

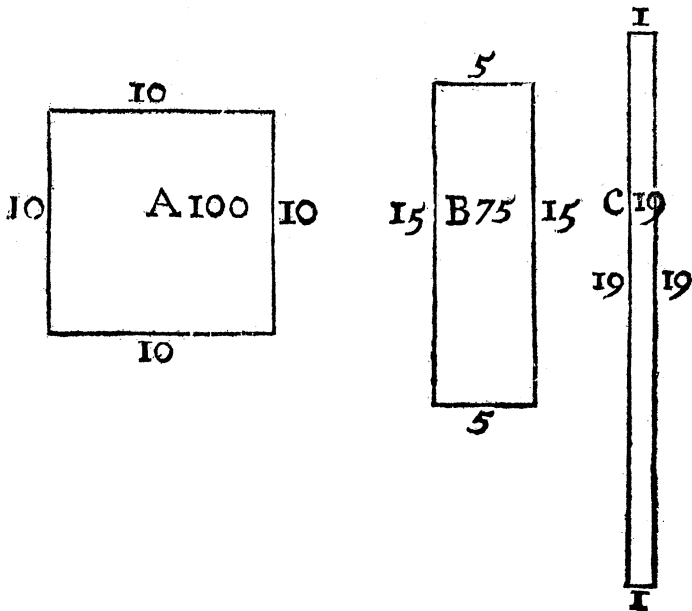
VI. *An Account of Books.* 1. *Jac. Gaveti Academ. Monspel. Alumni Avenionensis Doct. Medici. & apud Camberienfes Practici Nova Febris Idea ceu Conjectura Physicæ circa Febris Naturam. Geneva 1700. in 80.*

THere is no Disease more frequent than Fevers, and yet there is none whose nature is more dark and mysterious.

The Ancients declare all Fevers to be an unnatural heat first kindled in the Heart, and thence imparted by the Veins and Arteries to every part of the Body. Most of the celebrated Modern Writers speak of nothing but a Fermentation or Effervescence of the Blood. But these accounts are insufficient, since nothing more is assign'd than an Accident or General Cause, notwithstanding the several species of this Disease do so much differ in their nature and appearances. The peculiar and inseparable of Fevers is an unusual quickness of Pulse, as M. Gavet after Sennertus, Sylvius, Etmuller does believe. The true and Natural Cause of this will appear after some previous reflections on the Circular Motion of the Heart and Arteries, and the manners of Secretion and other Animal Operations.

Not to repeat what is commonly known, concerning the Muscular structure of the Heart, and the Artifice of its Fibres, Valves, Tendons, &c. M. Gavet, contrary to the opinion of former Writers, thinks the true *Diastole*, or Dilatation of the Heart happens at the time of its *Decartation*, or when its *Apex* is drawn up to its Basis, and its *Systole* or Contraction is during its Elongation. If two Parallelograms have equal Perimeters or Circumferences, as suppose 40 inches for instance, that whose sides, or length and breadth are equal, contains the greatest *Area*, and that whose length and breadth differ most,

most, the least. This is plain, if we consider the 3 Figures A, B, C.



Let the sum of the sides be 40 inches or parts, and the length and breadth of the first, or A be in both 10 of B or the second 15 and 5, of C 19 and 1. A shall contain an Area of 100 inches, B of 75, and C but of 19. And therefore our Author thinks it cannot be denied, the Heart contains the greatest quantity of Blood when it is abbreviated, since it does not then approach nearer to a square, but a Spherical Figure, which by the consent of all Geometers is the most capacious.

As for the Percussion of the Breast, he thinks this is in the *Diastole*.

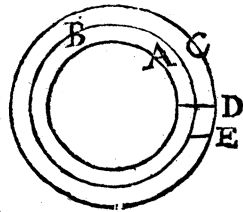
M. *Gavet* considers next the Fermentation, the Constituent Parts of the Blood, the Process of Generation, the several Modes of Secretion. He thinks it most probable, that the Constituent parts of all the Animal Liquors, as Blood, Chyle, Choler, are formally existent in the Aliment,

ment, since they are all prepared out of the Chyle into which the Food is resolved by the Action of the Stomach. He judges this will not be denied by those who believe the five Chymical Principles to be Ingredients in the composition of all Natural Bodies, because they are resolved into them by the operation of the Fire. Another invincible Reason, in our Authors opinion, are the Particles of Bile blended and mixed with the mass of Blood, and convey'd to all parts of the Body by the same Canals with that Crimson Liquor, tho it does not appear to our senses till the *Acini* or Glands of the Liver are obstructed, for then being unable to pass off, it regurgitates, and infects the Blood, and all the Animal Juices, and may be discerned by its Taste and Colour. This is the case of the Urine, Sweat, &c. whose respective Colatories do not produce, but merely percolate them from the Blood, of whose promiscuous mixture its mass is formed. Nor can the difference of Colours, as Red, Golden, Transparent, be an objection, since the least Change or New Disposition of its superficial parts, is sufficient to give a new modification of the sight, and create a different effect.

Having thus laid down his Principles, *M. Gavet* in his second part applies these to investigate the nature of Fevers and the Accidents which attend them. There are some dangerous and fatal Diseases, which for want of due consideration are called Inward and Malignant Fevers. Here the mass of Blood is at once corrupted, and its Constitution ruined, and yet there is no observable quickness of the Pulse. For this reason, wanting the Character and Mark, our Author excludes them the Genus of Fevers, into whose Nature and Causes he proceeds to enquire.

When the Animal Liquors begin to ferment and swell, they cause a distension of the Vessels in which they are contained; and hence follows the necessity of a frequent Pulse: for the Animal Spirits being unable to contract the Arteries, and streighten their Channels, by reason of
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the resistance of the contained fluid, there is less time required for their restitution by their Elastick force. For instance, if the Circle A be the Cavity of the Arterial Cylinder in its Natural *Systole*, and the Circle C the Cavity in its greatest *Diastole*, and D the space the Coats of the Artery pass thro in their alternate motion. If again B be the Cavity of the Artery, when it is distended by the Intumescence of the Arterial Blood, and E be the Distance which the Coats of the Artery pass thro, is it not plain they shall describe the Line E twice in the same time they do the other once, and consequently there be two Pulsations instead of one. Hence he thinks he may conclude against all who deny the Organs to have any concern in this affair, That a Fever is an Unnatural and Violent Tension of the Blood Vessels, which causes a quick motion in the Heart and Arteries, and disorders all the Animal Functions.



Now, since the Intumescence or swelling of the Blood is occasioned by too Plentiful Nutrition, the Suppression of some Evacuation, or the Mixture of some Impure Matter, which excites a Fermentation, and one of these must be the immediate cause of all Fevers whatever, consequently laying aside the ancient description of Fevers into Ephemeral, Putrid and Hectick, they are more rightly divided into Sanguinary and Humoral. The first are such as arise from an excessive quantity of Blood, or some unusual Fermentation of it. The latter are such as proceed from some Impurities, or some Heterogeneous Mixture, exciting a violent Effervescence in the Vital Liquor.

Having thus explained the Nature of a Fever, its Causes and Kinds, it remains to compare the Symptoms and Method of Cure, which M. *Gavet* thinks admirably conduce to illustrate and confirm the Truth of his System.

2. *D. Dominici Sanguineti Appuli Dissertationes
Iatrophysicæ Neapoli 1699*

THe Theory of Medicine has been strangely alter'd in the present Age, that it appears at first view a New Science. The Jargon of Hot, Cold, Moist, Dry, is become obsolete ; instead of these, all the talk now is of Acid and Alkali ; and from these Famous Principles the Modern Writers derive all Effects of Natural Bodies. But let these men take heed that they do not deceive themselves with Empty and Insignificant Names ; as for our Author, he is perswaded these Chymical Notions are Precarious, and no less unsatisfactory than the exploded Fictions of First Qualities, Mixture, Temperament, &c.

Tho the Terms of Acid and Alkali may seem new, yet the Notions, or at least something not very unlike them, are to be met with in several Writers in different Ages. *Hippocrates*, *Galen* and others, ascribe the Origin of many Diseases to unnatural, sower and corrosive Juices in the Body, &c. But to come nearer to our purpose. *Hippocrates* in his Book *de Dieta* has this passage, *But Man, as all other Animals, is formed and consists of two Principles of a contrary Nature, which yet agree and concur in their effect, Fire and Water. These in Conjunction are sufficient to give Being to all Things, tho neither is alone.* These words *Tachenius* adapts to, and interprets of his Acid and Alkali, which he thinks sufficient to account for the production of all Bodies, and the Appearances observable in them.

To illustrate this Resemblance in a more particular manner: *Plato* in his *Timæus* describes the Particles of Fire as Pyramidal, and Reasoning of its Effects, says that by the Sharpness of its Angles, the Subtilty of its Sides, the Minute-

nteness of their Parts, and Rapidity of Motion, they penetrate all Bodies break thro their Contexture, and destroy them. Agreeable to this Idea is the Description of *Tasso*,

*Genera du figure in varii aspetti
Di Piramidi acute il sottel fuoco.*

How little does this differ from the Account given by the Moderns of Insensible Parts of their Acid, who unanimously affirm them to be exceeding minute, sharp and pointed. Again, as Water, after the Theory of *Hippocrates*, is a Passive Principle, which serves to take off the Edge of the Fire, and make a Temperate Body in Combination with it ; so Alkali is represented as a Porous Matter, fit to receive and sheath the sharp Points of an Acid, and concur with them in forming a *Compositum*, which does not sensibly partake of the Extreme Qualities of either.

But setting this aside, whither Ancient or New, or any other use made of these Principles, *S. Sanguineti* considers them no farther than as they concern Animal Bodies. *Helmont* thinks no Acid can be lodg'd naturally in any part of the Body except the Stomach, and there it is necessary, and the chief Efficient in Digestion, and the Alteration which the Aliment receives ; but if it shall extend farther it becomes unnatural, infects the Sweet and Balsamick Juices, and is the Cause of most Diseases incident to Animal Bodies.

Whether Digestion and Chylification be effected by the help of an Acid in the Stomach may be very much questioned. The Ancients ascribe this to their *Calidum innatum* : *Sylvius* to a Mixture of the *Saliva* and the Remains of the former Meat, assisted by a Warmth convey'd from the Arteries of that and the neighbouring parts. But *S. Sanguineti* thinks none of these so proper as a certain Saline
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Armoniacal Liquor, separated by the inner and Glandulous Coat. But to return to the subject; the Notion of Acidity has so far prevailed, that all Diseases, as well Acute as Chronical, Fevers, Cachexies, Dropsies, Green-sickness, Suppression of the *Menstrua*, Venereal Maladies, Rheumatisms, Colicks, Pleurifies, Apoplexies, Epilepsies, and what not, are all derived from this Universal Source.

This Opinion is too hastily advanced, and without due consideration. To give one instance, instead of many more, of its Deficiency; it may sometimes happen that Diseases may arise from the Quantity or Quality of our Edibles, which may be so close and solid, that the Acid cannot penetrate or reduce them, or may be devoured so largely by Gluttons and Great Eaters as to overpower and oppress it.

After many other Reasons, which our Author alledges against the vulgar Hypothesis of Acid and Alkali, he enters into a Disquisition concerning Fermentation in Animals, and whether such an Intestine Motion be consistent with the Circulation of the Blood, and whether the latter alone be not sufficient for the preparation and secretion of all the Animal Liquors, without the former.

Tho' the Blood be a Dissimular Fluid, and consequently must have a great Aptitude to ferment when it stagnates, yet the Rapidity of its Circular Course must prevent this, so long as it continues in the Vessels of Living Creatures. The Spirits which flow from the Brain by the Nerves cause a quick Contraction of the Spiral Fibres of the Heart, and project the Blood with great Swiftnes and Impetuosity thro' the Arterial Canals to all Parts of the Body, so as to overcome the Resistance of the Fluid, and therefore all the Liquors in the Vessels must receive an Impulse and Direction from it, and can have no Motion of their own contrary to it.

As for the Chylification, and the Conversion again of Chyle into Blood, for which some suppose Fermentation

to be a necessary Instrument, it should then be the work of some days, and perhaps months, according to the Steps by which Vegetable Juices are brought to Perfection and Maturity; whereas, on the contrary, this work is compleated in a few hours, and the Aliment turn'd into Chyle, Blood, Spirits. It is more reasonable to ascribe this Change to the constant Impulse the Fluids do receive; nor can it seem strange, if we consider that the Heart beats four thousand times every hour, and the Component Parts of the Blood are so often shaken and beaten together, which is more than sufficient to excite any Motion, without calling Fermentation to its Aid.

S. Sanguineti does not think it beside his purpose, to enquire into the Nature of Fermentation in general, and in inanimate Things in particular. Tho' the Juices of Vegetables have beyond all controversie an Ebullition and Fermentative Motion, yet it may be doubted whither this proceed from any Acid or Alkali, or other Intestine Principles. *Borelli* ascribes it to the Gravity of the Air, and this seems to have a good Ground and Foundation. It must be put into a proper Vessel, closely stopt, and put under Water it will keep for a year: For by the Chillness of the Water, and the hindring the Ingress of New Air, that which before lay concealed in its Pores loses its Elasticity, and cannot excite a Commotion. In like manner, Fruits, Flowers, Flesh and Fish, are preserved without Decay for a considerable time; which Experiments, with many more to the same purpose, made and published by the late Honourable Mr *Boyle*, are too vulgarly known to be insisted on here. From all which it is undeniably plain, the Insensible Parts of all Bodies are agitated by the Air.

Besides, if Fermentation does only arise from the Heterogeneity of Mixt Bodies, he inquires why shall after percolation, stir very little, or not at all? Why Wines diligently kept from the Air shall last so long: Why Oyl, which is

a Vegetable Juice, shall either not ferment at all, or in such a manner as is scarce perceivable.

In his last Dissertation *S. Sanguineti* resumes the Matter of Chylification. He thinks the Stomach has most of its Ferment discharg'd into it when its Membranes are distended by the Food contained in them, because the numerous small Arteries suffer most Compression at that time, and the Circulation of the Blood thro them is most retarded ; and since the whole Mass, according to the Laws of Circulation, must in a little time pass thro the Stomach, there is no wonder Concoction should be so soon finished.

It seems plain, the Aliment contained in the Stomach is attenuated by the Mixture of Ferments, and the Motion of its Membranes, and by the Contraction and Pressure of its Fibres is protruded forwards, and when the Chylous Juice is perfected by the Weight of the Stomach and Superiour Viscera, and by the Force of the Liver, conspiring with the Alternate Motion and Compression of the Diaphragm, it is as it were by a Press squeezed into the Guts.

Before he concludes, our Author returns to his first Head, and declares Acid and Alkali do not deserve the Name of Principles, since they arise from the Dissolution or Conjunction of Bodies, and therefore are no more Elementary or Simple, than the other Chymical Principles, as Mr *Boyle* has largely prov'd in his *Sceptical Chymist*.
