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On Sense and the Sensible

By Aristotle

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On Sense and the Sensible

By Aristotle

Written 350 B.C.E

Translated by J. I. Beare

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Section 1

Part 1

Having now definitely considered the soul, by itself, and its several faculties, we must next make a survey of animals and all living things, in order to ascertain what functions are peculiar, and what functions are common, to them. What has been already determined respecting the soul [sc. by itself] must be assumed throughout. The remaining parts [sc. the attributes of soul and body conjointly] of our subject must be now dealt with, and we may begin with those that come first.

The most important attributes of animals, whether common to all or peculiar to some, are, manifestly, attributes of soul and body in conjunction, e.g. sensation, memory, passion, appetite and desire in general, and, in addition pleasure and pain. For these may, in fact, be said to belong to all animals. But there are, besides these, certain other attributes, of which some are common to all living things, while others are peculiar to certain species of animals. The most important of these may be summed up in four pairs, viz. waking and sleeping, youth and old age, inhalation and exhalation, life and death. We must endeavour to arrive at a scientific conception of these, determining their respective natures, and the causes of their occurrence.

But it behoves the Physical Philosopher to obtain also a clear view of the first principles of health and disease, inasmuch as neither health nor disease can exist in lifeless things. Indeed we may say of most physical inquirers, and of those physicians who study their art philosophically, that while the former complete their works with a disquisition on medicine, the latter usually base their medical theories on principles derived from Physics.

That all the attributes above enumerated belong to soul and body in conjunction, is obvious; for they all either imply

sensation as a concomitant, or have it as their medium. Some are either affections or states of sensation, others, means of defending and safe-guarding it, while others, again, involve its destruction or negation. Now it is clear, alike by reasoning and observation, that sensation is generated in the soul through the medium of the body.

We have already, in our treatise *On the Soul*, explained the nature of sensation and the act of perceiving by sense, and the reason why this affection belongs to animals. Sensation must, indeed, be attributed to all animals as such, for by its presence or absence we distinguish essentially between what is and what is not an animal.

But coming now to the special senses severally, we may say that touch and taste necessarily appertain to all animals, touch, for the reason given in *On the Soul*, and taste, because of nutrition. It is by taste that one distinguishes in food the pleasant from the unpleasant, so as to flee from the latter and pursue the former: and savour in general is an affection of nutrient matter.

The senses which operate through external media, viz. smelling, hearing, seeing, are found in all animals which possess the faculty of locomotion. To all that possess them they are a means of preservation; their final cause being that such creatures may, guided by antecedent perception, both pursue their food, and shun things that are bad or destructive. But in animals which have also intelligence they serve for the attainment of a higher perfection. They bring in tidings of many distinctive qualities of things, from which the knowledge of truth, speculative and practical, is generated in the soul.

Of the two last mentioned, seeing, regarded as a supply for the primary wants of life, and in its direct effects, is the superior sense; but for developing intelligence, and in its indirect consequences, hearing takes the precedence. The faculty of seeing, thanks to the fact that all bodies are coloured, brings tidings of multitudes of distinctive qualities of all sorts; whence it is through this sense especially that we perceive the common sensibles, viz. figure, magnitude, motion, number: while hearing announces only the distinctive qualities of sound, and, to some few animals, those also of voice. indirectly, however, it is hearing that contributes most to the growth of intelligence. For rational discourse is a cause of instruction in virtue of its being audible, which it is, not directly, but indirectly; since it is composed of words, and each word is a thought-symbol. Accordingly, of persons destitute from birth of either sense, the blind are more intelligent than the deaf and dumb.

Part 2

Of the distinctive potency of each of the faculties of sense enough has been said already.

But as to the nature of the sensory organs, or parts of the body in which each of the senses is naturally implanted, inquirers now usually take as their guide the fundamental elements of bodies. Not, however, finding it easy to coordinate five senses with four elements, they are at a loss respecting the fifth sense. But they hold the organ of sight to consist of fire, being prompted to this view by a certain sensory affection of whose true cause they are ignorant. This is that, when the eye is pressed or moved, fire appears to flash from it. This naturally takes place in darkness, or when the eyelids are closed, for then, too, darkness is produced.

This theory, however, solves one question only to raise another; for, unless on the hypothesis that a person who is in his full senses can see an object of vision without being aware of it, the eye must on this theory see itself. But then why does the above affection not occur also when the eye is at rest? The true explanation of this affection, which will contain the answer to our question, and account for the current notion that the eye consists of fire, must be determined in the following way: Things which are smooth have the natural property of shining in darkness, without, however, producing light. Now, the part of the eye called 'the black', i.e. its central part, is manifestly smooth. The phenomenon of the flash occurs only when the eye is moved, because only then could it possibly occur that the same one object should become as it were two. The rapidity of the movement has the effect of making that which sees and that which is seen seem different from one another. Hence the phenomenon does not occur unless the motion is rapid and takes place in darkness. For it is in the dark that that which is smooth, e.g. the heads of certain fishes, and the sepia of the cuttle-fish, naturally shines, and, when the movement of the eye is slow, it is impossible that that which sees and that which is seen should appear to be simultaneously two and one. But, in fact, the eye sees itself in the above phenomenon merely as it does so in ordinary optical reflexion.

If the visual organ proper really were fire, which is the doctrine of Empedocles, a doctrine taught also in the *Timaeus*,

and if vision were the result of light issuing from the eye as from a lantern, why should the eye not have had the power of seeing even in the dark? It is totally idle to say, as the Timaeus does, that the visual ray coming forth in the darkness is quenched. What is the meaning of this 'quenching' of light? That which, like a fire of coals or an ordinary flame, is hot and dry is, indeed, quenched by the moist or cold; but heat and dryness are evidently not attributes of light. Or if they are attributes of it, but belong to it in a degree so slight as to be imperceptible to us, we should have expected that in the daytime the light of the sun should be quenched when rain falls, and that darkness should prevail in frosty weather. Flame, for example, and ignited bodies are subject to such extinction, but experience shows that nothing of this sort happens to the sunlight.

Empedocles at times seems to hold that vision is to be explained as above stated by light issuing forth from the eye, e.g. in the following passage:-

As when one who purposes going abroad prepares a lantern,
A gleam of fire blazing through the stormy night,
Adjusting thereto, to screen it from all sorts of winds,
transparent sides,
Which scatter the breath of the winds as they blow,
While, out through them leaping, the fire,
i.e. all the more subtle part of this,
Shines along his threshold old incessant beams:
So [Divine love] embedded the round "lens", [viz.]
the primaeval fire fenced within the membranes,
In [its own] delicate tissues;
And these fenced off the deep surrounding flood,
While leaping forth the fire, i.e. all its more subtle part-.

Sometimes he accounts for vision thus, but at other times he explains it by emanations from the visible objects.

Democritus, on the other hand, is right in his opinion that the eye is of water; not, however, when he goes on to explain seeing as mere mirroring. The mirroring that takes place in an eye is due to the fact that the eye is smooth, and it really has its seat not in the eye which is seen, but in that which sees. For the case is merely one of reflexion. But it would seem that even in his time there was no scientific knowledge of the general subject of the formation of images and the phenomena of reflexion. It is strange too, that it never occurred to him to ask why, if his theory be true, the eye alone sees, while none of the other things in which images are reflected do so.

True, then, the visual organ proper is composed of water, yet vision appertains to it not because it is so composed, but because it is translucent- a property common alike to water and to air. But water is more easily confined and more easily condensed than air; wherefore it is that the pupil, i.e. the eye proper, consists of water. That it does so is proved by facts of actual experience. The substance which flows from eyes when decomposing is seen to be water, and this in undeveloped embryos is remarkably cold and glistening. In sanguineous animals the white of the eye is fat and oily, in order that the moisture of the eye may be proof against freezing. Wherefore the eye is of all parts of the body the least sensitive to cold: no one ever feels cold in the part sheltered by the eyelids. The eyes of bloodless animals are covered with a hard scale which gives them similar protection.

It is, to state the matter generally, an irrational notion that the eye should see in virtue of something issuing from it; that the visual ray should extend itself all the way to the stars, or else go out merely to a certain point, and there coalesce, as some say, with rays which proceed from the object. It would be better to suppose this coalescence to take place in the fundament of the eye itself. But even this would be mere trifling. For what is meant by the 'coalescence' of light with light? Or how is it possible? Coalescence does not occur between any two things taken at random. And how could the light within the eye coalesce with that outside it? For the environing membrane comes between them.

That without light vision is impossible has been stated elsewhere; but, whether the medium between the eye and its objects is air or light, vision is caused by a process through this medium.

Accordingly, that the inner part of the eye consists of water is easily intelligible, water being translucent.

Now, as vision outwardly is impossible without [extra-organic] light, so also it is impossible inwardly [without light within the organ]. There must, therefore, be some translucent medium within the eye, and, as this is not air, it must be water. The soul or its perceptive part is not situated at the external surface of the eye, but obviously somewhere within: whence the necessity of the interior of the eye being translucent, i.e. capable of admitting light. And that it is so is plain from actual occurrences. It is matter of experience that soldiers wounded in battle by a sword slash on the temple, so inflicted as to sever the passages of [i.e. inward from] the eye, feel a sudden onset of darkness, as if a lamp had gone out; because what is called the pupil, i.e. the translucent, which is a sort of inner lamp, is then cut off [from its connexion with the soul].

Hence, if the facts be at all as here stated, it is clear that- if one should explain the nature of the sensory organs in this way, i.e. by correlating each of them with one of the four elements,- we must conceive that the part of the eye immediately concerned in vision consists of water, that the part immediately concerned in the perception of sound consists of air, and that the sense of smell consists of fire. (I say the sense of smell, not the organ.) For the organ of smell is only potentially that which the sense of smell, as realized, is actually; since the object of sense is what causes the actualization of each sense, so that it (the sense) must (at the instant of actualization) be (actually) that which before (the moment of actualization) it was potentially. Now, odour is a smoke-like evaporation, and smoke-like evaporation arises from fire. This also helps us to understand why the olfactory organ has its proper seat in the environment of the brain, for cold matter is potentially hot. In the same way must the genesis of the eye be explained. Its structure is an offshoot from the brain, because the latter is the moistest and coldest of all the bodily parts.

The organ of touch proper consists of earth, and the faculty of taste is a particular form of touch. This explains why the sensory organ of both touch and taste is closely related to the heart. For the heart as being the hottest of all the bodily parts, is the counterpoise of the brain.

This then is the way in which the characteristics of the bodily organs of sense must be determined.

Part 3

Of the sensibles corresponding to each sensory organ, viz. colour, sound, odour, savour, touch, we have treated in *On the Soul* in general terms, having there determined what their function is, and what is implied in their becoming actualized in relation to their respective organs. We must next consider what account we are to give of any one of them; what, for example, we should say colour is, or sound, or odour, or savour; and so also respecting [the object of] touch. We begin with colour.

Now, each of them may be spoken of from two points of view, i.e. either as actual or as potential. We have in *On the Soul* explained in what sense the colour, or sound, regarded as actualized [for sensation] is the same as, and in what sense it is different from, the correlative sensation, the actual seeing or hearing. The point of our present discussion is, therefore, to determine what each sensible object must be in itself, in order to be perceived as it is in actual consciousness.

We have already in *On the Soul* stated of Light that it is the colour of the Translucent, [being so related to it] incidentally; for whenever a fiery element is in a translucent medium presence there is Light; while the privation of it is Darkness. But the 'Translucent', as we call it, is not something peculiar to air, or water, or any other of the bodies usually called translucent, but is a common 'nature' and power, capable of no separate existence of its own, but residing in these, and subsisting likewise in all other bodies in a greater or less degree. As the bodies in which it subsists must have some extreme bounding surface, so too must this. Here, then, we may say that Light is a 'nature' inhering in the Translucent when the latter is without determinate boundary. But it is manifest that, when the Translucent is in determinate bodies, its bounding extreme must be something real; and that colour is just this 'something' we are plainly taught by facts-colour being actually either at the external limit, or being itself that limit, in bodies. Hence it was that the Pythagoreans named the superficies of a body its 'hue', for 'hue', indeed, lies at the limit of the body; but the limit of the body; is not a real thing; rather we must suppose that the same natural substance which, externally, is the vehicle of colour exists [as such a possible vehicle] also in the interior of the body.

Air and water, too [i.e. as well as determinately bounded bodies] are seen to possess colour; for their brightness is of

the nature of colour. But the colour which air or sea presents, since the body in which it resides is not determinately bounded, is not the same when one approaches and views it close by as it is when one regards it from a distance; whereas in determinate bodies the colour presented is definitely fixed, unless, indeed, when the atmospheric environment causes it to change. Hence it is clear that that in them which is susceptible of colour is in both cases the same. It is therefore the Translucent, according to the degree to which it subsists in bodies (and it does so in all more or less), that causes them to partake of colour. But since the colour is at the extremity of the body, it must be at the extremity of the Translucent in the body. Whence it follows that we may define colour as the limit of the Translucent in determinately bounded body. For whether we consider the special class of bodies called translucent, as water and such others, or determinate bodies, which appear to possess a fixed colour of their own, it is at the exterior bounding surface that all alike exhibit their colour.

Now, that which when present in air produces light may be present also in the Translucent which pervades determinate bodies; or again, it may not be present, but there may be a privation of it. Accordingly, as in the case of air the one condition is light, the other darkness, in the same way the colours White and Black are generated in determinate bodies.

We must now treat of the other colours, reviewing the several hypotheses invented to explain their genesis.

(1) It is conceivable that the White and the Black should be juxtaposed in quantities so minute that [a particle of] either separately would be invisible, though the joint product [of two particles, a black and a white] would be visible; and that they should thus have the other colours for resultants. Their product could, at all events, appear neither white nor black; and, as it must have some colour, and can have neither of these, this colour must be of a mixed character- in fact, a species of colour different from either. Such, then, is a possible way of conceiving the existence of a plurality of colours besides the White and Black; and we may suppose that [of this 'plurality'] many are the result of a [numerical] ratio; for the blacks and whites may be juxtaposed in the ratio of 3 to 2 or of 3 to 4, or in ratios expressible by other numbers; while some may be juxtaposed according to no numerically expressible ratio, but according to some relation of excess or defect in which the blacks and whites involved would be incommensurable quantities; and, accordingly, we may regard all these colours [viz. all those based on numerical ratios] as analogous to the sounds that enter into music, and suppose that those involving simple numerical ratios, like the concords in music, may be those generally regarded as most agreeable; as, for example, purple, crimson, and some few such colours, their fewness being due to the same causes which render the concords few. The other compound colours may be those which are not based on numbers. Or it may be that, while all colours whatever [except black and white] are based on numbers, some are regular in this respect, others irregular; and that the latter [though now supposed to be all based on numbers], whenever they are not pure, owe this character to a corresponding impurity in [the arrangement of] their numerical ratios. This then is one conceivable hypothesis to explain the genesis of intermediate colours.

(2) Another is that the Black and White appear the one through the medium of the other, giving an effect like that sometimes produced by painters overlaying a less vivid upon a more vivid colour, as when they desire to represent an object appearing under water or enveloped in a haze, and like that produced by the sun, which in itself appears white, but takes a crimson hue when beheld through a fog or a cloud of smoke. On this hypothesis, too, a variety of colours may be conceived to arise in the same way as that already described; for between those at the surface and those underneath a definite ratio might sometimes exist; in other cases they might stand in no determinate ratio. To [introduce a theory of colour which would set all these hypotheses aside, and] say with the ancients that colours are emanations, and that the visibility of objects is due to such a cause, is absurd. For they must, in any case, explain sense-perception through Touch; so that it were better to say at once that visual perception is due to a process set up by the perceived object in the medium between this object and the sensory organ; due, that is, to contact [with the medium affected,] not to emanations.

If we accept the hypothesis of juxtaposition, we must assume not only invisible magnitude, but also imperceptible time, in order that the succession in the arrival of the stimulatory movements may be unperceived, and that the compound colour seen may appear to be one, owing to its successive parts seeming to present themselves at once. On the hypothesis of superposition, however, no such assumption is needful: the stimulatory process produced in the medium by the upper colour, when this is itself unaffected, will be different in kind from that produced by it when affected by the underlying colour. Hence it presents itself as a different colour, i.e. as one which is neither white nor black. So that, if it is impossible to suppose any magnitude to be invisible, and we must assume that there is some distance from which every magnitude is visible, this superposition theory, too [i.e. as well as No. 3 infra], might pass as a real theory of

colour-mixture. Indeed, in the previous case also there is no reason why, to persons at a distance from the juxtaposed blacks and whites, some one colour should not appear to present itself as a blend of both. [But it would not be so on a nearer view], for it will be shown, in a discussion to be undertaken later on, that there is no magnitude absolutely invisible.

(3) There is a mixture of bodies, however, not merely such as some suppose, i.e. by juxtaposition of their minimal parts, which, owing to [the weakness of our] sense, are imperceptible by us, but a mixture by which they [i.e. the 'matter' of which they consist] are wholly blent together by interpenetration, as we have described it in the treatise on Mixture, where we dealt with this subject generally in its most comprehensive aspect. For, on the supposition we are criticizing, the only totals capable of being mixed are those which are divisible into minimal parts, [e.g. genera into individuals] as men, horses, or the [various kinds of] seeds. For of mankind as a whole the individual man is such a least part; of horses [as an aggregate] the individual horse. Hence by the juxtaposition of these we obtain a mixed total, consisting [like a troop of cavalry] of both together; but we do not say that by such a process any individual man has been mixed with any individual horse. Not in this way, but by complete interpenetration [of their matter], must we conceive those things to be mixed which are not divisible into minima; and it is in the case of these that natural mixture exhibits itself in its most perfect form. We have explained already in our discourse 'On Mixture' how such mixture is possible. This being the true nature of mixture, it is plain that when bodies are mixed their colours also are necessarily mixed at the same time; and [it is no less plain] that this is the real cause determining the existence of a plurality of colours- not superposition or juxtaposition. For when bodies are thus mixed, their resultant colour presents itself as one and the same at all distances alike; not varying as it is seen nearer or farther away.

Colours will thus, too [as well as on the former hypotheses], be many in number on account of the fact that the ingredients may be combined with one another in a multitude of ratios; some will be based on determinate numerical ratios, while others again will have as their basis a relation of quantitative excess or defect not expressible in integers. And all else that was said in reference to the colours, considered as juxtaposed or superposed, may be said of them likewise when regarded as mixed in the way just described.

Why colours, as well as savours and sounds, consist of species determinate [in themselves] and not infinite [in number] is a question which we shall discuss hereafter.

Part 4

We have now explained what colour is, and the reason why there are many colours; while before, in our work On the Soul, we explained the nature of sound and voice. We have next to speak of Odour and Savour, both of which are almost the same physical affection, although they each have their being in different things. Savours, as a class, display their nature more clearly to us than Odours, the cause of which is that the olfactory sense of man is inferior in acuteness to that of the lower animals, and is, when compared with our other senses, the least perfect of Man's sense of Touch, on the contrary, excels that of all other animals in fineness, and Taste is a modification of Touch.

Now the natural substance water per se tends to be tasteless. But [since without water tasting is impossible] either (a) we must suppose that water contains in itself [uniformly diffused through it] the various kinds of savour, already formed, though in amounts so small as to be imperceptible, which is the doctrine of Empedocles; or (b) the water must be a sort of matter, qualified, as it were, to produce germs of savours of all kinds, so that all kinds of savour are generated from the water, though different kinds from its different parts, or else (c) the water is in itself quite undifferentiated in respect of savour [whether developed or undeveloped], but some agent, such for example as one might conceive Heat or the Sun to be, is the efficient cause of savour.

(a) Of these three hypotheses, the falsity of that held by Empedocles is only too evident. For we see that when pericarpal fruits are plucked [from the tree] and exposed in the sun, or subjected to the action of fire, their sapid juices are changed by the heat, which shows that their qualities are not due to their drawing anything from the water in the ground, but to a change which they undergo within the pericarp itself; and we see, moreover, that these juices, when extracted and allowed to lie, instead of sweet become by lapse of time harsh or bitter, or acquire savours of any and every sort; and that, again, by the process of boiling or fermentation they are made to assume almost all kinds of new savours.

(b) It is likewise impossible that water should be a material qualified to generate all kinds of Savour germs [so that different savours should arise out of different parts of the water]; for we see different kinds of taste generated from the same water, having it as their nutriment.

(C) It remains, therefore, to suppose that the water is changed by passively receiving some affection from an external agent. Now, it is manifest that water does not contract the quality of sapidity from the agency of Heat alone. For water is of all liquids the thinnest, thinner even than oil itself, though oil, owing to its viscosity, is more ductile than water, the latter being uncohesive in its particles; whence water is more difficult than oil to hold in the hand without spilling. But since perfectly pure water does not, when subjected to the action of Heat, show any tendency to acquire consistency, we must infer that some other agency than heat is the cause of sapidity. For all savours [i.e. sapid liquors] exhibit a comparative consistency. Heat is, however, a coagent in the matter.

Now the sapid juices found in pericarpal fruits evidently exist also in the earth. Hence many of the old natural philosophers assert that water has qualities like those of the earth through which it flows, a fact especially manifest in the case of saline springs, for salt is a form of earth. Hence also when liquids are filtered through ashes, a bitter substance, the taste they yield is bitter. There are many wells, too, of which some are bitter, others acid, while others exhibit other tastes of all kinds.

As was to be anticipated, therefore, it is in the vegetable kingdom that tastes occur in richest variety. For, like all things else, the Moist, by nature's law, is affected only by its contrary; and this contrary is the Dry. Thus we see why the Moist is affected by Fire, which as a natural substance, is dry. Heat is, however, the essential property of Fire, as Dryness is of Earth, according to what has been said in our treatise on the elements. Fire and Earth, therefore, taken absolutely as such, have no natural power to affect, or be affected by, one another; nor have any other pair of substances. Any two things can affect, or be affected by, one another only so far as contrariety to the other resides in either of them.

As, therefore, persons washing Colours or Savours in a liquid cause the water in which they wash to acquire such a quality [as that of the colour or savour], so nature, too, by washing the Dry and Earthy in the Moist, and by filtering the latter, that is, moving it on by the agency of heat through the dry and earthy, imparts to it a certain quality. This affection, wrought by the aforesaid Dry in the Moist, capable of transforming the sense of Taste from potentiality to actuality, is Savour. Savour brings into actual exercise the perceptive faculty which pre-existed only in potency. The activity of sense-perception in general is analogous, not to the process of acquiring knowledge, but to that of exercising knowledge already acquired.

That Savours, either as a quality or as the privation of a quality, belong not to every form of the Dry but to the Nutrient, we shall see by considering that neither the Dry without the Moist, nor the Moist without the Dry, is nutrient. For no single element, but only composite substance, constitutes nutriment for animals. Now, among the perceptible elements of the food which animals assimilate, the tangible are the efficient causes of growth and decay; it is qua hot or cold that the food assimilated causes these; for the heat or cold is the direct cause of growth or decay. It is qua gustable, however, that the assimilated food supplies nutrition. For all organisms are nourished by the Sweet [i.e. the 'gustable' proper], either by itself or in combination with other savours. Of this we must speak with more precise detail in our work on Generation: for the present we need touch upon it only so far as our subject here requires. Heat causes growth, and fits the food-stuff for alimention; it attracts [into the organic system] that which is light [viz. the sweet], while the salt and bitter it rejects because of their heaviness. In fact, whatever effects external heat produces in external bodies, the same are produced by their internal heat in animal and vegetable organisms. Hence it is [i.e. by the agency of heat as described] that nourishment is effected by the sweet. The other savours are introduced into and blended in food [naturally] on a principle analogous to that on which the saline or the acid is used artificially, i.e. for seasoning. These latter are used because they counteract the tendency of the sweet to be too nutrient, and to float on the stomach.

As the intermediate colours arise from the mixture of white and black, so the intermediate savours arise from the Sweet and Bitter; and these savours, too, severally involve either a definite ratio, or else an indefinite relation of degree, between their components, either having certain integral numbers at the basis of their mixture, and, consequently, of their stimulative effect, or else being mixed in proportions not arithmetically expressible. The tastes which give pleasure in their combination are those which have their components joined in a definite ratio.

The sweet taste alone is Rich, [therefore the latter may be regarded as a variety of the former], while [so far as both

imply privation of the Sweet] the Saline is fairly identical with the Bitter. Between the extremes of sweet and bitter come the Harsh, the Pungent, the Astringent, and the Acid. Savours and Colours, it will be observed, contain respectively about the same number of species. For there are seven species of each, if, as is reasonable, we regard Dun [or Grey] as a variety of Black (for the alternative is that Yellow should be classed with White, as Rich with Sweet); while [the irreducible colours, viz.] Crimson, Violet, leek-Green, and deep Blue, come between White and Black, and from these all others are derived by mixture.

Again, as Black is a privation of White in the Translucent, so Saline or Bitter is a privation of Sweet in the Nutrient Moist. This explains why the ash of all burnt things is bitter; for the potable [sc. the sweet] moisture has been exuded from them.

Democritus and most of the natural philosophers who treat of sense-perception proceed quite irrationally, for they represent all objects of sense as objects of Touch. Yet, if this is really so, it clearly follows that each of the other senses is a mode of Touch; but one can see at a glance that this is impossible.

Again, they treat the percepts common to all senses as proper to one. For [the qualities by which they explain taste viz.] Magnitude and Figure, Roughness and Smoothness, and, moreover, the Sharpness and Bluntness found in solid bodies, are percepts common to all the senses, or if not to all, at least to Sight and Touch. This explains why it is that the senses are liable to err regarding them, while no such error arises respecting their proper sensibles; e.g. the sense of Seeing is not deceived as to Colour, nor is that of Hearing as to Sound.

On the other hand, they reduce the proper to common sensibles, as Democritus does with White and Black; for he asserts that the latter is [a mode of the] rough, and the former [a mode of the] smooth, while he reduces Savours to the atomic figures. Yet surely no one sense, or, if any, the sense of Sight rather than any other, can discern the common sensibles. But if we suppose that the sense of Taste is better able to do so, then- since to discern the smallest objects in each kind is what marks the acutest sense- Taste should have been the sense which best perceived the common sensibles generally, and showed the most perfect power of discerning figures in general.

Again, all the sensibles involve contrariety; e.g. in Colour White is contrary to Black, and in Savours Bitter is contrary to Sweet; but no one figure is reckoned as contrary to any other figure. Else, to which of the possible polygonal figures [to which Democritus reduces Bitter] is the spherical figure [to which he reduces Sweet] contrary?

Again, since figures are infinite in number, savours also should be infinite; [the possible rejoinder- 'that they are so, only that some are not perceived'- cannot be sustained] for why should one savour be perceived, and another not?

This completes our discussion of the object of Taste, i.e. Savour; for the other affections of Savours are examined in their proper place in connection with the natural history of Plants.

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