

taken of thought in retrospect and commentaries that followed. Indeed if we were to benefit from thought itself we would not waste so much time with what has been thought in the past but we would become ourselves contributors to the advancement of knowledge. But this is something that is reserved for a very, very few, as history has shown.

(*To be Concluded*)

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## THE HUMAN MIND

A STUDY BY HUGO L.J. ODHNER

### IV. THE FORMATION OF THE MEMORY

Doctrine and experience alike tell us that man is born sensual and corporeal. But doctrine also reveals that the sensual degree of man is by inheritance so perverted that his only hope of salvation lies in an elevation from the sensual—an escape from the dark jungle of the merely animal impulses and corporeal appetites which rule him so long as his life is immersed in the flesh.

It is in order that man may be lifted out of the sensual that the Lord provides that the senses of the body shall be instrumental in the building up of a *memory*, through the accumulation of knowledge. Through the memory, man is introduced into a new world, which is not physical but mental; a world through which man may roam freely without being bound by the chains of natural time and space, and where he may live in something of independence from the pressure of external sensation; a *spiritual* world in which the Lord can perfect the most marvelous spiritual creations which are limited only by man's attitude and consent; a world in which the ends of creation may indeed be fulfilled.

The memory is the gateway and the ground of this new world of human life. But since the memory is formed on the basis of actual sensations which are conveyed to man's consciousness from the physical environment through the nervous system, it is necessary to distinguish what these sensations are. (We can do this only suggestively, since the whole sciences of psychology and neurology are involved in analyzing these complex processes.)

There are in general three types of sensations. The first two

types are unconscious, or involuntary. Thus, various sensory fibres of the "sympathetic" nervous system carry sensations or reports from the viscera—sensations of the heart-beat, the functioning of the various organs, and even the pain caused by disorders in the viscera—to the spine, whence they are relayed to the brain-stem and the thalamus (at the center of the cerebrum). To balance the action of these fibres, the "parasympathetic" nervous system (by sensory fibres of such nerves as the *par vagum* which originates near the brain) conveys sensations of hunger, nausea, and physical need to the medulla, the pons, and the cerebellum. These reports are integrated by the midbrain and the cerebellum and acted on without man's direct knowledge. They are unconscious sensations, causing involuntary reactions. In the case of pain, we may indeed feel the pain as intense discomfort, but cannot localize its source unless other sensory fibres are also affected which can convey "conscious" sensations.

By means of the unconscious sensations, and the consequent state of the thalamus in the cerebrum, an influence is exerted upon our emotional life, or upon what Swedenborg in his *Psychology* calls the "Animus." Something of training in the adaptability of the body seems also to result—by the perfection of an organic and muscular "memory." But what we shall now describe as memory proper is quite different; for the formation of this memory is occasioned through sensory impulses which reach the level of man's consciousness.

Such true "sensations" come from special organs of sense—sight, hearing, smell, taste, and touch. They are relayed through the brain-stem and the organs in the central core of the cerebrum—regions where numerous interconnected cells of the cortical type are scattered. Here the streams of sensation from different sense-organs are correlated, filtered and combined, and then carried up to the cerebral cortex in adapted forms.

It is in the cerebral cortex itself—in the grey matter or "bark" of the cerebrum—that sensations become distinct and, as it were, articulate. The sensations affect each cortical gland from without, inducing upon it a new state or condition.

How is sensation effected? What is meant by a sensory-impulse being carried by a chain (or relay) of nerve-fibres from the eye to the cortical "gland"?

Swedenborg—in his physiological works—simply concludes that the fibres are furnished with a central canal which contains a subtle vital fluid which distends the fibre, and that sensation is a tremulation or vibration of this fluid, a flashing, wavelike movement carried upward from the sense-organ. Modern science, denying that the nerve fibres contain any fluid for this purpose, speaks of the transmission of sensations and motor-impulses as being “electro-chemical” in nature; in fact it is now claimed that every part of “the human cortex gives out rhythmical waves of electric potentials” which can be measured. These waves, it is said, are larger and more regular during sleep. The nerve-impulse travels at about the rate of 400 feet per second in the insulated fibres, but slower in fibres which are not insulated. The relatively slow speed is explained by assuming that the energy for transmission is supplied by the nerve fibre itself by chemical adjustments from point to point. This leaves us with the problem as to what “electricity” is and what forms it may take. Up to recently it has generally been conceived of as an activity of the “ether.” Swedenborg also makes clear that the “fluid” which carries the nerve-impulse is of the same “form” as the ether; and he says that the spirituous essence which “flashes” like rays through the simplest fibres composing the tunic of the nerve fibre must not be thought of as a liquid, but is like a vortical current of force (*Fibre* 264, 251, 254, 265b).

We must also remind ourselves of Swedenborg’s doctrine about the motions of the brain. For he realized that every organ of the living body has a motion of its own—unique to itself, yet tied up to the two main sources of vital motion, the heart and the lungs. The brain, he points out, must be free from the domination of the heart’s pulse, if it is to be in peace to perform its functions as the basis for the mind. It is therefore encased in bone and tough fibrous membranes, within which it can have its own rhythmic motion, as a whole and in each individual part. Thus each cortical “gland” has a certain freedom of its own—freedom to expand, contract, receive nutriment, or secrete its vital fluids; and also to communicate by fibres extending to other parts of the brain.

This last is of great importance in connection with the formation of the memory. For when—after birth—sensations begin to reach the cortex of the cerebrum, and the infant begins to ap-

preciate differences and similarities among external objects, and to combine his primary sensations into perceptions of a higher order; distinguishing degrees of intensity in light or heat, connecting a sound with its visible source, recognizing spatial relations and forms—then new fibre-paths are activated in the cerebral cortex, gradually connecting some of the ten billion little glands either with each other or with the mid-brain. And while the general pattern of the lower parts of the nervous system is laid down by heredity, these new fibre-paths seem to mature with reference to the experience, effort, and training of the individual.

Thus the association-paths which connect the cortical cells together seem to begin to function in proportion as man's memory and the higher mental functions begin to develop. First the sensory areas of the cortex are connected with each other and with the corresponding "motor" areas, and then the frontal parts of the cortex begin to mature. And these anterior parts of the brain seem to be necessary for higher mental functions, which rest on sensations but are employed in interpreting the meaning of experience.

For in the cortex, sensations become more than mere testimonies to the state of our physical environment: they become occasions for the formation by the mind of symbols full of meaning, whereby we link the past to the present and begin to see our place relative to others. Through the cortex, the mind of man is furnished with a world of symbols which can stand either for physical things as such or for states of mind experienced in connection with them.

These symbols, which constitute the groundwork of the new mental world into which man's consciousness is now introduced, are called "knowledges" or "scientifics"—things known. And it is said of them that they are nothing but vessels for the interior things of the mind. By the things of knowledge we gain a new source of individuality; for in no two human minds can there be the same knowledges. Through knowledges man comes into a certain freedom—an independence of his physical environment; so that he may live, if he pleases, within himself. He may indeed make these symbols take the place of the physical satisfactions he otherwise might crave; he may retire within a realm of imagination and thought, and even build up (by means of his knowledge) certain controls by which he rules or "conditions" the visceral and sensual responses of his body in various ways, so that the cerebrum

might come to limit the rule of the heart, and man himself by degrees be "elevated from the sensual." The unconscious wisdom of the human soul labors from the first breath of life to achieve this objective, and to rear upon the ground of knowledge a "Jacob's ladder" which might lead into heaven itself.

The very first symbols which the soul of the new-born infant forms on the basis of physical sensations are not, properly speaking, "knowledges," because they do not even suggest the notion of a physical world. The infant only feels them as states of sensory delights. The celestial angels who attend the babe inflow into his mind, and it is their sphere which is so felt—for they delight in all that is of order even on the sensual plane, and see in this order a prophecy of the celestial destiny to which this order is looking. Thus the Lord stores up a memory of "delights" from all those tender states of infancy, which then become associated with an influx of celestial good. This is the garden of "Eden" (literally, "Delight") into which every babe is transported. These celestial things which are at first insinuated into man without knowledges, and later along with knowledges, are called "remains of good" (AC 1450, 1451, 1906), and are said to be stored up—not as knowledge, but as a state of delight—in the interior rational (AC 1906, 4759, 3654: 3), in the internal man (AC 8), or in the interiors of his natural (AC 5297). They serve, not as a part of his memory, but as a means of holding the mind open somewhat to the influx of heaven, so that man may be able to think reasonably and to exercise spiritual freedom. Even an evil man cannot pervert these remains with himself, although he may close them off.

Man alone among living creatures is born without knowledge (CL 133, 134). By this is not meant that animals have innate or connate ideas; for beasts have no ideas, nor can ideas ever be born with anyone (TCR 335). But animals are born forms of specific affections, as witness their tremendous diversity of bodily shape. Each animal from birth is possessed of a "science" or knowledge corresponding to its peculiar affection (DLW 61, 134, 255; AC 4906e). This so-called "knowledge" is nothing but the organization of its sensual degree so that it may receive an influx from the spiritual world which causes it to act from its native love. This influx gives it instinctive reactions so that it may respond to all situations within the scope of its love.

But man is born, not to represent some specific natural or predestined affection, but to add to the perfection of heaven by contributing a mind formed in freedom and used according to reason. The development of this mind—not merely the perfection of his senses along some unique line—becomes therefore the purpose of his life. The senses of man are only tools for the creation of the character and individuality of the eternal spirit. Human knowledge is a necessary means for this free development. For life without knowledges is indistinct and obscure—mere vitality without distinct consciousness (AC 3293). And without consciousness there can be no human freedom, no exercise of choice, no perception of relative values; and thus no thought, or even imagination; and no reflection, no reformation; no reception of the gifts of love and wisdom as coming from God.

For these reasons the memory of man must be formed by instruction in knowledges. Knowledges—or “scientifics” as the Writings call them—mean simply matters of information. We think of the memory as a great storehouse from which we draw at will, a vast pool of knowledge gathered by experience and reflection. But here we wish to examine first the raw-material out of which the memory is built.

The lowest and grossest elements of our consciousness are mental objects, images and symbols which correspond to things sensed in the external world. Certain of the senses—like sight, hearing, and touch—are especial aids for calling such symbols into being; but the resultant symbols are states of the spiritual substances of the mind, corresponding to the states of the natural organics of the cortex of the brain; indeed, they could not be formed anywhere else—cannot be formed after death. They are distinguished from ideas of thought (SD 5588; AC 6319: 2), and are often called “material ideas.” Material ideas are objects or symbols which suggest the primary form or notion of something in the natural world, thus something having the attributes of space and time. Such material ideas are mental representations of things which, we conclude, exist outside of our minds, either in nature or in our own bodies. They represent combinations of shapes and colors, weights, tones, rhythms, times, temperatures, speeds, etc. They spontaneously produce the sense of space and time. The mind on this level—which is the lowest spiritual de-

gree—is incapable of feeling any consciousness that is divorced from such space-ideas or time-ideas.

Of course we know that there is no actual space or time in our memory, but only a representation of it. The entire world, so far as we have experienced it, lies crowded into our memory, and there seems ever room for more! Our memory is the ground, the “ultimate” on which our conscious spirit dwells, on which our consciousness travels by swift changes from realm to realm. It reminds us of the fact that in the spiritual world there is similarly the appearance of time and space, yet these two limitations do not actually exist in that world “as properties of it” (AE 1210–1212). We learn further that in the spiritual world the idea of changing states, with “the consequent idea of the appearance of space and time, comes solely in and from the ultimates of creation there”—which are “the lands on which the angels dwell.” In the interiors of the spiritual, as in the superior degrees of the mind, there is no appearance of space or of time (AE 1219: 5). Thus we may conclude that the material ideas of the memory are modifications of the same degree of substance as that of the ultimates of the spiritual world.

Material ideas are “seen” in the mind in sensual “lumen.” For what is conceived as being part of the natural world is in the mind “seen” in that light. This “natural lumen” of the mind is from a spiritual origin. For man’s mind apprehends the objects of the memory from that sphere in the spiritual world in which the spirits who are with him dwell. Sensual lumen comes from spirits below heaven and also from the hells (WE 940: 2; SD 4627, 4629). Thus a sensual lumen is easily aroused with men, from the love of self and from the pride of self-intelligence which hold their minds down to material things, material values, personal vanities, and corporeal delights. It is indeed possible to enjoy a natural lumen which is not from evil, but to this man attains only through the delight in uses which makes it contain inwardly something of rational and spiritual light (AR 940; LJ post. 16).

The memory of material ideas is called, in the Writings, the *corporeal memory*; i.e., the memory of our bodily experiences. It is not a memory of things thought but of things sensed, and of the symbols, names, and attributes of such things. Thus it includes the speech of words, and all the scientifics about the world as such (AC 1639, 2471). And associated with it—as the very

substance in which it exists—are all the delights, yearnings, and lusts which welcome these knowledges. For no knowledge is ever formed on the basis of a sensory experience which has not a delight associated with it. Everything else that the senses offer is rejected.

It must not be supposed that the scientifics of the memory lie in utter confusion. The knowledges in the memory are arranged in an organic connection similar to the manner in which the fibres of the body are bound into fascicles and organs. For the body is in a perpetual correspondence with all the things of the mind (AC 5881; TCR 38, 351). This “bundling” of knowledges is, of course, especially evident as the memory grows and experience begins to be digested and sorted out and applied through the use of the higher faculties. There then arise “sciences” or distinct fields of knowledge. Swedenborg mentions, among the useful sciences, “physics, optics, chemistry, pharmacy, anatomy, mathematics, astronomy, architecture, botany, metallurgy, history, civics,” and the like. These are all founded on factual data and sensual scientifics; yet a “science” means an ordered arrangement of many data, which are scattered facts gathered and checked during the centuries.

Among the inner laws which bind our knowledges together are the laws of the “association of ideas.” The psychologists of today recognize two kinds of association of ideas: a simultaneous association of several composite perceptions which recall a kindred event or similar object; and a successive association of ideas into a train of thought, one thing having some connection with another. Both are usually described as connections in time—having been experienced at the same time—or in space—having been seen in the same place or possessing a similar shape. And it is true that space and time produce the “generals” of the corporeal memory, and form fields of connection among our sense-experiences. But in the Writings a deeper connection is stressed. For it is love which introduces things into our memory and arranges ideas there into series with a view to its own objectives (AC 4301: 3, 4, 5278). “If there is no affection, there will be no observation. It is this affection, or love, with which the thing that enters connects itself, and being connected it remains; as is evident

from the fact that when a similar affection or love returns, the thing itself recurs and is presented to view along with other things that had previously entered by virtue of a similar affection. . . . Similarly, also, when the thing itself returns, whether this be effected by objects of the senses, or by objects of the thought, or by the discourse of someone, the affection with which the thing had entered is also reproduced" (AC 3336).

The workings of the memory are therefore not mechanical. Ideas are "reproduced whenever a similar delight recurs"; and these webs of association become richer and deeper as life proceeds. Similarly—and in this lies our salvation—when the same truth is reproduced by one's self or suggested by another, the affections once associated with it are again aroused (AC 4205: 2, 4301: 4; SD 4037).

It is because of such laws of association that our ideas may become clearly perceptible and rich in meaning. The material idea in the corporeal memory was shown to Swedenborg as in the midst of a kind of "wave"—an undulating sphere of associated ideas. And by these associated ideas the thing thought of is elevated as by "spiritual wings" and lifted out of the memory into the full light of apperception. So, for instance, if we think of the name of some person, the spirits who are with us perceive all the things we ever knew or thought concerning the man, and all his history from childhood, as well as all our feelings about him from time to time. But, strangely enough, we ourselves are then only conscious of the particular notions to which our attention is confined (AC 6200). And if man is in merely sensual thought, the material idea in the memory is closed even to spirits; although spirits of a sensual type are still attracted (AC 6201).

The fact is that unless the sensual ideas of our memory become associated with states of remains—and with the truths and goods of later life—they become material, empty, dead, hard, and closed to the influx of heaven (AC 1472; SD 4184). They can then be used only for the world and for self. And "dead scientifics" are false scientifics: false, not because they are not accurate, but because the order into which they fall is a perverse order which centers around self and denies the real Divine ends of existence. The "empty scientifics" that a man learns in childhood and youth, together with the pleasures of cupidity which he favors, are what

prevent a man from attaining to celestial things (AC 1542). The purpose of education from infancy on should therefore be to keep the scientifics of the child's mind "open" to an influx of good affections, and to associate the things of the world—its objects, forms, and forces—with the thought of the Lord's purposes and of eternal life.

Sensual scientifics are only vessels into which truths and goods can be insinuated. With infants, they serve as a plane for cognitions of spiritual things. Without a knowledge of worldly things there can be no instruction in spiritual things, since we cannot introduce our children into the spiritual world directly. The languages of human speech are derived from the ultimates of nature, and even Divine revelation uses the words that have come into use among men. Man learns by symbols, acts, and words which receive meaning by being associated by use with certain states and are placed in a certain connection with other symbols to suggest more abstract connotations. The first abstraction is effected by generalization: as when we recognize the similarity, in form or use, of certain things or objects and give them generic names—"horse," "man," "woman," "house." But by further association of ideas the sensual image of a "house" may give rise to the moral concept of a "home" and later to the spiritual idea of the "good of mutual love" which should rule in the home.

This apparent raising of a concept from degree to degree not only invokes certain new laws of correspondence but requires the use of higher faculties, such as imagination and reason, of which we have not yet treated. By the processes of imagination and thought the memory is enriched. For the simple elements of experience are combined, and each combination, each new train of ideas, each complex thought, adds itself to the store of remembered events. Physical events and mental events (like thoughts or dreams) are kept separate in the memory, although the same elements or mental objects may enter both. And our doctrine explicitly states that by degrees an interior realm is formed in the natural memory for such things as are abstract in quality and of service to the rational mind.

Objects like the abstract terms and ideas found in the Writings enter the mind through a direct rational process, and are not re-

tained as sensual images but find a place in the *interior natural memory* (AC 5094). This interior natural memory differs from the "corporeal memory" in that it has to do, not with visual objects or symbols, but with "things"—with laws, things of faith, abstractions like charity, mercy, goodness, such as provide subject-matter for deep thought and interior speculation (SD 3258; AC 6814). This allows man's thought at times to be elevated out of the sensual without losing contact with the natural memory (AC 6226, 6183).

If the mind is in true order, theological things reside in a functional sense above the rest in the memory; moral theories and perceptions, under these; political or civic things occupy the lowest place. And as a substratum common to all, there are the manifold scientifics of sense-experience (TCR 186). Thus different conceptual knowledges are arranged according to man's evaluation of their importance to him. Yet all knowledges, of whatever kind, are "scientifics," and all belong to the memory. It is therefore an absurd tautology to use the term "memory-knowledges"—for where are there any knowledges except in the memory? (SD 1078).

Still there is a need to distinguish between what the Writings call "cognitions" and other knowledges. Cognitions are "the scientifics of the church" (AC 9755), and are thus "chiefly doctrinals" (HD 51; AE 545). They are called "interior scientifics," because of their subject matter (AC 9945). Associated with the term "cognition" is the idea of recognition or acknowledgment; but cognitions, like scientifics, are "outside of the man himself" so long as the will has not been affected by them (AC 9230). For the memory is only an outer court where stranger and friend may both linger.

*(To be Continued)*