

2th the prodigious divisibility of Bodies, but it is not merely from the divisibility of Bodies that they act. Next I proceed to the consideration of taste in the chemical atoms, as they are called, viz; salts, which are known especially to act, but it is false to suppose them only the objects of taste. All of them must be in a fluid, and they are commonly in a liquid state; they act as fluids are enabled to do on other bodies; they give an opportunity to elective attraction which produces the motion or action of Bodies on one another. It is in the case of mixture that the operation of elective attraction takes place, hence it needs hardly any assistance of agitation, whereas solution does. Now many of the objects of taste are truly ministers of salts. In a small quantity they excite a motion in our nervous fluid. But I own that tastes are by no means exactly corresponding to the action of solvent Bodies, the force of impression in taste is not in proportion to the solvent action of these Bodies. The properly solvent and antizymic Bodies are contrary to one another, the latter check the former give motions that would otherwise not

occur. As the operation of heat is directly the mo- 218
tion of a fluid acting upon ours. I say whether or not ^{are} antizymies fitted to receive & not retain the motion of surrounding Bodies the analogy may be admitted with regard to taste. And in this way does cold act. Another theory for the imperfections of taste is this. It is now admitted that we consider every mass of matter as inert, and surrounded in an elastic fluid. It has a particular relation to heat, but we know the oscillations of heat, are in no part of the matter, entirely extinguished. I have said that odour depends upon elastic vapour flying off from the surface of Bodies, and that every mass of matter sends off such odour, tho' many of them are not perceived by us. There is probably a particularity in this ~~ether~~ ^{ether}, and perhaps it is the case of elective attraction, accompanying every peculiar mixture. If we admit this we admit that there is an ~~ether~~ ^{ether} which is the foundation of mixture, and it may be communicated to our Tongue.

Lect. XL. Jan^y. 10

In the ear the vibrations of the air are excited by an oscillatory motion in the small parts of bodies

216 and making impressions on the organs of hearing, or even impressions made upon masses of solid Bodies affect our organs of hearing. I am ready to conclude that in smelling, not only vibratory impressions but mixture with our nervous fluid takes place, and the extent of our sense is to be taken in. Two Hypotheses are made use of here; the first, is, that there is a subtle fluid in all Bodies, and that they discover their elective attraction by that fluid, and that it is in consequence of like motion that our organ of taste receives impression. The other Hypothesis is that this subtle fluid is different in every different Body, that is so far as they are different mixtures. And here as I alluded of the vapours that gave odour, they are diversified by their mixture, so must their action, and the modification of impression be diversified. You must admit these two Hypotheses from the analogy of all nature; and as in smelling so in taste you must conclude for a mixture. The analogy of perceiving the oscillation of subtle fluids, does conform the whole. I make an application of that they seem to depend upon the oscillations of the small parts of Bodies

independent of any motion of the masses of 217 Bodies. We do not perceive the motion of the whole mass nor do we perceive any thing but the oscillations of subtle fluids in our nerves.

But different from these are the motions of touch or what is by way of eminence called feeling. It depends upon motions of the whole mass producing corresponding motions in our nerves.

The several modifications of it are difficultly kept separate from one another and explained. And first there is the perception of the roughness or smoothness of Bodies, which is performed by a motion of the surface of our Bodies upon that of others, and the sense of a spicity depends upon frequent alternate impulse on our Body, and smoothness upon an uniformity of impulse in the whole. The extremities of our nerves are divided and extended to give the same impression of inequality there. Next is the perception of figure that of sharp or blunt, angular or round, which depends not only on a single impulse, but a number that are simultaneous by which we grasp it about to measure it. A third perception is that of hard or soft, and of the same kind is the perception of flexed or rigid. These are

218 very nearly in common to all the several parts
of our Body, some parts may from thickness
of Epidermes be less sensible of them. And here
something, as particularly the last, the sense
of resistance is rather a perception of the mo-
tion of our own Bodies. Our perception of exten-
sion and what attends it, several modes of fi-
gures, are perceived by merely the extent of surface
of our Body occupied by impression and more
concomitantly by extending our fingers. Or again
we judge of the whole of figure by the succe-
ssive motions and different directions our hands
make around them. You see this is a sense
of motion in our Bodies with resistance. The
sense of pressure gives a perception of motion first
but after that it is only a change in the state of
our own hands. More particularly our perception
of it by the effort we make to overcome it, &
our sense of gravity is entirely of this kind. Now
you will observe that these are called the more
obviously mechanical impressions, depending
upon the motions of sensible bodies on ours.
But they are analogous to what happens to other
elastic Bodies the motion of whose parts in com-

pression, expansion, &c excites a motion in them 219
so in our nervous fluid is a motion excited. -
Tibillation is owing to some parts of the Body
being more sensible than others, and to alter-
nate motion of other Bodies upon ours. It would
appear to happen from its being more by an
oscillatory motion that it moves our whole Body.
Now we approach to perception, and in touch, I
must anticipate part of what belongs to it by
giving this general proposition, that in most
cases of sensation or perception, the thought
has no obvious or manifest connection with
impression (see Haller P. DLVI.) in doing
this I say, I must anticipate part of what I am
to say on perception. But in the case of touch a
perception of the motion, force & figure that pro-
duces is inseparable from the Body perceived. It
is then the perception of touch that gives us the
notion of external existence and gives us a sense
of what are called the primary qualities or exten-
sion &c. In the rest we can abstract but with
regard to expansion, without an Idea of it we can
have no Idea of Body. I observe that this is
the case yet touch does not always refer to ex-

220 tonal resistance. We may have a conscious sense of a change of the state of motion without sense of the external cold. Hence a sense of dry and wet, hot and cold, which are commonly called the cardinal qualities, and it is more evident in the perception of hot and cold. When the perception is accompanied with motion as that of the air upon our face we are apt to refer it to another Body, but in innumerable instances it is a sense of motion in our Bodies without any Idea of an object and often without which the motion is produced a sense of the manner. The only exception is that which takes place in pain. A strong sound gives an uneasiness which refers to the ear &c. but this does not happen in the most cases. So hot and cold refer us to parts or the whole of our Body so affected. And you see that the manner is not attended to except in the pain communicated to our Body.

Another application is, if the perception of impression of heat and cold is referred to touch, it has no more connection with it than there is between those mentioned before we came to this sense. I have referred the rest to mechanical impressions; but smell and taste remain still

the object of chemical impression and that 221 whether you refer this meaning of chemical impression to the motion being least understood and therefore for distinction so called, or to the motion taking place being that excited by chemical Bodies. I must now say that touch in its full extent is a subject of chemical impression. You know

take notice that the tongue has the sense of touch in common with the rest of the Body. Many Bodies act there as they do upon other sentient parts, and more strongly, as acting upon a part of more sensibility. And it is certain that many of these tastes we call acids are affected by touch upon the Tongue and Gums. When we can perceive such impression we may conclude that they are all impressions of touch and not of taste and would have analogous impressions on other parts of the Body. Also the internal nose is an exquisite organ of touch; hence the pungent & acid bodies that produce sneezing act more by touch than smell. In the eye and ear there is a peculiar sensibility of touch; the eye is sensible to the touch of acid Bodies; and the Mucous acidi-

222 torius has a very peculiar sense of touch, and the Chinese from that give the sense of titillation, pleasure, and the most violent convulsive motion by subtle touches. It leads to a curious question to wit that of specific stimuli, but this belongs to the operation of medicines, and there I shall speak of it; Here I say only, that tho' I shall refer it to the operation of medicines yet as it distinguishes the senses &c. I shall allow it in the ordinary animal Economy. Thus I have taken notice of the external corporeal impressions; I come now to the other, the internal, to wit those that arise from the Body itself. I here still consider the action of matter upon matter, and not the *sensus interni* of Haller. —

Lect. XLI. Jan^y. 15th

Haller's chapter of *sensus interni* comprehends perception. I am here to treat of perceptions of the state of the Body, but which are produced always by, and relative to the Body itself. But it will be difficult to distinguish them from the internal corporeal last spoke of. It will be difficult to distinguish, flatus generated in the stomach, or borborygmi introduced into it, and acids generated, from acid liquors. It will be more properly our Business in

the Pathology to enquire into the various causes 223 of internal impressions. We of ten know the internal impressions by the perceptions they produce; We are extremely apt to refer impression to the parts of the Body disagreeably affected. So simple tho' difficult to say where the seat of it is we refer to the part we feel most affected, and we generally refer to touch; Yet this sense of touch is not one, but fifty different impressions. Next with regard to internal impressions, as in the others called external, the relation is quite arbitrary, so it is with regard to the internal. Many impressions give no sense of impulse or motion or any modification of it but a want of it. So want of light, or of noise at times give uneasiness, as is clear by this viz. the uneasiness we feel from the want of usual impressions. Hence the uneasiness of created appetites, when the impressions made by their gratification are gone, as appears in opium when its action is over in such as are accustomed to it. I now speak more particularly. The first internal perception is the most general, to wit a consciousness of self; It is what Haller and other

224 Physiologists call the adreuptes. Whether we have emotion along with it of the general perception may be doubted. Conscious sum, ergo sum. But this I think is certain that we are conscious of our ordinary existence, and have the Idea of Identity from a full exercise of perception in our following our ordinary train of thinking. And this has the Idea of coherence or existence. — Hence we distinguish between our waking and sleeping thoughts. When a man has been under the impressions of a Dream, some of the circumstances of that may shake off sleep; when waked he calls for light, sees if it be his own Chamber, he finds that it is and that the perceptions of this Dream were incoherent. We judge whether other people are in their senses or mad, from their same coherence of perceptions in them. One chief mark of the adreuptes is alledged our perception of time and duration. Our ordinary train of thinking gives us our consciousness of existence, by giving us consciousness of time. Fits of madness we forget and hardly refer to our being. The common people think they can recollect Dreams, if no waking impression intervene between the Dream

and the recollection. How this is connected with 225 our present subject will appear presently. We have so much of it as extends to a general manner of our existence. We are conscious of lively perception, ready memory, and clear judgement at one time, and the reverse at another. Also in all our actions we are sometimes conscious of languor and debility, and at others, of alacrity and vigour. Now that these are not confined to the mind appears from this that all our impressions arise from corporal ones, internal or external. Too much or too little Blood will produce the difference of the state of thinking. I must observe to illustrate this, that when we come to perception we take a view of our mind as liable to emotions & passions, and I mention it because it is there we can best perceive. Take the example of the effects of different states of the weather; Sadness at one time and Alacrity at another; Doubt, Despair, fear & irresolution are the result of one state of the Atmosphere; so another state of it gives alacrity, easy satisfaction, complacency, gaiety, & gentleness, and inspires hope, Courage and Determined Resolution.

226 All these are perceived by us as the most general case of internal impression, and it gives Character to different temperaments. To some it applies for life to others by the Day and by the Hour, and depends not only on the state of the atmosphere, but upon various other causes, as the different state of our Stomach and genitals affect the general tone of our mind and body. I go on now to speak of internal impressions that depend more upon the state of particular Claps; They are ingeneral, disagreeable or agreeable. The agreeable are very few; They are taste &c. A second mode of the agreeable is a relief from uneasiness of any standing; The third is ingeneral, gratification. — All the other much more numerous, are disagreeable, but which may be reduced to the painfull & uneasy. These terms are considered as synonymous; But I appeal to common experience of property; Suchness of Stomach is uneasy, and pungency of pain in the same part ought to be called painfull. "It is uneasy, it is almost painfull" is a mode of expression that explains the difference betwixt them. Again, Pain may be more confined to the Body, uneasiness to the mind. Pain in all its Variety is in common to every sentient part of our Body, and exactly

referred to the place where the impression is made; 227 Rather it arises from internal causes they are an excess of the force of impression, and more particularly arise from the mechanical impressions; It is then proper that I am chiefly to consider the uneasy impressions. Under the sense of uneasiness there is great variety from, a greater variety of causes or states. First it arises from want of full, distinct impressions; Darknes is hardly so disagreeable as imperfect light. Secondly it arises from want of usual impressions; and thirdly from an interruption of our ordinary or usual train of them. fourthly a sense of debility or of resistance between which it is plain that we do not always exactly distinguish. As to them all it is to be observed that they are attended with anxiety or a desire of relief. Whether it be a desire of the removal of the uneasy sensation, or of the resistance to motion. Now as impressions are often observed by the perception they produce, so these uneasinesses are often only known by an anxiety. From differing we distinguish the uneasy state of the mind; Suchness from a Volition to vomit

228 In many cases the separation is not distinct. The Italians would say that it is always felt low'd by particular motion, as a fuller inspiration takes off the stagnation of Blood in the Lungs, and the sense of uneasiness in the stomach. But often we are not conscious of the volition or motion. There is at random a constant shifting of the motions of the Body. It is better founded that Gaubius undiransulas has ranged all the several uneasinesses that I am to take notice of with regard to the several parts of the Body. Amongst these is a sense of uneasiness that produces a puerile. 'Tis true that Hunger is often accompanied by a very general tho' undetermined impression, to wit a general desire to eat; and when it is carried to a height we have a sense of more particular pain; but in general there is no pain nor sense of motion.

Lect. XLII. Jan^y 15th

What else I have to say of the causes of impressions ^{shall refer} to the Pathology where I shall enter upon their consideration. I shall ^{now} innumerate impressions themselves. There is some danger of confusion in the use

of terms on this head, & a very impression that produces perception is not separable from it, so no wonder if I run into some ambiguity in taking one for the other. Every perception I dare venture to say, has its corresponding impression; and in many cases where I cannot point it out, you may still understand that to be the fact, & my reason for using the one term for the other.

The first impression I shall speak of is Sleep; a dull perception; which we refer to thickens. Do not what we call confusion of head, which is attended with a peculiar anxiety. Somnolentia is similar to both here & perhaps a part of both; It is particularly distinguished from them, that it is ambiguous between agreeable and disagreeable perception. Whether from it arise volition to sleep, or aversion to continue the effort of waking shall be afterwards inquired into. I might refer Vertigo to these for like reasons; it is properly a mode of vision, but it arises from impressions elsewhere made, as on the internal head & the motions of Blood. It is an instance of a false imagination. The tintulus aurium does not so often accompany it. I shall speak of both afterwards.

230 Incubus is an internal impression, but Gouttux
whether referable to the head or thorax. It is a general
sense of immobility, chiefly & commonly depending
on the circulation in the Viscera of the Thorax.
The gravitas capitis or dolor capitis gravitatus,
we refer to the external parts of the Head. It is un-
certain whether it is an uneasiness, or arises to the
full degree of pain. Next to these is Thorst. Place
it in the Fauces tho' it arises from a variety of
states of the system, and several of these making
their impressions on the Fauces. Yet all of them
are either directly in the Fauces, or communica-
ted to them. Next is Dyspnœa. It is very of-
ten attended with a sense of infarction, and con-
sists in an anxiety that we feel chiefly at the end
of respiration. This last is difficultly settled in our
perception or distinguished from the sense of infar-
ction. It is between this last & the anxiety that it
interrupts the course of the Blood. Another Dys-
pnœa attends laborious respiration. We employ the
muscles betwixt the scapulae and lungs, and
betwixt the scapulae & costaltræ, to relieve it.
It communicates a sense of debility to the whole
system. The instance of this is that an uneasy and

laborious respiration occurs in a warm air. 231
There is an uneasiness produced in the begin-
ning of Biliary fevers, viz. dyspepsia. It is diffi-
cult in theory to explain the cause of it. I men-
tion only one other article of inquiry, The percep-
tions of Coughing, where they act is not sustained
in our Pathology, where we shall speak of it. Ma-
ny of the feelings of the Thorax belong to the heart.
tho' we are not conscious of willing the action of
the Heart, yet we are sensible of its manner of
action; we are sensible of the palpitations and
more ordinary motions of it; we are sensible par-
ticularly to the interruption made by its contrac-
tions, and therefore of the uneasiness just now
spoken of. The same uneasiness arise from
Polipuses or Aneurisms obstructing the blood in
the left Ventricle, and from infarction in the lungs
giving obstruction to the right. At the coming on
of syncope, but more at the recovery from it,
there is great uneasiness; But syncope itself is not
disagreeable. There is in it a peculiar agitation
depending upon resistance to the motions of the
Heart. Next are the impressions in the abdomi-
nal viscera. In these there is a sense of anxiety

232 also arising from interruption of the motion of the blood. But we never refer it to particular viscera. I cannot help observing how indistinct we are in referring pains to their seat. Take the instance of the liver, the Biliary duct, and the flexure of the colon, which are contiguous to one another, and you will see the difficulty of referring to any particular one of them when any are affected. It is most necessary to inquire into the elementary canal. In perception we are rather limited to final causes, than that we can come at the efficient ones. This applies to the stomach, and as the stomach first receives the aliment, it is particularly sensible. This is the foundation of the operation of medicine, and of Matter acting upon the most distant parts. All the perceptions here, belong to external corporeal impressions. But there is no use in distinguishing these from internal. Here I mention it as a foundation to the impressions that may arise. Secondly the stomach is the seat of the appetite of hunger. The state of the system is communicated to the stomach, and the tension of the stomach corresponds to the whole of the system. The stomach is more nicely sensible of its own tension than any other part of the body; by this it

measures the quantity to be taken in. Also the 233 stomach is sensible of the state of its own motions, hence various perception. Lastly with regard to perception of the stomach it is so framed as to affect & be affected by the whole of the system. It is the source of more perceptions than any other organ and gives more application of sympathy than any. The sense of smelling &c and these states that are called Idiosyncrasies. I could wish to enumerate these impressions more particularly. We have a sense of emptiness or fullness, hence debility of the system and the appetite of hunger, not noticeable when it begins but after becomes an actual pain in the morose Ventriculi. On the other hand a sense of pain is attended with a sense of fulness often from over quantity of contents & from

and between liquid solid and vapour we do not always clearly distinguish: there is also a sense of want of appetite and when food is presented it rises to nausea or loathing. These higher degrees of aversion are attended with a peculiar sense of uneasiness or anxiety that in English we call sickness. The gradations are aversion, horror, nausea and vomiting. You will find it interesting to enquire into the causes. The intestines have a share of the same sensi-