

160 bees. By the first he means the same
gelly
we obtain by strong broth. I alledge there
is no fact or argument for supporting
this opinion but one, it is not so coagula-
ble by acid, alcohol, or heat as the lymph,
and not so conserisible; there is no other
foundation for it than that it is extrac-
ted from animal solids. But the extrac-
tion of gelatinous matter from animal
solids, is not a solution of an aggregate
into its integrant parts; it is the reso-
lution of a mixt into its constituent
parts. If it is the former, it was with
all its qualities as a jelly formerly in the
blood. If the latter, we see it is the effect

of mixture to form a neutral substance, 161
and therefore it was not with its proper-
ties of jelly in the blood. Geoffroy's experi-
ments in the french academy make it cer-
tain that it is a resolution. In extract-
ing gelatinous matter from different ani-
mals, he found that different degrees
of coction produced different matters, &
no one entire substance was got out.
And therefore so clear a demonstration
that the animal substance is constantly
suffering resolution, shews that we can
not judge of the entire state of this matter
in the blood. Take albumen ovi or coagula-

162 the lymph, tho' it does not easily, yet it ad-
mits of resolution to a degree that a broth
or jelly may come from it. The other
matter is what he call the mucus, or
mucosity; His thinking that to exist
in the blood, is as much without obser-
vation as the foregoing. It is true the
serum is viscid, and draws out into long
threads; and thus far resembles mucus.
But will any body say that two fluids are
the same because they agree in one thing
viz: visciditv. Haller draws the same con-
clusions as Senae, because we take in a
great deal of mucus in our aliment.
But we clear our animal aliment of

their mucous parts as much as possible, 163
nor will the vegetable mucus account for
it; and it goes upon a supposition that
it passes into our vessels quite unchanged.
Many substances do; but as it is aliment
it must be supposed to have under some
change. Senae uses as another argument
its being very copiously secreted: as there
is no internal surface of a cavity over
which air is to pass but that mucus
is secreted from it. We have had a dis-
position to imagine that every secreted
fluid existed in the common mass, but
such an opinion is extremely to be doubt-
ed. And Senae can not apply the sup-

164 position tell he shews the presence of
mucus; he has staid most surprisingly
to do this. He bids you scrape a stomach
and says you will find the inside of it to
have a good deal of mucus covering it,
which you will find supplied by a fresh
exudation after scraping, which, he
says could not have been contained in
the crypts, or folicles. But it can not
be easily determined, how much these
receptacles, which are very numerous,
can contain; nor can he draw his con-
clusion without accurate measurement,
ascertaining that circumstance. Beside
this argument proves a great deal too much

and therefore nothing, viz. that mucus 165
is secreted in the viscid state in which
we find it, which is contrary to the na-
ture of secretion, and an observation that
we have made, to wit, mucus, or the matter
forming it is poured into the crypts we
find extremely liquid and acid, as in
eructing, which the new secreted mucus
produces; and it acquires its viscidly on-
ly in consequence of stagnation. Further,
can a mucus pass thro' such small
vepels? The fluids universally are se-
creted in a very dilute state and only
thicken by stagnation.

Another part is mentioned with more

166 probability, which we largely take in, &
which is copiously secreted, which again
is reabsorbed, and might be thought an
ordinary part in our blood; ^{viz: oil} but I can
not think so. I have 1000 times seen
extravasated blood, but never saw a
particle of oil in it. It is true there
are in writers several observations of
oil in the blood, meaning on the sur-
face of extravasated blood, or of urines.
But that happens in disease, in which
case there are powers that ~~may~~ ^{may} separate
it. See in Haller how few facts he has
to produce in favour of the oil being
a distinct, separate portion of the com-

mon mass. I own that we will be affirmed 169
greatly embarrassed for want of a proper
solution of this kind, but we must rather
dissent the problem than adopt false facts.
Oil taken in is deluted in the stomach,
is still more united, in the lacteals tho' it
appears there still, but it disappears in
the common mass. But take the blood
or serum and treat it in any way, as
by water, you will not be able to sepa-
rate any oil. I think it entirely absorbed
by perhaps an acid of which I spoke al-
ready, and it may be sometimes, tho' in
fact it is rarely evolved. There is an-
other part of the common mass lately

168 taken notice of viz:

Elastic Air

That air is present in the most part of bodies that we know, and particularly in animal fluids is a fact, but it is present there in an absolutely fixed state and certainly does influence the mixture of animal, as it does that of other substances. Our enquiries however must be as to air in its elastic state, or in such a one as it can easily recover its elastic state. Air is present in all the water of our globe, and is incompressible, but here it is only diffused; for when pressure of the atmosphere is taken off

it immediately recovers its elastic state. 169

It is possible that air is introduced into our lungs, by being entangled in our viscid fluids; but it is neither evident nor applies to the purposes imagined; and the opinion of air entering by the Lungs is now deserted. It is thought that it is rather excluded from them. It is taken ~~in~~ with our aliment into the prima via, where it appears copiously, and where a portion that was fixed was extricated. It is also present in its elastic state in the chyle, at least it shews its elasticity, by the least diminution of pressure. If it is in the chyle it must be more or less in the thoracic duct. Blood pumped under the

170 receiver of an air pump, when the
air is exhausted shows air, but prod-
igiously little either in quantity or quali-
ty. The same experiment made on the
urine shews much smaller proportion
there. The animal process then fixes
this air more and more. Here is again
a singular quality viz; that there are
powers there that can evolve it, as in
the milk, in which again it is in con-
siderable quantity, and in the Bile which
has undergone still more of the animal
process. The Bile under the air pump,
swells to 14 times its natural Bulk.
It is present also in the saliva, which shews
that here there are powers that evolve it

And while the white colour has been made 171
an argument that milk is made of style,
the presence of air in it has been adduced
as an other. But we must not confound
nature to one way of operating. What I
have said gives you a general view of the
proofs of air being present in different
portions of our fluids. But what effects it
has upon the fluids, and these to be over-
sed is very doubtful. There is a difference
between atmospheric and mephitic air.
When the one, or the other is present, &
what power separates either is unknown.
It appears that there are perhaps parti-
cular passages that are fitted to contain

172 or transmit air, as in emphysematous
tumor produced over the whole body, wth.
is an operation for the cure of certain dis-
eases, While some suppose it to be in
common to the whole of the cellular
substance. But as oil & may prevent that
being in common to the whole, others have
supposed a particular part of the cellular
substance only, fitted to transmit it.
Sinaae embraces this last supposition,
and says by barring the cellular mem-
brane an air escapes. His argument
chiefly rest upon the necessity of it, and
he says, without ~~xxx~~ it the air would
not be pressed into a firm solid mass.

I have now finished what I had to say 173
upon our common fluids; but there are
secreted fluids which I must speak of.
we will begin with the function that pro-
duces them. —

Sect: LIX. Feb. 27th. —

Many other fluids, as I said, besides the com-
mon mass, require our notice. In a natural
state we have thought that all of them did
formally exist in the blood, and are formed
out of it. This power in the oeconomy is what
we call secretion, altho, it properly implies
a separation of one part from another. If we
consider in how many parts of the body it
has place, and the influence it has in the oc-

19th century, we must perceive it to be very considerable. See Dr. Haller's introduction to this subject in the seventh volume of his *Elementa Physiologicae*. He does not pretend to give ^{himself} any system, but mentions what has been said by others. I also shall give no explanation of this function; & shall only remark what attempts have been made towards it. The first question is then, whether the secreted fluids did previously exist in the common mass? I have no doubt that they are materially there. But it has been thought that they are formally there, and only lost by means of the diffusion in the common mass. This supposition is extremely doubtful

full, as I said yesterday, in milk and manna, which I denied to exist in the common mass; and I even doubted that of air. Yet the exhalation poured into every cavity of the body, absorbed again, and returned by the lymphatics to the blood, is undoubtedly, one of the constituent parts of the blood, and approaches, in every property to the serum. Also the urine and matter of perspiration, which as far as we can guess, resembles the serosity, formally exists in the mass. Hence we may understand the business of secretion, more nearly. The exhalation is no more than the separating the serosity from the red globules; and also the secretion of the perspirable matter, and urine, are separated

176 one in the same way, leaving the lymph
behind. I own that the mucus often re-
sembles the serum, as also the saliva
and pancreatic juice, but they differ so
much from it, that a great deal is to be
accounted for in their secretions, and con-
siderable changes in it take place. But
the bile, semen masculinum &c. are not to
be supposed to exist, in any degree in the
mass of blood. As to bile it has been sup-
posed that an alkaline serosity has been
conveyed to the liver, and a quantity of oil
taken up from the intestines to form a
sapo: But this, in fact, is not the case. Bile
is not a sape viewed in its qualities as far
as we know. We shall find that such views

can go but a little way in explaining 177
the several secretions. Every chemist knows
how ignorant we are of proper mixture in
our fluids. And the best chemist will be
most cautious, in his application of che-
mistry to the subject. The greatest part
of our secreted fluids are neither to be per-
ceived in the blood, nor the matters out of
which we can account for their formation;
therefore the secretory apparatus is to be
enquired into as the cause of the change.
We take in to account, more than the se-
cretory organ. According to the bloods ve-
locity to the secretory organ there is more
opportunity given for a separation; and

178 therefore a great deal of labour has been bestowed upon the velocity of the blood to the secretory organ, and to the angles &c. it is oblig'd to make in its progress. But in the first place it proceeds upon the supposition of a previous existence of the form of the secreted liquors in the blood, and that they only need an opportunity for spontaneous separation. But the whole theory must fall with this supposition upon which it is founded, and which is not well known. Tho' there were matters of different kinds ~~in~~ the blood, the disposition of it is not such as to be readily liable to such separation. If there was no flexibility, no ramifications in the vessels, there

might be an opportunity for such separation. But they are every where ramified and more so as they come to the end of their course. R. - n. supposed will pursue the course, and the lighter, and of unequal figure will be pushed to the side and go off; but there is no foundation for this. There are ramifications in the shortest space, and what was just now in the axis of the trunk must impinge upon the branch; and this must happen equally to the most solid and ponderous, as to the lighter parts, and the uniform diffusion, will certainly be performed, and kept up in this way. In the case of the bile it is secreted from venous blood, different