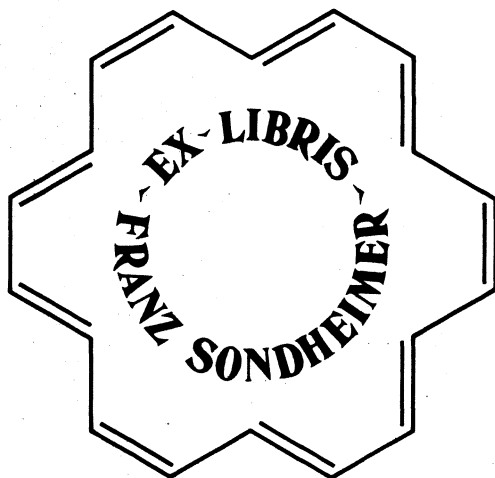




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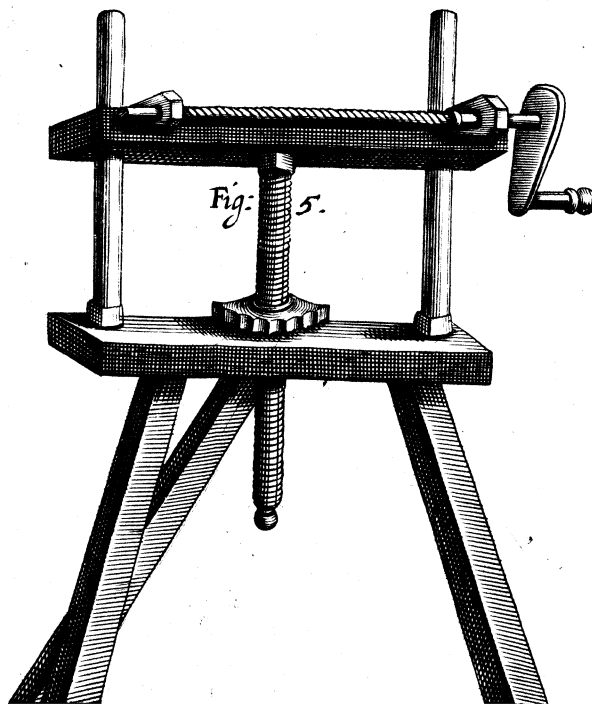
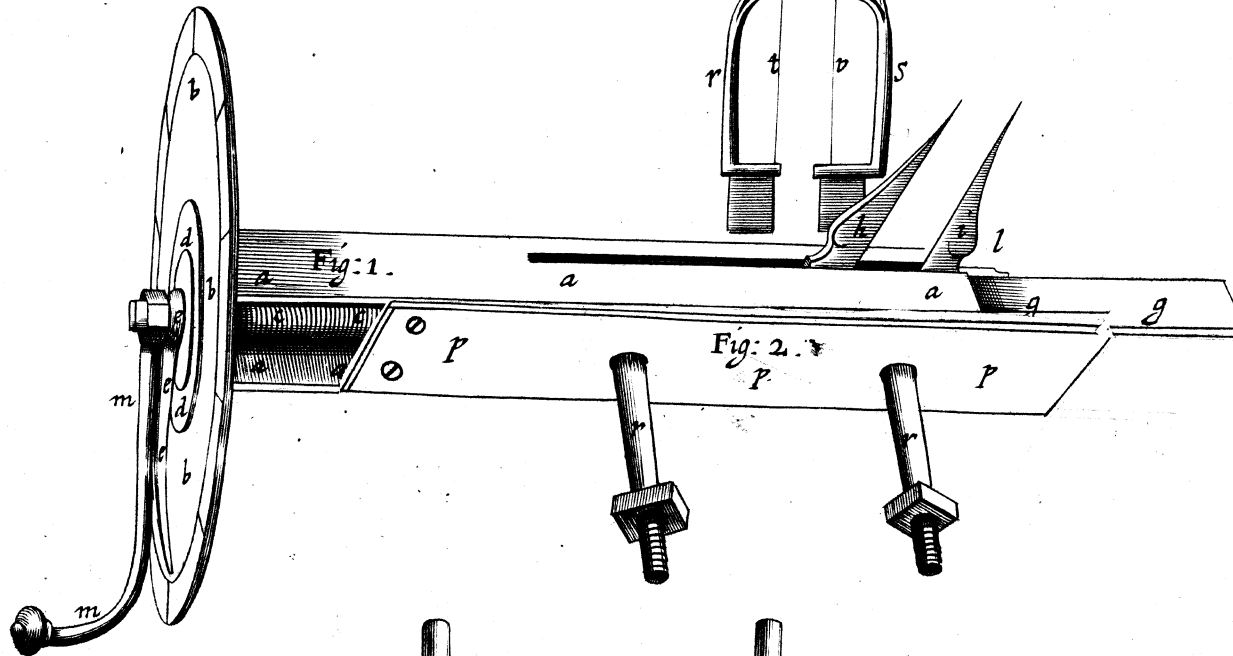
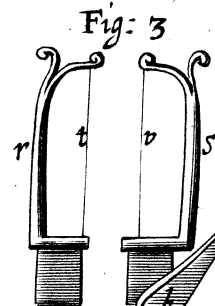
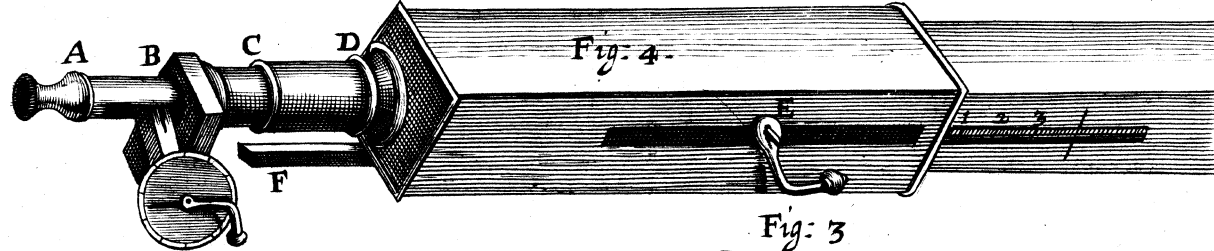
OF ANESTHESIOLOGY

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July 21





# PHILOSOPHICAL TRANSACTIONS.

Monday, Novemb. 11. 1667.

## The Contents.

*A description of an Instrument for Dividing a Foot into many thousand parts, and thereby measuring the Diameters of Planets to great exactness, &c. as it was formerly promised. An account of making a Dog draw his Breath just like a Wind-broken-Horse. Divers Anatomical Observations on Humane Bodies. Several Instances of Peculiarities of Nature, both in Men and Brutes. A Confirmation of the Experiments, mentioned in Numb. 27. to have been made in Italy, by Injecting Acid Liquors into Bloud. An Observation about the double Membrane call'd Epiploon, which covers the Entrails of Animals, and is fill'd with Fatt. Some Hortulan Communications, about the curious Engrafting of Orenge and Lemons or Citrons upon one anothers Trees, and of one Individual Fruit, half Orenge and half Lemon, growing on such Trees. An imitation of a way of preserving, in the more Northern Climats, Orenge-Trees all winter long, without any Fire. Inquiries for Greenland, An Account of the Synopsis NOVÆ PHILOSOPHIÆ & MEDICINÆ Francisci Travagini, Medici Veneti.*

### *A Description.*

*Of an Instrument for dividing a foot into many thousand parts, and thereby Measuring the Diameters of Planets to great exactness, &c. as it was promised, Numb. 25.*

*If the residence of the worthy Promiser of this Instrument, Mr. Richard Townley, had not been so remote from London, nor*  
K k k *some*

*some other impediments intervened, (after it was come to hand,) First on the Publisher's, then on the Engraver's side, the following Particulars concerning the same, promised some Moneths ago, had been imparted to the Publick a good while before this time. For the draught of the Figures, representing the New Instrument itself, and the Description of the same, we are obliged to the ingenuity of Mr. Hook.*

**T**He 1. 2 and 3 *Figures*, do represent the several parts of this Instrument; the 4<sup>th</sup> *Figure*, part of the *Telescope* with the Instrument applied to it, and the 5<sup>th</sup>, the *Rest*, on which the whole reposeth.

The 1. *Figure* represents the *Brass-boxe* with the whole *Instrument*, (excepting onely the *Moveable Cover*.) and the *Screws*, by which it is fixt to the *Telescope*. In this *Figure* (*a a a a*) is a small oblong *Brass-box*, serving both to contain the *Screws*, and its *Sockets* or *Femal Screws*, and also to make all the several moveable parts of the Instrument to move very true, smooth, and in a simple direct motion. To one end hereof is screwed on a *Round plate* of *Brass* (*b b b b*) about 3 inches over; the extream *Limb* of whose outside is divided into a 100 equal parts, and numbred by 10. 20. 30. &c. Through the middle of this *Plate*, and the middle of the *Box* (*a a a*) is placed a very curiously wrought *Screw* of about the bigness of a *Goose-quill*, and of the length of the *Box*, the head of which is by a fixed *Ring* or *Shoulder*, on the *Inside*, and a small *springing Plate*, (*d d*) on the *Outside*, so adapted to the *Plate*, that it is not in the least subject to shake. The other end of this *Screw* is by another little *Screw* (whose small point fills the *Center* or hole made in the end of the longer *Screw*, for this purpose) rendred so fixt and steady in the *Boxe*, that there appears not the least danger of shaking. Upon the *Head* of this *Screw* without the *Springing-Plate*, is put on a small *Index* (*e e*) and above that a *Handle* (*m m*) to turn the *Screw* round, as often as there shall be occasion, without at all endangering the displacing of the *Index*; it being put on very stiff upon a *Cylindrical* part of the *Head*, and the *Handle* upon a *Square*. The *Screw* hath that *Third* of it, which is next the *Plate*, bigger than the other

other *two Thirds* of it, by at least as much as the depth of the *small Screw*, made on it: The *thred* of the *Screw* of the bigger *Third* is as small again, as that of the *Screw* of the other *two Thirds*. To the *grosser Screw* is adapted a *Socket* (*f*) fastned to a long *Barr* or *Bolt* (*gg*,) upon which is fastned the *Moveable Sight* (*h*,) so that every turn of the *Screw* promotes the *Sight* (*h*) either a *thred* nearer, or a *thred* farther off from the *fixt Sight* (*i*) The *Barr* (*gg*) is made exactly equal and fitted into two small *Staples* (*kk*) which will not admit of any shaking. There are 60 of these *threds*; and, answerable thereto, are made 60 *divisions* on the edge of the *Bolt* or *Ruler* (*gg*,) and a small *Index* (*l*) fixt to the *Boxe* (*aaa*) denotes, how many *threds* the *Edges* of the two *Sights* (*h*) and (*i*) are distant; and the *Index* (*ee*) shews on the *Circular Plate*, what part of a revolution there is more; every revolution, as was said before, being divided into 100 parts. At the same time that the *moveable Sight* (*h*) is moved forwards or backwards, or more *threds* of the *Courser Screw*, is the *Plate* (*pp*. in *Fig. 2.*) by the means of the *Socket* (*q*) to which it is screw'd, moved forward or backward, or more *threds* of the *finer Screw*: So that this *Plate*, being fixt to the *Telescope* by the *Screws* (*rr*. in *Fig. 2.*) so as the middle betwixt the *Sights* may lye in the *Axis* of the *Glass*, however the *Screw* be turn'd, the midst betwixt the *Sights* will always be in the *Axis*, and the *Sights* will equally either open from it, or shut towards it.

*Figure 2.* represents the *moveable Cover* containing the *Screws*, to be by the Bookseller cut off, by the *pricked Line* (*xxx*) from the Paper, and to be fitly placed on *Figure 1.* according to the *pricked Line* (*yyy*) answering thereto; that by the taking off, as it were, or folding up of this *Cover*, the *inward contrivance* of the *Screws* and *Sights* may appear.

And because it is conceived by some ingenious men, that it will be more convenient, instead of the *Edges* of the two *Sights* (*h* and *i*) to employ two *Sights* fitted with hairs, therefore is added *Figure 3.* representing the two *Sights* (*r.* and *s.*) so fitted with *threds* (*t.* and *u.*) that they may be conveniently us'd in the place of the *solid Edges* of the *Sights* (*h.* and *i.*)

The 4<sup>th</sup> *Figure* represents, How the *Screws* are to be put on.

The *Tube A D* is divided into 3 lengths ; of which (as in ordinary ones) *BC* is to lengthen or contract, as the Object requires: But *A B* is here added, that at *A*. you may put such *Eye-glasses* as shall be thought most convenient, and to set them still at the distance, most proper for them, *Indexes* or *Pointers*, which here are suppos'd to be at *B*. which length alters also in respect of divers persons Eyes. *E*. is a *Screw*, by which the *Great Tube* can be fixt so, as by the help of the figures, any smaller part of it can immediately be found, measuring only, or knowing the *divisions* on *BC*, the distance of the *Object-glass* from the *Pointers*. *F*. is the *Angular* piece of wood, that lies on the *upper Screw* of the *Rest*. This *Rest* is represented by *Figure 5*.

As for a Description of the *Uses* of this ingeniously contrived and very curious *Engine*, the *Reader* is desir'd to look back to the before alledged *Numb. 25*.

#### *An Account*

*Of making a Dogg draw his Breath exactly like a Wind-broken, Horse as it was devised and experimented by Dr. Richard Lower; with some of his Instructive Observations thereon.*

*This Experiment was made before the R. Soc. Octob. 17. 1667. after it had been tryed by the Author in private, some while before. The Account of it in his own Words and as follows.*

After I had often consider'd the *manner* and way of *Respiration*, and by many Observations been induced to believe, that the *Diaphragme* is the *chief Organ* thereof, I thought, there could be no way more probable to try it, then by breaking the *Nerves*, by which its Motion is perform'd: Which may be easily (as it was actually) done after the following manner;

*First*, pierce the side of the Animal between the 6. and 7 *Ribb* in the middle of the *Thorax*, just over against the region of the Heart, with a small *Incision-knife*, passing the knife but just into the Cavity of the Breast (which you may justly know by finding no resistance to the point of it;) then take it out, and put in a *Director*, ora small *Quill* made like it, and thrust it in about an *Inch*, directing the end of it toward the *Sternum*, close to the inside of the Breast. Then cut upon it about an *inch* on the *Inter-costal Muscles*; by which you may be secur'd from touching the  
*Lungs*

*Lungs* with the point or edge of your knife. This done, put in your finger, and with your nail separate the *Nerve*, which passeth along the side of the *Pericardium* toward the *Diaphragme*. Then put in a *Probe*, a little inverted at the end like a hook, and apprehend the *Nerve*, and pull it to the Orifice of the Breast, and cut it off, and sow the hole up very close. Do the same on the other side, and presently let the Dog loose, and you will plainly see him draw his breath exactly like a *Wind-broken Horse*: Which yet you will see plainer, if you run him a little in a string after he is cut. But that any one may perform this Experiment the easier, let him first take notice, how the *Nerves* of the *Diaphragme* pass along on each side of the *Pericardium* in a *dead Animal*, before the trial be attempted in a *Living* one.

The most obvious *Observations* from this Experiment, are:

1. That the whole *manner* of *Respiration* is quite alter'd. For, as in a *sound Animal*, in *Inspiration* the Belly swells by the lifting up the Bowels by the *Contraction* of the *Diaphragme*; and in *Expiration* the Belly falls by the *Relaxing* of the same: In a *wind-broken Dog* or *Horse* 'tis quite contrary. For in them it is to be seen plainly, that when they draw their breath, their Belly is drawn in very lank and small, and when they breath up, their Belly is relaxt and swells again.

2. It being certain, that the *Lungs* do not move of *themselves* at all, but wholly depend upon the *Expansion* of the *Thorax* by the *Intercostal Muscles*, and the *Diaphragme*; by this Experiment it doth appear, how much the *single* motion of *either* of them doth *particularly* contribute to *Respiration*. For, all *Inspiration* being made by the *Dilatation* of the *Thorax*, and that *Dilatation* being caused *partly* by the *Intercostal Muscles* drawing up the Ribs, and *partly* at the same time the *Diaphragme* by its *Contraction* drawing downward the lower small Ribs, to which 'tis joyned, and also lifting up the *Viscera* of the lower Belly, by which they do *joyntly* make all the space, they can, for the Air to come in and distend the Lungs: It must hence necessarily follow, that the *Intercostal Muscles* and the *Diaphragme* being constituted for two distant Employments (though both to the same end) and *neither* being able to perform the *others* Office, where one ceaseth from it's work, the other for the exigence of Nature must take more pains to

supply the others defect. Which is very evident to be seen; for, the *Diaphragme* being made useles by loosing its *Nerves*, the *Intercoſtal* Muscles do dilate the Ribs much more than formerly, even to the utmost distance they can, when there is need for it; as, when you make the Dog run a little after he is cut, or when you gallop a *Wind-broken Horse*, doth manifestly appear.

3. The *manner* of Respiration being the same in a *Dog*, whose *Diaphragme-nerves* are cut, and in a *Wind-broken Horse*, 'tis more than probable, that the *Cause* may be as nearly the same, as the *Signes* are; and that, though there may be *other* faults found in the Lungs of such Creatures, yet 'tis very likely, they may be induced from the *weakness* of Respiration, but that they had their *Occasion* from the *Relaxation* or *Rupture* of the *Nerves* of the *Diaphragme* at first: which will seem more credible, if we remember, that by the streining of the Midriff too much (by which the *Nerves* may be quite broken or stretcht beyond their proper tone) most commonly that accident happens.

#### Anatomical

*Observations on a Humane Body, dead of odd Diseases; as they were communicated by Dr. Nathanael Fairfax.*

A Young Maid of *Rumberough* in *Suffolk*, when she was about thirteen years of age, took *Chalybeats* for the Green-sickness, and found some relief by it, but was after much pent in her wind. From 16. to 22. she much afflicted her self for the Death of her Father and Mother, and the misbehaviour of a Brother; during which time, she had every year an *acute* disease or two. At 18, she was very weakly, clogg'd in her Chest, and melancholy. If she went out in a windy day, she was fain to make hast in; for the wind, *she said*, was ready to choak her. She was a very slow Walker, going up-hill or up-stairs with much difficulty. She was now observed to be very *thirsty*, usually drinking at Bed-time, and in the night too, sometimes; else, *she said*, she should be choak't with drought. Between 21. and 22. of her age, going down stairs, she heard a frightful Jolking in her Breast; which she then made known to the rest of the house, who when she shew'd them the manner of it by shaking her Body, joyn'd all with her in the wonder, concluding (as most would have done by the noise) that her Breast was almost full of water. She took several



veral things of *Dr. Browne* and others at *Normich* for about six moneths time, without finding relief. Half a year after, toward *Michaelmas*, upon taking a slight cold, she was so stop't up, that she could only whisper; nor could she lie flat, but rear'd up with pillows. I being sent for, caus'd presently a Vein to be open'd, as an Expedient only to make way for a freer Circulation, and room for Nature to disburthen her self. Within less than an hour she got breath, and soon after grew as well as she was before. She affirm'd, she never swet in her life, nor could it be procur'd by ordinary Sudorificks. Being desirous to adde an Empirical remedy, I gave her three of *Matthews Pills*; which did sweat her lightly, but beyond what ever she remembred. Several daily doses of *Lockiers Pills*, 4. per dose, remov'd the Julking, as she said, lower to the Mid-riff: when she, fearing an *Hyper-catharsis*, laid them by for two or three daies, and then taking them up again, could find no further alteration by them. She could never lie on her left side. In the 23. year of her age, in Winter, she had a dangerous *Feaver*, with a *Diarrhea*, but came off. In her 24. in Winter again, she got cold, was quite stopt up, after five or six daies fell into Convulsion ere she was bled, through want of care in those about her. By late bleeding she had present ease, and chear'd up in the Evening, but died the next Morning.

I had leave from her self, whilst living, and from her Relations, when dead, to open her Body; which I did accordingly.

First therefore I cleav'd asunder the Brest-bone from the Cartilage, called *Ensi-formis*, to the neck; when, laying open the hollow of the *Thorax*, there steam'd out at first a very offensive smell, notwithstanding the sharp frost, there was at that time, it being about *Christmas*. Then making way to lay open either side of the *Sternum*, I was surpris'd to see (as I thought) almost the whole Cavity of the *Thorax* empty above, (as the Body lay supine) and fill'd with nothing but thick Milk beneath. But searching further, I found there was only all the right side of the Chest, and about a third part of the left, in that condition. It took up, in the part to the neck-ward a hand-breadth, and ran three fingers thickness to the left of the *Mediastinum*. The Liquor was like Cream, or rather like a size of *Spanish White*, having a cast of yellow, like *Beefings*. For, putting a spoon into it, from the bottom

bottom I took up a thick clammy matter, just like that *Spanish White*, that sinks to the bottom of its size. In quantity it might be about three *pints*, contain'd in a *Bag*, which was capable to hold as much more and better. The *bag* ran along from the left shoulder to the utmost of the right side of the *Mid-riff*: not streight along nor stiffly stretcht; but about a hand-breadth from its rise it went directly down to the *Midriff*, with which it closed all along. Its skin or coat was thicker than that of the stomach, as well as its capacity larger, in as much as the Flexures of the Ribs joyn'd with it, and made up above half the compass. Where it adher'd to the *Mid-riff*, 'twas near a finger thick: And in one place, where I endeavor'd to separate it from the *Mid-riff*, I hit upon a thinner *bag*, whence issued out 2 or 3 spoonfuls of shier water: How it got in, I found not. The *Mediastinum* was either wholly wasted, or else woven into the thickness of the *Bagg*, as was also the *Pleura*, as far as the *Bagg* reach'd. It lay loose and flapping from the left *Axillar* to the *Chest*, having been before fill'd and distended either with lenid or the Liqueur. All the hollow was bedabbed with the wallowings of the liquor about, as is the Ouse by the Ebbings and Flowings of the *Tide* in a Channel. That *Lobe* of the *Lungs*, which should have been on the right-side, was gone, and that on the left, wasted to near a third part. In the *Lower Belly* all was well.

Dr. Brownsaith, he hath met with the like in an *Italian* Author. His opinion was to salivate her. I had thoughts of a *Paracentesis*, or Tapping between the Ribs. For by the noise of the Liqueur, and by her not enduring to lye on the left, I concluded it must be in a *Cystis* on the right. But if that had been done, the *Bagg* being too thick might have mortified. The Jolking was exactly like that of Water or Milk. This Woman was as Flat-breasted as a Man. Whether the Liqueur proceeded from the falling down of the *Chyle* from the *Axillars*, is a *Quare*, but seems to carry in it somewhat of probability. But I must not reflect.

*Two other Anatomical Observations, imparted, by the same hand.*

1. A certain Serving-man about 27 years of age, dyed *Hydropical*, which Disease he was molested with, 4 years before his death. He was

was ever a listless, dull and melancholy fellow, never cheerful nor smiling, especially for ten years before he died. His words came from him as if forced, and speaking but a little, he would end with a sigh. When open'd, he was found to have the left *Lobe* of the *Lungs* almost quite wasted; but no Ulcer, nor ought preternatural appearing in the remaining part, except its wasting. The heads of the *Vessels* and *branches* of the *Wind-pipe* as big, as in the other *Lobe*. That *Lobe* of the Liver, which butts on the Mid-risse, was black *outwardly* for about a hand-breadth, and about a thumbs-breadth within the *Parenchyma*. Other parts found.

2. The other day I took notice in the *Corps* of a *Felon*, that, whereas *ordinarily* the *Preparing Vessels* arise, on the *right* side, out of the *Cava*, as on the *left*, out of the Emulgent, his *right* Vas preparans sprang cleerly from the *right Emulgent*.

#### Divers Instances

of Peculiarities of Nature, both in Men, and Brutes; Communicated by the same.

1. One Mr. Morley of Bury St. Edmunds in an *Asthmatick* distemper, was advised by some to take down a Spoonfull of good English *Honey*; which being done, the *Patient* fell into an Universal swelling, as if he had swallow'd the worst of *Poysons*. Mr. Goodrich being hastily call'd in, to save life, prescribed him a common *Sudorifick*, which in competent time relieved him. They then made inquiry at the Apothecary's, Whether nothing were amiss in the Honey; and they protested, it was altogether right. But to be assur'd of it by *Experiment*, they afterwards got the like quantity at another place, which was given with the very same frightful event, and the Party was cured by the same *Chirurgion* (who is my *Author*) with the same kind of sweat\*.

2. Mr. Twisse, a Minister of *Mettingham* in *Suffolk*, about forty years of age, having been accustomed for some time to drink *warm* or rather *hot* Beer,

which was then unknown to the *Chirurgion*, as was to the *Patient* the mixture; 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 examined about the *Ingredients*, and declaring one of them to be *Honey*, the Lady soon acquainted him with her *Antipathy* to that substance: whereupon that Application was immediately removed, and another more proper for the *Patient* put in the place, with good success.

\* The like Example hath been more than once related to the *Publisher* by a very credible person, of a Noble Lady in *Ireland*, who having received a small hurt on her Leg, and the *Chirurgion* mingling in the Application, he made to it, a little *Honey* (from which she hath an utter Aversion,

and coming from his House about Mid-summer to a house near *Rumburch-Church*, where he was offered a Cup of *cold Beer*, out of modesty, or a humor to prevent the being wondred at, took it off thus cold, after he had taken a Pipe of *Tobacco*. Which done, he presently took horse, and rode with other Company towards *Framlingham*. Coming at *Haleswith*, he found himself sick, his stomach much out of order. He lighted once or twice by the way and vomited, but coming at his Journeys end, his vomiting grew worse, and he was constrain'd to betake himself to his bed. Next day he grew yet worse, could find no help by Physick, but died the very next morning.

It may be worth noting (*adds the Author*) that one, who is wont to drink *cold Beer*, is not, for ought we know, endanger'd by a draught of *hot Beer*: But I cannot tell, whether it may be thence inferr'd, that *hot* things are more agreeable to the natural Tone of the Stomach, than *cold*. That it was not barely the coldness of particles, sensible to the Touch, appears, because the same Party could drink cold *Wine*, as I was inform'd from my own Father.

3. Madam *Mary Brook* of *Toxford* hath such an Aversion to *Wasps*, that whilest their season of swarming about in Houses lasteth, she is forc'd to confine her self to a little close Chamber, and dares not then come out to Table, least their coming there should put her into such distempers, as *Cheese* doth those, who have an utter Antipathy against it.

4. Mrs. *Raymund* of *Stow-market*, when ever she hears *Thunder*, even a farr off, begins to have a bodily distemper seize on her. She growes faint, sick in her stomach, and ready to vomit. At the very coming over of it, she falls into a right down *Chalera*, and continues under a *Vomiting* and *Looseness*, as long as the Tempest holds, and that in a more violent way, than is commonly procured by such Medicaments as are usually exhibited for those very purposes. And thus it hath been with this Gentlewoman from a Girl.

5. I know a Woman in *Stow-market*, who, during her Green-sickness, was invited by her *Pica* or longing, 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

the Bellows inverted. I know another that was for crackling of *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 somewayes mislead, more than the *Appetite natural* any wayes depraved.

6. Somewhat, like to this, is to be found in *Brutes*. In May last a *Grey-hound* Bitch at *Brightwell-Hall*, about five or six dayes 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 Bitches Whelps, she devour'd them all (4 or 5, as I remember) and fell next upon the Bitch her self, who made a shift to get from her as well as she could, being help'd. From this, and from *Sows* devouring whole *Litters* of Pigs, I am prone to think otherwise of the *Longings* of *Teeming-Women*, than is the common opinion.

#### *A Confirmation*

*Of the Experiments, mention'd in Numb. 27, to have been made by Signor Fracassati in Italy, by Injecting Acid Liquors into Blood.*


THE Honourable *Robert Boyle*, having seen the particulars inserted in *Numb. 27*, concerning some Experiments made by Signor *Fracassati*, and recollecting, what himself had experimented of that nature, several years ago, was pleas'd to give to the *Publisher* the following Information about it, by the favour of a Letter, written to him from *Oxford, Octob. 19. 1667. viz.*

Sir,


I Hinted to you in my last something about the Original of the Experiments, made in Italy, by Injecting Acid Liquors into Blood: To explain which, I shall now tell you, That about this time three years \* I mentioned at *Gresham Colledge* to the *Royal Society* an odd Experiment, I had formerly made (not by Chance, but De-

his Office hath the Care of seeing them faithfully managed) do fully agree with the Affirmation of this Noble Person, as well in the Circumstance of the Time, as the Substance of the Matter in question; It being in the Month of *December* of An. 1664. when, what is now alledged in this Letter, was publicly related by its Author.

\* The Journals of the *Royal Society* being looked into by the *Publisher* (who, by the honour of his Relation to that *Illustrious Body*, hath the advantage of perusing them, as he by



signe) upon Blood yet warm, as it came from the Animal, viz. That by putting into it a little Aqua fortis, or Oyl of Vitriol, or Spirit of Salt. (these being the most usual Acid Menstruums,) the Blood not only would presently loose its pure colour and become of a Dirty one, but in a trice be also coagulated; whereas if some fine Vrinous spirit, abounding in Volatil Salt, such as the Spirit of Sal Armoniack, were mingled with the warm Blood, 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 Volatil spirits to the Blood. And I remember 'twas so much taken notice of, that some very Inquisitive Members of the Society came presently to me, and desired me to acquaint them more particularly with it; which I readily did, though afterwards I made some further Observations about the same Experiment, that I had no occasion to relate.

This having been so publicly done, though I shall not say, that Signor Fracassati may not have hit, as well as I, upon the Experiments published in his Name, yet there is so little difference between the warm Blood of an Animal out of his Veins and in them, that 'tis not very improbable, that he may have had some imperfect Rumor of our Experiment without knowing whence it came, and so may, without any disingenuity, have thence taken a hint to make and publish, what now is English'd in the Transactions. If it be thought fit, that any mention be made of what I related so long since, I think, I can send you some other Circumstances belonging to it. For I remember, I tryed it with other Liquors (as Spirit of Wine, Oyle of Tartar, Oyle of Turpentine,) and I think also, I can send you some remarks upon the Colour of the upper part of the Blood. And I shall on this occasion add in reference to Anatomical matters in general, that after I saw, how favourably the Usefulness of Experimental Philosophy was receiv'd, I was invited to enlarge it in another Edition; and for that, I provided divers Anatomical as well, as other Experiments, and design'd many more, so that I have by me divers things, that would not perhaps be unwelcome to Anatomists, &c.


#### *An Observation*

About the Epiploon, or the Double Membrane, which covers the Entrails of Animals, and is fill'd with Fat.

This Observation should have been added to those that were publish'd in Number



ber 27. and made by Fracassati and Malpighi. For it is contain'd in an Exercitation De Omento, annexed to the Tetras Anatomicarum Epistolarum Marcelli Malpighii and Caroli Fracassati de Lingua & Cerebro, printed in Bononia. Since it was then omitted, it was thought worth the inserting now, viz.

 The *Epiploon*, being look'd upon by a good *Microscope*, is like a great *Sack*, full of abundance of other small *Sacks*, which do inclose *Gatherings* of *Grease* or *Fat*. There are many *Vessels*, which may be call'd *Adipous* or *Fatty*, which issue out of this *Membrane*, and spreading themselves all over the *Body*, convey *Fat* to it, just as the *Arteries* carry the *Blood* all over the same. Wherever is *Fat* or *Grease*, there is found store of these little *Sacks*, wherein *that* is inclosed, whence it is, that in lean and emaciated *Bodies*, in stead of *Fat*, you find nothing but *skins*.

The structure of these *small Sacks* and of the *Adipous vessels* sufficiently sheweth, that the *Fatt* is not form'd accidentally out of the thick *Vapours* of the *Bloud*, as is the common belief. Nor is its chief *Use*, to foment the *Natural heat*; but it seems rather to conduce to the allaying of the *Acrimony* of the *Salts*, that are in the *Bloud* and the *Serosities*. And indeed (saith this *Author*) Lean persons, and those, whose *Epiploon* hath been cut, are more subject than others to *Rhumatisms*, *Lienteries*, and the like diseases that are caused by the sharpness of the *Humours*. And those that are *fatt*, are not so easily seized on by them, in regard the *Acrimony* of the *Serosities* is corrected by the *Mixture* of the *Fatt*, just as the sharpest *Lixivium* will loose its force, if *Oyl* be mingled therewith.


*Some Hortulan Communications about the curious Engrafting of Oranges and Lemons or Citrons upon one anothers Trees, and of one Individual Fruit, half Orange and half Lemon, growing on such Trees, &c.*

We have here *Orange-trees*, (saith the *Intelligence* from *Florence*) that bear a fruit, which is *Citron* on one side, and *Orange* on the other. They have not been brought hither out of other *Countries*: and they are now much propagated by *Engrafting*.

2. This was lately confirmed to us by a very Ingenious *English Gentleman*, who asserted, that himself not only had seen, but bought of them *An. 1660.* in *Paris*, whither they had been sent by *Genoa-Merchants*; and that on some *Trees* he had found an *Orange* on

on one branch, and a *Lemon* on another branch ; as also, ( conso-  
nantly to the *Florentine* information ) one and the same Fruit half  
*Orange* and half *Lemon* ; and sometimes *three quarters* of one kind,  
and *one quarter* of the other.

3. A *Provencal* at *Paris* pretends to keep *Orange-trees* in that  
Town all the winter long *without* any *Fire*, though they remain in  
the Earth, and not be put in *Caisses* or *Boxes*. This is thought to  
be effected by a peculiar sort of *Dung*, used for that purpose, and  
wrought deep into the Ground.

 Q. *Why should not the Experiment of some such thing be made  
about London, whose Latitude is but so little more North-ward than  
that of Paris?*

### *Inquiries for Greenland.*

To discharge our Promise made in the last Transactions, we shall  
subjoyn the following Queries, which we also purpose to recom-  
mend in due season, to some of those English Masters of Ships  
and other fit persons that shall sail into Greenland for the Whale-  
fishing : Intreating withal, as many as have conveniency, to assist us  
in these recommendations.

#### *The Inquiries are*

1. **W**Hat, and how much is the heat of the Sun *there* in  
the midst of the Summer, compar'd with the heat  
of it in *England* : to be observed with a seal'd Thermometer.

2. What is the most constant weather there in Summer, whether  
Clear, Cloudy, Rainy, Foggy ? &c.

3. What weather is most usual at such and such times of the  
year ?

4. What constancy or unconstancy there is of the *Wind* to  
this or that quarter of the *Horizon*, or to this or that part of the year ?

5. What the Temperature of each particular Wind is observ'd  
to be ? And particularly, whether the *North-wind* be the coldest ?  
If not, what wind is ? whether is the colder, the *East* or *West*, &c.

6. What wind is observed to bring most Ice, and what to make  
a clear water at Sea ?

7. What *Currents* there are ? How fast, and which way they  
set ? Whether those Currents are not stronger at one time of  
the *Moon* than at another ? Whether they always run *one way* ?

8. What is Observable about the *Tydes*, Spring or Neap ?

How

How high the *High-water* mark is above the *Low-water*? Which way it floweth? which way it ebbeth? what time of the Moon the *Spring-tides* fall out?

9. Whether the Ice that floats in the Sea be of Salt-water or Fresh?

10. What *Rivers* there are in the Summer, and what fresh water can be had?

11. What Fowl are found to live there, and what Beasts? How they are thought to subsist in Winter? How they breed and feed their young?

12. What *Vegetables* grow there, and whether they yield any Flowers or Fruits, &c.?

13. Whether there have been any *Thunder* or *Lightning* observed in those parts?

14. How deep the Cold penetrates into the Earth? whether there be any Wells, Pitts or Mines so deep, that the Cold does not touch the bottom thereof?

15. How the Land trends? and whither the Parts under or near the *Pole* be by those, that have gone furthest that way, thought to be *Sea* or *Land*? How near any hath been known to approach the *Pole*, & whether the Cold increaseth with the increase of *Latitude*?

16. To make, if possible, some Experiments and Observations about the *Magnet* or *Needle*; and particularly, How much the *Declination* is there? and whether they doe exactly observe the Degrees of *Declination* in their course? Likewise to make Observations about the *Height* of the *Sun* and other Celestial Bodies, and their *Diameter*, *Refractions*? &c.

17. What is their opinion concerning the *North-East* passage?

18. What Fish do most frequent those Seas, besides *Whales*? Anything observable in their Fishing; as the Usual or Unusual bigness, strength, and the several sorts of *Whales*; and particularly to observe whether that kind of *Whales* they call *Trompa*, have in their Heads the *Sperma Ceti*, and in their Entrails the *Ambergreese*, looking like *Cows-dung*, as was alledged out of *Purchas* in Numb 28. pag 538?

19. To give in an exact Relation of the *Whale-fishing*, throwing the Harpoons, following the Fish, &c.

20. To describe the whole manner of making the *Oyl* of *Whales*.

*An Account of the*

## SYNOPSIS NOVÆ PHILOSOPHIÆ & MEDICINÆ *Francisci Travagini Medici Veneti.*

SOME months since there were two *Letters* sent hither from *Venice*, from Signior *Francisco Travagino*, giving notice of a Treatise of his, ready for the Press, under the Title of *NOVA PHILOSOPHIA & MEDICA*

**MEDICINA.** Those Letters came accompanied with a *Synopsis* in Print, giving a brief Account of the Contents of the said Treatise, to this effect, *viz:*

That this *Author* hath compos'd a *System* of Natural Philosophy by Observations and Experiments, accomodated to the benefit of Humane Life, and subservient to *Physick* and other *subalternate* Arts; which *Philosophy* he pretends to have rais'd on *Principles*, that are certain Bodies drawn out of *Mixts*; which, though in themselves invisible and incoagulable, yet become, according to him, visible by their Contrariety and mutual Operation upon one another, and so do constitute the Temperaments of Concretes, and cause not only their Dissolution, but also their Redintegration.

These *Principles* he undertakes to prove to be *Two Salts*, call'd by him *Acidum* and *Salsum*; which, as they work more or less on one another, when blended, so they lose more or less of their Volatility, and the degrees of their contrariety: And from their various Complication (in which he places the whole business and moment of *Philosophy*) he holds, that that great Multiplicity of Concretes, which is in the *Universe*, does result.

In *Particular* he deduceth from the said *Principles* the cause of *Ferments* and their Variety, the nature of *Generations*, *Concretions*, *Putrefactions*, *Precipitations*, &c. and sheweth, how those *Principles* run through all *Minerals*, *Vegetables* and *Animals*, by their manifold combinations, and various wayes of acting on one another.

He explains also the Mixtures of *Alkaly's*, *Vitriols*, *Armoniaks*, *Sulphurs*, *Mercuries*, and explicateth the Properties of *Dissolvents*, as also *Tastes*, *O-dors*, *Colors*, &c. all from the same principles.

And having rais'd this Structure of his, as far as he judgeth it sufficient for *Subordinate* Arts, he proceeds to adapt it to the Art of *Physick*. And applying it to *Animal* Bodies, he thence draws the Diversity of Humors and Tempers, the Beginning and Duration of Vital Heat, the Motion of the Limbs, the Faculties of Entrals, the Origin, Vitality and Properties of the Blood, and the various Fermentations therein; shewing the Distempers of the Ferments and Juyces in Animals, the nature of Congulations, Dissolutions, Feavers and other Symptoms; as also the Original of Poysons in Animal Bodies; concluding with an Indication of the proper remedies (as he conceives) of many Diseases.

*Whether this Philosophy be New, is easie to Judge.*

*A Note to be inserted above, pag. 544. after lin. 12.*

**T**His Rest (by Mr. *Hook's* suggestion) may be rend'ed more convenient, if, instead of placing the Screw *Horizontal*, it be so contriv'd, that it may be laid *parallel* to the *Equinoctial*, or to the *Diurnal* motion of the Earth. For by that means the same thing may be perform'd by the single motion of *one* Screw, which in the other way cannot be done, but by the turning of *both* Screws: As will easily appear to those that shal consider it.

In the *S A V O Y*:

Printed by *T. N.* for *John Martyn*, Printer to the *Royal Society*, and are to be sold at the *Bell* a little without *Temple-bar*. 1667.

Boyle 87A

