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THE SENSES.

PART FOUR OF THE ANIMAL KINGDOM.

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CHAPTER IV.

(*Continued.*)

82. 6. *The kinds of changes of state in the sensory of smell.* 1. Changes of state arise from these causes, thus diversely in each object. 2. Changes of state from these causes are induced upon the cortical substance itself; these are its more common changes; those of taste are still more common, and those of touch are the most common; all these changes the soul sensates distinctly, for she is everywhere. 3. Similar changes of state are induced upon the whole brain, that is to say, upon its two substances, wherefore upon both hemispheres of its globe, especially by touch and taste, and by smell. 4. Similar changes of state return immediately into the organ, and into every single papilla of it, which papilla then expands itself, or retracts, or hardens, or softens, or becomes inflamed, grows warm, grows cold, trembles, and more or less lives. 5. A like change is induced upon its glandules, upon the pituitary membrane, upon the arteries, upon the veins; thus all things arrange themselves according to affections, desires, appetites, pleasures. 6. Most happy is he who suffers himself to be urged, so far as may be, by the soul, while the soul is urged by the superior mind. 7.

A like state is unduced upon every muscle of the face, wherfore upon the countenance. 8. But the change of state of the whole organ or the nose, which is the common sensory, is not of such a kind and is brought about by means of the muscles, because it either opens the nasal apertures or closes them, draws either little or much of the atmosphere, slowly or swiftly, either removes itself from a place, or brings itself to a place; either comes thither or flees thence, either holds the nose with the fingers, or with the hands brings up such things as are grateful, and it procures those things for itself from the vegetable kingdom and elsewhere, etc. 9. Thus there are changes of state proper to the nose, and these are artificial by various means.

83. 7. *As to effects.* 1. Not only is the organ itself changed as to its state according to causes of appetite, 2, but also all those things are changed which conspire, as the trachea and the lungs. 3. The veins themselves, which draw in aerial aliment, take upon themselves similar states; they open or close, thus they seek or turn away from a thing; in the same manner as the brain so does the fibre, for a like affection returns into the fibre. 4. A similar change of state sometimes occupies the cuticles, which excite a similar cause, and snatch up atmospheric foods. 5. Therefore the state of the animal microcosm imitates the state of the macrocosm, in that now it opened and admits into itself effluvia and vapors, now indeed rejects them, yea, sometimes not by insensible perspiration, but by sweats. 6. Thus the whole corresponds, the cause of which is sensation; and thence arises affections, and thence appetite. 7. But it is the cerebellum, which induces these states, not indeed the cerebrum; this latter sensates the affection.

84. 8. *As to the second use, or the excitation of the brain by the sense of smell,* from the things said it becomes evident, 1, that that sense, as also taste, instructs us but little as to what agrees or disagrees with the body. 2. It instructs the soul, indeed, especially the soul of the cerebellum, but its affection does not come to the cognizance of the rational mind, because it is not instructed by the soul, but it is only a pleasure which persuades. 3. Wherefore it can be present or absent. 4. From these things it follows that the use of knowing those

things which agree with the blood is not the primary use in the human kind, but is the primary use in brutes, which are ruled by instinct or the nature of the soul. 5. Wherefore the primary use in the human kind is that the brain may be excited and exhilarated by the sense of smell. 6. The soul in the cerebellum sensates those contacts, although no sense reaches to the cerebrum.

85. *How this nasal sense very greatly excites the brain, and restores the body, sometimes in an instant.* 1. This may appear from certain medicines which with stupendous swiftness induce changes; [such a medicine] relieves headaches, removes pains, heals deafness itself, and blindness arising from causes in the brain, and cures many morbid indispositions arising from the brain, as I have seen in the practice of Dr. Walth of London, by only drawing a subtile spirit through the nostrils; and as it thus heals, so also it kills and perverts, as in mines and wells, (of which the histories are extant), by inhaling poisonous and toxic effluvia, and many other things. 2. This is because the nose is the very ultimate centre of the skull, of the brain, of its meninges, of the fibres, of the cortex, of the convolutions, in order that from that focus it may run through every part, even to the cortical beginnings, whence the whole force returns into all the peripheries and into the body. 3. For the sense of smell is not simple, but double; smell is conjoined with a subtle sensation of touch. 4. From both is brought about the effect of contraction, expansion and modification, which traverses the whole superior region and its parts; and indeed extends to beginnings and arises from beginnings, therefore it is not a palliative cure. 5. The sense of touch instantly pervades the mucous membrane, which, because it is thickly sown with so many fibres of the olfactory nerves, penetrates from so great an expansion and by the network of its membrane into the dura mater; 6, and because it is bound to the turbinated bones, which are formed and rolled altogether according to the nature of its modification, it penetrates into every part of the cranium, into the neighboring bones, (concerning which see Heisterus), into all the sinuses, which are invested with the same membrane, into the folds, into all things which depend upon the dura mater within the cranium, and by this way into every part of the

brain. 7. Then also it penetrates into the pia mater, which thing also at the same time a certain sense or more subtle modification, or smell, perceives, wherefore it reaches all the divisions of the brain in general and in particular, even to every surface of the cortical part and to every division of the medullary part, so that nothing is left untouched. 8. Likewise by the fibres it penetrates into the mammillary processes, which subtend the brain, and are inrooted in the whole medullary substance and are terminated in the cortex itself, for the sense runs through every contiguous part, and the more perfectly when its parts are thus arranged according to every form of modification as in the brain. 9. For the modification or sensation of one or of some of the papillæ goes immediately to the whole subtending membrane as into its own general receptacle, and thus with increased strength to the whole medullary and cortical substance. 10. The modification likewise also proceeds by the arterial or sanguineous way, for according to Winslow the external carotids communicate with the internal, and the internal with the external in this place; so also the veins. 11. If also anything passes through which produces or foments the spirit through the corporeal fibres there arising even to the cortex, the more certain is the effect thence. 12. The effect returns into the beginnings themselves, into the fibres themselves, into the spirit, into the blood, into the beginnings, into the vital liquors, wherefore into all things of the whole body from the beginnings. 13. Similarly also to the cerebellum by the fibres of the nerves of the fifth pair; 14, to the eye, the ear, (more immediately, because they obstruct from the side), with which there is communication proximately by an external way; finally into the optic nerves by an internal way. 15. Likewise also immediately into the lungs, their fibres, vessels, spirit and blood; the lungs are the principles of life in the body,—they are succenturiate to the brains. Hence is evident what is the effect of this double sensation in the nostrils. 16. Further that it excites the affections themselves of every faculty; and of the soul from the mind, whence is confidence, which also contributes.

86. *Why of necessity by the sense of smell the brain is excited, in brutes and in man.* 1. In brutes in order that they

may know the nature of their nourishment, nature dictating, for their science is natural, not adscititious and artificial; wherefore it is by the instinct of the soul. 2. And in order that, as in man, they may excite into new life and may be continually revived by their own herbs; for they know from nature what is useful for eating and what for exciting, and they are from nature skillful as to medicine for their body. 3. Wherefore with them senses of this kind are more perfect, the olfactory processes are larger, thinner, more tumid, more deeply inrooted in the medullary substances, more perfectly communicating all things with the beginnings. 4. Then also with the lungs—wherefore they draw breath more deeply even to the flanks, while with the nostrils they gape for food, especially when appetite is present. 5. In man, however, this sense is more for the sake of excitation, for thence all things are vivified, and by affections exhilarated. 6. In order that man may know what is in the atmosphere, wherefore what floats in the hidden parts of it. 7. What thence is from a distance. 8. In order that he may perceive the wonderful things of God from amenities, and may enjoy a delightful life. 9. But he does not know these things *ex priori,* but from effect, whether they agree with his nature, even odors most fragrant and most delightful. 10. And on the other hand, in order that he may be able to shun, abhor, and not admit things contrary to his nature, and by preservative things injected into his nostrils may repel, break them up, etc. 11. Man has less acuteness as to this sensation, and that which disturbs his analyses, induces varieties upon his faculty of thinking, thus it disturbs his proper endowment; for smell especially effects this, for thought requires a quiet state of the cortex. 12. For if we attend well to deep thoughts, when we draw breath, then an abundance of ideas from the lower part rush into the sphere of the thought, as if then, the gate being open, the attacking army rushes in; but when we hold the breath and expire slowly so long we may remain deeply in the tenor of our thought, and we as it were communicate with our superior faculty or with our soul. This I have very often observed in myself. Holding the breath is having intercourse with the soul, but drawing it is having intercourse with the body. Reason also admits this, for as often as there is drawn

into the cortical substance itself the blood or the coarser spirit of the blood and from the body, and that substance comes into another state, in which state the sense is altogether corporeal; 13, wherefore, also we do not smell, except during inspiration, but not during expiration, as is known. 14. This also is the reason why it is given to man to breath through the palate thus by a shortened way, lest anything interrupt the analyses of his rational mind. 15. In infants and others who live in the body, we notice full, not slow, inspirations. 16. The same is confirmed by the ecstatic phenomena of certain persons; while they are in these states they are in intercourse with their soul and with its nature. 17. Wherefore the lungs and their respirations are the things which (establish) the corporeal life and the motor and sensitive life of the body, and join the soul to the body, so that we are able to act *ex posteriori* when the machine is reversed, according to those things which have been said in Part II. of the Animal Kingdom. 18. Wherefore to man are given thin mamillary processes; for they are almost alone for the sake of the pleasure and excitation of the corporeal life. 19. In the human race this sense is sometimes wanting, without any diminution of life.

87. *From these things it appears how the rational mind which is the proprium of man, takes away instinct such as is in brutes.* 1. In brutes there is no rational mind and will thence, but a blind leading of nature, or instinct, as is known. 2. There are with brutes senses, which immediately communicate the effects of the body and the world with their soul, whence their instincts are called forth; thus they as it were do nothing from themselves, but from nature. 3. Therefore all things tend from ultimates to firsts, where knowledge resides; from this arises the affection, according to which they act. 4. But in man there is another principle, or the rational mind; to him are given senses in order that that mind may be instructed, 5, and in order that the soul may inflow into the mind, or in order that we may arrive at the communication of mind by our mind; for the more that is cultivated, the more fully does communication take place, if only we proceed rightly, and have a desire for those truths. 6. Thus our rational mind is that which takes away instinct, and according to its culture the mind obtains

culture for itself. 7. And this is in order that we may live not under nature, but under the influx of the supreme mind or spirit of God. 8. This is the end, why we are born most infantile and ignorant, namely, in order that thus we may be associated with the supreme being, which can never be done in the case of brutes. 9. But as to these things they are to be found in Psychological treatises; for we ought to distinctly comprehend those faculties, and indeed according to the doctrines of order and degrees, of influxes, of forms, etc.

88. 9. *How the drawing of the breath not only nourishes the blood, but also the spirit itself, and brings certain atmospheric elements even to the cortex of the brain.* 1. This is especially done in the lungs, for thither come the purest elements, for the air is purified on the way, according to those things in Part II., concerning the Lungs. 2. Thence is the renascence of the blood, its splendor, and its preparation, and change into arterial blood. 3. Something similar occurs in the nasal crypts, which inspect, as does the tongue, and absorb the purer things, which flow to it; 4, therefore there is a various communication with the external and internal Carotids. 5. The corporeal fibres are what bring forward; 6, the excitation itself of the brain and its sudden refection persuades it, of which above: 7, in the meantime the same thing as that mentioned concerning the cuticles occurs here, for this is very thin, of the same nature, and furnishes with a double sense, thus still more than the common cuticle. In this cuticle there is a more perfect sensible perspiration. 8. Hence in the nares the construction persuades so many arterial and venous vessels, so many glandules, so many nervous fibres. 9. We do not know what is done in the smallest forms; all of them have porosity and permeability; this is known from the effect alone.

". . . They have spiritual light, who love to understand whether that be true which is said by another, but . . . they have natural light, who only love to confirm what hath been said by others." *Swedenborg,* Div. Wis., I.