nothing being such a *Terror* to him as the approach of any *Drink*. I then, with much difficulty, perswaded him to cast himself cross the Bed upon his Belly (for he had his Cloaths loosely about him) hanging his *Head* over the other side; perswading my self that this posture might be advantageous to his *Drinking*, since that in the erect posture of a Man he could not so much as endure the approach of *Liquor*. In this Posture then of a *Dog*, he suffer'd a large Bowl fill'd with *Small-Beer* to be brought under his Head, and imbracing it with Raptures of Joy, he declared he was infinitely refresh'd with the smell of it; that he now saw it with delight, and assur'd us he should be able soon to *Drink* it all off. And he that now thought himself a Dying Man talk'd pleasantly, and said many passionate things to his Brother, Wife, &c. Wonderfully extolling this Invention, and thanking me for it. He endeavour'd with great earnestness to put down his Head to it, but could not; His *Stomach Rise* as often as he opened his Lips; At length he put out his Tongue, and made towards it as though he would *lap*; but ever as his *Tongue* never so little touch'd the surface of the *Beer*, he started back *Affrighted*. And yet all this while was pleas'd with the thoughts of *Drinking*; and would not suffer the Maid Servant to take it away from under his Head; and if she did a little withdraw it, he said he follow'd it by the smell with Delight, Snuffing with his Nostrills. After a long time being mightily foil'd, he alledg'd that the faint Smell of the *Small-Beer* hindred him from *Drinking*, and therefore desired a Bowl of *Ale*; which was brought him: but  
after

after much striving, and exerting his *Tongue* a thousand times, he could not *Drink* of it; and *Lapping* with great *affrights*, as oft as his *Tongue* touched it he started back with his *Head*, bringing it down again gently to the *Bowl* a hundred times, but all in vain. And in this posture, what upon his *Belly* and what upon his *Hands* and *Knees*, he kept himself at least an *Hour* thus *Tantalizing* himself; but it was not in his power to *Drink*. We then gave him a *Quill* which consisted of 2 or 3 *Joynts*, the one end in his *Mouth* the other in the *Liquor*; but he could not manage it, nor *Suck*, no more than a *Dog*. I persuaded him to give over and lye down, which he did; and not long after my going away he fell into a *Convulsion Fit*, *Bit* and *Snar'd* and *Catch'd* at every body, and *Foam'd* at the *Mouth*. After this *Fit* was over, he took an *Elleborism* in a *Bolus*, which was taken like the rest, and very willingly by him; it wrought about 3 or 4 times very plentifully, and he declared himself wonderfully at ease by it; but yet now and then fell *Convulsed*, and then always *Insensible*. And after 4 *Hours* I return'd to him again, and found the *Minister* with him; he talked very sensibly to him, prayed very earnestly with him, saying the *Prayers* after him, and desired the *Sacrament*, which in these *Circumstances* could not be given.

He was again solicited to *Drink*, and he now readily enough put himself into the former posture, and with as much earnestness as ever used all the little shifts to *Drink*, while the *Bowl* was under his *Head*; but all in vain. He had a little *Silver Tumbler* filled with *Drink* put into his *Hand*; which suddenly, when he had as it were stolen it near his *Mouth*, he would have thrown it into his *Throat*, as he did the *Bolus's*; but it hit against his *Teeth* and fell into the *Bowl*. I cannot say he ever went to *Stool* or made *Water* all this time, and therefore had a *Clyster* given him; but upon parting with it, which he did immediately almost as soon as given, he *Died Convulsed*: But his not *Making Water*, as well as a troublesome *Priapism* which he complain'd of when upon his *Knees*, might proceed from the *Blistering Plaisters*, as well as from his *Disease*.

That nothing may be omitted which relates to this *Case*; the day after his *Interment* I accidentally met with his *Cozen Mrs. S.* who told me that her *Daughter* was in fear, for just that very day *Fortnight* before his *Death* she had been at his *House*, and he would go home with her to her *Mother's*; that she remembered his *Hand Trembled* and his *Body Shaked*, that he was in a *Cold Sweat*, and in a great disorder, so that she asked him what he ail'd: he told her, that after his *Work* (for he was an *Upholsterer*) it had been of late usual with him. And which was Remarkable the very *Dog* which *Bit* him came at that time along with him, to her *Mother's House*; and was alive and well at the *Man's Death*.

To this we may add, that *Mr. Widdow*, a *Mercer*, doth affirm, that about the very time that *Mr. Corten* was thought to be *Bit* with *Mr. Sutton's Dog*, a black *Dog*, which he verily believes to be the same, came and *Bit* a *Whelp* of his in his *Shop*. The next day the *Whelp* ran *Mad* up and down the *House*, and *Bit* both him and the *Maid* in the *Leg*, and dyed that very day. About a *Month* after he was *Bit* he found himself not well, and was

was troubled with a Pain at his Heart, and had a Fearfulness and Trembling upon him, and got no rest for 3 Nights, upon which he had himself Blood-ed, and found himself better; his Maid doth not yet complain of any Harm.

It is very hard to give any probable Reason of this *Aquæ Pavor*: what Galen (*de Theriaca*) says of their much Coveting Water, because of the intolerable Thirst upon them, agrees not with our Case. For this Man would often say that he was not Thirsty, which also appeared by the Moisture and Flexibility of his Tongue. Nor was he Distracted as Galen would have them, but all the time in his Wits and discoursed Rationally. What Julius Palmarinus means by the 3d Paroxysm of an *Hydrophobia*, I cannot understand. For this Man had the Disease upon him continually from the first Moment to his Death, which was near 48 Hours without any Intermision. Dioscorides Treats of it most Soberly, and is to be Credited; *Quidam, qui jam Aquæ metum sentirent, sumpto Helleboro, simulac primum Morbi impetum experirentur, sanati sunt: Nam & jam vitio tentatos nemo unquam servare potest.* This very well agrees with our Case; The latter Person, who had a sense of the Evil, had it prevented by Bleeding, but our Man, which had the Evil, that is, the *Aquæ Pavor* upon him, not Bleeding, or the most Famed Antidotes, or even Hellebore, could in the least save, tho' not very untimely given him.

De Morbis Contagiosis.

The Case indeed so rarely occurs, that it cannot be observed in all due Circumstances, in order to its clearer Understanding, and consequently Cure; we shall venture however, to lay down some few things to Solve it by.

First, That J. Corton had some of the Organick Parts of his Body Transformed into, or Affected after the nature of a Dog, especially the Gula, Tongue, &c; so that what was offered to him in the Erect Posture of a Man was very frightfull, as well as difficult for him to take, because against his New Nature, as much as it would be for us to get a Dog to Drink standing upon his hinder Legs. But yet this is not all, for when he was turned upon his Belly, and would have Acted the Dog, he yet could not Drink; and tho' he frequently put out his Tongue and Lapt, yet he could not endure to take any thing into his Mouth of Liquor, as though something had hindred him within. Therefore we may imagine he was also Convulsed in those Parts, or Swell'd: but this we cannot Grant, for the contrary does plainly appear, because he could cast any thing into his Mouth and Swallow it; as he did very many times stiff Bolus's, more nimbly as to the Swallow, than any Man reasonably could be supposed to do, that was so weakened.

Secondly, That his Spittle was Envenomed; for as oft as he Swallowed it, (his Stomach vehemently abhorring it) it went to his Heart (as we say), and was even present Death to him. And so liquid things coming nearer to the consistence of Spittle might the rather movere Salivam, and therefore gave him a greater Terrour and Difficulty to Swallow, than Solid things. And that his Spittle chiefly was Infected with the Venom of the Dog, seems probable

Gal. de Locis Af-  
fec. lib. 6.

probable from these reasons also. 1. Because the Dog Bit him, whose Spittle alone to be *Venemous* to the Touch, there are many credible Instances in *Medical History*. 2. He was almost like a Dog in the Mouth, viz. where are the proper Organs of the *Saliva*. 3. The Bite of a Man so Bitten is a-like *Infectious*; but otherwise *Innocent*.

But it may be askt how comes it to *Infect* his Spittle, and not other *Humours* and the *Blood*. I answer, the *Blood* in part was undoubtedly Affected, as the *Symptoms* arising before the *Aquæ pavor* (which yet is the only true *Pathognomick* of the *Disease*) demonstrate. Again the *Blood* is not One *Liquor* (as is generally thought) but many Distinct *Liquors* circulated together in one Set of common Vessels; and so it might *Infect* that *Liquor*, which it was most a-kin to, as the *Saliva* of a Dog to the *Saliva* of a Man.

An Hydropho-  
by; by Dr. Ro-  
ger Howman. n.  
169. p. 916.

XXXVI. On Wednesday at Evening, Oct. 1. 1684. I was call'd to a Patient at Norwich, who about 6 Weeks before had been Bitten with a Mad Fox on the Right Hand; he began to be indisposed the Saturday before with running Pains, yet so well as to be abroad next day at Church: on Monday his Pains grew more troublesome, and the day following, much worse, especially, on his Right Hand, Arm, Shoulder and Back, but not to confinement: On Wednesday (I know not by whose advice,) he took a Dose of the common Purging Spirit of Scurvy-grass, which gave him 7 or 8 Stools, and made him very faint, and weak; so I found him; and complaining that he could not use his Right Hand (it Beginning to be *Paralyticall*;) tho' his Pains were much abated there, and where else they had been most troublesome, excepting only on the lower Parts, or small of his Back, where they soon after vanished also. He told me he Bled freely at the Wounds the Fox had made, and that they Healed without any farther trouble, than now and then a little Girding Pain on that Hand and Arm; and further said, (to please his Friends,) he had taken a white Powder of an Apothecary, and believed himself in no Danger of what was feared (for I had discovered the Danger I apprehended in his Condition). Tho' the *Aquæ Pavor* did not yet appear, his Heat was much encreased and his Pulse intermitted every 5th or 6th Stroak, but on the Right side only; which I again and again examin'd, finding no Variation; he also looked Gastly and Thin, but his Eyes sparkling and Fiery. I prescrib'd the best Temperate *Antispasmodic* and *Antiparalytic* Remedies I knew, to be mixt with the *Specificks* of common use in an *Hydrophobia*; thus much on Wednesday at Night. Next Morning he complained his Night had been Restless, that then he had wholly lost the Use of his Right Hand, and tho' the Pains were more abated, yet he was very Hot and uneasy: his Pulse then was much stronger than over Night, but intermitted on the Right side only as before, his Countenance was somewhat more Gastly, yet his Veins very full as in *Initio & Augmento Febris*, and no *Hydrophobia* appearing, I advis'd him to Bleed 6 or 7 Ounces at the Left Arm, (the Right being *Paralyticall*;) and the continuance of what I had prescrib'd before; he Bled 8 Ounces very freely, the Blood well coloured but very thick. After I left him, the great *Symptome* appeared, and in my Absence, another was consulted who gave him

him many Remedies. At my return out of the Country on *Friday* at 6 at Night, his *Heat* was very great, and his *Pulse* very high, and *intermitted* then on *both Wrists*, and if any thing were offered him to *Drink*, *Standing* or *Sitting*, he *Started* as if his Head would have fallen backwards off his Shoulders, but when *Laid* upon his Pillow, could (tho' with great *difficulty* and *uneasiness*;) now and then get down a Spoonful. He looked then very Thin and Gasty, and seem'd Shy or Afraid of every Body that came suddenly near him, telling them that they Stifled him, or stopt or hindred his Breath in coming so hastily to him. His *Reason* was all along very good, and (as some observ'd) better than in his Health: his *Voice* was broken and imperfect, as theirs whose Tongue and other Organs of Speech are growing *Paralytical*. I saw him again at 10 that Night when all *Symptoms* were growing worse; yet he could then Walk out of one Chamber into another, with very little help, but between 12 and 1 next Morning he *Died*, without any *Convulsive* Motions, Sighs or Groans; as if in a Moment there had been a total *Paralysis*.

From this Relation it's most Observable. 1. That as the *Pains*, (which were like those in the *Rheumatism*;) abated, the *Paralysis* and *Fever* increased. 2. As the *Fever* increased, the *Intermission* of the *Pulse* grew more frequent, tho' the *Pulse* were much *Stronger*; but why it *Intermitted* first on but *one side*, is not easily accounted for. 3. That the Imperfection of *Voice*, as well as the Difficulty of *Swallowing* were the Effects of the *Paralysis*, may probably be allowed, and be a satisfactory Reason, why the Person Dr. *Lifter* mentions, could not use the *Quill* which was given him to *Suck* with. 4. That his thin Gasty Aspect, the Defect of Spirits and Tonic Vigour, (if I may so call it,) was from a *Paralytical* Original, is not unreasonable to conjecture. 5. That the *Paralysis* chiefly affected the *Muscles* of the *Head* and Upper Parts, may be partly collected from his inability to hold his Head *Steady* at the approach of any *Liquor*; the *Fear* thence arising, causing him to *Starr*, and his *Head* so to fall backwards, as if it would fall off his Shoulders. 6. And that his Lower Parts were less affected, is probable, because, 2 or 3 *Hours* before he *Died*, he could *Walk* out of one Chamber into another, even when his *Voice* was hardly intelligible.

XXXVII. In the Year 1688, there was brought to us for Cure a Child of about 3 Years of Age, who had just then received a large *Wound* upon the *Masseter Muscle* by the *Bite* of a *Mad Dog*. The *Wound* we treated with *Digestives* for some time, *Sutures* were forborn, though otherwise necessary, that the *Sanation* thereof being defer'd, the Contracted *Venom* might have the freer Egress thereat. There was in short time discharged a very laudable *Pus*, and the *Wound* *Incarned* as fast as we could desire. In about 3 Weeks time we had *Incarned*, and brought over a very firm and seemly *Cicatrix*; and in about 2 Days after *Cicatrizing* the *Wound*, the Child was seiz'd with a *Fever*, a disorderly *Pulse*, and *Palpitation* of the *Heart*: The Night ensuing he grew *Delirious*, and the Succeeding day the *Malignity* had made so virulent an Impression upon the Animal Spirits, as

A Child Bit by a  
Mad Dog; by  
Mr. I. Turner.  
a. 207. p. 24.

did excite very strong Irritations in the Members of the Body by *Convelling* of their Muscular Fibres. Neither was the *Brain* and its parts freed from the same Morbid Taint, which manifested its Ferocity in a most strange and unusual *Distortion* of the *Eyes*, from a confused and irregular Expansion of the *Optick Nerve*, attended with an extraordinary *fierceness* in the whole Visage, continual *Vigilies*, and a constant *Trepidation*, with a reiterated *snarcing* up of the lower *Mandible*, making Signs as if he would have *Bitten* at any thing that was offered him. His *Voice* was uttered with a *Canine Hoarseness*, and had an extraordinary resemblance to the *Barking* of a *Dog*. He was moreover infested from that time with a *Singultus*, and *Foaming* at the *Mouth*. He was no sooner sensible of the *Reflection* of a *Looking-glass*, which out of *Curiosity* I presented before him, than he *Threw* his *Head backwards* with great *Violence*, and continued *Barking*, and *Snapping* at every thing near him: In the *Evening*, notwithstanding such *Alexipharmicks* as had been exhibited, he sunk under the *Oppression* of these cruel *Symptoms*. I was not permitted to open him: But the *Abdomen*, I perceived, was excessively *Inflated*, his *Limbs Convulsed*, and the *Superfice* of the *Body* of a *Livid Colour*; the *Muscles* of the *Face* were drawn into such a form as did nearly represent a *Spasmus Cynicus*.

Two Boys, in  
Ireland, Bitten by a  
Mad Dog; by  
Mr. Keneda,  
n. 242. p. 246.  
n. 243. p. 308.

XXXVIII. About the last of *Oct.* 1679. it happened that 2 Boys of 10 and 9 Years Old, of a Sanguine and Choleric Complexion, did *Touch* and *Handle* the *Head* of a *Dog* which had been *wounded* by a *Mad Dog*, but by the *Handling* and *Washing* of his *Wound* by the *Children*, the *Dog* so *wounded* was *heald*, and did not become *Mad*. But about *May* 1680. the *Children* became *unwell*, and were seized with a *Paining Grief* towards the *bottom* of their *Bellies*, which did *Grind* and *Torment* them with *Pain* and *Trouble*, which *Ascended* gradually upwards towards their *Navel*. And about the *1st.* of *July*, together with the *foresaid Grief*, they were taken with a *slow Flux*, and with *Fainting Fits* by times, when the *foresaid Pains* assaulted them. After they had continued thus for a time, their *Pain* and *Grief* *Ascended* towards and above the *Stomach*, whereupon followed very violent and *Convulsive like Motions* in their *Bodies*, especially about the *Stomach* and *Belly*, by which they were *tossed* and *tumbled* and *disturbed* in the whole *Body*, with some *Foaming* at the *Mouth*, in the interim of their *Fits*; now and then these *Symptoms* continued and increased until the latter end of *August*, that they were taken with the *Fear of Water*, and could not endure to *look* into any *Liquid* thing, until the *Cup* was covered, but forthwith would have fallen down as *Dead*, and so would have lain a little time as in a *Sounding* or *dead Fit*; and then would have *tumbled* and *tossed* in the *foresaid* violent *Motions* and *Distractions* of their *Bodies*, *Moaning* and *Groaning*; and ordinarily, the *Eldest* especially, *Snarled*, *Barked*, and *indeavoured* to *Bite* like a *Dog*, they continued in this *Fit* for an *Hour* sometimes, and sometimes less, and so came out of the *Convulsive-like Motions*; lying as it had been in a *Sound*, a little before they came out of the *Fits*, and when they did come out of the *Fits*, would have *crope*n away in

a *Feared* manner from any who had been by them: and thus within an *Hour*, or little more, they come so out of their *Fits*, that they were also *Well*, and as much themselves as ever. They remained under these *Symptoms* until the middle of *September* every day taking the said *Fits*, in which they could not *Speak*, and in their Intermissions were as towardly and as well in their Wits as ever; And 'twas observable that they *both* took the *Fits* and came out of them at the same Time. But about the middle of *September*, about which time especially their *Barking* and *Snarling* like a *Dog* came, they became more *Wild*; so as for some *Days* now and then, even whilst out of their *Torturing Fits*, they would not endure any *Company*, no not so much as to come near one the other, and thus continued of this Disposition for a *Week*; and then the *Eldest* drew near his *Father*, saying as one surpriz'd, *Father, I am well*; and so he and the other became forthwith *Well*, and could look into *Water* without any *Fear*, and so continued to be *Well* for 3 or 4 *Days*, and after that fell *Ill* again, and remain'd *Ill* 6 or 7 *Days*, at the end whereof they both became *Well* as formerly on a *Suddain*, and from that time continued *Well*; only the *Eldest* about the end of *January* had some *Fits* like the former.

Observe, that in *August*, there were *Doses* of *Antimony* and *Mercurius Vitæ* prescribed, together with *Antidotes* of *Venice Treacle*, *Powder of Crabs Eys*, and other things.

XXXIX. 1. R. *Agrimony* Roots, *Primerose* Roots, *Dragon* Roots, *Single Peony* Roots, the *Leaves of Box*, of each a *Handful*; the *Star of the Earth* (or *Lychms Viscosa flore muscosa*, *Casp. Bauhini*; or *Spanish Catch-Fly*;) two *Handfulls*; the black of *Crabs Claws* prepared, *Venice Treacle*, of each one *Ounce*; all these are to be beaten and bruised together, and boyl'd in about a *Gallon of Milk*, till the half be boyl'd away; then put it into a *Bottle*, unstrained, and give of it, about 3 or 4 *Spoonfulls* at a time, to the *Dog* or *Beast*, three *Mornings* together, before *New* and *Full Moon*. It will be necessary the day before you administer the *Medicine*, to take away a little *Blood*. Some of these *Roots* and *Herbs* being difficult to be gotten in the *Winter*, they may be gathered in their *Season*, and being dried and well *Powder'd*, may be given mixt with the *Crabs Claws*, and *Venice Treacle*, with *Sallet Oyl* or *Butter*, and it will do as well.

For *Men* or *Women* that are *Bitten* with *Mad Dogs*; take the same *Ingredients* in the same *Quantities*, and the *Roots* and *Herbs* being bruised altogether, with the *Crabs Claws* and *Venice Treacle*; let them be *Infused* warm into two *Quarts* of strong *White Wine*, for at least 12 *Hours*. This being strained, the party *Bitten* is to take about a *quarter* of a *Pint* *Evening* and *Morning*, 3 *Days* before the *New* and *Full Moon*; it may be sweetned, either with *Sugar* or some *Cordial Syrup*.

2. 1. Take *Virginia Snake-Root* and *Flowers of St. Johns-wort* gathered in their *Prime*, equal parts of each, let them be made into a very fine *Powder*. The *Dose* is from a *Scruple* to a *Dram*, and to be taken in any sort

Cures for Mad Dogs, or anything Bit by them; by Sir Robert Gordon. n. 187. 298.

Several Receipts for the Bite of a Mad Dog; by Sr. Theo. Mayer. n. 191. p. 409.

of Decoction prepared with *Specificks*. To a *Horse* give two *Drams*, to a *Dog* from 1 to 1½ *Dr.* This before the 9th Day after the *Bite*.

2. Take Leaves of *Rue* pickt from the Stalks and bruised, 6 *Ounc.* *London Treacle*, (or which is better *Venice Treacle*) *Garlick* pill'd and bruised, and fine Filings of *Tin*, each 4 *Ounces*; put them into 4 *l.* of *Canary*, or good *White Wine*, or in case of a nice or hot Constitution, into the same quantity of *strong* and well workt *Ale*, in an Earthen Vessel well stop't. Then let there be made a *Digestion*, or gentle *Boyling* thereof in *Balneo*, for 4 *hours*, shutting in the *Steam*, then press it and strain it. The *Dose* is from 2 or 3 *Ounces* (and in some Persons more) to be taken every Morning for 9 *Days*. The party *Bitten* must fast for 3 *Hours* after it, and the *Dregs* that remain after Expression must be bound upon the *Wound* received, renewing it every 24 *Hours* N. B. That the 9th Day after the *Bite* must not be let slip, before this *Medicine* be taken, least the *Poyson* seize the *Blood* too strongly. It must be given Cold, or at least only a little Aired. A double Quantity may be a given to a *Beast*, soon after the *Eite*.

I never found this *Remedy* to fail. *Theo. de Vaux.*

3. Pluck the *Feathers* from the *Breech* of an old *Cock*, and apply it bare to the *Bite*, and do this upon each of the *Wounds*. If the *Dog* were *Mad*, the *Cock* will *Swell* and *Die*, and the Person *Bitten* will do well; but if the *Cock* *Dies* not, the *Dog* was not *Mad*. If the *Wounds* be very small, it is requisite to open them with a *Lancet*.

4. Let the Party be 9 times *Plunged* in the *Sea*, while he is *fasting*, as soon as may be after the *Bite*. Let the *Bitten* Part be washed with a *Lie* of the *Ashes* of *Oke-Wood* and *Urine*, and apply a *Cataplasme* of *London Treacle* *Alliaria*, or *Hedge Garlick*, *Rue* and *Salt*.

Take dried *Rue* and *Scordium* each 2 *Dr.* *Virginia Snake Root* 1½ *Dr.* *Flowers* of *St. Johns Wort* 3 *Dr.* fine Filings of *Tin* and *Garlick* cut small, each 4 *Dr.* *London Treacle* 1 *Ounce*. Let them be all beaten and exactly mixt together, adding *Syrup* of *Lemon Pills* as much as suffices to make it into an *Electuary*; Divide this into 9 equal parts to be taken every Day one, Drinking after it a small draught of good *strong-Ale*. Let him walk upon it and not *Dine* till 4 *Hours* after. Use as little of the aforesaid *Syrup* of *Lemon Pills* as may be: and if that be not at hand, a *Syrup* made of *Malaga Wine*, adding as much *Sugar* as it can *Dissolve*, may serve the turn.

Make up of this *Electuary* 4½ *Ounces* at a time, that so the *Dose* may be half an *Ounce*.

3. I. I have sent you some of the *Herb* you desir'd. You must look for it in dry Grounds; Light and Sandy Ground where Sheep feed, doth commonly afford it; but my *Uncle* prefer'd that that grows on good Ground before any other. \* It is a sort of *Jews Ear*, which grows on the Ground as close as may be to it, being flat on it, the *Moss* and *Grass* groweth up about and amongst it. To use it, you must dry it in an *Oven*, by the *Fire*, or in the *Sun*, then powder it, and pass it through a *Renge*, or fine *Sieve*, the which mixed with the like quantity of fine beaten and powdered *Pepper*, is the *Composition*. When given to a *Dog*, the *Dog* must first be *Blooded*, and then  
wast

A Cure for the  
Bites of a Mad  
Dog; by Mr. Geor.  
Dampier. n. 237.  
542.

Wash well all over, the Dog being kept from Meat a convenient while before, then mix it well in a convenient Quantity of Milk or Broath warm. If it be for any Cattel, it must be also Blooded and well Washed, and given with a Drenching Horn, and the Dose may be proportioned to the Bigness or strength of the Creature that is to take it. To a Man or Woman it must be given after Blood letting, and well Washing the Face, and Hands, or place that may be Bitten, or all the Cloaths that the Person had on him or her, when Bitten, to Wash away the Snivel or Drivel that comes from the Mouth of a Dog or other Creature when Mad, for that is the only Reason for Washing. A Man or Woman may take it in warm Milk, Beer, Ale, Broath, or how he best likes it, fasting, two or three several Mornings to make sure.

After a Dog hath Bitten Man or Beast, it will not appear or begin to grow Mad till after a full and New Moon, or New and Full; but when it begins to be Mad, 'tis very hardly Cured. Therefore when you know any thing to be Bitten, or suspect it to be so, use the Remedy as soon as may be after, and then, when given in time, it prevents all Signs of Madness at all, which hath made some indiscreet People say it did no Good, they believe it would have done well enough without it: But my Uncle hath fully confuted that Mistake several times, by not Drenching a Dog of small worth in a Gentleman's Cry of Dogs, which hath Died Mad, and not one of the rest Sick, but have followed their Master's Game rather better than before; and indeed being ingeniously prepared and given, 'tis a most Noble and Infallible Medicine. I was with my Uncle when a Dog had gotten in amongst a whole Heard of Cattell at Charmister by Dorchester, and had Bitten some, which growing Mad, and feeding together with their Fellows, when Mad the Driveling of them Infected many more, and the Distemper continued almost all the Summer amongst them still one or two Dying, and Infelling more. The Murrain was at first suspected, and the Cattel were Drenched for that Disease. But my Uncle being sent for, he found 3 or 4 Sick, which he could not Cure, but ordered all the rest to be driven 3 or 4 times through the great River, and all put from the same Pasture, till after it should Rain a good Shower or two, which would Wash away the Snivel from the Ground, and then Drenching them prevented any farther Evil, for not one was Sick afterward. The whole Heard was near 250, and about 40 Dy'd.

2. The Simple or Herb mentioned is not *Jews Ear*, but the *Lichen Cinereus Terrestris*, describ'd by Mr. Ray. It grows commonly in Barren places all over England. The Weight of one single Dose of this Simple, and the Pepper mix'd, Communicated to me by Mr. Southwell, with Mr. Dampier's leave, is near Div.

A Remark, by  
Dr. Hans. Sloane  
ib. p. 52. Hist.  
Plant. p. 117.

XL. A Judicious Person related to me, that being in the Country of *Otranto*, where the *Tarantula's* are found in great Numbers, there was a Man who thinking himself Stung by one of them, shew'd in his Neck a small Speck about which in a very short time, there arose some Pimples full of a serous Humour; and that, in a few hours after, that Poor Man was sorely afflicted with very violent Symptoms, as *Syncope's*, very great Agitations, *Giddiness* of the Head, and *Vomit*; but that without any Inclination at all to *Dance*, and without

Persons supposed  
to be stung by  
*Tarantula's*; by  
Dr. Tho. Corné-  
lio. n. 83. p. 266.

without all desire of having any *Musical Instruments*, he miserably Dy'd within two Days.

The same Person affirm'd to me, that all those that think themselves *Bitten* by *Tarantula's*, (except such, as for some ends Fain themselves to be so,) are for the most part Young Wanton Girls, (whom the *Italian* Writer calls *Dolci di Sale*;) who by some particular Indisposition falling into this *Melancholy Madnes*, perswade themselves according to the Vulgar prejudice, to have been *Stung* by a *Tarantula*. And I remember to have observed in *Calabria* some Women, who seized on by some such Accidents were counted (according to the common belief of that Province) to be Possess'd with the Devil.

This brings to my mind a terrible Evil, which often enough is observed in *Calabria*, and is called in their Language *Coccio maligno*. It ariseth on the surface of the Body, in the form of a small *Speck*, of the bigness of a Lupin. It causeth some *Pain*, and if it grow not soon *Red* thereupon, it in a very short time certainly *Kills*. 'Tis the common Opinion of those People, that such a Distemper befalls those only, that have eaten *Flesh* of Animals Dead of themselves: which Opinion I can from Experience affirm to be false. So it frequently falls out, that of many strange Effects, we daily meet with, the true Cause not being known, such an one is assigned, which is grounded upon some Vulgar prejudice. And of this kind I esteem to be the Vulgar belief of the Cause of that Distemper, which appears in those that think themselves *Stung* by *Tarantula's*.

*A Contumacious Jaundise, attended with an odd Case in Vision; by Mr. Samuel Dale, n. 211 p. 158.*

XLI. I here send you an account of my Patient *Grace Dennis*, of *Braxted Magna*, in this County of *Essex*. About *Christmas* 1689. after much Grief and Trouble of Mind in the foregoing Autumn, the *Jaundise* began to appear upon her: for which, after having for about 9 *Months* used many Medicines, which were told her by divers of her Friends and Acquaintance, but without Success, She in *Sept.* 1690. applyed her self to me to whom I administred divers Medicines, famous in the most Celebrated Authors for the Cure of the *Jaundise*, and which I had often used with success in the Cure of that Disease, yet to her they were of no Benefit. After which she had the advice of several Learned *Physitians* in the Country, and likewise some in *London*: but all that cou'd be done for her hath not yet had any Effect; for her Disease yet continues, and her Body which used to be Plump and Flethy, is now become Lean and Emaciated, almost like a Skeliton, and her Appetite is little and depraved.

In *May* 1691. After an extraordinary *Menstrual Flux* for about 3 *Months* she began as soon as the *Sun* was down, to be deprived of her *Sight* by degrees until it was quite Dark; when altho' never so big a Fire or many Candles were in the Room, yet could she not discern the Object (except a small shining of Light) and so she remained until the *Morning* as one Stone Blind, when by little and little, as the *Light* increased, her *Sight* returned, until the *Sun* arose, and then she recovered her perfect *sight*.

And in this Case she continued until *August* 1692. when being returned from *Epsom*, where she had been drinking the *Waters* for about a *Month*, her *Sight*

*Sight* returned to her again, so that she could see in the *Night* perfectly. Thus she continued until *January* following, when an extraordinary *Menstrual Flux* again seizing her, her *Nocturnal Sight* likewise left her, and she became *Blind* again as formerly.

In *July* 1693. She was seized with a *Fever*, when her *Sight* again returned, and continued for about a *Month*, and then left her as formerly; so that now in *Octob.* 1693. She hath her *Nocturnal Blindness*, and the *Faundise* likewise continues.

XLII. 1. One Mr. *Moreley* of *Bury St. Edmonds*, in an *Asthmatick* Distemper, was advised by some to take down a Spoonful of good *English Honey*; which being done, the Patient fell into an *Universal Swelling*, as if he had swallowed the worst of *Poysons*, Mr. *Goodrich* (who is my Author) prescribed a common *Sudorifick*, which in competent time relieved him. And that they might be assur'd that there was nothing amiss in the *Honey* they afterwards got the like *Quantity* at another place, which was given with the very same frightful Event, and the Party was Cured with the same kind of *Sweat*.

*Divers Instances of Peculiarities both in Men and Brutes; by Dr. Nath. Fairfax. p. 29. P. 549.*

The like Example hath been more than once related to me by a very credible Person of a Noble Lady in *Ireland*, who having received a small hurt on her Leg, and the Chirurgeon (unkown to her) mingling in the Application, he made to it a little *Honey* (for which she had an utter *Aversion*;) the place affected did soon after Rankle and grow so bad, that the Lady was constrained to send for him that had applied it, who being acquainted with her *Antipathy* to *Honey* immediately removed that *Plaister* and apply'd another with good Success.

*By Mr. Oldenburgh. ib.*

2. Mr. *Twisse*, a Minister of *Metigham* in *Suffolk*, about 40 Years of Age, having been accustomed for some time to drink *Warm* or rather *Hot Beer*, being abroad about *Midsummer*, took off a Cup of *Cold Beer*, after he had taken a Pipe of *Tobacco*. He soon after found himself *Sick*, and *Vomited*, and coming home his *Vomiting* grew worse, and he was constrained to betake himself to Bed. Next Day he grew yet worse, and could find no help by *Physick*, but Died the very next Morning. And yet I am Informed that the same party could Drink *Cold Wine*: So that it was not the *Coldness* of Particles, sensible to the Touch that Kill'd him.

*By Dr. Fairfax. ib.*

3. Madam *Mary Brook* of *Nxford* hath such an *Aversion* to *Wasps*, that whilst their Season of *Swarming* about in Houses lasteth, she is forced to confine her self to a little close Chamber; and dares not then come out to *Table*, lest their coming there should put her into such *Distempers*, as *Cbeese* doth those who have an utter *Antipathy* against it.

4. Mrs. *Raymund* of *Stowmarket*, when ever she hears *Thunder*, even afar off, begins to have a bodily *Distemper* seize on her; She grows *Faint*, *Sick* in her *Stomach*, and ready to *Vomit*. At the very coming over of it, she falls into a right-down *Cholera*, and continues under a violent *Vomiting* and *Looseness* as long as the *Tempest* lasts. And thus it hath been with this Gentle-Woman from a Girl.

5. I know a Woman in *Stow-Market*, who during her *Green Sicknefs* was invited by her *Pica* or *Ltnging* to suck the *Wind* out of *Bellows*, which as often as she could, she took into her Body with open Mouth, forcing it in, by Blowing with her own hands the *Bellows* inverted; I know another that was for *Crackling Cinders* under her Feet. From which kind of Instances I am inclin'd to doubt, whether that Distemper begins at the Depravation of the Acid Liquor in the *Stomach*, and not rather at the *Uterus*, which next Infects the *Brain*, such kind of things gratifying the *Fancy* some ways mislead more than the *Appetite Natural* any ways Depraved.

6. Something like to this is to be found in *Brutes*. In *May 1667*. a *Grey-h und Bitch* at *Bricewell-Hall*, about 5 or 6 Days before she cast her Whelps, had such a wild kind of *Hunger*, (though she was fed sufficiently every Day with usual Food) that finding another *Bitch's Whelps*, she *Devour'd* them all and fell next upon the Bitch her self, who made a shift to get from her. From this, and from *Sow's Devouring* whole Litters of Pigs, I am prone to think otherwise of the *Longings* of *Lactating Women*, than is the common Opinion.

Several Observations on different Maladies; by M. Gaillard. n. 233. P. 717.

XLIII. 1. There was seen at *Toulouse*, about the Year. 1685. an Infant who had 2. Heads; One was a sort of a Bag, resembling the *Hood* of a *Benedictine Monk*, and was fastened to a *Neck* of the same length with the *Neck* of the other *Head*. Master *Peter*, sworn Chirurgeon, opened it in Presence of Mr. *Bayle* and Mr. *Carboneau* the Waters being let out, the *Swelling* vanished; the *Neck* did not so, that part of it which was next to its Original, and which had about the length of *two Inches* and a *half*, was made up of *Flesh*. This Child Lived 15 Days.

2. In the Suburb *St. Cyprien*, near to the Hospital of *St. Joseph of Grace*. Mr. *Soye*, a Skillful Surgeon, having opened the Daughter of a *Cap-Maker*, dead of the *King's Evil*, *April*. 1685. remarkt, that the *Glands* of the *Mesentery* were *Petrified*, most of them were about the bigness of a *Walnut*, and others of a *Small Nut*; in some of them, being opened, he found about a *Dozen* of *Stones*.

3. Mr. *Bousquet*, Citizen of *Toulouse*, being Dead on the 8th of *Mar*. 1686 of a *Continual Fever*, and a *Spitting* of *Blood*, accompanied with a *Difficulty* of *Breathing*, Mr. *Delpesch*, sworn Surgeon, opened him, and found in the *Right Kidney* 3 little *Stones*, and some *Gravel*; going down the *Ureter*, which was much enlarged, he found a *Tough Stone*, of the bigness of a *Bean*, lodged towards the *Lower Orifice* of the same Passage; The *Lungs* stuck to the *Pleura*, to the *Mediastin*, the *Diaphragm*, and *Pericardium*; The *Wind-Pipe* was full of *Blood*; there was seen in the left Lobe, and the Back part of the *Lungs*, a *Bony Substance* 2 *Inches* long, and *half* an *Inch* broad: There were two *Polypuses* in the *Heart*, one in each *Ventricle* of the bigness of a *Pigeon's Egg*, whose Roots were 10 *Inches* long, the *Vena Cava*, both *Ascendent* and *Descendent*, was covered at its entry into the *Left Ventricle* of the *Heart*, with a *Bony matter*.

4. Mr. Soye having in May 1689. opened the *Vena Basilica* of the Right Arm of Mad. de St. Paul, a Religious of the Hospitalers of Paris, observed a little *Black Blood* that stoppt the Orifice he had made, and being willing to take it away to open the Passage, he found that it was a *Polypus* 10 Inches long.

5. In Sept. 1687. the Sieur Soye, having in the Hospitalers, opened a Servant Maid, aged between 25 and 26, which was from time to time seized with a *Bloody Flux*, he found the *Colon* and part of the *Mesentery Ulcerated*. The Mouth of this *Ulcer* was so great, that one might easily thrust in his Fist at it. It was stoppt with a *Clew of Worms* greater than it.

6. There happened much about the same time a Passage, singular enough, in that Monastery, M. — having stoppt on a sudden a Flux of Blood in Madam Maria, who had her *Catamenia* (though she had a Continual Fever and a Bleeding at the *Nose*) before he had used general Medicines, she fell all on a sudden into an *Apoplexy*, and Dying quickly after, M. Soye open'd her, and found in the Lateral *Sinus*, which divides the *Brain* from the *Cerebellum*, a *Clot of Blood* as big as a Hazel Nut. All the Vessels of the *Brain* were very much swelled and full of *Clotted Blood*; as for the *Ventricles*, they were full of a *Serous Humour*, being about the Quantity of a *Setier*.

7. Madam le Gendre, who dyed a Maid of 18 Years Old, about the end of Nov. 1693. was subject to great *Head-aches*, and almost Continual Faintings, and *Convulsive Fits*; and the two last Years of her Life, she was so strongly seized with them, that she became *Blind* of them, and continued in that Condition two or three Months. After Death she was opened by M. Soye; and when he came to the *Grey Substance* of the *Brain*, he found above the *Ventricles* between the *Cortical Substance* and the *Callous Body*, a *Lump of Flesh*, resembling the Stomach of a Goose. Immediately after the *Callous Body* in the foremost *Ventricles* did appear an *Ulcer*, from which came out about a *Setier* of Matter.

8. In the beginning of Sept. 1695. M. Soye opening the *Gall-Bladder* of a Widow of 19 Years old, he found there a *Stone* altogether like a Hen's Egg, that part of the *Liver* which was near, was Hurt, and her *Matrix* Schirrous. She had for 2 Years the *Yellow Jaundice*.

9. The same M. Soye, having in Sept. 1696. opened a Child of M. Roze Notary, found in the *Ventricles* of the *Brain* a *Setier of Water*.

10. In another Child of Mr. Hugonien, Woollen Draper, which he opened much about the same time, and which was about 2 Years Old, he found in the *Right Ventricle* of the *Heart*, a *Polypus* as big as a Pigeon's Egg, and in the *Left Ear* *Coagulated Blood* of the bigness of a Walnut; he found moreover in the little *Lobe* of the *Lungs* two *Ulcers* very distinct, from each of which there issued a *Setier* of Matter. The *Ureter* of the *Left Kidney* was distended an *Inch*, and its Passage stoppt by *Phlegm*, so hardened that scarcely could a *Knife* cut it.

11. Madam de l'Escarre, about 26 Years of Age, and subject to great Diseases, was opened in the beginning of Oct. 1695. by M. Soye; he saw

the Vessels that brought the Blood to the *Membranes* of the *Brain*, were greatly swelled, and full of *Polypus's*; of them we drew out 12, some 4 *Inches* long, and some three.

12. In the Beginning of this Year. 1697. the Wife of M. *Mafoc*, Merchant, being 40 Years old, who had 4 or 5 Children, had the same *Symptoms* which happen to Women near their *Labour*. M. *Soye* was called to her, and seeing that she suffered such a Loss as happens to Women before their bringing forth, or upon some Hurt, made ready for *Laying* of her. We saw presently a *False Conception*, which appeared at the Inner Orifice of the *Matrix*; This he pulled out, perceiving it loose from its Ligaments. This *False Conception* was of the bigness of a Goose Egg, and shap't like a *Kidney*: There was also so great a Similitude between the Structure of the *Kidney*, and this Mass of Flesh, that the Fibres were wholly alike. This Woman said, that this *False Conception* had been two Years in her *Matrix*. After it was out, she had the same Loss of *Blood*, as in her other *Lyings in*, and keeping to the same Course as she used in such Occasions, she had no bad Consequences of it.

13. There was observed in a Child, newly Born, and in due time, that it had nothing of the *Bone* in the Hind-Part of the *Head*, the *Temporal Bones*, nor of the *Frontal Bone* as far as the *Eyes*; so that the *Eyes* made an appearance of two Horns, which the Calves have when they come into the World, which standing much out, made the Child's Face very *Monstrous*. In the *Temporal Bones* there was nothing seen but what enclosed the *Organ of Hearing*; upon laying the Hand upon it, was felt the *beating* of the *Arteries*, and the Vessels which watered the *Pia* and *Dura Mater* were seen distinctly, as if the *Bone* had been taken off. This Child *Lived* in this State, 4 or 5 *days*.

14. M. *Soye* the Younger, a Surgeon, having opened a Young Girl, found her *Matrix* so *Schirrous*, that it seemed to be made but of One Piece.

15. The same observed since, such a thing in a Girl 2 Years Old, that died of an *Apoplexy*; he found also 4 *Glands* in the *Mesentery* of this Maid, each as big as a Walnut. He has since seen that the *Mesentery* of a Child 7 or 8 Years Old, was made of 2 *Glands*, each of the same bigness.

16. M. *Barriere*, Sworn Surgeon, found in a Girl 11 or 12 Years Old, instead of a *Matrix*, a very thin *Membrane* placed where the *Matrix* is. The *Vagina* in the outward Orifice was shut up *Hermetically*; i. e. the Cover was of the same Piece with the *Matrix*.

17. M. *Carlan*, sworn Surgeon; having observed in a Man a *Swelling*, as big as a Pullet's Egg, upon the place called *Fontanella*, and covered with *Hair* like the rest of the Head, applyed to it *Emplastrum de Betonica*, by order of M. *Dufaur*, Professor of Surgery, and the *Swelling* disappear'd.

#### XLIV. Papers of Less General Use, Omitted.

p. 35. p. 672.

1. Several *Anatomical Inventions* and Observations Ascribed to their Proper Authors; by Dr. *Tim. Clark*. viz.

1. Of

1. Of the *Vasa Lactea*, to *Afellius*;
2. Of the *Ductus Thoracicus*, to *Pecquetus*;
3. Of the *Vasa Lymphatica*, to *Bartholinus* and *Rudbeckus*; yet these *Lymphaticks*, were observed in the *Testicles*, by *Folius*, some Time before;
4. Of the *Circulation* of the *Blood*, to *Harvey*, not to *P. Paulus Venetus*;
5. Of the *Injection* of *Medicated Liquors* and other things into the *Veins* of *Animals*, to *Sir Chr. Wren* about the latter End of the Year, 1656. if not to *Dr. Potter* about 18 Years before.
6. In the Prosecution of this last kind of *Operations*, both *Dr. Clark* and *Dr. Henshaw* attempted, about that time, the *Transfusion* of *Blood* from one *Animal* into another; but Unsuccessfully, till *Dr. Lower* hit upon a more Practicable Method, and Perform'd the *Operation* at *Oxford*. An. 1666.
2. Several Historical Passages, concerning the *Invention* of *Injection* into the *Veins*, and *Transfusion* of the *Blood* of *Animals*; by *Mr. Oldenburg*.  
Where the *Invention* of the First is given to *Sir Chr. Wren*, and the Successful Practice of the Later, to *Dr. Lower*; except this Honour may be allow'd to *Libavius*, who indeed describes the *Operation* upon *Men* plainly enough (in his *Defensio Syntagmatis Arcanorum Chymicorum*, &c. p. 8. Edit. An. 1615.) but 'tis only to mock at it.  
n. 7. p. 128.  
n. 27. p. 489.  
n. 28. p. 523.  
n. 37. p. 731.
3. *Queries* and *Trials* propos'd by *Mr. Boyle* to *Dr. Lower*, to be made by him, for the Improvement of *Transfusing Blood* out of one *Live Animal* into another.  
n. 20. p. 357.  
n. 22. p. 385.
4. A *Letter* from *M. Gasper de Gurye de Montpoly* to *M. Bourdelot*, concerning necessary *Circumspection* to be used in the Practice of *Transfusion* upon *Men*.  
n. 25. p. 517.
5. The *Cautious* Proceedings of the *English* in the Practice of *Transfusion* upon *Men*.  
n. 28. p. 521.
6. A *Printed Letter* of *M. Gadroys* to *M. Bourdelot*; being an Answer to a *Paper* of *M. Lamy*, and a *Vindication* of the *Transfusion* of *Blood* from his *Objections*.  
n. 30. p. 559.
7. A *Printed Paper*, written by *J. Denis*, touching a late *Cure* of an *Inveterate Phrensy* by the *Transfusion* of *Blood*; and the Proceedings of the *Court* of *Justice* at *Paris* upon the *Death* of the *Man*, after he had undergone that *Operation* twice or thrice.  
n. 32. p. 617.  
n. 36. p. 710.  
ib. p. 712.  
n. 54. p. 1075.
8. *Experiments* of *Staunching Blood* with the *Royal Styptique*; Extracted from *M. Denis's* 11th. *Conference*, Printed in *French* at *Paris*. Apr. 30. 1673.  
n. 95. p. 6054.

XLV. *Accounts of Books*, Omitted.

1. **M**emoirs for the Natural History of *Humane Blood*, especially the *Spirit* of that *Liquor*; by the Hon. *Rob. Boyle*, Esq; Lond. 1683.  
n. 154. p. 418.
2. *Apologia pro Circuitione Sanguinis*; qua responderetur *Emilio Parisano*, Medico Veneto: Auth. *Geo. Entio*. Editio altera, auctior & accuratior. Lond. 1685. in 8vo.  
n. 173. p. 1105.

- n. 58. p. 1200. 3. *Job. Sig. Elsholtii Clysmatica Nova; five Ratio in Venam Sectam Medicamenta Immittendi. Coloniae Brandenburgicae. 1667. in 8vo.*
- n. 4. p. 75. 4. *Diatribæ, Tb. Willisii. M.D. & Profefs. Oxon. de Febribus, Vindicatio: Authore Rich. Lower.*
- n. 12. p. 210. 5. *Dr. Sydenham's Methodus Curandi Febres, propriis Observationibus, superstructa.*
- n. 123. p. 568. 6. *Observationes Medicæ circa Morborum Acutorum Historiam & Curationem; Auth. Thom. Sydenham. M. D. Lond. in 8vo.*
- n. 197. p. 657. 7. *Novæ Hypotheseos, ad Explicanda Februm Intermitentium Symptomata & Typos excogitatae Hypotyposis: Una cum Ætiologia Remediorum, speciatim vero de Curatione per Corticem Peruvianum. Accessit Dissertatiuncula de Intestinorum Motu Peristaltico. Auth. Gulielmo Cole. M. D. Lond. 1693. in 8vo.*
- n. 199. 717. 8. ΠΥΡΕΤΟΛΟΓΙΑ: Seu Exercitationes de Morbis Universalibus Acutis Auth. Rich. Morton. M. D. Lond. 1692. in 8vo.
- n. 217. p. 123. 9. *Archibaldi Pitcairni. M. D. Dissertatio de Febribus.*
- n. 73. p. 2210. 10. *Dissertationes duæ Medicæ de Veneno Pestilenti: Studio Caroli de la Font. M. D. & in Acad. Arvenion. Prof. Primar. Amstel. in 120.*
- ib. p. 2212. 11. *Franc. de le Boe Sylvii. M. D. Oratio de Affectus Epidemici, Anno 1669. Leidam Depopulantis, Causis Naturalibus. Lugd. Batav. 1670. in 120.*
- n. 81. p. 4028. 12. *Λοιμολογία, Sive Pestis nuperæ Londini Grassantis Narratio Historica. Auth. Nathan. Hodges. M. D.*
- n. 101. p. 14. 13 *Medicina Militaris; or a Bodie of Military Medicines experimented, by Raymundus Mindererus: Englisht out of High Dutch. Lond. 1674. in 8vo*
- n. 136. p. 918. 14. *Tractatus Medicus de Morbis Castrensihus Internis. Auth. Job. Valentino Willio. Hafniæ. 1676. in 4to.*
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