 bility and consent, but it is only a share. We are sensible of their emptiness and fulness. The anxiety & uneasiness that precedes the operation of a purgative is known. It is often attended with griping. As to impressions made here observe the Colon particularly; its beginning is liable to particular impressions,. The extremity of the Rectum has a particular sense that is communicated to the System, hence the uneasiness after evacuations by stool.— The same thing may be said of the evacuation by the neck of the Bladder, the different state of the genitals, their emptiness give Languor and pusilanimity, their fulness, rage, Courage & Strength. The human species are exposed to other impressions that modifie and counterbalance these. In the female sex beside these connected with the apetite there are a variety connected with the uterus; thus in pregnancy, Labour &c &c ——

—— Lect. XLIII. Jan. 16th. —

In the extremities it is that we feel torpor, debility or lassitude, as well as alacrity and Strength. We often do not distinguish in weight of the extremities, whether the weight is in our own Limbs or added to them by external Bodies. It is these impressions of the different state of Volatile motions that we chiefly impute to our extremities. It is only the case of acute pain that we refer to deeper parts; all the other we refer to the skin, as the sense of numbedness or stupor and the case of increased Sensibility. If our Body is for some time without motion, it can not be without the pressure of the whole Body, or its particular parts pressing it to the parts it rests on. A certain degree of that is not at all perceived. But it is often equal whether the pressure be greater or our skin be more sensible. Hence in many states of our Body such a continuation of rest and pressure gives a Jactigatio. Frequently the sense of lassitude concurs here, and in that case no posture can long be easy; and therefore Jactigatio arises from both. A man will feel often as if his head was ill made or a quantity of sand was in it. Under the title of the "anxietas Tibiarum" mentioned by Sauvage which we call the fitches in this country, the principal impression is the sense of heat and cold which best of all gives the distinction of internal and external impressions. It may arise from my Body without external heat, or from the fire. As if Nature had placed this sense in the Skin, as necessary with regard to external Bodies. I immagine it is only felt in the skin and not in the internal parts, unless such as are ex=

posed to external Bodies, as the glasses. I believe sense of heat exists no where else. Also sense of cold sometimes affects the Stomach, but I believe, no other internal part. In the surface of the Body there is often flushing which signifies heat or horror. Why Horror begins in the Back and from thence as a cold air brushing to the extremities, is often variously modified, sometimes like one, sometimes like many streams? It is to be enquired into whether it is not accompanied with real motion, that is whether the cutis anserina does not accompany it. There are two other impressions to be mentioned, the Pruritus and Formicales. The last is a sense of motion sometimes with heat some times with cold as if small insects crept along the skin, and hence called Formicatio; with pringlenz as we call it and what you call tingling with a sense of the pricking of a number of fine pointed needles. As to the Pruritus it affects the division I formerly made of the internal impressions giving pain or uneasiness. I did not overlook it unwittingly but left it to be considered here: I am at a loss to which to refer it: This often ambiguous, believe it the too. It often arises from the slightest uneasiness to higher degrees of pain, In some of which (as the English observe) it affords a very high gratification. When I spoke of Formicalia I should have said there is in it a sense of aura or vapours arising from some parts of the extremities & mounting upwards to the head; attending the coming on of Epilepsy, and some other states of the Body. We think it to be a nervous affection. It affords one of the strongest proofs of impressions being communicated to the organ of the nerves in a similar motion. It will be readily perceived that we have presented you some difficulties in pursuing this subject, and have failed from the difficulty of separating these internal impressions from the mental. But as the mental impressions depend upon perception, I must speak of them under it. That is to say after I have added that there are two impressions which are ambiguous, between the two of corporal and mental. They are certainly corporeal but in their causes and effects, as certainly mental. Such are the impressions occasioning visage and gesture. Now there is an image produced and perceived by my eyes which produce the like motions, passions and expressions. This is the foundation of Language, & has been explained as the entire foundation of moral sentiments

It was necessary to remark it as a very governing impression in the system. Next secondly most of the actions of a man not only belonging to emotion and passion, but those belonging to effort or struggle, produce in others an imitation, as appears in endeavoring, coughing, breathing, yawning. We have a singular instance from Donald Monro, of an Doctor used to perform every violence he saw ~~in~~ any other person. There is probably a curious Law with regard to our system, that is that all our Ideas arise originally from corporal impression, and hence the Idea remains when the cause of the perception is entirely removed. Now I take this to be a Law. That any Idea renewed has the effect of renewing the corporal state that was originally produced by the external Body. One proof of many is that tickling about the upper lip with a feather will give a convulsion; and threatning to do the same thing after will give the same feeling & the same convulsions, without your touching the lip at all. I imagine there are many other instances of this. So the sight of a nauseous medicine included in a well corked Phial, will renew the nausea which the taking it, at first occasion. There

is no other explication of imitation than that it produces corresponding motions in our Bodies. This observation has pleased the Malabrians, that the soul was present in every organ of sense. It will admit of no such application; for this does not always take place with regard to seeing & hearing. When I recall to my memory an object I saw yesterday the image is not renewed to day.

Lect. XLIV. spent in recapidulating the proceedings — — — — —

Lect. XLV. Jan. 20th.

Of Perception.

Perceptions are various according to the variety of impressions, or the organs impressed, and therefore thoughts may be innumerable. What is here under perception to be added is in some measure common to all. We can distinguish between simple & variously modified ~~impress~~ Perceptions. Under this title we shall mention all the modifications of thought, between impression & contraction and form the connection between these. This is the same with the sensus interni of Haller. Boerhaave has a section under the same title so far as it goes much

more simple and clear. I am to consider the more general impression and Contraction that I spoke upon thought. Almost the whole history of the human mind, as I have said before enters into our subject; or at least it is difficult to say what parts do not relate to it. Then I may to many seem superfluous, I shall however avoid that as much as I can & expect indulgence from my philosophers. —

There are two different series's of Phaenomina here. The first is the thought arising from the impression of an external body present; This I shall call strictly Sensation. When that object is removed there are various occasions on which such sensations are renewed without the object. I would distinguish this by the name Idea. Memory is the renewal of Ideas. Renewal more strictly in the sense of the original is imagination. We compare two things together and perceive various relations; The observation of relations is otherwise to be called Judgement, or it is reasoning. These various modifications of thought are all applicable to the most simple sensations. Sensation is attended with a reflex sense of agreeable, or disagreable, other wise pain or pleasure. From this may be again distinguished Approbation or Dislike; from these, Desire or aversion; and this renews various

modifications called volition, instincts, apprehension &c. These different operations of the mind have been distinguished by what belongs to the understanding and what to the will. It is the first that we would most readily think of under perception, and we may in general distinguish between these two; and therefore the term of Gaubius as comprehending both is wrong. I believe Gaubius did not view the matter so largely, and only thought of perception, conceiving volition as a part of his third title of contraction. I go on now to consider these series's of Phaenomina separately. I shall meet with the same difficulty to separate these, here as before on the head of impression, and will be obliged often to speak of volition. —

Sensation

I employ as of the same import as David Humes term impression; that of perception is in opposition to Idea, which last is a thought from an object not present. Now the sensations have no obvious connexion with impression, but seem to be arbitrary. So the impression of sound might as well for any thing we know or can see have given the perception of Colour, and colour might as well have given a perception of sound. But I must grant what is allowd

Immaterialists; yet I must say that all thought arises directly or indirectly from impression. A blind man can not have an Idea of colour, nor a deaf man of sound, nihil in intellectu quod non prius fuerit in sensu. Next it is presumed a law that like impressions produce like sensations, that is comprehending all that is in impression's viz: the action of bodies external and the state of the organ itself. So Boerhaave expresses it "

" eadem Idea organ"

Indeed the proposition is otherwise rendered sensible; that like causes produce like effects, and we must reject all separate laws from the soul as altering this Law. But when the cause is complicated it is the action of external Bodies concurring with our organs, which last will vary the action of the external Body. I must observe that sensation is very rare, generally the cause is obvious as in the case of Jaundice, when while appears yellow. Such is the state of the coats or humours of the eye to transmit only yellow rays. M. Buffon mentions under the Coelum occidentale when one looks first at the sun, turning to a while wall finds it to be red

an impression remaining in the organ after the Body external is removed is here the cause of this. A third cause is where different sensations arise from individually the same external action. But it is a difference in the degree of external action; & such is the state of our Bodies that that will give us to tally a different sensation; as in heat and cold where the difference lies only in the degree of heat. A combination of our organs give different degrees of sensation. If irritability or the organization suited to it be different in different cases, the sensation will be different. But irritability we cannot perceive is different from a different degree of sensation, or sensibility. This confusion may often enter into this subject, & so we must avoid it as well as we can; & we must likewise examine what are the different degrees of sensation. And first we must judge from the stronger or weaker impulse of external Bodies. This is illustrated by the case of heat or cold, either of them being given the degrees exactly correspond to the Thermometer; and the same in the general perception of light, and what is more, of colour. We take sensation of light in the order of the different degrees of refrangibility of rays, that is in the order of the oscillations. And the same thing may

be said of sound. Light is according to its concentration;
the force with which sound affects our organs is accor=
ding to the tone that is the frequency of vibrations with
which it affects them in a given time. In taste and
odour we percieve something similar. The sensati=
on is as the force of impression taken by the con=
centrations; this applies in odour taste and touch.
But in a variety of all these we cannot discern the con=
nection. It is true we can reduce pain or pleasure
to degree of force in the impulse, but we can not
say that the oscillations of a heated body give a stron=
ger impulse than those of the frozen. But we may
at least be able to view this subject in a nother light
if we can ever arrive at a theory of electrive attractions.
Next the degree of sensation depends on the organ im=
prest. First we are lead to perceive a different con=
dition according as organs are suited to be impressed
by external Bodies. A variety of these I mentioned;
so we find a peculiar sense of acrimony in the
Fauces, the sense of acrimony and every thing else
but air in the Glottis, and the sense of acrimony
in the Bronchia. These are so many organs of
sense; and how the nerves are suited to them we
know not; how the Retina vibrates with the vi=
brations of light, and the Nerves of the ear with their

of sound; but they likewise modify the degree of sen=
sation. With regard to all of these we have shown
their receiving impressions that excite sensations de=
pends upon the Brain; and perhaps the condition of
the sentient extremity contributes to the diversity
of each respective sensation. Now there is afforded a
fluid distributed to our ~~many~~ organs that may be
in more or less quantity whence the sensation will be
proportionably varied as in the Hydrophobia the
whole organs of sense acquire a different degree of sen=
sibility. Next you may view this condition as propor=
tionably belonging to the Sensorium. Whatever relates to
by belonging to the Sensorium. What soever relates to
that seems to belong here to the different conditions
of the percieving organ. As to the apparatus of organs
there are provisions for shutting out impressions. Thus
our sensations of touch are varied by the thickness
of the cuticula. There is one other modification of
our organs independant of the Brain viz: inflam=
mation; We know in several instances, an inflam=
matory state in the eye gives an exquesite sensibility
to that organ so that the light becomes an intolera=
ble pain. Our Eyelids shut out a strong degree of
light and give almost absolute darkness, but yet
the direct rays of the sun will affect them. And I
have seen even Cloaths laid above the eyelids were

not sufficient to prevent the impression of light and its effects, and upon the least opening of the curtains, window shutters &c which were kept constantly closed the N.t would perceive the impression. Probably in this case the the dilatation of the blood vessels touching the nervous fibrils might give the pain; and there may be a variety of other causes. ——

—— Lect: XLVI. Jan.y 21.st ——

Tho I am ready to allow the connection between impression and sensation is quite arbitrary just as all sensations arise either directly or indirectly from impression. It is then a fixed law that similar impressions give similar sensations. But these conditions are not always evident, and sometimes the same impressions produce different sensations that is in dizees. I enquired whence this difference in dizee proceeded. I said the difference was first from the force of impulse: for where we can measure the force of impulse, we find our sensations to correspond to it, as in the case of heat where we have standard, and something like this I allidge occurs in taste odour and sound, but here we want a proper measure. I shall by and by give a reason for believing that even in these the dizee of sensation

may depend upon the force of impulse, and if we shall ever get an elective alteration of these we may be able to ascertain it. Next the dizee of sensation depends upon the constitution of the organs many of which receive impressions of certain kinds and they give sensations different in kind; How far that may depend on difference in dizee is doubtfull. I believe there is something like it depending on force of impulse. It is difficult to say why the membrane of the glands should be sensible to the mildest fluid, and the tickling of a feather should produce the strongest convulsions; It is possible we may find something in the constitution of the nerve that disposes it to some impressions more than others. But if we take organ as not only consisting in the sentient extremity of the nerve, but also in the apparatus, we will see there is much in the apparatus that determines the dizee of force at different times. But I allidge there may be one source of different dizees of sensibility in the sentient extremity. An elastic fluid is distributed in different quantities at different times, and there is sometimes analogous to what we call the tonic Power which

will make a difference at different times. But further we have still more distinct proof of the sentient extremity of the nerves giving a difference viz: in the Blood vessels mixd with the sentient extremities. The inflamatory states may be supposed to give a greater degree of tension; and the effects of general inanition, and the vessels being more flaxed from a less quantity of Blood in them may diminish our sensibility. I think this is pointed out in several instances in the Nathology. Next this difference depends upon conditions in the state of the whole cause of the nerve up to its common origin. When compression has taken away feeling the compression being itself taken away the sensation returns, but gradually, and from absolute stupor thro' all the degrees of sensibility till it returns to its natural feeling. Besides there may be more partial obstructions, which we are not acquainted with, producing the same differences. It is proper to refer to this the state of the Nerves at their origin as compressed from blood or other fluids depending upon them. Fourthly our sense depends on the state of the sensorium commune. Now here is always the consideration of the immaterial being to be attended to. But of the state of the organs of the sensorium we have imperfect and gross notions when we come to look for the corporal causes of diseases, in this they evade us for want of the anatomy of this organ. But the state of compression from various causes differing in its manner and gives different effects in sensation. Besides it there are certainly other states of the Brain that we can understand affecting sensation, such as stagnation or regurgitation of the Venous blood; and much depends upon the state of impulse of the arterial blood. Sense is as much destroyed in Deliquia animi as in apoplexy. But a certain impulse of the arteries is necessary to sensation so the increase of that impulse is an obvious cause of increased sensibility. Paralytic affections hence are well known. We commonly overlook a compression from excess of dilatation of the arterial vessels. Hence Amaurosis from dilatation of the retinal, & the same thing may happen in the Vessels of the Brain, hence coma & stupor. I must now add that there are constitutions of that kind to be taken notice of such as the different degrees of sensibility depending upon sleep and waking. We can all sleep in various degrees between being fast asleep and quite awake. So much for the state of the sensorium. I add

 here two other Cases that of attention & habit. Attention is the tendency of the mind to rest longer or shorter upon the perception of any one impression. The mind can not attend but to one perception or Idea at once; Hence the mind occupied by a strong impression is quite insensible to many others at the same time. And it seems to be a Law that an impression must act for a certain time, to have its full force. Therefore if another impression succeeds too soon, the former passes away almost unperceived. and therefore you will se a sensation arising depends much upon its being long perceived. Now this resting of the mind for a necessary length of time, to give impressions their full effect, is attention. It is in some measure voluntary and therefore the causes of attention depend upon these circumstances that more or less determine the inclination. The first of these is the novelty of the impression. Our minds are so intended to extend and accumulate knowledge that merely the novelty engages attention. But in the Case of impressions that are not new, the engaging the attention seems to depend upon the force of the impressions, whether that is to be rated by force

and external impulse or in proportion to that it commands attention. But while our minds particularly percieve the relation of objects, the perception of relation particularly engages attention. With regard to Relation. There is a relation of all our perceptions to our selves, to the pleasure or pain they give us; This I call interresting relation; and our attention is more or less according to it. And as relation has such power over the attention, imperfect perception of relation engages our attention; & nothing engages us more than that attention which arises to anxiety. On the other hand attention is interrupted by the various causes of insensibility of the organs. We are inattentive to all weak impressions; and we turn the mind from all painfull impressions if they are not interested to engage us. Also the mind already occupied with a strong interrested impression will not attend to any other: hence the hearing of a blind man is remarkably improved because the mind can out admit of one impression at once. Next habit gives different degrees of relation. All of our senses are very much, the most part of them all together relative to the Oeconomy of our own Body. In short

 we have no judgement of the degree of heat in other Bodies but from their exceeding or falling short of our own, and so it happens with regard to a variety of our other sensations, and hence the same impression necessarily gives various degrees of perception but different in kind. Heat this day may be cold tomorrow, and also in light what appears stronger or weaker depends upon the condition of our organs. A single candle will offend me after I come out of darkness: What we call darkness has a good deal of light, and suffices to affect the eyes of some animals ~~body~~ to discover objects. In the history of M^r. Du Faen of the french academy he perceived that all diamonds had the property of the Bolognian Phosphorus. He made a number of experiments, and saw there might be a deception. If the Diamond was brought to him in the dark he saw the light, but if he carried it out of the light himself into a dark place he did not perceive it. H tied up his eye and in the dark, perceived the light of the diamond with that which had been tied up, but not with the other.

Sect: XLVII. Jan^y. 22^d

Upon the different degrees of sensation after mentioning the foundation of it in the extremity of the Nerve, in its course to, and in the Sensorium commune. I had to add more purely mental Laws, these two are attention and Habit. Impression must be applied for a certain length of time to have its full effect, and this is what we call attention, which is as the novelty and force of impression; and as these give occasion to relation, especially if this last is intermitted, & as the perception is attended with uneasiness or indistinctness which tho' weak in their nature excite strong attention. On the other hand attention is interrupted by all those things which diminish sensibility. All weak and disagreable ones turn off the attention, and prior occupation has the same effect. Such is the nature of impressions that the sense remains when the object is removed. Habit is the other operation when the impression has subsisted for any length of time, is frequently repeated or gives a new Law. And our perceptions are relative to the state of our own Body. This is illustrated in the case of heat, light and sound, and in all these that admit of de-