

35 Animal Mists, or the Vegetable matters of which they are formed; but this is one of the great Myster-  
ies of Nature, for a small quantity of Matter to assimilate a much larger into its own Nature.  
We know a great many Fermentations, & even the different fermentations known, are not near all the variety of Nature. Till the Doctrine of this is better understood, their productions in Animal fluids must be unknown; If secretion is strictly a separation of Matters by a sieve we must not consider it in this light, for there is some thing else in the Organ itself that gives a peculiar Nature to the fluid passing thro' it, & we must know this before we can say what secretion is.

Against the Hydraulic —  
Mathematicians give the greatest certainty of all Sciences; but after 100 Years trial we see its Application by no means so certain as we expected, & false-  
hood has arisen from using it in Reasoning; particu-  
larly in the Animal System; & even the Mathem-  
aticians are still disputing about what are their

Principles with regard to the Animal Economy.  
So Bonelli &c. in calculating the Power of the Heart have differed in their Principles from a few owners to several hundred Pounds; thus Dr. Robt. Morgagni, Selvius, & Senac are opposite in their Principles; & for eighty years past the Doctrine of Revulsion & Derivation has been un-  
decided by the Mathematicians; & even supposing the Principles ascertained, the Data are difficult to be acquired; we are not agreed about the largeness of the Capacity of the Heart, the Proportion of the Trunks & Branches of Vessels, nor their Action; Anatomy hardly in one instance gives the Proportioning Parts, & tho' it gives the grosser Parts accurately yet not the more subtle. It is probable that our Ignorance in Secretion is owing to a defect in Anatomy. Otherwise we know nothing about Motion from our not knowing any thing of the Structure of an ultimate Fibre. We have made very beautiful Theorems, we have got general propositions depending upon a force & size not ascertained. But that Propo-  
sition does not continue for two moments the same.

36 Two or three years ago by a mathematical calculation they tried what quantity in blood-letting ought to have been let; but every Physician must be determined by the Strength & frequency of the Pulse.

### Arguments against the Animatus.

First objection against it is *Stal's* view with regard to the question whether we have a rational soul governing the Motions of the Body, or whether it be an arbitrary one? we shall afterwards show this question not to be of much consequence.

*Dr. Willis* in England enters into the Doctrine in his *Animæ Medica*; *Gaubius* has so great difficulty in ballancing the *Stahlian* Doctrine that you would be at a loss to say whether he is *Stalez* or not. If the Soul acts arbitrarily we must give up all reasoning concerning its Operations on the Body, but we must admit of a sentient Principle. Yet it may be alledged that if this Doctrine be a fact we may proceed by steps to more general ones & consequently form a Theory. But with regard to the sentient Principle every man not only differs from every other but even

from himself at different times, & the *Sentient 37 Principle* gives, under different circumstances a very different series of Causes & Effects; here *Anatomy* has failed us in teaching, nothing of the Nerves either in their Origin or Termination. The different structure & Arrangement of the Brain must give a difference, which, however we know nothing of. So in the Extremities of Nerves tho' we see Organs of different Senses yet we must suppose a different afflux of origin. We cannot say how the Optic Nerve is disposed to receive the Impression of light; & we are also especially ignorant of the means of Communication among the Nerves. We imagine it to be the motion of a Fluid from the common Origin of the Nerves along the different Ramifications, but whether it be a fluid, or what it is, we know not. *Gaubius* determines nothing, but says, "*Dis Docet*" Therefore the Dogmatic Plan must be fundamentally wrong, & occasion not only present Difficulties but such as are likely to remain as being in their Nature beyond Human Knowledge. The Functions of the Animal Economy every where run in a Circle; thus the

38 Motion of the Nerves influences the Circulation, & that the former; likewise in the change of the Aliment there is a Modification of all the Circumstances <sup>of Circulation</sup> from the present state of the Solid parts which will be different according as they are differently affected. There is not one Function in which the Study of Chemistry, Hydraulics, & the Nerves don't take place altogether.

Lect. 10<sup>th</sup> Nov. 20<sup>th</sup>

I said that the Functions are mutually the Cause & Effect of each other. Of Vital, Natural, & Animal the Vital are more especially necessary to life, but if we cease to take in Aliment, or the noxe attending this & other natural functions be not guarded against, the Vital very soon languish; If we are not moving the Body, receiving good Air &c: neither the Vital or Natural can long continue; & therefore they also go on in a Circle. Watch Dogs, therefore must get out of this verbugenous sound as soon as possible. I must add the Galaxy of Human Reason, & the particular Fallacies arising from the difficulties mentioned, & if besides all these you observe that they are common

ed to weak Men, you will see Error unavoidable, 39 Speculations are beautifully ingenious often & may be admitted into the schools, or for the amusement of the Leisure, but not in the important Affairs of Life. System is necessary, I think, in all teaching, that is to say the Memory can not take hold of a thing without arrangement, but no System is, at present, & perhaps never will be perfect & therefore the Regious of Systems is compatible with Human knowledge. But Dogmatism leads to System & the more particular a System seems to comprehend, the more fallacious. Galen is blamed for being hurtful to Physic, but Boerhaave would have done the same thing had he been in the same Circumstances. Another effect of Dogmatism is that it leads to Doubting, & the more a man reasons the more will he doubt. Gentlemen in the Practice of Physic are very often disturbed with imaginary Indispositions which they would be very free of if they had less speculative Knowledge. Hence the most Systematick have been the most timid in Practice; in short it has been objected against Dogmatists, that they are seldom anxious about the cure of their Patients provided they



do treat them secundum Artem.

We must see next what is to be put in the Place of Dogmatism; the only other Alternative, the Empyric Plan; I shall therefore point out the Palace of it; & shew that it would be a bad exchange for Dogmatism; I might point out the general Arguments of Scepticism, w<sup>th</sup> as they affect Dogmatism so I might say they affect Empyricism too. The Senses are to be trusted but they are not infallible, yet admitting that they are to be trusted they give a gross or general Idea but not in weight & measure. Our judgement of length and breadth would go but a little way without artificial Measures; there is scarce one man in Europe to be trusted in drawing a Scale, so rare a qualification is accuracy among Mortals. These Foundations of Empyricism, as well as Sense & Experience might be urg'd against the Empyric, through all their three Divisions, Observation History & Analogy. The two first are the principal part of Empyricism Analogy borders on Dogmatism. —

Such Abstraction as Analogy requires is more or less fault from the great Diversity of Circumstances to be attended to in each hereditary Taint — every known remarkable accident in the course of life — the general Tenure of the manner of life — the Patient's late exposure — & the immediately exciting Cause: & then the present circumstances of the Patient's Body & Mind. They are applied to the Qualities visible & the Actions Loss, under which, vast variety is comprehended. And we must also attend to external Circumstances, as the Heavenly Bodies & ~~external~~ the state of the Air. Then we must attend to the Course of Symptoms, & series of Phenomena not only by the Day but by the Hour; a host of this is an attention to the Longest & Shortest, in which the Efficiency of Hours makes an Odds; lastly an attention to the final Event is requisite, if in Health, to the Degree of it, whether it is more or less perfect; if in Death, we must enquire into the Seat, the Cause & Effect of the Disease. Now how many of the preceding Circumstances have either been considered by the Patient nor others, how seldom are

Let our masters of the remote Cause; again how many  
circumstances do we overlook, & how many are not  
to be observed at all, & what is passing in the Mind  
into mind & various feelings; how often are we  
ignorant of the Insipida, tricked by the Nervus, &  
with regard to the Event how many things are there  
not attended to. It may be answered that such  
minute Observation is not necessary. They are dis-  
tinguished into the communica, Propria, & Acciden-  
talia; the first not always necessary to be attended  
to much seldomer the last. But what are acciden-  
tal what essential scarce any mortal can tell,  
& therefore dangerous mistakes may arise from this Cause.  
This is true as the Art advances it will relieve  
us more & more in this Distinction. Perhaps in  
this way we may go to the length of establishing the  
genera of Diseases or settling Orders; but I am afraid  
the species & Varieties will elude us. How unsettled  
are the Pathognomonic signs, while the remote Causes  
are not attended to, & since Accidents must alter the  
Nature of the Case. Therefore there will be scarce  
room for strict observation, & to deny that is deserting  
to Analogy. In Hospitals we can make these Ob-

servations best but with more pains than mostly is  
practised. The Measure of Heat & Cold <sup>by Thermom.</sup> has promised  
to be a very important discovery, & tho' we have been  
100 Years in Possession of them not one good Obser-  
vation has been made; even De Haen's are much  
disputed. Dr. Brown Langrish examined the Arteries  
but scarce one of his Experiments will apply. Our  
Clock watch numbers the Pulse; they talk of softness  
& hardness, but scarce any two agree in their senses  
there.

Lech: 11<sup>th</sup> Nov: 21<sup>st</sup>

Having spoke of Observation I am now to say some-  
thing of History; & first all the Difficulties, oversight,  
Inaccuracies & Fallacies, of observation must enter into  
to History; there is a great Difference between  
Reading of, & seeing Diseases; it depends on this,  
that many Symptoms very easily distinguished, are  
not to be described; but suppose we had words that  
easily communicated one mans Idea to another  
yet the Measure & Dose can not be expressed in  
Words; too very difficult for any man to give his  
own feelings exactly, but much less will he be able  
to perceive those of the Patient. Much is got by

its observing the words, Gestures, & Motions of the Patient that will be lost in Description; History then has all the Inconvenience of Observation & this more, that it does not communicate all that can be learned by Observation; & it is rendered still more inconvenient from Languages, particularly those of different Countries & Ages. Another considerable defect of Observation I have reserved to this Place that is the great Fallacy of it from Assurance or prejudice. Not to see in bright light or not to hear distinct sounds is odd indeed, but not more so than the Impudence of too many. We drop what is not former Purpose & add from our own heads what will set the work off in better Colours. This has been a great objection to the Dogmatists, but it does not affect them alone; for the Prejudices of Analogy equally affect the Empyric. We should not doubt of having many Remedies in every Disease yet when we come to examine the matter we find often we have not ones; and the fallacia causa pro causa common to both Empyric & Dogmatists; But we are absolutely liable to detect Fraud & Imposture, of the Patients.

A German Author relates, upon the Testimony of his

Patient, that after a certain Emetic he threw up 45 Whelps; & with us, a Man Midwife is said to have delivered a Woman of a Number of Rabbits; The Patient always, in his complaints, augments his symptoms, & conceals such causes as men owing to his own trashiness; accordingly Galen has long ago wrote a Treatise to discover counterfeiting Patients. In Philopon how frequent are Impostures When Profit or Reputation lead that way we find men have not scrupled to tell gross falsehoods; add to this the fallacies from supporting or opposing a particular Opinion, as well as the Vanity of writing a Book to get a Character. There is also a fraud of which a Man is but half conscious, that is, supplying many things in his Clauset which he did not observe at the Patients bedside. L'Esprit Observateur d'A. Grand. Menteur is a very true & very common Observation in France. History involves all these disadvantages extremely inconvenient. We have all been disappointed in History; & in 30 Years Practice I can hardly say that I have three times met with the same Case I wanted. In the actual State of History, & qualities of the Observations, if



46 you examine 500 of Rieves & 1000 of Torulus you will easily see that one 1/4 of them will not apply in the Practice. They either don't let you know the Cure was performed, or they say it was effected by Remedies, that are known to be inert or inactive. Nothing is so obvious as the Impotency of Empiricism in its own proper Business, to wit determining questions of Fact, For 100 years Appeals have been made to Fact on both sides, & disputed by each other, or reconciled by fending both Sides.

The Questions concerning Peruvian Bark must be decided by observation alone, with regard to the safety of the Remedy, the time of the exhibition, & its different Effects on different Constitutions; but all these Points are yet undetermined. British Physicians most positively maintain that the Bark cures Mastication, I believe they are right but Astruc denies it. With regard to Corrosive sublimate the Domburg & German Physicians are at Wars, & the same Vienna Physicians & almost all Europe differ about the Vicaria. The Allercations of Leysmatists are almost entirely hight off the Stage

but we are almost equally engaged in disputing 47 facts. With regard to a number of Remedies that have come in Vogue at different times, much might be said; In my time, Duck Saliva, soap, Tar Water, Water Remedies, & James's Cordent, have all been given to the Publick with high Recommendations. It is easy to shew the general Falacy but with regard to the particular we find that nobody can much rely upon them. Therefore from the whole of what has been said, I would infer that Empiricism, as consisting of Observation & History is quite lame & insufficient. The Empirical certainly is presumptuous, viz. that we shall find in the Histories of Physic a case such as the one before us & a Remedy adapted to it; The Empyres have not had the benefit of this, nor been able to keep themselves to it, except some such bold enterprizers as Dr. Ward who when called to a Patient who told him his symptoms Cough, cough, cough, I know nothing about your symptoms, don't tell me of them, there is a Remedy that will cure you. I shall now proceed to take the third part of the Empyric Plan, Analogy.

48 Sydenham has every where imitated.

The Empyrics have always been attached to Medicines of sensible Operations; so far right they are certainly the most efficacious, & the honest Attachment to Poisons is I imagine well founded, & if a man will venture to blunder on he must make some Cures, a very few of which will establish his Reputation. Failures are easily Excused; the Violence of the Symptoms is blamed & the Practitioner as well as the Publick is imposed on. Hence Empyrics have left Observation & taken this way of it. I shew the Ancients did very little in the way of History; & the Chemists who are properly the Modern Empyrics have done much less. The Empyrics have not neglected bloodletting Diet, & Regimen, & the Dogmatists have been led to study these; both have had their Bias that has proved hurtfull. The hardy common People, the Vulgar, favour Empyricall Remedies. while the luxurious great will require Hippocratic Remedies. Which if you attend to the Cause rather makes for the Dogmatists. The Method of the Empyricist is rash &

they can not own Doctors that they kill seven-tye men Arteries, or leave men to die with out hastening their Fate. I shall either trust to Nature, or consult a man who has studied, & who's Delicacy & Education will never allow him to hurt me if he can not do me service, must be the language of every man of sense

Lect: 12<sup>th</sup>. Nov: 25<sup>th</sup>

I suppose you will not rest in either of the contradictory Conclusions which I have drawn from Empyricism & Dogmatism. At Analogy which remains to be spoke of, our Representations must stand. Celsus tells us in an unknown Disease, that a Patient was allotted to die without a Cure being attempted which might have been made out, had Analogy which he call Similitude been tried. I have frequently met with Pleurisy, & found V. S. to be a usefull Remedy in it; If I should meet with a Splenitis attended with fever, & hard Pulse &c. I have not found that exact concurrence of Symptoms before but I have recourse to V. S. as the Disease is similar. If I should meet with a third Disease in which there was an acute Pain causing Cough, but no fever, If I should in this case apply Analogy I would do hurt



30 & therefore I find caution necessary in the use of  
this Analogy. I find then it was the sharp Pulse &  
thirst that constituted the Comparison, & made the  
Resemblance, which likewise warranted the Pre-  
scription in the Cure. But further to give another  
Example I met with another Pain in the Pit of  
the Stomach & fever with it; & if from Dissection  
I find the same Internal Inflammation, & from the  
Appearance of the Blood find the same fundamen-  
tal similitude I get a much more general  
Analogy & am led pretty fairly to conclude that  
O. S. is usefull in all Inflammations; hence I  
conclude that the System of the Antient Em-  
pyrics was imperfect in not generalizing of Facts, &  
so extending their Analogy. From Celsus & Galen  
we find they had not this & had only recourse to  
Analogy on particular Occasions when their Expe-  
rience failed them. Of the Empyric Plan, Aste-  
zy is the only usefull part; hence Sydenham is  
the only considerable practitioner in this way.  
If Sydenham had not adopted many general facts  
from Hippocrates, he could not have gone so far  
as he has done. This fact "that Nature cures dis-

eases" has given the whole Train of Sydenham's  
Observations, therefore there is no doubt but that  
Sydenham would have added many facts more than  
if he had lived till now. By persisting in this Me-  
thod we may hope to arrive at last at a Plan super-  
seding all particular imitation, & which is the Right  
of Dogmatism. U. S. in all Inflammatory Dis-  
eases is usefull, but a Gastritis is an Inflammatory  
Disease & do we conclude Vomition is necessary  
in it? or that Analogy proceeds upon Slogism?  
To this I answer that Logic has been employed  
in explaining it & giving Rules for the conduct  
of it. It is very much neglected, not that it does  
not explain every process in our Reasoning, but  
from the Abuse of it in false Reasoning.  
The Error is this that in all reasoning one of  
the Premises is always an universal Proposition,  
Hence arises the Foundation of all Error in  
reasoning this way. We correct this Universality by  
Induction; accordingly all human Reason resolves  
into Experience & Induction from it, whether it  
regards the Practice or Theory, & all that is

52 reduced into Cause & Effect; that is to say, we  
only know that certain facts have a Contiguity in  
Point of time; the former we call Cause, the latter  
Effect. Spinoza has the same foundation as Empi-  
ricism, which is the attaining facts general.—  
Under a Bias to Dogmatism the excess is Hypo-  
thesis, & in that case we fancy facts, or form upon  
too short an Induction of them. This is the Error  
of Dogmatism, but it is an abuse of the human  
Faculty. Again, in Empiricism the Error may  
be transferring to simple Analogy & neglecting  
to generalize it by employing Induction. The Bias  
to Dogmatism is necessary, safe & proper. Particular  
Experience is lame & contingent when not frequently  
repeated, & unless modified in this way is of very little  
use; & when so modified it is the best way of bring-  
ing out & applying particulars; & Dogmatism has  
always been cultivated in this way, foolish as many  
of its professors have been, they have so proceeded;  
so Chemists & Cartesianes have proceeded. At  
present the Italian Sect have observed more  
fact relative to the Plethoric State than any  
other; likewise the Hoffmannians have given more

53  
general facts upon their Nervous System than  
could arise from Imitative Analogy; nay Sir  
Isaac Newton & I believe, every Philosopher as-  
sumes a general fact, when confirmed by particu-  
lar Observation. Muschenbroeck & Cat the first  
a Mechanic the second a Chemical Philosopher have  
been engaged in the random way; but few men  
will be diligent in making use of such facts; for  
most must have a general Rule. We in Physic  
have obtained <sup>very few</sup> very few Pathognomonic, & now few  
as they are we have set about generalizing them  
of late; which very scheme, I hope will result upon  
a way of extending & filling up the number of  
particular facts. A larger Range is allowed us and  
we may obtain Facts from various auxiliary Arts  
So Chemistry has given a great Number of Facts  
usefull to explain the Nature of Digestion.  
The Hydraulic Machine is of some service N.B.  
being taken from it. I have said that that  
Physicians disputed for 100 years past upon Den-  
sation & Revulsion; ~~Silvius~~ has in this way ap-  
plied his Mathematics wrong; & Boerhaave has  
overthrown the Doctrine he so established it is