ARISTOTLE

DE ANIMA
TO HENRY JACKSON
WHO HAS INSPIRED MANY
WITH HIS OWN LOVE OF
GREEK PHILOSOPHY
DE ANIMA. Book II.

So much for the theories of soul handed down by our pre-decessors. Let us, then, make a fresh start and try to determine what soul is and what will be its most comprehensive definition. Now there is one class of existent things which we call substance, including under the term, firstly, matter, which in itself is not this or that; secondly, shape or form, in virtue of which the term this or that is at once applied; thirdly, the whole made up of matter and form. Matter is identical with potentiality, form with actuality. And there are two meanings of actuality: knowledge illustrates the one, exercise of knowledge the other. Now bodies above all things are held to be substances, particularly such bodies as are the work of nature; for to these all the rest owe their origin. Of natural bodies some possess life and some do not: where by life we mean the power of self-nourishment and of independent growth and decay. Consequently every natural body possessed of life must be substance, and substance of the composite order. And since in fact we have here body with a certain attribute, namely, the possession of life, the body will not be the soul: for the body is not an attribute of a subject, it stands rather for a subject of attributes, that is, matter. It must follow, then, that soul is substance in the sense that it is the form of a natural body having in it the capacity of life. Such substance is actuality. The soul,
therefore, is the actuality of the body above described. But the term ‘actuality’ is used in two senses; in the one it answers to knowledge, in the other to the exercise of knowledge. Clearly in this case it is analogous to knowledge: for sleep, as well as waking, implies the presence of soul; and, whilst waking is analogous to the exercise of knowledge, sleep is analogous to the possession of knowledge without its exercise; and in the same individual the possession of knowledge comes in order of time before its exercise. Hence soul is the first actuality of a natural body having in it the capacity of life. And a body which is possessed of organs answers to this description.—We may note that the parts of plants, as well as those of animals, are organs, though of a very simple sort: for instance, a leaf is the sheath of the pod and the pod of the fruit. The roots, again, are analogous to the mouths of animals, both serving to take in nourishment.—If, then, we have to make a general statement touching soul in all its forms, the soul will be the first actuality of a natural body furnished with organs. Hence there is no need to enquire whether soul and body are one, any more than whether the wax and the imprint are one; or, in general, whether the matter of a thing is the same with that of which it is the matter. For, of all the various meanings borne by the terms unity and being, actuality is the meaning which belongs to them by the fullest right.

It has now been stated in general terms what soul is, namely, substance as notion or form. And this is the quiddity of such and such a body. Suppose, for example, that any instrument, say, an axe, were a natural body, its axeity would be its substance, would in fact be its soul. If this were taken away, it would cease, except in an equivocal sense, to be an axe. But the axe is after all an axe. For it is not of a body of this kind that the soul is the quiddity, that is, the notion or form, but of a natural body of a particular sort, having in itself the origination of motion and rest.

Further, we must view our statement in the light of the parts of the body. For, if the eye were an animal, eyesight would be its soul, this being the substance as notion or form of the eye. The eye is the matter of eyesight, and in default of eyesight it is no longer an eye, except equivocally,
like an eye in stone or in a picture. What has been said of the part must be understood to apply to the whole living body; for, as the sensation of a part of the body is to that part, so is sensation as a whole to the whole sentient body as such. By that which has in it the capacity of life is meant not the body which has lost its soul, but that which possesses it. Now the seed in animals, like the fruit in plants, is that which is potentially such and such a body. As, then, the cutting of the axe or the seeing of the eye is full actuality, so, too, is the waking state; while the soul is actuality in the same sense as eyesight and the capacity of the instrument. The body, on the other hand, is simply that which is potentially existent. But, just as in the one case the eye means the pupil in conjunction with the eyesight, so in the other soul and body together constitute the animal.

Now it needs no proof that the soul—or if it is divisible into parts, certain of its parts—cannot be separated from the body, for there are cases where the actuality belongs to the parts themselves. There is, however, no reason why some parts should not be separated, if they are not the actualities of any body whatever. Again, it is not clear whether the soul may not be the actuality of the body as the sailor is of the ship. This, then, may suffice for an outline or provisional sketch of soul.

But, as it is from the things which are naturally obscure, though more easily recognised by us, that we proceed to what is clear and, in the order of thought, more knowable, we must employ this method in trying to give a fresh account of soul. For it is not enough that the defining statement should set forth the fact, as most definitions do; it should also contain and present the cause: whereas in practice what is stated in the definition is usually no more than a conclusion. For example, what is quadrature? The construction of an equilateral rectangle equal in area to a given oblong. But such a definition expresses merely the conclusion. Whereas, if you say that quadrature is the discovery of a mean proportional, then you state the reason.

We take, then, as our starting-point for discussion that it is life which distinguishes the animate from the inanimate. But the term life is used in various senses; and, if life is present in but a
single one of these senses, we speak of a thing as living. Thus there is intellect, sensation, motion from place to place and rest, the motion concerned with nutrition and, further, decay and growth. Hence it is that all plants are supposed to have life. For apparently they have within themselves a faculty and principle whereby they grow and decay in opposite directions. For plants do not grow upwards without growing downwards; they grow in both directions equally, in fact in all directions, as many as are constantly nourished and therefore continue to live, so long as they are capable of absorbing nutriment. This form of life can be separated from the others, though in mortal creatures the others cannot be separated from it. In the case of plants the fact is manifest: for they have no other faculty of soul at all.

It is, then, in virtue of this principle that all living things live, whether animals or plants. But it is sensation primarily which constitutes the animal. For, provided they have sensation, even those creatures which are devoid of movement and do not change their place are called animals and are not merely said to be alive. Now the primary sense in all animals is touch. But, as the nutritive faculty may exist without touch or any form of sensation, so also touch may exist apart from the other senses. By nutritive faculty we mean the part of the soul in which even plants share. Animals, however, are found universally to have the sense of touch: why this is so in each of the two cases will be stated hereafter.

For the present it may suffice to say that the soul is the origin of the functions above enumerated and is determined by them, namely, by capacities of nutrition, sensation, thought, and by motion. But whether each one of these is a soul or part of a soul and, if a part, whether it is only logically distinct or separable in space also is a question, the answer to which is in some cases not hard to see: other cases present difficulties. For, just as in the case of plants some of them are found to live when divided and separated from each other (which implies that the soul in each plant, though actually one, is potentially several souls), so, too, when insects or annelida are cut up, we see the same thing happen with other varieties of soul: I mean, each of the segments has sensation and moves from place to place.
to place, and, if it has sensation, it has also imagination and appetency. For, where there is sensation, there is also pleasure and pain: and, where these are, desire also must of necessity be present. But as regards intellect and the speculative faculty the case is not yet clear. It would seem, however, to be a distinct species of soul, and it alone is capable of separation from the body, as that which is eternal from that which is perishable. The remaining parts of the soul are, as the foregoing consideration shows, not separable in the way that some allege them to be: at the same time it is clear that they are logically distinct. For the faculties of sensation and of opinion taken in the abstract are distinct, since to have sensation and to opine are distinct. And so it is likewise with each of the other faculties above mentioned. Again, while some animals possess all these functions, others have only some of them, others only one. It is this which will differentiate animal from animal. The reason why this is so must be investigated hereafter. The case is similar with the several senses: some animals have all of them, others some of them, others again only one, the most indispensable, that is, touch.

Now "that by which we live and have sensation" is a phrase with two meanings, answering to the two meanings of "that by which we know" (the latter phrase means, firstly, knowledge and, secondly, soul, by either of which we say we know). Similarly that by which we have health means either health itself or a certain part, if not the whole, of the body. Now of these knowledge and health are the shape and in some sort form, the notion and virtual activity, of that which is capable of receiving in the one case knowledge, in the other health: that is to say, it is in that which is acted upon or conditioned that the activity of the causal agencies would seem to take effect. Now the soul is that whereby primarily we live, perceive, and have understanding: therefore it will be a species of

notion or form, not matter or substratum. Of the three meanings of substance mentioned above, form, matter and the whole made up of these two, matter is potentiality and form is actuality. And, since the whole made up of the two is endowed with soul, the body is not the actuality of soul, but soul the actuality of a particular body. Hence those are right who regard the soul as not independent of body and yet at the same time as not itself a species of body. It is not body, but something belonging to body, and therefore resides in body and, what is more, in such and such a body. Our predecessors were wrong in endeavouring to fit the soul into a body without further determination of the nature and qualities of that body: although we do not even find that of any two things taken at random the one will admit the other. And this result is what we might expect. For the actuality of each thing comes naturally to be developed in the potentiality of each thing: in other words, in the appropriate matter. From these considerations, then, it is manifest that soul is a certain actuality, a notion or form, of that which has the capacity to be endowed with soul.

Of the powers of soul above mentioned, namely, those of nutrition, appetency, sensation, locomotion and understanding, some living things, as we remarked, possess all, others some, others again only one. Plants possess the nutritive faculty only: other things along with this have sensation; and, if sensation, then also appetency: where under appetency we include desire, anger and wish. But all animals have at least one sense, touch: and, where sensation is found, there is pleasure and pain, and that which causes pleasure and pain; and, where these are, there also is desire, desire being appetite for what is pleasurable. Again, they have a sensation concerned with nutriment, touch being such a sense. For it is by what is dry and moist, hot and cold, that all living things are nourished (and these qualities are perceived by touch, whereas the other sensibles are not, except incidentally): for sound, colour and odour contribute nothing to nutriment, while flavour...
is one of the tangible objects. Hunger again, and thirst are forms of desire, the one for what is hot or dry, the other for what is cold or moist. Flavour is, as it were, the seasoning of these. We will deal with these in detail hereafter: at present let it suffice to say that all animals which have the sense of touch are also endowed with appetency. Whether they have imagination is not clear: this, too, must be considered later. Some have in addition the power of locomotion. Others—that is to say, man and any other species like man or, possibly, superior to him—have also the thinking faculty and intellect.

From this it is clear that there is one definition of soul exactly as there is one definition of figure: for there is in the one case no figure excepting triangle, quadrilateral and the rest, nor is there in the other any species of soul apart from those above mentioned. Again, a definition might be constructed which should apply to all figures, but not specially to any species of figure. And similarly with the species of soul above enumerated. Hence it would be absurd here as elsewhere to seek a general definition which will not be properly a definition of anything in existence and will not be applicable to the particular irreducible species before us, to the neglect of the definition which is so applicable.

The types of soul resemble the series of figures. For, alike in figures and in things animate, the earlier form exists potentially in the later, as, for instance, the triangle potentially in the quadrilateral, and the nutritive faculty in that which has sensation. So that we must examine in each case separately, what is the soul of plant, of man or of beast. Why they are related in this order of succession remains to be considered. There is no sensitive faculty apart from the nutritive: and yet the latter exists without the former in plants. Again, none of the other senses is found apart from touch; while touch is found apart from the others, many animals having neither sight nor hearing nor sense of smell. Also of those which possess sensation, some can move from place to place, others cannot.
Lastly and most rarely, they have the reasoning faculty and thought. For those perishable creatures which possess reason are endowed with all the other species of soul, but not all those which possess each of the other faculties have reason. Indeed, some of them have not even imagination, while others live by imagination alone. As for the speculative intellect, it calls for a separate discussion. Meanwhile it is clear that an account of the several faculties is at the same time the most appropriate account of soul.

The enquirer who approaches this subject must ascertain what each of these faculties is before he proceeds to investigate the questions next in order and so forth. But if we are asked to state what each of these is; that is to say, what the cognitive, sensitive and nutritive faculties respectively are, we must begin by stating what the act of thinking is and what the act of sensation is. For activities and functions are logically prior to faculties. But, if so, and if a study of the correlative objects should have preceded, these objects will for the same reason have to be defined first: I mean, nutriment and the sensible and intelligible. Consequently we have first to treat of nutriment and of generation.

The nutritive soul belongs to other living things as well as man, being the first and most widely distributed faculty, in virtue of which all things possess life. Its functions are reproduction and assimilation of nutriment. For it is the most natural function in all living things, if perfect and not defective or spontaneously generated, to reproduce their species; animal producing animal and plant plant, in order that they may, so far as they can, share in the eternal and the divine. For it is that which all things yearn after, and that is the final cause of all their natural activity. Here final cause is an ambiguous term, which denotes either the purpose for which, or the person for whom, a thing is done. Since, then, individual things are incapable of sharing continuously in the eternal and the divine, because nothing in the world of perishables can abide numerically one, and the same, they partake in the eternal and

divine, each in the only way it can, some more, some less. That is
as to say, each persists, though not in itself, yet in a representative
which is specifically, not numerically, one with it.

Now the soul is cause and origin of the living body. But cause
and origin are terms used in various senses: accord-
ingly soul is cause in the three senses of the word
already determined. For the soul is the cause of
animate bodies as being in itself2 the origin of motion, as final
cause and as substance. Clearly it is so as substance, substance 4
being the cause of all existence. And for living things existence
means life, and it is the soul which is the cause and origin of life.
Furthermore, actuality is the notión or form of that which has
potential existence. Manifestly, too, the soul is final cause. For 5
nature, like intelligence, acts for a purpose, and this purpose is
for it an end. Such an end the soul is in animals, and this in the
order of nature, for all the natural bodies are instruments of soul:
and this is as true of the bodies of plants as of those of animals,
shewing that all are means to the soul as end; where end has two
senses, the purpose for which and the person for whom. Moreover, 6
the soul is also the origin of motion from place to place, but not
all living things have this power of locomotion. Qualitative change,
also, and growth are due to soul. For sensation is supposed to be a
sort of qualitative change, and nothing devoid of soul has sensation.
The same holds of growth and decay. For nothing undergoes
natural decay or growth except it be nourished, and nothing is
nourished unless it shares in life.

Empedocles is mistaken in adding that in plants, in so far as
they strike their roots downwards, growth takes place
because the earth in them has a natural tendency in
this direction and that, when they shoot upwards, it
is because the fire in them has a similar tendency upwards. He
is wrong in his view of up and down. For up and down are not the
same for all individuals as for the universe. On the contrary, the
roots of plants correspond to the heads of animals, if we are to

\[\text{Error of Empedocles.}\]

\[\text{Digression on the soul as threefold cause.}\]
make identity and diversity of organs depend upon their functions. Besides, what is it that holds together the fire and the earth, tending, as they do, in opposite directions? For they will be rent asunder, unless there is something to prevent it: while, if there is, it is this which is the soul and the cause of growth and nourishment.

Some hold the nature of fire to be singly and solely the cause of growth of nourishment and growth. For it would seem that fire is the only body or element which of itself is nourished and grows. Hence fire might be supposed to be the operative cause, both in plants and animals. Whereas, though it is in a sense a joint cause, it is not a cause absolutely: it is rather the soul which is so. For fire goes on growing to infinity, as long as there is fuel to be consumed, but in natural wholes there is always a limit or proportion which determines growth and size. But this belongs to the soul and not to fire, to form rather than to matter.

The nutritive faculty of the soul being the same as the reproductive, it is necessary first to give a definition of nutriment. For it is by the nutritive function that this faculty is separated off from the others. The common view is that contrary is nutriment to contrary; though not in every case, but wherever each of two contraries is not only generated by, but derives growth from, the other. For many things are derived from one another, but not all of them are quantities: thus the sick man becomes well. But it is found that even the contraries supposed to derive growth from each other are not fed by one another in the same way: while water serves to feed fire, fire is not nutriment to water. It would seem, then, that it is in the simple bodies above all that of two contraries one is nutriment and the other is nourished. Yet here is a difficulty. It is said by the one side that like is nourished by, as well as derives its growth from, like; while the others, again, as we explained, hold that contrary is nourished by contrary, on the ground that like cannot be affected by like, while food undergoes change and is digested. Now change is always in the direction of the opposite, or of the intermediate state. Further, nutriment is acted upon by that which it nourishes; and not the latter by the former: just as

*Fire is not the cause of growth.*

the carpenter is not affected by his material, but on the contrary
the material by the carpenter. The carpenter merely passes to
activity from inaction. But it makes a difference whether by \( \text{II} \)
nutriment we mean the final, or the primary, form of what is
added. If both are nutriment, the one as undigested, the other as
digested, it will be possible to use the term nutriment in conformity
with both theories. For, in so far as it is undigested, contrary is
nourished by contrary: and, in so far as it is digested, like by like.
So that clearly both sides are in a manner partly right and partly
wrong. But, since nothing is nourished unless it possesses life, \( \text{I}2 \)
that which is nourished must be the animate body as such: so that
nutriment also is relative to the animate being which it nourishes:
and this not incidentally merely.

There is, however, a difference between nutritivity and con-
ducivity to growth. In so far as the animate thing is
quantitative, what is taken promotes growth; in so far
as it is a definite individual, what is taken nourishes. For the
animate thing preserves its substance or essential nature and exists
as long as it is nourished: and it causes the production, not of that
which is nourished, but of another individual like it. Its essential
nature already exists, and nothing generates itself, it only main-
tains its existence. Hence the above described principle of the
soul is the power to preserve in existence that which possesses it
in so far as it is a definite individual, while nutrition prepares it
for activity. Therefore it cannot live when deprived of nutriment.
There are, then, these three things, that which is nourished, that \( \text{I}4 \)
with which it is nourished, and that which nourishes it. The last
of the three is the primary soul, that which is nourished is the
body which contains the soul, that wherewith it is nourished is
nutriment. As, however, it is right to name all things from the \( \text{I}5 \)
end they subserve, and the end here is reproduction of the species,
the primary soul is that which is capable of reproducing the
species. That with which the living thing is nourished may be \( \text{I}6 \)
understood in two senses, just as that with which one
steers may mean the hand or the rudder; the former, the
hand, both causing motion and being moved, the latter,
the rudder, being simply moved. Now it is necessary that all food
should be capable of digestion, and digestion is promoted by heat;
this explains why every animate thing has warmth. This, then,
is an outline of what nutriment is. It must be more clearly
defined hereafter in the discussion devoted specially to it.

Now that these points have been determined, let us proceed
to a general discussion of all sensation. As above
remarked, sensation consists in being moved and acted
upon, for it is held to be a species of qualitative change. Some
add that like is in fact acted upon by like. How far this is
possible or impossible we have explained in the general discussion
of action and passivity. The question arises why there is no
sensation of the senses themselves: that is, why they produce no
sensation apart from external sensibles, though the senses contain
fire, earth and the other elements, which are the objects of sensation
either in themselves or through their attributes. Evidently it
follows that the faculty of sensible perception exists not
in activity, but only in potentiality. Hence it must be
here as with the fuel which does not burn of and in
itself without something to make it burn; otherwise it would
kindle itself and would have no need of the fire which is actually
existent. Now to have sensation has two meanings: we use the
terms hearing and seeing of that which has the capacity to hear
and see, even though it be at the time asleep, just as we do of
that which already actually hears and sees. And therefore sen-
sation, too, will have two meanings: it may mean either potential
or actual sensation. Similarly with having sensation, whether
potential or actual.

Let us then first proceed on the assumption that to be acted
upon or moved is identical with active operation. For
movement is in fact active operation of some sort,
though incomplete, as we have elsewhere explained. But in
every case things are acted upon and moved by an agent in
actual operation. It follows that in one sense what is acted upon
is acted upon by what is like it, in another sense by what is unlike
it, as we have explained. That is to say, while being acted upon it
is unlike, after it has been acted upon it is like the agent.
We must also draw a distinction in regard to the terms potentiality and actuality: at present we are using them without qualification. For instance, we may use the term wise, firstly, in the sense in which we might speak of man as wise, because man is one of the genus of beings which are wise and have wisdom; secondly, in the sense in which we at once call the man wise who has learnt, say, grammar. Now of these two men each possesses the capacity, but in a different sense: the one because the genus to which he belongs, that is to say, his matter, is potentially wise; the other because he is capable, if he chose, of applying the wisdom he has acquired, provided there is nothing external to hinder. Whereas he who is at the moment exercising his wisdom is in actuality and is wise in the proper sense of the term: for example, he knows the A before him. Thus the first two are both potentially wise: the first becomes wise actually after he has undergone qualitative change through instruction and often after transition from the reverse condition; while in the latter case it is by another kind of transition that the man passes from the mere possession, without the use, of sensation or grammar to the use of it.

To suffer or be acted upon, too, is a term of more than one meaning. Sometimes it means a sort of destruction by the contrary, sometimes it is rather a preservation of what is potentially existent by what is actually existent and like it, so far as likeness holds of potentiality when compared with actuality. For it is by exercise of knowledge that the possessor of knowledge becomes such in actuality: and this either is no qualitative change (for the thing develops into its own nature and actuality), or else is qualitative change of a different sort. Hence it is not right to say that that which thinks undergoes change when it thinks, any more than that the builder undergoes change when he builds. That, then, which works the change from potential existence to actuality in a thinking and intelligent being should properly receive a different name and not be called instruction: while that which learns and is brought from potential to actual knowledge by that which is in actuality and capable of instructing should either not be said to suffer or be acted upon at

all, or else two modes of change should be assumed, one to the negative states and the other to the normal habits and the true nature.

In the sensitive subject the first change is due to the parent: once generated it possesses sensation exactly in the same sense as we possess knowledge. And to have actual sensation corresponds to exercise of knowledge. There is this difference, however, that in the one case the causes of the activity are external: as, for instance, the objects of sight, hearing and the other senses. The reason is that actual sensation is always of particulars, while knowledge is of universals: and these universals are, in a manner, in the soul itself. Hence it is in our power to think whenever we please, but sensation is not in our power: for the presence of the sensible object is necessary. It is much the same with the sciences which deal with sensible objects; and for the same reason, namely, that sensibles are particulars and are external.

But we shall have a further opportunity of making this clear hereafter. For the present let us be content to have established that of the two meanings of potentiality, the one according to which a child might be called potentially a general, and the other according to which a man of full age might be so called, it is the latter which applies to the faculty of sense-perception. But as this distinction has no word to mark it, although the fact and the nature of the distinction have been established, we are compelled to use the terms to suffer or be acted upon and to be qualitatively changed as if they were the proper terms. Now, as has been explained, the sensitive faculty is potentially such as the sensible object is in actuality. While it is being acted upon, it is not yet similar, but, when once it has been acted upon, it is assimilated and has the same character as the sensible object.

In considering each separate sense we must first treat of their objects. By the sensible object may be meant any one of three things, two of which we say are perceived in themselves or directly, while the third is perceived per accidens or indirectly. Of the first two the one is the special object of a particular sense, the other an object common to all the senses. By a special object of a particular sense I mean that which cannot be perceived by any other sense and in respect to which deception is impossible; for
example, sight is of colour, hearing of sound and taste of flavour, while touch no doubt has for its object several varieties. But at any rate each single sense judges of its proper objects and is not deceived as to the fact that there is a colour or a sound; though as to what or where the coloured object is or what or where the object is which produces the sound, mistake is possible. Such then, are the 3 special objects of the several senses. By common sensibles are meant motion, rest, number, figure, size: for such qualities are not the special objects of any single sense, but are common to all. For example, a particular motion can be perceived by touch as well as by sight. What is meant 4 by the indirect object of sense may be illustrated if we suppose that the white thing before you is Daires' son. You perceive Daires' son, but indirectly, for that which you perceive is accessory to the whiteness. Hence you are not affected by the indirect sensible as such. Of the two classes of sensibles directly perceived it is the objects special to the different senses which are properly perceptible: and it is to these that the essential character of each sense is naturally adapted.

The object, then, of sight is the visible: what is visible is colour 7 and something besides which can be described, though it has no name. What we mean will best be made clear as we proceed. The visible, then, is colour. Now colour is that with which what is visible in itself is overlaid: and, when I say in itself, I do not mean what is visible by its essence or form, but what is visible because it contains within itself the cause of visibility, namely, colour. But colour is universally capable of exciting change in the actually transparent, that is, in light; this being, in fact, the true nature of colour. Hence colour is not visible without light, but the colour of each object is always seen in light. And so we shall have first to explain what light is.

There is, then, we assume, something transparent; and by this 2 The medium. I mean that which, though visible, is not properly speaking, visible in itself, but by reason of extrinsic colour. Air, water and many solid bodies answer to this description. For they are not transparent quid air or quid water,
but because there is a certain natural attribute present in both of them which is present also in the eternal body on high. Light is the actuality of this transparent quid transparent. But where the transparent is only potentially present, there darkness is actually. Light is a sort of colour in the transparent when made transparent in actuality by the agency of fire or something resembling the celestial body: for this body also has an attribute which is one and the same with that of fire. What the transparent is, and what light is, has now been stated; namely, that it is neither fire nor body generally nor an effluence from any body (for even then it would still be a sort of body), but the presence of fire or something fiery in the transparent. For it is impossible for two bodies to occupy the same space at the same time.

Light is held to be contrary to darkness. But darkness 3 is absence from the transparent of the quality above described: so that plainly light is the presence of it. Thus Empedocles and others who propounded the same view are wrong when they represent light as moving in space and arriving at a given point of time between the earth and that which surrounds it without our perceiving its motion. For this contradicts not only the clear evidence of reason, but also the facts of observation: since, though a movement of light might elude observation within a short distance, that it should do so all the way from east to west is too much to assume.

It is that which is colourless which is receptive of colour, as 4 it is that which is soundless which is receptive of sound. And the transparent is colourless, and so is the invisible or the dimly visible which is our idea of the dark. Such is the transparent medium, not indeed when it is in actuality, but when potentially transparent. For it is the same natural attribute which is at one time darkness and at another time light. It is not everything visible which is visible in light, but only the proper colour of each thing. Some things, indeed, are not seen in daylight, though they produce sensation in the dark: as, for example, the things of fiery and glittering appearance, for which there is no one distinguishing name, like fungus, horn,
the heads, scales and eyes of fishes. But in no one of these cases is the proper colour seen. Why these objects are seen must be discussed elsewhere. At present this much is clear, that the object seen in light is colour, and this is why it is not seen without light. For the very quiddity of colour is, as we saw, just this, that it is capable of exciting change in the operantly transparent medium: and the activity of the transparent is light. There is clear evidence of this. If you lay the coloured object upon your eye, you will not see it. On the contrary, what the colour excites is the transparent medium, say, the air, and by this, which is continuous, the sense-organ is stimulated. For it was a mistake in Democritus 6 to suppose that if the intervening space became a void, even an ant would be distinctly seen, supposing there were one in the sky. That is impossible. For sight takes place through an affection of the sensitive faculty. Now it cannot be affected by that which is seen, the colour itself: therefore it can only be by the intervening medium: hence the existence of some medium is necessary. But, if the intermediate space became a void, so far from being seen distinctly, an object would not be visible at all.

We have explained the reason why colour must be seen in light. Fire is visible both in light and in darkness: and necessarily so, for it is owing to fire that the transparent becomes transparent. The same argument holds for sound and odour. For no sound 8 or scent produces sensation by contact with the sense-organ: it is the intervening medium which is excited by sound and odour and the respective sense-organs by the medium. But, when the body which emits the sound or odour is placed on the sense-organ itself, it will not produce any sensation. The same holds of touch and taste, although it appears to be otherwise. The reason for this will be seen hereafter. The medium for sounds is air, that for odour 9 has no name. For there is assuredly a common quality in air and water, and this quality, which is present in both, stands to the body which emits odour in the same relation as the transparent medium.
to colour. For the animals that live in water also appear to have the sense of smell. But man and the other land-animals which breathe are unable to smell without inhaling breath. The reason for this, too, must be reserved for future explanation.

Let us now begin by determining the nature of sound and hearing. There are two sorts of sound, one a sound which is operant, the other potential sound. For some things we say have no sound, as sponge, wool; others, for example, bronze and all things solid and smooth, we say have sound, because they can emit sound, that is, they can produce actual sound between the sonorous body and the organ of hearing. When actual sound occurs it is always of something on something and in something, for it is a blow which produces it. Hence it is impossible that a sound should be produced by a single thing, for, as that which strikes is distinct from that which is struck, that which sounds sounds upon something. And a blow implies spatial motion. As we stated above, it is not concussion of any two things taken at random which constitutes sound. Wool, when struck, emits no sound at all, but bronze does, and so do all smooth and hollow things; bronze emits sound because it is smooth, while hollow things by reverberation produce a series of concussions after the first, that which is set in motion being unable to escape.

Further, sound is heard in air and, though more faintly, in water. It is not the air or the water, however, which chiefly determine the production of sound: on the contrary, there must be solid bodies colliding with one another and with the air: and this happens when the air after being struck resists the impact and is not dispersed. Hence the air must be struck quickly and forcibly if it is to give forth sound; for the movement of the striker must be too rapid to allow the air time to disperse: just as would be necessary if one aimed a blow at a heap of sand or a sandwhirl, while it was in rapid motion onwards.

Sound and hearing.

Echo is produced when the air is made to rebound backwards like a ball from some other air which has become a single mass owing to its being within a cavity which confines itself to colour. For the animals that live in water also appear to have the sense of smell. But man and the other land-animals which breathe are unable to smell without inhaling breath. The reason for this, too, must be reserved for future explanation.

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Echo.

it and prevents its dispersion. It seems likely that echo is always produced, but is not always distinctly audible: since surely the same thing happens with sound as with light. For light is always being reflected; else light would not be everywhere, but outside the spot where the sun's rays fall there would be darkness. But it is not always reflected in the same way as it is from water or bronze or any other smooth surface; I mean, it does not always produce the shadow, by which we define light.

Void is rightly stated to be the indispensable condition of 5 hearing. For the air is commonly believed to be a void, and it is the air which causes hearing, when being one and continuous it is set in motion. But, owing to its tendency to disperse, it gives out no sound unless that which is struck is smooth. In that case the air when struck is simultaneously reunited because of the unity of the surface; for a smooth body presents a single surface.

That, then, is resonant which is capable of exciting motion in 6 a mass of air continuously one as far as the ear. There is air naturally attached to the ear. And because the ear is in air, when the external air is set in motion, the air within the ear moves. Hence it is not at every point that the animal hears, nor that the air passes through: for it is not at every point that the part which is to set itself in motion and to be animate has a supply of air. Of itself, then, the air is a soundless thing because it is easily broken up. But, whenever it is prevented from breaking up, its movement is sound. But the air within the ears has been lodged fast within walls to make it immovable, in order that it may perceive exactly all the varieties of auditory movement. This is why we hear in water also, because the water does not pass right up to the air attached to the ear, nor even into the ear at all, because of its convolutions. Should this happen, hearing is destroyed, as it is by an injury to the membrane of the tympanum, and as sight is by an injury to the cornea. Further, we have evidence whether we hear or not, according as there is or is not always a ringing sound in

Torst., ἀλλὰ non leg. Philop. Soph. || 7. ἐκφύειν etiam Philop. Soph., ἐκφύειν coni. Torst., cui assentiumatur Hayduck et Dittenberger, p. 1615, ἐκφύειν, ὅστε ἡ κόρη τὸ ἀνθρώποι τῷ Ψρᾶτι, ὑπὸ τῷ Ψρᾶτι, ὑπὸ τῷ Ψρᾶτι τῷ Ψρᾶτι, τῷ Ψρᾶτι, τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρᾶτι τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρὰ τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τῷ Ψρα τ焐లα unc. incl. Torst., leg. Simpl. Philop. Soph. || 14. ἀφ' Ἅτ' Ἴπτ || 15. ἐν τοῖς κανύου unc. inclusit Biehl, om. E T W P y Soph. || ἀλλὰ usque ad 18. ἓρας unc. incl. Torst., tuentur Them. Simpl. Philop. Soph.
the ears, as in a horn: for the air imprisoned there is always moving with a proper motion of its own. But sound is something of external origin and is not native to the ear. And this is why it is said that we hear by means of what is empty and resonant, because that by which we hear has air confined within it.

Does that which is struck emit the sound or that which strikes? Is it not rather both, but each in a different way? For sound is motion of that which is capable of being moved in the same manner as things rebound from smooth surfaces when struck sharply against them. Thus, as above remarked, it is not everything which, when struck or striking, emits sound: supposing, for instance, a pin were to strike against a pin, there would be no sound. The thing struck must be of even surface, so that the air may rebound and vibrate in one mass.

The varieties of resonant bodies are clearly distinguished by the sound they actually emit. For, as without light colours are not seen, so without sound we cannot distinguish high and low or acute and grave in pitch. These latter terms are used by analogy from tangible objects. For the acute, that is, the high, note moves the sense much in a little time, while the grave or low note moves it little in much time. Not that what is shrill is identically rapid, nor what is low is slow, but it is in the one case the rapidity, in the other the slowness, which makes the motion or sensation such as has been described. And it would seem that there is a certain analogy between the acute and grave to the ear and the acute and blunt to the touch. For that which is acute or pointed, as it were, stabs, while the blunt, as it were, thrusts, because the one excites motion in a short, the other in a long time, so that *per accidens* the one is quick, the other slow. Let this account of sound suffice.

Voice is a sound made by an animate being. No inanimate thing is vocal, though it may by analogy be said to be vocal, as in the case of the pipe, the lyre and all other inanimate things that have pitch and tune and articulation: for these qualities, it would seem, the voice also possesses. But many animals have no voice: that is to say, all bloodless animals and, among animals that have blood, fishes. And this is what we might expect, since sound is a movement of air. Those fishes which

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\(\text{CH. 8} \quad 420 \ \text{a} \ 16—420 \ \text{b} \ 11 \quad 87\)

\(\text{ly} \delta \text{hes et post II.} \ \psi \phi \phi \ \text{virculas ponendas et kal...11.} \ \psi \phi \phi \ \text{post 13.} \ \tau \omega \nu \omega \tau \nu \ \text{transponendum censet Susemihl || II.} \ \text{etep...} \ \psi \phi \phi \ \text{fortasse corrpta esse putat Torst., leg. Philop. Soph. Them. (qui pro} \ \psi \phi \phi \ \text{habet} \ \varphi \omega \eta \text{)} \ || \ \text{vis om.} \ \text{SU} \ \text{V} \ \text{X et in paraphr. Them. Philop. leg. Soph. || II.} \ \delta \lambda \text{'13.} \ \tau \omega \nu \omega \tau \nu \text{unc. incl.} \ \text{Torst., leg. Them. Philop. Soph., defendunt Wilson, Phil. Rundschau 1882, N. 47, Trans. of Ox. Phil. Soc. 1882-3, p. 9 et Susemihl.}\)
are said to possess voice, such as those in the Achelous, merely
make a noise with their gills or some other such part. Voice is sound made by an animal, and not by any part of its body in-
differently. But, as in every case of sound there is something
that strikes, something struck and a medium, which is air, it is
reasonable that only creatures which inhale air should have voice.
For here nature uses the air that is inhaled for two purposes, just
as it uses the tongue for tasting and for speech, the former use, for
tasting, being indispensable and therefore more widely found, while
expression of thought is a means to well-being. Similarly nature uses
the breath first as a necessary means to the maintenance of internal
warmth (the reason for which shall be explained elsewhere) and,
further, as a means of producing voice and so promoting well-being.
The organ of respiration is the larynx, and the part to which this
part is subservient is the lung: for it is this organ, namely, the
lung, which enables land animals to maintain a higher temperature
than others. Respiration is also needed primarily for the region about
the heart. Hence, as we draw breath, the air enters: and so the
impact upon the windpipe, as it is called, of the air breathed is
voice, the cause of the impact being the soul which animates the
vocal organs. For, as we said before, it is not every sound made
by an animal that is voice. Noise can be produced even with the
tongue or as in coughing: but it is necessary for voice that the
part which strikes should be animate and that some mental image
should be present. For voice is certainly a sound which has signifi-
cance and is not like a cough, the noise of air respired: rather with
this air the animal makes the air in the windpipe strike against the
windpipe. A proof of this is the fact that we cannot speak while
inhaling or exhaling breath, but only while we hold it in: for
anyone who holds his breath uses the breath so held to cause
motion. And it is evident why fishes are voiceless. It is because
they have no larynx. And they are without this part because
they do not take in the air nor breathe. Why this is so does not
concern us here.
Of smell and the object of smell it is less easy to speak definitely than of the senses above-mentioned: for the nature of odour is by no means so clear as is the nature of sound or of colour. The reason is that this sense in us is not exact, but inferior to that of many animals. In fact, man has a poor olfactory sense and perceives none of the objects of smell unless they be painful or pleasant, which implies that the organ is wanting in accuracy. It is reasonable to suppose that animals with hard eyes perceive colour in the same vague way and do not distinguish the varieties of colour except in so far as they do, or do not, inspire fear. And this is the way in which mankind perceive odours. For it would seem that, while there is an analogy to taste and the varieties of flavour answer to the varieties of smell, our sense of taste is more exact because it is a modification of touch and the sense of touch is the most exact of man’s senses. In the other senses man is inferior to many of the animals, but in delicacy of touch he is far superior to the rest. And to this he owes his superior intelligence. This may be seen from the fact that it is this organ of sense and nothing else which makes all the difference in the human race between the natural endowments of man and man. For hard-skinned men are dull of intellect, while those who are soft-skinned are gifted.

As with flavours, so with odours: some are sweet, some bitter. (But in some objects smell and flavour correspond; for example, they have sweet odour and sweet flavour: in other things the opposite is the case.) Similarly, too, an odour may be pungent, irritating, acid or oily. But because, as we said above, odours are not as clearly defined as the corresponding flavours, it is from these latter that the odours have taken their names, in virtue of the resemblance in the things. Thus the odour of saffron and honey is sweet, while the odour of thyme and the like is pungent; and so in all the other cases. Again, smell corresponds to hearing and to each of the other senses in that, as hearing is of the audible and inaudible, and

\[\text{Varieties of odour and flavour.}\]

\[\text{As with flavours, so with odours: some are sweet, some bitter.}\]
sight of the visible and invisible, so smell is of the odorous and inodorous. By inodorous may be meant either that which is wholly incapable of having odour or that which has a slight or faint odour. The term tasteless involves a similar ambiguity.

Further, smell also operates through a medium, namely, air or water. For water animals, too, whether they are, or are not, possessed of blood, seem to perceive odour as much as the creatures in the air: since some of them also come from a great distance to seek their food, guided by the scent.

Hence there is an obvious difficulty, if the process of smell is everywhere the same, and yet man smells when inhaling but does not smell when instead of inhaling he is exhaling or holding his breath, no matter whether the object be distant or near, or even if it be placed on the inside of the nostril. The inability to perceive what is placed immediately on the sense-organ man shares with all animals: what is peculiar to him is that he cannot smell without inhaling. This is made plain by experiment. Consequently bloodless animals, since they do not breathe, might be thought to have a distinct sense other than those commonly recognised. But, we reply, that is impossible, since it is odour which they perceive. For perception of odour, be it fragrant or noisome, constitutes smelling. Moreover, it is found that these bloodless animals are destroyed by the same powerful odours as man, such as asphalt, brimstone and the like. It follows then that they do smell, but not by inhaling breath.

It would seem, again, that in man the organ of this sense differs from that of the other animals, as his eyes differ from those of hard-eyed animals. Man's eyes have, in the eyelids, a sort of screen or sheath and without moving or opening them he cannot see: while the hard-eyed animals have nothing of the kind, but at once see whatever is taking place in the transparent medium. So, too, it seems, the organ of smell in some animals is unenclosed, just as is the eye, but in those which take in the air it has a curtain, which is removed in the process of inhaling, by dilatation of the veins and passages. And this is the
reason why animals which breathe cannot smell in the water. For it is necessary for them to take in breath before smelling and this they cannot do in the water. Odour is included under that which is dry, as flavour under that which is moist, and the organ of smell is potentially dry also.

The object of taste is a species of tangible. And this is the reason why it is not perceived through a foreign body as medium: for touch employs no such medium either. The body, too, in which the flavour resides, the proper object of taste, has the moist, which is something tangible, for its matter or vehicle. Hence, even if we lived in water, we should still perceive anything sweet thrown into the water, but our perception would not have come through the medium, but by the admixture of sweetness with the fluid, as is the case with what we drink. But it is not in this way, namely, by admixture, that colour is perceived, nor yet by emanations. Nothing, then, corresponds to the medium; but to colour, which is the object of sight, corresponds the flavour, which is the object of taste. But nothing produces perception of flavour in the absence of moisture, but either actually or potentially the producing cause must have liquid in it: salt, for instance, for that is easily dissolved and acts as a dissolvent upon the tongue.

Again, sight is of the invisible as well as the visible (for darkness is invisible and this, too, sight discerns as well as light) and, further, of that which is exceedingly bright, which is likewise invisible, though in a different way from darkness. Similarly hearing has to do with noise and silence, the former being audible, the latter inaudible, and, further, with loud noise, to which it is related as vision is to brightness, a loud and a violent sound being in a manner just as inaudible as a faint sound. The term invisible, be it noted, is applied not only to that which it is wholly impossible to see, which corresponds to other cases of the impossible, but also when a thing has imperfectly or not at all its natural properties, answering to the footless and the kernel-less. So, too, taste has for object not only that which can be tasted, but also the tasteless, by which we mean that which has little flavour or hardly any at all, or a flavour destructive of the taste. Now in flavour this distinction is supposed to start with the drinkable and the
undrinkable. Both are tastes of a sort, but the latter is poor or destructive of the faculty of taste, while the former is naturally adapted to it. The drinkable is the common object of touch and of taste. But, since the object of taste is moist, the sense-organ which perceives it must be neither actually moist nor yet incapable of becoming moist. For taste is acted upon by the object of taste as such. The organ of taste, then, which needs to be moistened, must have the capacity of absorbing moisture without being dissolved, while at the same time it must not be actually moist. A proof of this is the fact that the tongue has no perception either when very dry or very moist. In the latter case the contact is with the moisture originally in the tongue, just as when a man first makes trial of a strong flavour and then tastes some other flavour; or as with the sick, to whom all things appear bitter because they perceive them with their tongue full of bitter moisture.

As with the colours, so with the species of flavour, there are, firstly, simple flavours, which are opposites, the sweet and the bitter; next to these on one side the succulent, on the other the salt; and, thirdly, intermediate between these, the pungent, the rough, the astringent and the acid. These seem to be practically all the varieties of flavour. Consequently, while the faculty of taste has potentially the qualities just described, the object of taste converts the potentiality into actuality.

The same account is to be given of touch and the tangible. If touch is not a single sense but includes more senses than one, there must be a plurality of tangible objects also. It is a question whether touch is several senses or only one. What, moreover, is the sense-organ for the faculty of touch? Is it the flesh or what is analogous to this in creatures that have not flesh? Or is flesh, on the contrary, the medium, while the primary sense-organ is something different, something internal? We may argue thus: every sense seems to deal with a single pair of opposites, sight with white and black, hearing with high and low pitch, taste with bitter and sweet; but under the tangible are included several pairs of opposites, hot and cold, dry and moist, hard and soft and the like. A partial solution of this difficulty lies in the con-

sideration that the other senses also apprehend more than one pair of opposites. Thus in vocal sound there is not only high and low pitch, but also loudness and faintness, smoothness and roughness, and so on. In regard to colour also there are other similar varieties. But what the one thing is which is subordinated to touch as sound is to hearing is not clear.

But is the organ of sense internal or is the flesh the immediate organ? No inference can be drawn, seemingly, from the fact that the sensation occurs simultaneously with contact. For even under present conditions, if a sort of membrane were constructed and stretched over the flesh, this would immediately on contact transmit the sensation as before. And yet it is clear that the organ of sense is not in this membrane; although, if by growth it became united to the flesh, the sensation would be transmitted even more quickly. Hence it appears that the part of the body in question, that is, the flesh, is related to us as the air would be if it were united to us all round by natural growth. We should then have thought we were perceiving sound, colour and smell by one and the same instrument: in fact, sight, hearing and smell would have seemed to us in a manner to constitute a single sense. But as it is, owing to the media, by which the various motions are transmitted, being separated from us, the difference of the organs of these three senses is manifest. But in regard to touch this point is at present obscure.

In fact, the animate body cannot consist of air or water singly, it must be something solid. The only alternative is that it should be a compound of earth and of these elements, as flesh and what is analogous to flesh profess to be. Consequently the body must be the naturally cohering medium for the faculty of touch, through which the plurality of sensations is communicated. That they are a plurality is made clear by touch in the case of the tongue, for the tongue perceives all tangible objects, and that at the same part at which it perceives flavour. Now, if the rest of the flesh also had perception of flavour, taste and touch would have seemed to be one and the same sense: whereas they are really two, because their organs are not interchangeable.

Here a question arises. All body has depth, this being the 6th third dimension, and, if between two bodies a third body is interposed, the two cannot touch one another. Now that which is fluid is not independent of body, nor is that which is wet: if it is not itself water, it must contain water. But when bodies touch one another in the water, since their exterior surfaces are not dry, there must be water between them, the water with which their extremities are flooded. If, then, all this be true, no one thing can possibly touch another in the water, nor yet in the air: for the air stands to the objects in the air as water to the things in water, but this fact we are more apt to overlook, just as aquatic animals fail to notice that the things which touch one another in the water have wet surfaces. The 7 question then arises: is the mode of perception uniform for all objects or does it differ for different objects? According to the prevalent view, taste and touch operate by direct contact, while the other senses operate at a distance. But this view is incorrect. On the contrary, we perceive the hard and the soft also mediatly, just as much as we do the resonant, the visible, the odorous. But the latter are perceived at a distance, the former close at hand: and this is why the fact escapes us, since we really perceive all objects through a medium, though in touch and taste we fail to notice this. And yet, as we mentioned above, even if we perceived all objects of touch through a membrane without being aware of its interference, we should be just in the same position as we now with regard to objects in the water or in the air: for, as it is, we suppose that we are touching the objects themselves and that there is no intervening medium. But there is 8 this difference between the tangible on the one hand and visible and resonant things on the other: the latter we perceive because the medium acts in a certain way upon us, while tangible objects we perceive not by any action upon us of the medium, but concurrently with it, like the man who is struck through his shield. It is not that the shield was first struck and then passed on the blow, but, as it happened, both were struck simultaneously. And, 9 generally, it would seem that the flesh and the tongue are related.
to the true sense-organ as are air and water to the organs of sight, 
hearing and smell respectively. But neither in the one case nor in 
the other would sensation follow on contact with the sense-organ; 
for instance, if a body that is white were placed on the outer 
surface of the eye: which shows that the instrument that appre-
hends the tangible is within. We should then get the same result 
as in the case of the other senses. What is placed on the sense-
organ we do not perceive: what is placed on the flesh we do 
perceive: therefore flesh is the medium for the faculty of touch.

It is, then, the distinctive qualities of body as body which are 10 
the objects of touch: I mean those qualities which determine the 
Tangible qualities.
elements, hot or cold, dry or moist, of which we have 
previously given an account in our discussion of the 
elements. And their sense-organ, the tactile organ, that is, in II 
which the sense called touch primarily resides, is the part which has 
potentially the qualities of the tangible object. For perceiving is 
a sort of suffering or being acted upon: so that when the object 
makes the organ in actuality like itself it does so because that organ 
is potentially like it. Hence it is that we do not perceive what 
is just as hot or cold, hard or soft, as we are, but only 
the excesses of these qualities: which implies that the 
Sense a mean.
sense is a kind of mean between the opposite extremes in the 
sensibles. This is why it passes judgment on the things of sense. 
For the mean is capable of judging, becoming to each extreme 
in turn its opposite. And, as that which is to perceive white and 
black must not be actually either, though potentially both, and 
similarly for the other senses also, so in the case of touch the 
organ must be neither hot nor cold. Further, sight is in a manner, 12 
The in-
tangible.
as we saw, of the invisible as well as the visible, and 
in the same way the remaining senses deal with oppo-
sites. So, too, touch is of the tangible and the intangible: where 
by intangible is meant, first, that which has the distinguishing 
quality of things tangible in quite a faint degree, as is the case 
with the air; and, secondly, tangibles which are in excess, such as 
those which are positively destructive. Each of the senses, then, 
has now been described in outline.
In regard to all sense generally we must understand that sense is that which is receptive of sensible forms apart from their matter, as wax receives the imprint of the signet-ring apart from the iron or gold of which it is made: it takes the imprint which is of gold or bronze, but not quite gold or bronze. And similarly sense as relative to each sensible is acted upon by that which possesses colour, flavour or sound, not in so far as each of those sensibles is called a particular thing, but in so far as it possesses a particular quality and in respect of its character or form. The primary sense-organ is that in which such a power resides, the power to receive sensible forms. Thus the organ is one and the same with the power, but logically distinct from it. For that which perceives must be an extended magnitude. Sensitivity, however, is not an extended magnitude, nor is the sense: they are rather a certain character or power of the organ. From this it is evident why excesses in the sensible objects destroy the sense-organs. For if the motion is too violent for the sense-organ, the character or form (and this, as we saw, constitutes the sense) is annulled, just as the harmony and the pitch of the lyre suffer by too violent jangling of the strings. It is evident, again, why plants have no sensation, although they have one part of soul and are in some degree affected by the things themselves which are tangible: for example, they become cold and hot. The reason is that they have in them no mean, no principle capable of receiving the forms of sensible objects without their matter, but on the contrary, when they are acted upon, the matter acts upon them as well. It might be asked whether what is unable to smell would be in any way acted upon by an odour, or that which is incapable of seeing by a colour, and so for the other sensibles. But, if the object of smell is odour, the effect it produces, if it produces an effect at all, is smelling. Therefore none of the things that are unable to smell can be acted upon by odour, and the same is true of the other senses: nor can things be acted upon when they have the power of sensation, except as they individually possess the particular sense required. This may also be shown as follows. Light and darkness do not act upon bodies at all; neither does sound nor odour: it is the things which possess them that act. Thus it is the air accompanying the thunderbolt which rives the timber. But, it may be said, things tangible and
flavours do so act: else by what agency are inanimate things acted upon or changed? Shall we, then, conclude that the objects of the other senses likewise act directly? Is it not rather the case that not all body can be affected by smell and sound, and that the bodies which are so affected are indeterminate and shifting; for example, air? For odour in the air implies that the air has been acted upon in some way. What then is smelling, besides a sort of suffering or being acted upon? Or shall we say that the act of smelling implies sense-perception, whereas the air, after it has been acted upon, so far from perceiving, at once becomes itself perceptible to sense?
DE ANIMA. BOOK III.

That there is no other sense distinct from the five, by which I mean sight, hearing, smell, taste, touch, anyone may convince himself on the following grounds. Let us assume that, as a matter of fact, we have sensation of every sensible object for which touch is the appropriate sense, all qualities of the tangible, as such, being perceptible to us through touch. Let us further assume that, when any sense is lacking to us, an organ of sense must also be lacking; and further, that whatever we perceive by actual contact is perceptible by touch, a sense which we do possess, while whatever we perceive mediately and not by actual contact is perceptible by means of the elements, namely, air and water. And here are implied two cases. Suppose, first, we have perception by one and the same medium of two several things, different in kind from one another, then whoever possesses the appropriate sense-organ must be percipient of both: as, for example, if the sense-organ consists of air and air is also the medium of both sound and colour. Next suppose several media to transmit the same object, as both air and water transmit colour, both being transparent, then he who possesses one of these alone will perceive whatever is perceptible through both media. Now, of the elements, air and water are the only two of which sense-organs are composed. For the pupil of the eye is of water, and the ear is of air, and the organ of smell is of one or the other, while fire, if present anywhere, enters into all, since nothing can be sentient without warmth. Earth, again, belongs to none of the sense-organs, or, at most, is a constituent peculiar to touch. It follows, then, that outside water and air there is no sense-organ. Now sense-organs composed of air and water
certain animals do, in fact, possess. We may infer, then, that all the senses are possessed by those animals which are fully developed and are not crippled: even the mole is found to have eyes beneath its skin. And thus, unless there exists some unknown body or some property different from any possessed by any of the bodies within our experience, there can be no sixth sense which we lack.

Nor, again, can there be any special sense-organ for the common sensibles, which we perceive incidentally by every sense; for example, motion, rest, figure, magnitude, number, unity. For all of these we perceive by motion. Thus it is by motion that we perceive magnitude, and consequently figure, figure being one variety of magnitude; while that which is at rest we perceive by the fact that it is not moved. Number we perceive by the negation of continuity and by the special sense-organs also: for each sensation has a single object. Clearly, then, it is impossible that there should be a special sense for any one of these; for example, motion: for in that case we should perceive them in the same way as we now perceive sweetness by sight (and this we do because we have a sense which perceives both, and by this we actually apprehend the two simultaneously when they occur in conjunction). Otherwise we should never have more than an incidental perception of them; as of Cleon's son we perceive not that he is Cleon's son, but that he is a white object, and the fact of his being Cleon's son is accessory to the whiteness. But of the common sensibles we have already a common perception, which is direct and not indirect, so that there cannot be a special sense for them. For, if there were, we should never perceive them otherwise than in the way in which we said Cleon's son.
But the various senses incidentally perceive each other's proper objects, not as so many separate senses, but as forming a single sense, when there is concurrent perception relating to the same object; as, for instance, when we perceive that gall is bitter and yellow. For it is certainly not the part of any other sense to declare that both objects are one and the same. Hence you are sometimes deceived and, on observing something yellow, fancy it to be gall.

But, it might be asked, why have we several senses, instead of only one? I answer, it is in order that we may not be so likely to overlook the common attributes, such as motion, magnitude, number, which accompany the special sensibles. For, if sight had been our only sense and whiteness its object, we should have been more apt to overlook the common sensibles and to confuse all sensibles, because colour and magnitude, for instance, must always go together. As it is, the fact that the common attributes are found in the object of another sense also shows that they are severally distinct.

Inasmuch as we perceive that we see and hear, it must either be by sight or by some other sense that the percipient perceives that he sees. But, it may be urged, the same sense which perceives sight will also perceive the colour which is the object of sight. So that either there will be two senses to perceive the same thing or the one sense, sight, will perceive itself. Further, if the sense perceiving sight were really a distinct sense, either the series would go on to infinity or some one of the series of senses would perceive itself. Therefore it will be better to admit this of the first in the series. Here, however, there is a difficulty. Assuming that to perceive by sight is to see and that it is colour or that which possesses colour which is seen, it may be argued that, if you are to see that which sees, that which in the first instance sees, the primary visual organ, will actually have colour. Clearly, then, to perceive by sight does not always mean one and the same thing. For, even when we do not see, it is nevertheless by sight that we discern both darkness and light, though not in the same manner. Further, that which sees is in a manner coloured. For the sense-organ is in every case...
receptive of the sensible object without its matter. And this is why the sensations and images remain in the sense-organs even when the sensible objects are withdrawn.

Now the actuality of the sensible object is one and the same with that of the sense, though, taken in the abstract, sensible object and sense are not the same. I mean, for example, actual sound and actual hearing are the same: for it is possible to have hearing and yet not hear; again, that which is resonant is not always sounding. But when that which is capable of hearing operantly hears and that which is capable of sounding sounds, the actual hearing and the actual sound occur simultaneously, and we might, if we pleased, call them audition and resonance respectively. If, then, motion, action and passivity reside in that which is acted upon, then of necessity it is in the potentiality of hearing that there is actual sound and there is actual hearing. For the activity of agent and movent comes into play in the patient; and this is why that which causes motion need not itself be moved. The actuality of the resonant, then, is sound or resonance, and the actuality of that which can hear is hearing or audition, hearing and sound both having two meanings. The same account may be given of the other senses and their objects.

For, just as acting and being acted upon are in the subject acted upon and not in the agent, so also the actuality of the sensible object and that of the sensitive faculty will be in the percipient subject. But in some cases both activities have a name; for example, resonance and audition: in other cases one or the other has no name. Thus, while the actuality of sight is called seeing, that of colour has no name; and, while the actuality of the taste-faculty is called tasting, that of the flavour has no name. Now, as the actuality of the object and that of the faculty of sense are one and the same, although taken in the abstract they are different, hearing and sound thus understood as operant must simultaneously cease to be or simultaneously continue in being, and so also with flavour and taste, and similarly with the other senses and their objects: but when they are understood as potentialities, there is no...
such necessity. On this point the earlier natural philosophers were in error, when they supposed that without seeing there was neither white nor black, and without tasting no flavour. Their statement is in one sense true, in another false. For the terms sensation and sensible thing are ambiguous. When they mean the actual sensation and the actual sensible thing, the statement holds good: when they mean potential sensation and potential sensible, this is not the case. But our predecessors used terms without distinguishing their various meanings.

If, then, concord consists in a species of vocal sound, and if vocal sound and hearing are in one aspect one and the same, [though in another aspect not the same], and if concord is a proportion, it follows that hearing must also be a species of proportion. And this is the reason why hearing is destroyed by either excess, whether of high pitch or of low. And similarly, in the case of flavours, excess destroys the taste, and in colours excessive brightness or darkness destroys the sight, and so with smell, whether the excessive odour be agreeable or pungent. All this implies that the sense is a proportion. Hence sensibles are, it is true, pleasurable when they are brought into the range of this proportion pure and unmixed; for example, the shrill, the sweet, the salt: in that case, I say, they are pleasurable. But, speaking generally, that in which ingredients are blended is pleasurable in a higher degree, accord more pleasurable to the ear than high pitch or low pitch alone, and to touch that which admits of being still further heated or cooled. The due proportion constitutes the sense, while objects in excess give pain or cause destruction.

Now each sense is concerned with its own sensible object, being resident in the organ, qua sense-organ, and judges the specific differences of its own sensible object. Thus sight pronounces upon white and black, taste upon sweet and bitter, and so with the rest.
But, since we compare white and sweet and each of the sensibles
with each, what in fact is it by means of which we
perceive the difference between them? It must be by
sense, for they are sensibles. And thus it is clear that the flesh is not the ultimate organ of sense; for, if it were, it would be necessary that that which judges should judge by contact with the sensible object. Nor indeed can we with separate organs judge that sweet is different from white, but both objects must be clearly presented to some single faculty. For, if we could, then the mere fact of my perceiving one thing and your perceiving another would make it clear that the two things were different. But the single faculty is required to pronounce them different, for sweet and white are pronounced to be different. It is one and the same faculty, then, which so pronounces. Hence, as it pronounces, so it also thinks and perceives. Clearly, then, it is not possible with separate organs to pronounce judgment upon things which are separate: nor yet at separate times, as the following considerations show. For, as it is one single faculty which pronounces that good and bad are different, so when it judges "A is different from B" it also judges "B is different from A" (and in this case the "when" is not accidental; I mean, accidental in the sense in which I may now say "Such and such things are different" without saying that they are different now. On the contrary, it pronounces now and pronounces that A and B are different now). That which judges judges, then, instantaneously and hence as an inseparable unit in an inseparable time. But, again, it is impossible for the same thing, in so far as indivisible and affected in indivisible time, to be moved at the same instant with contrary motions. For, if the object be sweet, it moves sense or thought in such and such a way, but what is bitter moves it in a contrary way, and what is white in a different way. Is, then, that which judges instantaneous in its judgment and numerically undivided and inseparable, although separated logically? Then it is in a certain sense that which is divided which perceives divided objects; in another sense it is indivisible that the divided perceives them: that is to say, logically it is divisible, locally and numerically it is indivisible. Or is

\[ \text{etiam Alex. 1. 1.} \quad \text{καὶ χρώμων ἀχώριστων} \] U y et rc. E in litura (Trend. Bus.) Philop. 484, 10, καὶ τόπων ἀχώριστων coni. Susemihl, textum receptum tueitur Alex. 1. 1. et vet. transl. \( \text{τὸ κρῶνον om. corr. E (Trend. Bus.)} \quad \| 3. \) \( \delta έ \) \( \text{d} \) \( \text{S U Alex.} \quad \| \text{pro τὸ διασ. coni.} \) 
\( \text{διεσ. Steinhart} \quad \| 4. \) \( \text{δ} \) \( \text{om. T W, leg. Alex.} \quad \| 7\] \( \text{X, om. Alex.} \quad \| \text{αιαρέτων pr. E,} \) ἀδιαρέτων etiam Alex. \( \| 5. \) \( \text{τόπων δὲ καὶ χρῶμω καὶ ἀριθμῷ} \) U, καὶ χρῶμω non habent Alex. Them. Simpl. Philop. \( \| \text{o} \) \( \text{οι διαρέτων} \) T, ἀδιαρέτων etiam Alex. Simpl. Philop.
this impossible? For the same indivisible unity, though in potentiality each of two opposites, in the order of thought and being is not so, but in actual operation is divided: it is impossible that it should be at the same time both white and black, and hence impossible that it should receive at the same time the forms of white and black, if reception of the forms constitutes sensation and thought. Rather is the case parallel to that of the point, as some describe it, which is divisible in so far as it is regarded as one or two. Well then, in so far as the faculty which judges is indivisible, it is one and judges instantaneously; but, in so far as it is divisible, it is not one, for it uses the same point at the same time twice. So far as it treats the boundary-point as two, it passes judgment on two separate things with a faculty which in a manner is separated into two; so far as it treats the point as one, it passes judgment on one thing, and that instantaneously. So much, then, for the principle in virtue of which we call the animal capable of sensation.

There are two different characteristics by which the soul is principally defined; firstly, motion from place to place and, secondly, thinking and judging and perceiving. Both thought and intelligence are commonly regarded as a kind of perception, since the soul in both of these judges and recognises something existent.

The ancients, at any rate, identify intelligence and perception: thus, in the words of Empedocles: “Wisdom for mankind is increased according to that which is present to them”: and again “Whence they have also continually a shifting succession of thoughts.” Homer’s meaning, too, is the same when he says: “Such is the mind of men.” In fact, all of them conceive thought to be corporeal

like sensation and hold that we understand, as well as perceive, like by like: as we explained at the outset of the discussion. They ought, however, at the same time to have discussed error, a state which is peculiarly characteristic of animal life and in which the soul continues the greater part of its time. It follows from their premisses that either all presentations of the senses must be true, as some affirm, or contact with what is unlike must constitute error; this being the converse of the position that like is known by like. But, as the knowledge of contraries is one and the same, so, too, it would seem, is error with respect to contraries one and the same.

Now it is clear that perception and intelligence are not the same thing. For all animals share in the one, but only a few in the other. And when we come to thinking, which includes right thinking and wrong thinking, right thinking being intelligence, knowledge and true opinion, and wrong thinking the opposites of these, neither is this identical with perception. For perception of the objects of the special senses is always true and is found in all animals, while thinking may be false as well as true and is found in none which have not reason also. Imagination, in fact, is something different both from perception and from thought, and is never found by itself apart from perception, any more than is belief apart from imagination. Clearly thinking is not the same thing as believing. For the former is in our own power, whenever we please: for we can represent an object before our eyes, as do those who range things under mnemonic headings and picture them to themselves. But opining is not in our power, for the opinion that we hold must be either false or true. Moreover, when we are of opinion that something is terrible or alarming, we at once feel the corresponding emotion, and so, too, with what is reassuring. But when we are under the influence of imagination we are no more affected than if we saw in a picture the objects which inspire terror or confidence. There are also different forms even of belief; knowledge, opinion, intelligence and their opposites. But the difference between these species must be reserved for another discussion.

To turn to thought: since it is different from sense-perception and seems to include imagination on the one hand and conception on the other, we must determine the nature of imagination before we proceed to discuss conception. If, then, imagination is the faculty in virtue of which we say that an image presents itself to us, and if we exclude the metaphorical use of the term, it is some one of the faculties or habits in virtue of which we judge, and judge truly or falsely. Such faculties or habits are sensation, opinion, knowledge, intellect. It is clearly not sensation, for the following reasons. Sensation is either a faculty like sight or an activity like seeing. But we may have an image even when neither the one nor the other is present: for example, the images in dreams. Again, sensation is always present, but not so imagination. Besides, the identity of the two in actuality would involve the possibility that all the brutes have imagination. But this apparently is not the case; for example, the ant, the bee and the grub do not possess it. Moreover, sensations are always true, but imaginings prove for the most part false. Further, it is not when we direct our energies closely to the sensible object, that we say that this object appears to us to be a man, but rather when we do not distinctly perceive it [then the term true or false is applied]. And, as we said before, visions present themselves even if we have our eyes closed.

Neither, again, can imagination be ranked with the faculties, nor opinion, since it is different from sense-perception. Not sensation, for the following reasons. Sensation is either a faculty like sight or an activity like seeing. But we may have an image even when neither the one nor the other is present: for example, the images in dreams. Again, sensation is always present, but not so imagination. Besides, the identity of the two in actuality would involve the possibility that all the brutes have imagination. But this apparently is not the case; for example, the ant, the bee and the grub do not possess it. Moreover, sensations are always true, but imaginings prove for the most part false. Further, it is not when we direct our energies closely to the sensible object, that we say that this object appears to us to be a man, but rather when we do not distinctly perceive it [then the term true or false is applied]. And, as we said before, visions present themselves even if we have our eyes closed.


though many have imagination. Further, every opinion implies conviction, conviction implies that we have been persuaded, and persuasion implies reason. Among brutes, however, though some have imagination, none have reason. It is evident, then, that imagination is neither opinion joined with sensation nor opinion through sensation, nor yet a complex of opinion and sensation, both on these grounds and because nothing else is the object of opinion but that which is the object of sensation: I mean, it is the complex of the opinion of white and the sensation of white, not surely of the opinion of good with the sensation of white, which alone could constitute imagination. To imagine, then, will be on this supposition to opine directly, not indirectly, that which we perceive. But there are false imaginings concerning things of which we hold at the same time a true conception. For example, the sun appears only a foot in diameter, but we are convinced that it is larger than the inhabited world: in this case, therefore, either, without any alteration in the thing and without any lapse of memory on our part or conversion by argument, we have abandoned the true opinion which we had about it; or else, if we still retain it, the same opinion must be both true and false. It could have proved false only in the event of the object having changed without our observing it. It is not, then, either one of the two, opinion and sensation, singly, or a combination of the two, which constitutes imagination.

Now, when one thing is moved, something else can be moved by it. And imagination is thought to be a species of motion and not to arise apart from sensation, but only in sentient beings and with the objects of sense for its objects. Motion, again, may be produced by actual sensation, and such motion must resemble the sensation which caused it. From all this it follows that this particular motion cannot arise apart from sensation nor be found anywhere except in sentient beings: and in virtue of this motion it is possible for its possessor to do and experience many things: imagination, too, may be both true and
false. The reasons for the last conclusion are as follows. Perception of the objects of the special senses is true, or subject to the minimum of error. Next comes the perception that they are attributes: and at this point error may come in. As to the whiteness of an object sense is never mistaken, but it may be mistaken as to whether the white object is this thing or something else. Thirdly, there is perception of the common attributes, that is, the concomitants of the things to which the special attributes belong: I mean, for example, motion and magnitude, which are attributes of sensibles. And it is concerning them that sense is most apt to be deceived. But the motion which is the result of actual sensation will be different according as it arises from one or other of these three kinds of perception. The first kind, so long as the sensation is present, is true: the other kinds may be false, whether the sensation is present or absent, and especially when the object perceived is a long way off. If then, imagination possesses no other characteristics than the aforesaid, and if it is what it has been described to be, imagination will be a motion generated by actual perception. And, since sight is the principal sense, imagination has derived even its name (φαντασία) from light (φῶς), because without light one cannot see. Again, because imaginations remain in us and resemble the corresponding sensations, animals perform many actions under their influence; some, that is, the brutes, through not having intellect, and others, that is, men, because intellect is sometimes obscured by passion or disease or sleep. Let this account of the nature and cause of imagination suffice.
As to the part of the soul with which it knows and understands, whether such part be separable spatially, or not separable spatially, but only in thought, we have to consider what is its distinctive character and how thinking comes about. Now, if thinking is analogous to perceiving, it will consist in a being acted upon by the object of thought or in something else of this kind. This part of the soul, then, must be impassive, but receptive of the form and potentially like this form, though not identical with it: and, as the faculty of sense is to sensible objects, so must intellect be related to intelligible objects. The mind, then, since it thinks all things, must needs, in the words of Anaxagoras, be unmixed with any, if it is to rule, that is, to know. For by intruding its own form it hinders and obstructs that which is alien to it; hence it has no other nature than this, that it is a capacity. Thus, then, the part of the soul which we call intellect (and by intellect I mean that whereby the soul thinks and conceives) is nothing at all actually before it thinks. Hence, too, we cannot reasonably conceive it to be mixed with the body: for in that case it would acquire some particular quality, cold or heat, or would even have some organ, as the perceptive faculty has. But as a matter of fact it has none. Therefore it has been well said that the soul is a place of forms or ideas: except that this is not true of the whole soul, but only of the soul which can think, and again that the forms are there not in actuality, but potentially. But that the impassivity of sense is different from that of intellect is clear if we look at the sense-organs and at sense. The sense loses its power to perceive, if the sensible object has been too intense: thus it cannot hear sound after very loud noises, and after too powerful colours and odours it can neither see nor smell. But the intellect, when it has been thinking on an object of intense thought, is not less, but even more, able to think of inferior objects. For the perceptive faculty is not independent of body, whereas intellect is separable. But when the intellect has thus become everything in the sense in which one who actually is a scholar is said to be so (which happens so soon as he can exercise his power of himself), even
then it is still in one sense but a capacity: not, however, a capacity in the same sense as before it learned or discovered. And, moreover, at this stage intellect is capable of thinking itself.

Now, since magnitude is not the same as the quiddity of magnitude, nor water the same as the quiddity of water (and so also of many other things, though not of all, the thing and its quiddity being in some cases the same), we judge the quiddity of flesh and flesh itself either with different instruments or with the same instrument in different relations. For flesh is never found apart from matter, but, like "snub-nosed," it is a particular form in a particular matter. It is, then, with the faculty of sense that we discriminate heat and cold and all those qualities of which flesh is a certain proportion. But it is with another faculty, either separate from sense, or related to it as the bent line when it is straightened out is related to its former self, that we discriminate the quiddity of flesh. Again, when we come to the abstractions of mathematics, the straight answers to the quality "snub-nosed," being never found apart from extension. But the straightness of that which is straight, always supposing that the straight is not the same as straightness, is something distinct: we may, for instance, assume the definition of straightness to be duality. It is, then, with another instrument or with the same instrument in another relation that we judge it. In general, therefore, to the separation of the things from their matter corresponds a difference in the operations of the intellect.

The question might arise: assuming that the mind is something simple and impassive and, in the words of Anaxagoras, has nothing in common with anything else, how will it think, if to think is to be acted upon? For it is in so far as two things have something in common that the one of them is supposed to act and the other to be acted upon. Again, can mind itself be its own object? For then either its other objects will have mind in them, if it is not through something else, but in itself, that mind is capable of being thought, and if to be so capable is everywhere specifically one and the same; or else the mind will have some ingredient in its composition which makes it, like the rest, an object of thought. Or shall we recall our old distinction between two meanings of the phrase "to be acted upon" in virtue of a

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common element," and say that the mind is in a manner potentially all objects of thought, but is actually none of them until it thinks: potentially in the same sense as in a tablet which has nothing actually written upon it the writing exists potentially? This is exactly the case with the mind. Moreover, the mind itself is included among the objects which can be thought. For where the objects are immaterial that which thinks and that which is thought are identical. Speculative knowledge and its object are identical. (We must, however, enquire why we do not think always.) On the other hand, in things containing matter each of the objects of thought is present potentially. Consequently material objects will not have mind in them, for the mind is the power of becoming such objects without their matter; whereas the mind will have the attribute of being its own object.

But since, as in the whole of nature, to something which serves as matter for each kind (and this is potentially all the members of the kind) there corresponds something else which is the cause or agent because it makes them all, the two being related to one another as art to its material, of necessity these differences must be found also in the soul. And to the one intellect, which answers to this description because it becomes all things, corresponds the other because it makes all things, like a sort of definite quality such as light. For in a manner light, too, converts colours which are potential into actual colours. And it is this intellect which is separable and impassive and unmixed, being in its essential nature an activity. For that which acts is always superior to that which is acted upon, the cause or principle to the matter. Now actual knowledge is identical with the thing known, but potential knowledge is prior in time in the individual; and yet not universally prior in time. But this intellect has no intermittence in its thought. It is, however, only when separated that it is its true self, and this, its essential nature, alone is immortal and eternal. But we do not

remember because this is impassive, while the intellect which can be affected is perishable and without this does not think at all.

The process of thinking indivisible wholes belongs to a sphere from which falsehood is excluded. But where both truth and falsehood are possible there is already some combining of notions into one. As, in the words of Empedocles, “where sprang into being the neckless heads of many creatures,” then afterwards Love put them together, so these notions, first separate, are combined; as, for instance, the notions incommensurable and diagonal. And, if the thinking refers to the past or to the future, the notion of time is included in the combination. Falsehood, in fact, never arises except when notions are combined. For, even if white be asserted to be not-white, not-white is brought into a combination. We may equally well call every statement a disjunction. But at any rate under truth and falsehood we include not only the assertion that Cleon is white, but also the assertion that he was or will be. And the unifying principle is in every case the mind.

Since, however, the term indivisible has two meanings, according as a whole is not potentially divisible or is actually undivided, there is nothing to hinder us from thinking an indivisible whole, when we think of a length (that being actually undivided), or from thinking it in an indivisible time. For the time is a divisible or indivisible unit in the same way as the length thought of. We cannot therefore state what the mind thinks in each half of the time. For, if the whole be undivided, the half has only potential existence. But, if the mind thinks each half separately, it simultaneously divides the time also. And in that case it is as if the parts were separate lengths. If, however, the mind conceives the length as made up of the two halves, then the time may be regarded as made up of corresponding halves.

Again, that which is not quantitatively but specifically an

indivisible whole the mind thinks in an indivisible unit of time and by an indivisible mental act. *Per accidens,* however, such specific unity is divisible, though not in the same way as they, the act of thought and the time required for the act, are divisible, but in the same way as they are whole and indivisible. For in these specific unities also there is present a something indivisible, though certainly not separately existent, the same as that which constitutes the unity of both the time and the length. And, as with time and length, so in like manner with whatever is continuous. But the point and every division and whatever is an undivided whole in the same sense as the point is clearly explained by the analogy of privation. And the same explanation holds in all other cases. How, for instance, is evil apprehended, or black? In some fashion by its contrary. But that which apprehends must potentially be, and must contain within itself, the contrary which it apprehends. If, however, there be something which has no contrary [*some one of the causes*], then it is itself the content of its own knowledge, is in actuality and is separately existent.

Now every proposition, like an affirmative proposition, predicting something of something, is true or false. But with thought this is not always so. When its object is the What in the sense of the quiddity and there is no predication, thought is in every case true. But, as the perception by sight of the proper object of sight is infallibly true, whereas in the question whether the white object is a man or not, perception by sight is not always true, so is it with immaterial objects.

Now actual knowledge is identical with the thing known. But potential knowledge is prior in time in the individual, and yet not universally prior even in time. For it is from something actually existent that all which comes into being is derived. And manifestly the sensible object simply brings the faculty of sense which was potential into active exercise: in this transition, in fact, the sense is not acted upon or qualitatively changed. Conse-
quently this must be a different species of motion. For motion is, as we saw, an activity of that which is imperfect; but activity in the absolute sense, that is, activity of that which has reached perfection, is quite distinct.

Sensation, then, is analogous to simple assertion or simple 2 apprehension by thought and, when the sensible thing is pleasant or painful, the pursuit or avoidance of it by the soul is a sort of affirmation or negation. In fact, to feel pleasure or pain is precisely to function with the sensitive mean, acting upon good or evil as such. It is in this that actual avoidance and actual appetition consist: nor is the appetitive faculty distinct from the faculty of avoidance, nor either from the sensitive faculty; though logically they are different.

But to the thinking soul images serve as present sensations: and when it affirms or denies good or evil, it avoids or pursues (this is why the soul never thinks without an image). To give an illustration: the air impresses a certain quality on the pupil of the eye, and this in turn upon something else, and so also with the organ of hearing, while the last thing to be impressed is one and is a single mean, though with a plurality of distinct aspects.

What that is by which the soul judges that sweet is different 4 from warm has been explained above, but must be restated here.

It is a unity, but one in the same sense as a boundary point, and its object, the unity by analogy of these two sensibles or their numerical unity, is related to each of the two in turn as they, taken separately, are to each other. For what difference does it make whether we ask how we judge the sensibles that do not fall under the same genus, or the contraries which do,
like white and black? Suppose, then, that as \( A \), the white, is to \( B \), the black, so \( C \) is to \( D \) [that is, as those sensibles are to one another]. It follows, convertendo, that \( A \) is to \( C \) as \( B \) to \( D \). If, then, \( C \) and \( D \) are attributes of a single subject, the relation between them, like that between \( A \) and \( B \), will be that they are one and the same, though the aspects they present are distinct: and so, too, of their single subject. The same would hold, supposing \( A \) were the sweet and \( B \) the white.

Thus it is the forms which the faculty of thought thinks in mental images. And, as in the region of sense the objects of pursuit and avoidance have been defined for it, so also outside sensation, when engaged with images, it is moved to action: as, for instance, you perceive a beacon and say “That is fire”; and then [by the central sense], seeing it in motion, you recognise that it signals the approach of an enemy. But at other times under the influence of the images or thoughts in the soul you calculate as though you had the objects before your eyes and deliberate about the future in the light of the present. And when you pronounce, just as there in sensation you affirm the pleasant or the painful, here in thought you pursue or avoid: and so in action generally. And, further, what is unrelated to action, as truth and falsehood, is in the same class with the good and the evil. Yet in this, at any rate, they differ, that the former are absolute, the latter relative to some one concerned.

But the abstractions of mathematics, as they are called, the mind thinks as it might conceive the snub-nosed; \( gu\beta \) snub-nosed, it would not be conceived apart from flesh, whereas \( gu\beta \) hollow, if anyone ever had actually so conceived it, he would have conceived it without the flesh in which the hollowness resides. So, too, when we think of mathematical objects, we conceive them, though not in fact separate from matter, as though they were separate. And, speaking generally, mind in active operation is its objects [when it thinks them]. The question, whether it is possible for the mind to think anything which is unextended without being itself unextended, must for the present be postponed.
And now let us sum up what has been said concerning the soul by repeating that in a manner the soul is all existent things. For they are all either objects of sensation or objects of thought; and knowledge and sensation are in a manner identical with their respective objects. How this is so requires to be explained. Knowledge and sensation, then, are subdivided to correspond to the things. Potential knowledge and sensation answer to things which are potential, actual knowledge and sensation to things which are actual, while the sensitive and the cognitive faculties in the soul are potentially these objects; I mean, object of sensation and object of cognition respectively. It follows that the faculties must be identical, if not with the things themselves, then with their forms. The things themselves they are not, for it is not the stone which is in the soul, but the form of the stone. So that there is an analogy between the soul and the hand; for, as the hand is the instrument of instruments, so the intellect is the form of forms and sensation the form of sensibles. But, since, apart from sensible magnitudes there is nothing, as it would seem, independently existent, it is in the sensible forms that the intelligible forms exist, both the abstractions of mathematics, as they are called, and all the qualities and attributes of sensible things. And for this reason, as without sensation a man would not learn or understand anything, so at the very time when he is actually thinking he must have an image before him. For mental images are like present sensations, except that they are immaterial. Imagination, however, is distinct from affirmation and negation, for it needs a combination of notions to constitute truth or falsehood. But, it may be asked, how will the simplest notions differ in character from mental images? I reply that neither these nor the rest of our notions are images, but that they cannot dispense with images.

\[\text{Chandler, } \tau\lambda\nu\nu\varepsilon\text{ }}\]
The soul in animals has been defined in virtue of two faculties, not only by its capacity to judge, which is the function of thought and perception, but also by the local movement which it imparts to the animal. Assuming the nature of sensation and intellect to have been so far determined, we have now to consider what it is in the soul which initiates motion: whether it is some one part of the soul, which is either locally separable or logically distinct, or whether it is the whole soul: and again, if a separate part, whether it is a special part distinct from those usually recognised and from those enumerated above, or whether it coincides with some one of these. A question at once arises in what sense it is proper to speak of parts of the soul and how many there are. For in one sense there appear to be an infinite number of parts and not merely those which some distinguish, the reasoning, passionate and concupiscent parts, for which others substitute the rational and the irrational. For, if we examine the differences on which they base their divisions, we shall find that there are other parts separated by a greater distance than these; namely, the parts which we have just discussed, the nutritive, which belongs to plants as well as to all animals, and the sensitive, which cannot easily be classed either as rational or irrational. Imagination, again, is logically distinct from them all, while it is very difficult to say with which of the parts it is in fact identical or not identical, if we are to assume separate parts in the soul. Then besides these there is appetency, which would seem to be distinct both in concept and in capacity from all the foregoing. And surely it is absurd to split this up. For wish in the rational part corresponds to concupiscence and passion in the irrational. And, if we make a triple division of soul, there will be appetency in all three parts.

To come now to the question at present before us, what is it that imparts to the animal local movement? For as for the motion of growth and decay, which is found in all animals, it would seem that this must be originated by that part of soul which is found in all of them, the generative and nutritive part. Inspiration and expiration of breath, sleep and waking, subjects full of difficulty, call for subsequent enquiry. But to return to locomotion, we must enquire what it is that imparts the moving principle.
to the animal progressive motion. That it is not the nutritive
faculty is clear. For this motion is always directed to
an end and is attended either by imagination or by
appetency. No animal, which is not either seeking or
avoiding something, moves except under compulsion.
Moreover, if it were the nutritive faculty, plants also would be
capable of locomotion and thus would have some part instrumental
in producing this form of motion. Similarly it is not 6
the sensitive faculty, since there are many animals which
have sensation and yet are throughout their lives stationary and
motionless. If, then, nature does nothing in vain and, except in
mutilated and imperfect specimens, omits nothing that is indis-
ensible, while the animals we are considering are fully developed
and not mutilated—as is shown by the fact that they pro-
pagate their kind and have a period of maturity and a period of
decline,—it follows that, if locomotion was implied in sensation,
they would have had the parts instrumental to progression. Nor, 7
again, is it the reasoning faculty or what is called
intellect that is the cause of motion. For the specula-
tive intellect thinks nothing that is practical and makes no assertion
about what is to be avoided or pursued, whereas motion always
implies that we are avoiding or pursuing something. But, even if
the mind has something of the kind before it, it does not forthwith
prompt avoidance or pursuit. For example, it often thinks of some-
thing alarming or pleasant without prompting to fear; the only effect
is a beating of the heart or, when the thought is pleasant, some other
bodily movement. Besides, even if the intellect issues the order and 8
the understanding bids us avoid or pursue something, still we are
not thereby moved to act: on the contrary, action is determined
by desire; in the case, for instance, of the incontinent man. And
generally we see that, although a man possesses a knowledge of
medicine, it does not follow that he practises; and this implies
that there is something else apart from the knowledge which deter-
mines action in accordance with the knowledge. Nor,
again, is it solely appetency on which this motion de-
pends. The continent, though they feel desire, that is
appetite, do not act as their desires prompt, but on the contrary
obey reason.
The motive causes are apparently, at any rate, these two, either appetency or intelligence, if we regard imagination as one species of thinking. For men often act contrary to knowledge in obedience to their imaginings, while in the other animals there is no process of thinking or reasoning, but solely imagination. Both these, then, are causes of locomotion, intelligence and appetency. By intelligence we mean that which calculates the means to an end, that is, the practical intellect, which differs from the speculative intellect by the end at which it aims. Appetency, too, is directed to some end in every case: for that which is the end of desire is the starting point of the practical intellect, and the last stage in this process of thought is the starting point of action. Hence there is good reason for the view that these two are the causes of motion, appetency and practical thought. For it is the object of appetency which causes motion; and the reason why thought causes motion is that the object of appetency is the starting point of thought. Again, when imagination moves to action, it does not move to action apart from appetency. Thus there is one single moving cause, the appetitive faculty. For, had there been two, intelligence and appetency, which moved to action, still they would have done so in virtue of some character common to both. But, as a matter of fact, intellect is not found to cause motion apart from appetency. For rational wish is appetency; and, when anyone is moved in accordance with reason, he is also moved according to rational wish. But appetency may move a man in opposition to reason, for concupiscence is a species of appetency. While, however, intellect is always right, appetency and imagination may be right or wrong. Hence it is invariably the object of appetency which causes motion, but this object may be either the good or the apparent good. Not all good, however, but practical good: where by practical good we mean something which may not be good under all circumstances.

It is evident, then, that motion is due to the faculty of the soul corresponding to this object—I mean what is known as appetency. But those who divide the soul into parts, if they divide it according to its powers and separate these from one another, will find that such parts tend to become very numerous: nutritive, fort. Them. i 19, 13 sq., scripsit Torst. || 26. νοῦς μὲν...ἐπιστ. unc. incl. Essen III, p. 57 || 26. ὁρθὸς ἐστὶν...ὁρθὸς ἐστὶν etiam E4 (Bhl.), κυριοτ. μὲν ἐπιστ. Them., om. ἐστὶν Bek. Trend. Torst. || 27. καὶ φαντασία] κατὰ φαντασίαν coni. Essen, l. l. || 31. κυριοτ. W Essen, l. l. || 433 b, l. τοῖς δὲ διαμορφ. ...4. θυμικῶν alieno loco inserta indicat Torst., p. 216 || τὰ μέρη τῆς ψυχῆς sive post κατὰ transponenda sive delenda censet Essen III, p. 58.
sensitive, intelligent, deliberative, with the further addition of an appetent part: for these differ more widely from one another than the concupiscent does from the passionate. Now desires arise which are contrary to one another, and this occurs whenever reason and the appetites are opposed, that is, in those animals which have a perception of time. For intelligence bids us resist because of the future, while appetite has regard only to the immediate present; for the pleasure of the moment appears absolutely pleasurable and absolutely good because we do not see the future. Therefore, while generically the moving cause will be one, namely, the faculty of appetency, as such, and ultimately the object of appetency (which, without being in motion itself, causes motion by the mere fact of being thought of or imagined), numerically there is a plurality of moving causes.

Now motion implies three things, first, that which causes motion, secondly, that whereby it causes motion, and again, thirdly, that which is moved; and of these that which causes motion is twofold, firstly, that which is itself unmoved and, secondly, that which both causes motion and is itself moved. The unmoved movens is the practical good, that which is moved and causes motion is the appetitive faculty (for the animal which is moved is moved in so far as it desires, and desire is a species of motion or activity) and, finally, the thing moved is the animal. But the instrument with which desire moves it, once reached, is a part of the body: hence it must be dealt with under the functions common to body and soul. For the present, it may be enough to say summarily that we find that which causes motion by means of organs at the point where beginning and end coincide; as, for instance, they do in the hinge-joint, for there the convex and the concave are respectively the end and the beginning, with the result that the latter is at rest, while the former moves, convex and concave being logically distinct, but locally inseparable. For all animals move by pushing and pulling, and accordingly there must be in them a fixed point, like the centre in

a circle, and from this the motion must begin. Thus, then, in general terms, as already stated, the animal is capable of moving itself just in so far as it is appetitive: and it cannot be appetitive without imagination. Now imagination may be rational or it may be imagination of sense. Of the latter the other animals also have a share.

We must also consider what is the moving cause in those imperfect animals which have only the sense of touch. Is it possible that they should have imagination and desire, or is it not? It is evident that they feel pleasure and pain: and, if they have these, then of necessity they must also feel desire. But how can they have imagination? Shall we say that, as their movements are vague and indeterminate, so, though they have these faculties, they have them in a vague and indeterminate form? The imagination of sense, then, as we have said, is found in the other animals also, but deliberative imagination in those alone which have reason.—For the task of deciding whether to do this or that already implies reasoning. And the pursuit of the greater good necessarily implies some single standard of measurement. Hence we have the power of constructing a single image out of a number of images.—And the reason why the lower animals are thought not to have opinion is that they do not possess that form of imagination which comes from inference, while the latter implies the former. And so appetency does not imply the deliberative faculty. But sometimes it overpowers rational wish and moves to action; at other times the latter, rational wish, overpowers the former, appetency. Thus one appetency prevails over another appetency, like one sphere over another sphere, in the case where incontinence has supervened. But by nature the upper sphere always has the predominance and is a moving cause, so that the motion is actually the resultant of three orbits.

The cognitive faculty, however, is not subject to motion, but is at rest. The major premiss is universal, whether judgment or proposition, while the minor has to do with a particular fact: for, while the former asserts that such and such a person ought to do such and such an act, the latter asserts that a particular act is one of the sort and that I am such a person. Now it is the latter judgment which at once moves to action, not the universal. Or shall we say that it is both together, but the one is akin to the unmoved movment, the other is not?

Every living thing, then, must have the nutritive soul and in fact has a soul from its birth till its death. For what has been born must necessarily grow, reach maturity and decline, and for these processes nutriment is indispensable. It follows, then, of necessity that the nutritive faculty is present in all things that grow and decay. But sensation is not necessarily present in all living things. For wherever the body is uncompounded there can be no sense of touch: nor, again, in those living things which are incapable of receiving forms apart from matter. But the animal must of necessity possess sensation, if nature makes nothing in vain: for everything in nature subserves an end or else will be an accessory of things which subserve an end. Now every living body having the power of progression and yet lacking sensation would be destroyed and never reach full development, which is its natural function. For how in such a case is it to obtain nutriment? Motionless animals, it is true, have for nutriment that from which they have been developed. But a body, not stationary, but produced by generation, cannot possibly have a soul and an intelligence capable of judging without also having sensation. [Neither can it, if it be not generated.] For why should it have the one without the other? Presumably for the advantage either of the soul or of the body. But neither of these alternatives is, in fact, admissible. For the soul will be no better able to think, and the body will be no better off, for the absence of sensation. We conclude, then, that no body that is not stationary has soul without having sensation.
But, further, the body, assuming that it has sensation, must be either simple or composite. But it cannot be simple, for then it would not have touch, and this sense is indispensable. This is clear from the following considerations.

The animal is an animate body. Now body is always tangible and it is that which is perceptible by touch which is tangible: from which it follows that the body of the animal must have tactile sensation, if the animal is to survive. For the other senses, that is to say, smell, sight, hearing, have media of sensation, but a being which has no sensation will be unable when it comes into contact with things to avoid some and seize others. And if this is so, it will be impossible for the animal to survive. This is why taste is a kind of touch, for taste is of nutriment and nutriment is body which is tangible; whereas sound, colour and smell afford no nourishment and promote neither growth nor decay. So that taste also must be a kind of touch, because it is a sensation of that which is tangible and nutritive. These two senses, then, are necessary to the animal, and it is plain that without touch no animal can exist.

But the other senses are means to well-being, and are necessary, not to any and every species of animal, but only to certain species, as, for example, those capable of locomotion. For, if the animal capable of locomotion is to survive, it must have sensation, not only when in contact with anything, but also at a distance from it. And this will be secured if it can perceive through a medium, the medium being capable of being acted upon and set in motion by the sensible object, and the animal itself by the medium. Now that which causes motion from place to place produces a change operating within certain limits, and that which propels causes the thing propelled to propel in turn, the movement being transmitted through something intermediate. The first in the series initiates motion and propels without being itself propelled, while the last is simply propelled without propelling; the numerous middle terms of the series both propel and are propelled. So it is also with qualitative change, except that what is subject to this change remains in the same place. Suppose we were to dip something into wax, the movement in the wax would extend just so far down as we had dipped the object, whereas in the like case...
a stone is not moved at all, while water is disturbed to a great
distance and air is disturbed to the farthest extent possible and acts
and is acted upon as long as it remains unbroken. And, to revert
to the reflection of light, that is why, instead of holding that the
visual ray leaving the eye is reflected, it would be better to say that
the air is acted upon by the shape and colour, so long as it is one
and unbroken. This is the case over any smooth surface: and ac-
cordingly the air acts on the organ of sight in turn, just as if the
impress on the wax had penetrated right through to the other side.

It is evident that the body of an animal cannot be uncom-
pounded; I mean, it cannot consist entirely of fire, for
instance, or of air. An animal, unless it has touch, can
have no other sense, the animate body being always, as
we have remarked, capable of tactile sensation. Now the
other elements, with the exception of earth, would make sense-
organs: but it is always indirectly and through media that such
organs effect sensation. Touch, however, acts by direct contact
with objects: hence its name. The other sense-organs, it is true,
also perceive by contact, but it is by indirect contact: touch alone,
it would seem, perceives directly in and through itself. Thus, then,
no one of the three elements referred to can constitute the body of
the animal. Nor indeed can it be of earth. For touch is a sort
of mean between all tangible qualities, and its organ is receptive
not only of all the distinctive qualities of earth, but also of heat
and cold and all other tangible qualities. And this is why we
do not perceive anything with our bones and our hair and such
parts of us, namely, because they are of earth. And for the same
reason plants, too, have no sensation, because they are composed
of earth. Without touch, however, there can be no other sense;
and the organ of this sense does not consist of earth nor of any
other single element.

Thus it is evident that this is the only sense the loss of which 2
necessarily involves the death of the animal. For it is not possible
for anything that is not an animal to have this sense, nor is it
necessary for anything that is an animal to have any other sense
besides this. And this explains another fact. The other
sensibles—I mean, colour, sound, odour—do not by their
excess destroy the animal, but only the corresponding
sense-organs: except incidentally, as when concurrently

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with the sound some thrust or blow is given, or when objects of sight or smell move something else which destroys by contact. Flavour, again, destroys only in so far as it is at the same time tactile. Tangible qualities, on the other hand, as heat, cold and hardness, if in excess, are fatal to the living animal. For excess of any sensible object is fatal to the organ, and so consequently excess of the tangible object is fatal to touch. And it is by this sense that the life of the animal is defined, touch having been proved to be indispensable to the existence of an animal. Hence excess in tangible qualities destroys not only the sense-organ, but also the animal itself. For touch is the one sense that the animal cannot do without. The other senses which it possesses are, as we have said, the means, not to its being, but to its well-being. Thus the animal has sight to see with, because it lives in air or water or, speaking generally, in a transparent medium. It has taste on account of what is pleasant and painful, to the end that it may perceive what is pleasant in food and feel desire and be impelled to movement. It has hearing in order that information may be conveyed to it, and a tongue, that in its turn it may convey information to its fellow.