Then shows that the several operations depend upon the brain. How the operations of sensation are equally connected with the brain.
The soul is not located in the brain, but in various parts, according to the uninterpretable of the schools; we must not talk so vaguely.
If there is no such a seat of our mental operations external one must be communicate to the extremity of the medulla, and from there propagated to the corporal comumunica. thus have placed the soul in the gladdened intimation, but without authority. This cannot be made as a source of muscular motion. All this is a commentary upon the 365 & 366 paragraph of Haller, to whom I must now return and follow closer hereafter. N 372 "De animis sidere" I hope I have given them under an order that will contribute to our understanding them better. Now as to muscular motion small elocution seems to take place: on the one hand there is cohesion appears, such as in the medullary substance of the brain, and on the other the haptic of bone, precludes our conception of elocution. We call this elocution. The elocution of the
We call it by Salle's name, incisura loch, in his 1200 P. 4 following it, where he distinguishes three different powers. "Ico manifest" and to the particular application he says, "I say the contractile power, in which or which, if it exists, is peculiar to muscular fibres. It is in them, especially in the middle of the parts that have this contractile power, and are shot of muscular fibres in seeming very different circumstances. And we discover them by their irritability and contractibility, also by their difference in their cold and appearance. Terme says this power is not everywhere the same, it is however difficult to say this if we have not yet perceived any different grounds for knowing of a different organ of motion. There may be a difference of organization that accrues to be distinguished by the degree of irritability, so in tendinous and muscular fibres it is a dispute whether the latter is not a continuation of the same structure, the difference being in the cellular membrane being diminished in the tendon. Others say they are not a continuation.

Haller discusses this point pretty fully, without 267 a certain conclusion; he has endeavored to show it by the absence of undivided fibres to be a continuation of the muscular, but in 309 P. of his later work he is still left confidential, he puts it by way of question. Anatomists are by no means agreed in this point, but it is enough for me that Athenaeus stands for the continuation I think of. There is a continuation here, and the arguments abound in favour of it to be true, viz that the tendinous fibres hardly appear in the tendons, are constantly growing. If his be true, there is a gradual passage of feathery muscular fibres into tendons, in this last we find the continuity entirely disappearing. Having explained what irritability is and when its said, I proceed to say that muscular fibres are the fibres. All the fibres of our body. The ultimate fibres of a muscle is so extremely minute that we have only capability of arriving at its structure. If Maclay has resolved the whole into this that they are perfectly uniform cylindrical figures, but we must still think they have a peculiar organization. You must not know that many of the various conjectures on this
398. We are founded upon false or doubtful facts. Do not resolve the phenomena. All that are founded upon the motion of the heart are not to be so derived because many of them are without the heart's action. Give the heart any extent that any body has conceived; the musculature of muscular fibre goes on as far beyond that, that we must say it is beyond the heart's action. The arteries then are not concerned and muscular motion is independent of them.

As 399. It just now is shown of us also all, where he shows that muscles may have their arteries tied without affecting them, until after a long time by autotraction & gangrene. If there is the experiment of the inferior extremity, becoming paralytic he has in another place shown it to be false & in accurate. Next, they have had recourse to a fluid derived from the nerve for the cause of muscular motion. The proof is in short this, that many muscles we can examine have a large proportion of nerves, a very moderate muscle say they have a much larger proportion than that bulkly venous of the liver. Thus secondly very means of destroying con

lunity destroy the contractile power immediately 399 in part, and a little after wholly. Thirdly applications to the brain have the power of exciting or suppressing, or entirely destroying muscular action. If a muscle is taken out of the body & a portion of its nerve along with it, it is equal whether you make your application to the body of the muscle itself, or to the extremity of the nerve; you can by the brother of a need equally excite contraction in both. But I must add that as the whole operations of thinking are in the brain & dependent on it, so I think that every modification of thought, suppressing muscular motion (for by some thing propagated to the brain from the extremity of the spine), if there is any such communication of motions as is independent of perception of it, rapidly equally well at that motion being brought back to the extremity of the spine. If there a motion from the sentient extremity to the common origin and that that excited motion in the muscle, the communication must be allowed.

Lect. LIV. Sitt. 4th.

Having talked of the contractility common to other bodies, is that peculiar to living animals.
these arguments, and transport this could 301 the motor extremity, there to act. It was ob- served that on being an artery the irritability of the muscle might be excited by applying between the muscle and the ligature, of which it is now conduct excited motion & a con- trary motion had no effect; but that is not true.

Haller 377 p. 21

11. This has the appearance of the reasoning was fair, but I do not see that it is conclusive. While the muscles receiving nerves from another branch of a common trunk are not affected, in answer, in answer to this I say the muscles proceed distinct & separate from the common origin; if an impression was communicated to every nerve of the same branch, we should have very indistinct impressions. No wonder, then, if their motion is not produced upwards along the same branches of a common trunk. There is no distinction between motor & sentient nerves; and every nerve is sensi- ble to sentient impressions; for particular impressions there must be a particular action, as in the eye and ear, but whether of the
That a nervous power depends upon a motion propagated from the common origin along the course of the nerves, but this does not go far to explain muscular motion; the motion is still in the organized fiber. Ballerini, of the Societé of nerves surrounding the blood vessels, but he himself and all others have declared that opinion; therefore nothing need be said of it. There is a peculiar organization which, by the assistance of the nervous power, explicat all their phenomena. Ballerini of opinion that it may be independent of the nervous power though explicable by it. This last he calls the new inertia of muscles, and he supposes this to be something residing in the gluten; I find no other foundation than one set of experiments to support this opinion, that muscular fibers operated from the state of the remin., have still their irrevocability and independency upon the common laws of irritability, see ch. 208 & 209. I say the opinion is chiefly founded on these facts. I mention that it may be some thing belonging to the muscle itself. We can not only form another opposition.

preposion" rueo alicie

preposion will affect his own doctrine in another place; in the 408. — Now we have shown
of the muscle or the cut of extremity of the 306
nerve. Will any body doubt then whether or not
impose this motion by an impulse communi-
cated, or will any body seek any other
impulse than that derived from the brain?
This at least takes off all the proof of a via in-
sita which is an opinion defending when see-
ing no other cause. Also if we acknowledge
that the nervous power acts occasionally in-
sidiously arising from hence that the same
powers that produce irritability are all such
as act upon the nervous power and produce
sensations, therefore the contractile power
of muscles depends entirely on the nervous
power, and there are no other proofs of a via
insita. And yet in the "Phil. Haller has two
other arguments "
" "
" " The "nihil valde" mind
refuses. He goes on "
" " From what appear
insects and plants "say be" it must depend upon their structure. I acknowledge that irritability with all its circumstances appears in plants, and I own it to be a like irritability to that of animals, there may be a difference in the stimulus, let us see how it affects our question. There is something in plants that seems to be very analogous to the system of animals; there are distinct fibres proceeding from a common origin, as in the animal system; you will see a ramifications exactly resembling the vessels in an animal. But now we know that there is a separate connection and that each of them is a bundle of fibres distinct. Further late experiments show that then distinct fibres of vegetables are not tubular or hollow cylinders, as we supposed and that they are strong because of collaterals among them. Now let us see if this irritability is as in insects residing in the separate parts, is unconnected with the whole. We find them in the most sensitive plant that when a part is separated it is no longer sensitive; it depends upon a principle of life spread over the whole, and every part subjected by a communication with the rest. Whether there is a brain in plants is very uncertain, but granting that there is no such thing, can we limit the operations of nature to say that a subtle fluid is not contained in a common origin. It was made an universal axiom that two animals of different sexes were necessary to generation but Lamarck has shown that a single animal can propagate the species, there is also a universal hemorrhage that only visible could be propagated by cuttings, but we now see that Polypri can be propagated by the means as well as vegetables. Now there may be an irritability depending upon the nervous powers diffused over the whole system. As to insects his arguments are paleraceous. We have found several insects profuse of a brain, if we thought to be without, and one may find the same thing in the rest. We may be too limited in our notion of brain; it may be in different shapes in different animals, still exist.
As to the nervous power there are two opinions. The one is what we have expressed by an inelastic fluid moving through the tubes of the nerves; the other is that it is an elastic fluid adhering to the nerves. We reject the first of these opinions, as an inelastic fluid can not account for the velocity or force excited in nervous motion. The other seems at present groundless and is resolved again into two opinions: The first is the motion of such a fluid as we know to be the foundation of tremors, of elastic chords; the other supposes it to be an elastic fluid but such as may be propagated along soft chords. Again we reject the first of these opinions which lies upon elasticity and tension as there is not tension enough to support the opinion of the motions depending on elasticity. Therefore we trace the last, which is difficult in admitting even the opinion, which would have been greater 100 years ago. But since Newton established an Atter as the foundation of attraction of cohesion; and since the Phenomena of Electricity and Magnetism have both been discovered.
Different species of subtle elastic fluids, we
can have of difficulty in admitting, if in
animal nerves; and the phenomena of the
nervous system, such as that of irritation
confirm this; and further the several ex-
pressions upon our organs of sense produce
all these make for the opinion of a nervous
elastic power, and if the motions consist in
an oscillatory motion, the probability is that
it is performed by an oscillating fluid. How-
ever to say of what nature it is more par-
ticularly, we shall find it difficult to say.
It has been common to suppose the nervous
fluid of an electrical nature; but I must
own I find no proper foundation for this
supposition. With regard to all of these elas-
tic fluids it is manifestly related to them all,
as all of them are remarkably related to each
other, but they may all be considered as distinct
if the elastic fluid of the nerves may be looked
on as one. Before I leave the subject I must
take notice of what Galen says on it in the
Par. 379.

"(amen). In P. 309. he says,

"orientis"

These are all the several proofs of it being a liquid or elastic fluid; only adding to it
that there is supposed a secretion of it, and
the nerves considered as the secretory organs.
Galen puts by way of question:

"by this last

Paragraph it is the phenomenon of the elas-
tic anatomies by which any single drop
of water may be made to move any given
weight. The force by which nervous motions
are performed may be explained by it, but
the celerity by which they are performed and
which shows the inverse proportion of the
causes to the effect seems to refute it. Galen
goes on in the next paragraph to add:

"laberi"

In that we perfectly agree with.
318 him and what he further adds "that the
atmosphere is absolutely invisible" without
"elastic and smell," this is probable, but with
regard to his other conclusions we meet with
considerable difficulties and irreparable; we
shall take up this when we treat of the laws
of the fluid. It is more probable that the elec-
tricity, magnetism or election of cohesion, de-
depends upon mixture and state of aggrega-
tion, always the same. When that mixture or
aggregation is found in vegetables or in ani-
mals to be the same. I say that that being
given, it is always the same. I have a more
or less more to remark on Dr. Halter's where
he seems to favour its being of the electric na-
ture "electrical materia
"ve sua reseat". Whether elec-
trical matter penetrates the whole substance
of bodies or only entire their surface may
be a question. He concludes "shortest idea
deject." There is the cor-
numstance that I would willingly dispute, 392
that it confined within hollow tubes, he
can not conceive how it should be otherwise
I therefore fix upon this opinion; but the
circumstance of electricity explains that, which
will without hollow tubes, be propagated 400
miles of the surface is homogeneous; that
there are circumstances which determine elec-
tric matter to adhere to the surface of bodies
is what we may admit, and the ether
it may be confined to form an atmosphere
around the nerves only; and I think the ner-
vous fluid is an elastic fluid peculiar to the
nerves, having a true circulation to any part of
them under modifications. The first modifi-
sation is that it suffers in muscular struc-
ture & excite muscles into contraction, sup-
porting the fibres a continuation of the medullary
fibres of nerves, we can see: it should produce
contraction while enveloped in the membranes,
caused these would not be that room for a circulation
that would bring the muscular parts nearer by
this; and as we maintain the equally continuity of
3rd medullary fibre, there is no occasion for accumu-
lution, & the propagation should be from one end to the other, but we can suppose that muscular fibre acts like electric force, and confines the propagation of the fluid. We can go so far and find that the nervous power may be slept at the two extremities of the muscular fibre, and is accumulated about it, if these circumstances are such as admit of it. You understand how the action of a subtle fluid when the stretching of elastic chords has the power of making them contract and of bringing them into their former situation. It is but supposing that the muscular fibre has its parts at some distance from one another, & that the accumulation is around its parts; and we may only suppose that there is some other state of organization, that is still more favourable to give the con-
tractions I speak of. I go on to consider the var-
ious modifications of this nervous power; it may be excited by various causes, applications, impressions, perceptions, or with various circumstan-
ces which shall stimulate the most remarka-
ble are impressions of external objects. And as I
have said, there may be impressions made when 3s
the nerves that don't excite perception, so now I
mention it to be the case. I need not anyone
have no perception without consciousness; also
that consciousness may be entirely obliterated,
and accordingly with regard to many impres-
sions that yet now are not attended to with
any consciousness, I must say that they never
were with consciousness. There was a time in the
beginning of life when impressions were not pre-
ceptible before there was any memory which
happened at a certain time of infancy. Haller
has even condescended on the time when mem-
ory begins, which I should find more difficult.
I can conceive that all impressions made in
that period may be obliterated since. But then
our memory is in full vigour and also our sensi-
blity, if then and in that case these are impres-
sions made without consciousness, I must say that
as often as that happens, so often there is no per-
ception. A perception may operate without giv-
ing consciousness till it comes to the volition.
Grasping is not a perception of the operation of
The purgative, it is merely the removal of a mass producing pain. Therefore I conclude that there are impressions which excite various motions, in all the different parts of our system without our being conscious of them. Now all that I say is, that sensibility only takes place when we have been originally or are at present conscious of impressions. But some have extended the term sensibility to every impression made on the nervous power. They may do if they please and help to narrow power & sense principle being the same. In a cut-out part if I touch the body of the muscle so as to cause contraction some will call that irritability & some sensibility. But if I touch the superincumbent of the artery more I think it would be more proper to call it sensibility. And to apply the sentient-principle cut out of the body as White does is highly improper. Now all the different causes exciting the action of muscles may be reduced to four heads. First, the purely mechanical stimuli; they are the effects of impulse of motion communicated from one part of matter to another. The second is where there is irritation, propensity.