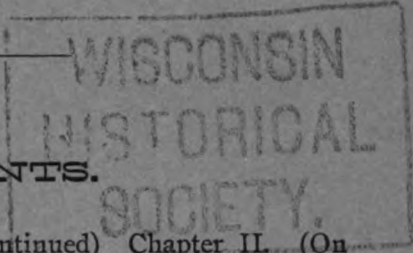


THE NEW PHILOSOPHY

A Quarterly Magazine devoted to the interests of The Swedenborg Scientific Association.



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THE NEW PHILOSOPHY.

THE NEW PHILOSOPHY is a quarterly magazine devoted to the exposition of the scientific and philosophical principles contained in the works of Emanuel Swedenborg, and as the organ of the Swedenborg Scientific Association it will be the means of promulgating the uses undertaken by that body. The magazine will contain essays on Science and Philosophy; instalments of some of Swedenborg's Scientific works; and the transactions of the Association.

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II. The promotion of the principles taught in these works, having in view likewise their relation to the science and philosophy of the present day.

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VOL. IV.

APRIL, 1901.

No. 2.

ON THE SENSES.

PART FOUR OF "THE ANIMAL KINGDOM"

BY EMANUEL SWEDENBORG.

The First Branches of the External Carotid.

36. Experience. The first branch of the external carotid rises from the same source at the side; it immediately makes a small circuit, and after it has given off branches to the neighboring jugular glands, for the fat and for the skin, it runs transversely, and distributes itself to the thyroid glands, to the muscles and other parts of the larynx; it also gives off little branches to the pharynx and to the hyoid muscles. This is to be called the *laryngeal*, or *superior guttural artery*. The *second branch* crosses in front of the neighboring horn of the hyoid bone, and goes to the hyoid and glossal muscles, to the sublingual glands, and finally crosses in front of the horn of the hyoid bone and buries itself in the tongue, where it is called the *sublingual* and also the *ranine artery*.

37. I. Analysis. The purest blood and that of the best quality is required in each organ of the senses, then in the motor organs or the muscles; for the blood is formed according to sense and motion, and in sense and motion consists the life of the body; the animal spirit itself also, and its beginning, which is the soul, wills instantly to learn and to do what conduces to the body; wherefore the lowest universal essence or the blood ought to be

most promptly obedient to it, and to correspond exactly to those things both in quality and quantity.

38. The organs of the senses are the ear, which corresponds to the larynx, or hearing to which sound corresponds; taste follows this in purity, then smell; finally sight, which is the purest of the external senses: in a similar grading the purities of the blood and of the spirits themselves ought to correspond.

39. 2. From the flux of the arteries, especially of the external carotids, it appears in what manner the blood is dispersed and tempered while on the way to the organs mentioned, so that none but what is pure comes to those sensory and motor organs. These temperings and artifices are not yet very well known, wherefore they shall be briefly expanded.

40. 3. In order that the desired quality of blood and of the right kind may always approach, there are in the way *excretory* and *secretory* organs; the excretory are the cuticles and many cellular textures, which entice into themselves, and lead away the unsuitable serosity. The secretory glands are those which drawn into themselves the salivary humors; thus the rest of the blood which flows to that organ is of a more defecated kind. This is the reason why the first branch which is called the laryngeal, or superior, guttural is first led to the jugular glands and to the cuticle which draw off the muddy parts (see Winslow above concerning the first branch). A like thing occurs in regard to the little branch which goes off thence transversely towards the larynx, for this also is derived into its cuticles and into its glands, namely, the thyroid and arytenoid, where the still impure residua are drawn off; thus what remains is purely sanguineous. A like thing still more accurately occurs in the still smaller and in the smallest branchlets which we cannot observe; for there nature is in her own exercising-ground.

41. 4. Now as to the *quality* of blood, lest too great an abundance infest the organ, it is led away partly by the veins which are adjoined in a perpetual anastomosis with the smallest arteries, partly also by the fat, which absorbs superfluities, as notice the omentum; that these branches also go off to the fat see Winslow. Thus both the right quality and the right quantity approach to that motor organ.

42. 5. The very determination of the proper branch, which supplies a given organ favors these things; for this branch runs, or is led off, from a more common branch (see Winslow in regard to the first branch), wherefore no greater sanguineous flood is injected into it than the organ itself demands; for the blood undulating not thus transversely to the sides as much as it urges obliquely forward, therefore, no more pushes in than just the amount required by that organ; thus the invitation is altogether correspondent to the cause, so far that the invitation itself is the primary cause. This is evident from an examination of the nature of the undulation, then also from the forward motion of the blood into the excurrent vessels. By this reason nothing can be brought to the larynx but the blood of just that kind which corresponds to the uses of the organ; for all things are formed according to use; nor does nature proceed a hairsbreadth (*lineolam*) without the consideration of use.

43. 6. A like thing occurs in regard to the second branch, which is ascribed to the tongue and to its muscles and sensories; for that branch first approaches the sublingual glands and the pituitary or mucous membrane, in which places it purifies itself of its poorer character, and by infinite anastomoses directs itself into the veins, also into the fat of the tongue, then it betakes itself directly into the tongue: and, indeed, the more perfectly are the parts of the organ multiplied in the degree that that sense is more subtle. So also many other things which confer to that same end.

44. 7. Here ought also to be observed: that the blood is determined into the muscles of the pharynx and the hyoid bone by two ways, or by two branches, that is, the first and second, or the laryngeal and lingual, because there are two primary offices of the pharynx and the hyoid bone, namely, that they may serve the larynx in its operation of speech, then that they may serve the tongue in its operation of mastication. This is the reason why the blood flows in distinctly by the branches of both the laryngeal and lingual arteries, so that the work of one may not disturb that of the other, but that it may be continually ready; for the pharynx assists the larynx in its operation of speech, likewise also does the hyoid with its muscles, and the tongue assists both; thus it appears how carefully it is provided.

That the laryngeal branch also flows into the muscles of the pharynx and of the hyoid bone, then also that the lingual branch flows into the same, see Winslow.

The Remaining Branches of the External Carotid.

45. 1. *Experience.* The *third branch*, or the inferior maxillary artery, goes to the maxillary gland, to the styloid muscles, to the mastoid, to the parotid and to the sublingual glands; it gives off branches to the muscles of the pharynx and to the flexors of the head. The *fourth branch*, the external maxillary, goes anteriorly over the masseter muscles, over the middle of the lower jaw to the side of the chin (wherefore it is called the mental artery), under the apex of the angular muscle of the lips, and to it as also to the buccinator, and to the *quadratus* of the chin. The tortuous branch, together with the like of the other side, constitutes the coronal artery of the lips; it ascends to the nostrils, and gives off to the muscles and cartilages of the nose, and downward it sends off a branch communicating with the coronal artery of the lips; finally it ascends to the angle of the eye, to the common muscle of the lids and of the eyebrows, and to the frontal muscle, where it ceases. The *fifth branch*, the internal maxillary, is noteworthy; it goes to the pterygoid muscles; it then divides into three branches. The first goes to the inferior orbital fissure; it directs itself towards the peristaphilinus muscles, and to the glandular membrane of the posterior nares; inferiorly it distributes itself to the parts in the orbit of the cavity [of the nose]. A subordinate branch also enters the cranium as far as the dura mater, and communicates with the artery of the dura mater, entering from beneath through the sphenoid bone. It sends off still another branch to the maxillary sinus and to the teeth. The *second* goes to the sockets of the teeth and to the teeth and loses itself when it has passed between the angle of the lower jaw and the parotid gland, and thus forms the *temporal artery*. The anterior branch of the temporal artery goes to the frontal muscle; it sometimes gives off a little artery through the cheek bone (*os de la pomette*) to the orbit of the eye. The middle branch goes partly to the frontal muscle, partly to the occipital; the posterior por-

tion goes to the occiput and communicates with the occipital artery; these also give off branchlets to the teguments.

46. 2. *Analysis.* A similar thing occurs with regard to the rest of the branches of this artery, as with regard to the *third branch*, which gives off branches to the styloid muscles, to the mastoid muscles, to the muscles of the pharynx and to the flexors of the head; this approaches the maxillary and sublingual glands. The *fourth branch*, which supplies the masseter muscles, the buccinator, the quardatus of the chin, the orbicularis of the lips, finally the muscles of the eyelids, of the eyebrows and the frontal muscles, goes to the nostrils, and there disposes of its superfluities, etc. The *fifth branch* likewise, which is divided into several other branches, goes to the muscles of the orbit of the eye, and to the eye itself; this one crosses to the nostrils and also to the parotid gland, and thus unburdens itself of impurities; for those glands are the greatest purificatory organs of the head, namely, the nostrils, together with the pituitary membrane of the nose and palate, and with the parotid gland.

47. 3. Therefore, as to what pertains to the eye, or to sight, the blood which is sent out thither purifies itself of phlegm and injurious sera in its whole passage: 1, by branches to all the glands of the throat, of the larynx, pharynx, of the tongue and of the jaws; 2, in transit by branches thrown off into the palate and nostrils; 3, finally by the proper branch, which is also diverted towards the nostrils and even to the parotid gland; 4, to say nothing of the branches proper to the orbit of the eye, which go to the gland of the lids and the eyebrows; 5, this blood which approaches by the last branches ought to come to the eye altogether pure. 6. Yea, it should be of that purity that it can penetrate the orbital foramen into the dura mater, and communicate with the internal carotid, for it is purified throughout the way. 7. That such blood is required by the eye will be shown in its analysis, for the sense of the eye is of a purity proximate with the mediate internal sense.

48. 4. As the blood acts in the greater and common branches so also it acts in the smaller and particular branches, or in those proper to any organ, and indeed [in the latter] much more perfectly, orderly and regularly; for fluids and substantialia in their least forms are, as it were, in the exercise-ground of their oper-

ations; neither are there such diverting causes and inconstancies, and similar things which lead them aside from their rules and laws, and remove them from nature which offers them guidance. For the farther you proceed from principles and first causes towards effects, the more inconstantly, uncertainly and limitedly a thing happens, because it draws one into errors and mocks the senses.

49. 5. But in what manner nature acts in her least forms, and how very perfectly, cannot be so well apperceived from any sensory organ of the head as from the brain itself; for the brain is the most perfect organ, and because of its large mass it manifests all the rules of nature exactly; therefore those things which are still desired we shall be taught in the following Part on the Brain, which things, however, we taste beforehand in each sensory organ.

50. 6. Thus we can know all the rules of operating nature, which regard the circulation of her blood, and the determination of its vessels; then also we could determine why its vessels flow thus and so, and not otherwise. For nature, from a certain physical and natural necessity, does not and cannot otherwise tend to proposed ends and uses. This is the reason why nature in the determination of her vessels is everywhere like herself in every object. The very differences originate not from use, but from diversity of tissue, for every subject, especially in the head and face, has a different tissue, but, given a use or an end which she intends, nature everywhere observes her rules; therefore it is worth while to explore those rules which, being explored, you can know the determination of visible causes, and also that of invisible causes. From least things we may learn more perfectly and certainly of the rules which nature observes; for in least things she is perpetually in her rules. Wherefore from the brains we may best learn of those precepts which, taken together, exhibit the natural necessity of the organism. These most general rules are many, as follows:

51. I. All vessels are in the stream of the motion of their own viscus, for every viscus has its own determinations according to common axes, peripheries and centres, according to which also are its motions. Among themselves the viscera, (each part in itself) hold their directions according to centres and axes,

which regard the direction of the integers, and these, the direction of the whole; therefore in order that the blood may be rightly distributed, all the vessels flow in those directions; wherefore we may, from the directions of the vessels, as also of the fibres, learn the determination of that organ of the body as to its axis, peripheries, and centres, likewise *vice versa*; wherefore also we may learn of the determination of their motion, and thus of the tissue itself; for those things which we do not distinctly perceive and refer to forms, to their axis, and to many other things, these we understand only obscurely, and we cannot explore their tissue, wherefore neither can we explore the causes of their progression to ultimate use; therefore the first rule is that the vessels and fibres traverse the determinations of the body, then those of every viscus, finally those of every part; for the vessels are determinant and the viscera, thence excited, are their determinations. But the more universal determination is of the nervous fibres which, however, concur with the blood vessels; for the vessels follow these fibres; thus first things concur with last things, in order that media may be determined to their own uses. 2. The second rule is, that to every organ is furnished both the due quantity and the due quality of blood, and this indeed according to use; for without the due allotment, a designated use would never be obtained in externals. The due quantity is obtained by the drawing off of the blood into the veins both proximately to that organ, and everywhere also in the common branches, to this extent, namely, that the organ is never obliged to receive as great a quantity of blood as in any case its common artery pours in; for in the time of wakefulness there is a greater incitation than invitation of the blood; in the time of sleep they mutually correspond; therefore the passages which draw off ought to be open, namely, both those that open into the veins everywhere, and those that open into the cuticles, which also draw off the quantity* both of the blood and of the serum. 3. Now as to quality of the blood, there are everywhere placed glandules which draw the phelgm into themselves, and thus purify the blood for the

—+—

*The word in the original is *qualitatem*; the context strongly indicates that it should be *quantitatem*.—Tr.

organ; therefore there are excretions and secretions which are beneficial, and which, by way of the saliva and of the stomach, etc., lead back again into the blood, lest anything perish which can be of use; this is the reason of there being so many glands, and also the reason of their position, sometimes side by side with the viscus which they serve. 4. The mutual correspondence of incitation and invitation is for the most part obtained by the tissue of the given organ in least things, then by the direction of the vessel either obliquely or transversely, for the more obliquely or transversely any vessel is directed from the common trunk the less can the inciting and urging force be present and the more the inviting force can be, as may appear from the flux of the undulation. 5. For the nobler an organ is the more transverse determinations of that kind are there from the common branches, even to the most particular; this appears especially from the branches which go to the eye and to the brain. As to those which go to the eye, first it is the common branch which leads off [from the carotid], then all the remaining four, then the branchlets likewise, even so that they can bring in more deeply nothing else than that which is suitable for the sensory. This is especially so in the case of the brain, where many transverse and angular determinations occur in the common branch, and still more in the smaller branches. These are the general rules which nature everywhere follows; there are yet innumerable rules, as it were, subject and subaltern to these, which rules nature observes; thence uses and ends are known, and there is nowhere any deviation. You may see other things in the determination of the internal carotid, which is as it were an exemplar of all; for these things, which have the leadership of life, act most distinctly and regularly for the sake of the internal sensations; so that these may be the rules of the remaining sensations.

APPENDIX TO MECHANISM IN THE BRAIN AND
PURER BLOOD CIRCULATION.*

BY MISS LILLIAN BEEKMAN.

I. *Source of Sensitive-Awareness of Environmental Variations
Pertaining to All Living Protoplasmic Substance.*

According to Swedenborg, consciousness,—which may be defined as the intelligent perception of ends or designs,—is in every instance the function of and associated with a distinct specialized structure.

Consciousness as here defined, the perception of ends with intelligent discriminative apprehension of measure relation and bounds, is by no means ever to be confounded or mixed with the idea of that mere *sensitive-awareness* of variations in its immediate environment which exists as an inherent property and nature in every particle of relatively-firm living substance or protoplasm; whether it be the simplest cell or even a particle of apparently undifferentiated protoplasm—jelly;—which latter property or potency of sensitive-awareness is sometimes laxly called “consciousness.”

Sensitive-awareness of variations in its environment, whether that variation take the form of vibrations, waves, impacts, blows, belongs to a sensitive-potency or *passioning*, pertaining to the very substance of recipient living forms or organized structures; and thus it appears with and always is associated with every particle of living substance or protoplasm as an universal intrinsic potency of living matter in itself.

It comes, of course, from that portion of some spiritual ether or atmosphere which is within every particle of living protoplasm; all through it. For the ethers of the spiritual world are created the one passioning or sensitive substance of all the Universe:—although the Lord has separated from them, from the

*To be read in connection with paper on “Mechanism in the Brain, Etc., in *The New Philosophy*, Vol. IV., No. 1, January 1901, pp. 9-29.

beginning, the power of the activities which they are to be sensitively aware-of; such activities or variations, whether rhythmic or otherwise, always being brought to them from some source outside themselves. But the potency of being sensitively aware of, or passioning, the activities and variations thus imparted to them from sources extraneous to themselves; is their inseparable property or nature; it is their very Self.

This is so true even to their lowest and most exterior form, in which this their potency is as it were in shade, and cold, and sleep, and afar off,—the form which is particularly appropriated to the vegetable kingdom,—that even then there remains enough of this sensitive-awareness of environmental variations, of this inherent *passioning*, to give to the delicate finger-tips of roots the power of avoiding obstacles in their path before they quite touch them; and in leaf and stem gives rise to phenomena of which the sensitive plant's shiver and collapse at a strange touch is a notable instance, and also the universal turning of leaves to the light, spreading their broadsides toward the sun in gray weather and taking an edgewise position to the source of light during the blazing Summer noons.

But consciousness in its high sense, the perception of ends, as something apart from this sensitive-awareness of and reaction to the stimulus of environmental changes common to all living substance, is another thing altogether; and *it* only appears and is associated with some such specialized tissue, the periodic function of which is governed by a blood supply operated as shown in the previous paper.

And it is comparatively only here and there in the macrocosm that there are given these specialized structures framed to functionate such distinct perception of ends, with a determinate activity implying a simultaneous perception of *more than one end*. But the formative, operating, modifying activities of vital fluids and undulating ethers are everywhere in the created universe; and immense is the sum and mass of living protoplasmic substance, sensitive in its awareness of and reaction to its own appropriate stimuli.

Even where such a structure, thus specialized to functionate this perception of ends, is in existence, it occupies but a relatively small space in that whole organized body of microcosm

of which it is a part; and its very function is not continuous, but intermittent.

There is something worth considering here both as to the relations of the spiritual ethers to the natural ethers, their correspondents, as well as to the Lord as the "Spiritual Sun."

The spiritual ethers are the one living sensitive substance of all the creation; and from these spiritual ethers the interiors of all living creatures are formed. But from these spiritual ethers the Lord has forever separated any self-potency of motion. Thus they can never be indebted to themselves for the motions which they are to be sensitively-aware of or feel; and without which their potency of sensation cannot become actuality, or real sensation; but remains locked in themselves as potency merely. For since they are created *passive* as well as *passioning*, or sensitive, the motions which they are *to passion* or be affected and thus "sensitively live by" always have to come to them, to be given to them, from some source outside themselves.

Now these motions, arousing sensations in them, are brought to them from two directions,—from within and from without. From *within* they receive those fine vibrations and expansions from the Spiritual Sun, maintaining them forever in the material and potency of their existence and state; and flying on through them as *media*; even as the light and heat of the natural sun, we know, flies through the known ether. From *without*, in so far as they are in close touch and organic connection with the natural ethers, they are able to receive a *second series of motions*. For these natural ethers are a distinct series of substances, created *non-passioning* or *non-sensitive*; but supremely active, motile. So that they are even termed "motion itself," especially in their primitives and purest units, which are the verimost simples, prior to and everlastingly underlying, as the very substance of, all composites. To which leasts and primitives the Infinite as directly and perpetually gives activity and maintains in undiminished motive energy, as He gives activity to the Spiritual Sun itself.

Now, when in living creatures the *spiritual*, the sensitive living ethers, are thus intimately and organically adjoined and conjoined to these *natural*, these motile and active ethers, all the movements and varying activities of the latter being thus com-

municated to the spiritual ethers within, would give to them to experience sensation. This appears to be the *modus operandi* of sensation in Swedenborg's scientific system. Because of this, Swedenborg says a knowledge of the operations of human life presupposes "a theory of the natural ethers." For the natural ethers or the "elementaries" of Nature are, he says, "the very source of motion; and by their mobility, under all circumstances, are, so to speak, the life of the Universe."¹ And the natural ethers "are the only things that can transfer motion."²

It will be observed that both the inner and outer sources of these "communicated motions" are directly and personally maintained by God; and thus rest at last immediately upon Him the Living Infinite. So His hand besets us, before and behind; within and without; above and below.

With a spiritual universe of sensitive substances and a natural universe of motile substances, thus inter-related and possible to be conjoined, (thus *necessarily* conjoined and that most nearly and intimately if the spiritual substances are to be in their "life,") the dependence of the spiritual-universe upon the natural-universe, and the dependence of both upon the Lord, receive weight and point of meaning. While the *basic substratum* of a relatively fixed and material world below all, in its plain inertness, can, when woven also into the organic fabric, give fixity of place to portions of the sensitive spiritual ether bound in with it, and afford a fulcrum and resistant ground to the active leverage of the motile natural ethers, which fixed fulcrum and resistant basis is perhaps a necessity to the active motile ethers, if they are effectively to direct their motions to and modifying act upon that particular portion of spiritual ether organically and intimately adjoined.

II. *Molecular Structure-Type of Carbon Compounds. Swedenborg's General Statement Concerning the Formation of Protoplasm. Food Value of Dead Protoplasm.*

In the human form the true spirituous fluid or highest blood, which is the formative and anthropoplastic substance and force

¹ *Outlines of the Infinite*. Swedenborg, pp. 130, 133-136.

² *Ibid.* Chap. II. *Mechan. of Inter.*, p. 137.

in the organism, is framed solely of the First or Universal Aura. But in animal forms the highest blood is not framed from the substance of the First Aura; but from the second or magnetic, which is the aura of the local solar systems.

There is a certain fact concerning the class of chemical substances invariably associated with organized structure or protoplasm which is notably significant when considered in connection with Swedenborg's statements as to the manner in which protoplasm is formed. Carbon, nitrogen, oxygen and hydrogen always enter in varying proportions into the substance of protoplasm. The carbon and nitrogen compounds are peculiarly those of organized substance. The carbon compounds indeed are in organized substance so universally that from this fact the department of chemistry treating of the carbon compounds at first was called simply "Organic Chemistry;" a name which obtains to this day.

In Swedenborg's *Chemistry* two chapters are devoted to the typical molecular structure or characteristic structure-type belonging to the nitrogen and carbon compounds generally. Their structure type, as he gives it, consists of a group of the units or molecules of some *ether*, arranged according to certain definite and special patterns; each of these molecules of ether being encrusted with more or fewer "inert particles" and small composites of inert particles, of a fineness commensurate with the fineness and subtlety of the particular ether involved. In point of fact, these encrusting inert particles or fragments are always angular compactures of "finites"³ of the same name as those which form the envelope of the special ether molecules involved, homogenous atoms or finites being able to be adjoined firmly to homogeneous.

These thus encrusted ethereal molecules are in touch with each other along the lines of their various patterns; so that motion

³ "Finites" are either atoms or the "simples" of which atoms are composed: the latter being called "corpuscles" nowadays. Such "angular compactures" of finites or atoms are inelastic, inexpandible, inert, and the manner in which inertness, or inactivity of the whole compacture, can and must result from the angular arrangement in it of individual finites or atoms, the free and native orbit or gyre of which would be the very "acting force" of fire itself. (*The Fibre*. Swedenborg. No. 261.)

may most instantly be communicated from one to another, along their entire line.⁴

Also the interstices of the whole group or patterns are packed more or less with larger inert angular masses of "finites" or atoms; which inert angular masses of various grades of size Swedenborg terms earthy or stony saline, sulphurous and urinous particles; all which are particles by themselves fixed and fixing;—not expansible, nor elastic.⁵

This particular structure-type, one containing as its distinctive feature units of molecules of the *ethers*, is peculiar to the nitrogen and carbon compounds. Other chemical compounds do not possess this feature in their structure-type. Their structure-types, which also Swedenborg gives under the various headings salts, metals, and so forth,—are different altogether. That is, it is only into the make-up or structure of the nitrogen and carbon compounds that molecules of the *ethers* enter as thus part of their constitution.

Now the several ethers of the natural universe, Swedenborg says, are the active substances and forces of Nature; into and by means of which the living spiritual first enters (*can* first enter, and operate) in and upon the world of nature. It is of these ethers that the Lord forms the proximate or nearest body and instrument of that Spiritual. For when an organism formed of the spiritual substances of the created universe begins to be embodied in and by the natural substances of the created universe, the first thing formed is a fluid body or organ *constituted of that particular natural ether* which is correspondent and mated to its own special grade or degree of living spiritual substance.⁶

For in all this vital constructive work, it is to be gathered

⁴ From this it is, that each and every least individual particle and cell in the animate body has its individual special peculiar and "proper-own" motion; and possibilities also as to reception, transmission and communication of motions.

⁵ *Economy Animal Kingdom*. Swedenborg. Part I., Nos. 41, 68, 75-6, 79, 104, 107.

The Fibre. Swedenborg. No. 261.

⁶ *Economy Animal Kingdom*. Part I., Nos. 270-5; Part II., Nos. 193, 269. *Spiritual Diary*. No. 242. *Athanasian Creed* (A. Ex.), p. 8. *Economy Animal Kingdom*. Part II., No. 344. *Divine Love and Wisdom*. Nos. 315, 346.

from Swedenborg, the ethers of the spiritual universe and the ethers of the natural universe go in pairs, like mated partners: the spiritual being the male of the twain, and each spiritual ether having its own constructive mate.

In the second place purest and tenderest fibrils are formed from and by means of this first-formed fluid organ, "the spirituous fluid,"—fixed and tempered, weighed and slowed down, more or less by adjoined and inserted "inert angular compactures" and fixed particles, of a delicacy commensurate and accordant with its own high fineness and subtlety,—and of these a whole plane of organic structure is contextured.⁸

Next, by activities in and by means of both the spirituous-fluid and this its first relatively firm structural plane, a second fluid protoplasm or blood is formed, by adjoining and organically combining with a portion of the first fluid protoplasm or generic formative substance, units or molecules of the *Second ether*, the Magnetic Aura;—and then second plane of relatively firm organic structure by fixing and tempering the second fluid-protoplasm or blood with inert particles of the second degree of fineness, commensurate and accordant with the relative grossness and sluggishness both as to native dimension and force of this Second Aura adjoined.⁹ This process is repeated on the successive planes or degrees until the lower successively more materiated fluid protoplasms are able to derive "from the inert and heavier elements of the world this feature, that they are able to coalesce into a lower essence and to be of use to functions in the ultimate parts of the world."

An invariable characteristic of the process in this production of the successively derivative bloods is worth especial note. Always a higher and prior "blood" or fluid protoplasm within operates in conjunction with some ether without, and an ether

⁷ It is thus that in the living body there is not a fibril in which the human of the spirit is not together with the human of the body. *Divine Wisdom* (A. Ex.), VII., 4.

⁸ *The Soul*. Nos. 1, 2, 3, 5. *The Fibre*. Nos. 249, 261. *Economy Animal Kingdom*. Part II., Nos. 273, 248, 269.

⁹ *The Brain*. No. 88. *Divine Love and Wisdom*. No. 370. *Economy Animal Kingdom*. Part I., Nos. 270-7, 314. Part II., Nos. 233, 272, 273, 281, 283. *Divine Love* (A. Ex.), II. *Posthumous Tracts*. Chap. XVIII., The Red Blood.

next lower in the scale of active substances than that entering into the composition of its own finer tides. By means thus of the finer blood from within and the ether from without, operating together as a first and a last cause, an active and re-active, the next lower blood is begotten and brought forth, as a kind of *intermediate*, and complex of use. This process is repeated, an entire step lower down, in effecting the formation of a still lower blood.

In embryonic growth the three bloods are formed successively. The highest or spirituous fluid is formed first. Then the second or purer blood. Lastly the red blood or lowest.*

The very first, and distinguishing feature of this vital construction of protoplasm or living matter is, then, the peculiar part which molecules, or portions, of the *ethers* play in the very make-up and constitution of its substance.

But such an invariable presence of molecules of ethers as a component part of their structure-type is stated by Swedenborg in his *Chemistry* to be characteristic of nitrogen and carbon compounds; which nitrogen and carbon compounds are known to modern experimental science as the invariable and distinguishing feature of protoplasm considered as a chemical substance.

As an additional item of interest to the general student of Swedenborg, it might be added that it is also characteristically in carbon and nitrogen compounds, notably the former, that *isomeric* forms exist, i. e., two substances which are apparently the same and analyze alike in the chemical laboratory, but the atoms of which must be, it seems to rational deduction, arranged in the molecules in the one case in lines with a left-handed twist or curve, and in the other with a right-handed twist; since the one will turn a ray of light passing through it, say, ten degrees to the left; and the other will turn a like ray ten degrees to the right. These two different forms or arrangements of precisely the like material, or atoms, which yet act upon light in this different fashion are found by experiment also to differ in physiological effect; the one being noxious, and the other harmless or even beneficial.

The point of interest is that Swedenborg in his theological writings speaks of the push and trend and endeavor of spiritual

**Economy Animal Kingdom.* Part I., Nos. 247, 617.

substance into nature, or, as it would be phrased theologically, the influx of the spiritual universe into the natural universe, as being divisible, generally speaking, into two great classes or types, broadly distinguished by the fact that in one the push and trend and current of its spiral and spirating endeavor is from right to left, and in the other from left to right.

Another interesting thing belongs to this general topic. At death, which is a withdrawal of the interior spiritual organism and thus of the sensitive spiritual ether within that organism, from that natural organic structure which is framed of protoplasmic substances, the lower natural ethers, which entered into that protoplasm as intimate constituent part of its chemical structure, remain in it, and hold it in form for a time, at least until its entire dissolution into its several ethereal and inert elements takes place. This is the fact underlying the *food value* of newly-dead protoplasm to living organized structures. The newly-dead protoplasm is a complex organic structure, possessing already *in situ* those natural ethers with which the spiritual can conjoin itself; and by means of which it operates its own activities on entering the plane of nature and materiality. Thus they furnish to the interior spiritual of living organisms a basis of ready-made "correspondents," or suitably "recipient" organisms, or forms.

In literal fact animate creatures are dependent for their subsistence upon newly-dead protoplasm prepared thus ready-made for them by the vital activities of the vegetable kingdom which performs this noble use to the Lord's creation. Thence it is that, as Swedenborg says, "Animals themselves vegetate upon the vegetable kingdom."

III. *How It Comes That the Membranes or Relatively-Firm Protoplasmic Substances Feel, or Are Sensitive to Variations in the Contiguous Environment; While the Vital Fluids Do Not Feel.*

The cells of the pure or simple cortex constitute the nucleus centres of the cortical glands or gray-matter cells, and are thus cortex of the cortex, nervous matter of the nervous matter. While the spirituous fluid, which is formative substance alike of

simple cortex and the entire body, and derivative bloods, acting as the vice-gerent and "otherself" of the soul, in the body, is as the very immediate glove through which the forming hand of the high-spiritual operates throughout brain and body.

It is important to note here one other point which is this: that the embryonic building of complex organic bodies by the high protoplasmic fluids, as well as the formation of the least and most inconspicuous cell, or a fragment of undifferentiated protoplasm jelly, is something absolutely apart from any perception of ends or conscious guidance of formative or structural operations on the part of the embryo being built or the living protoplasm being formed. It is done by the Lord; by the instrumentality and through the sundry substances of the spiritual universe with their correspondents in the natural universe.

The structures formed are unconscious of the living operation of those high formative fluids which are shaping and compacting them. Neither is a perception of the ends thus worked toward, in those fluids themselves, although they are more living than the living structure they are building, and which in large part they do literally form of their own selves and substance. For the fluid-protoplasms or "bloods" of the body are at once nursing-breasts and moulding-fingers to the firmer, more solid protoplasm as every firmer or solid protoplasm was once fluid.¹⁰

But the Lord the Creator, without Whom there is not anything made that is made, is perceptively and consciously engaged in every item of the work of those vital formative fluids, as He is also of all their after operation, to the end; and their marvels are the marvels of Divine Providence.

A grave question opens here. There are three great fluid-protoplasms or bloods in the animate world; and respectively alongside them stand three great plans of firmer-protoplasm or "membranous tissue." Each fluid-protoplasm has its own *range* of firmer-protoplasm or membranous tissue. The purest blood has "belonging" to itself a range of "membranous tissue" of inconceivable softness and subtlety;¹¹ consisting of the simple

¹⁰ *Economy Animal Kingdom*. Part I., Nos. 61, 170, 173.

¹¹ *Spiritual Diary*. No. 242. *On the Infinite*, Chap. II.; *Mechan. of Inter.*, Sections IV., IX.

cortex within the gray matter cells, and all the purest fibrils throughout the body. The purer blood has the range of the gray matter cells or cortical glands themselves, with the simple fibres in brain and body; also it seems the "connective tissue" as a whole, and, in general, the intercellular matrix, are particularly its own. To the red blood belong the red blood vascular and the muscular tissues most notably; "each blood doing its own work and ruling its own organism:"¹² under the spirituous fluid which is universal in the living system and even in the red blood.¹³

Now since the fluid-protoplasms are the causes of the existence and the subsistence of the firmer-protoplasms,¹⁴ "all parts of the bodily system being fluid before they are solid" and "the law by which parts solidify being founded on their action as fluids;"¹⁵ since also the fluids of the animate body are living;¹⁶ and, it is to be gathered, *more living* than the firmer-protoplasms or "membranous tissues" they form, because into the constitution of the firmer-protoplasms which make up the membranous tissues of the body there enter but two things—i. e., first,—some of the fluid-protoplasm; second, sundry inert inexpandible unelastic angular-particles adjoined to the fluid-protoplasm and more or less tempering its activity, fixing it, weighting it down, and making it more slow and heavy and inert by such adjunction; since these things are so and the fluid-protoplasms are verily more living than the firmer-protoplasmic-structures they form, how then is it that in the living organism the firmer-protoplasms are sensitively aware of the environmental changes touching them, or feel, while the more living vital fluids are not thus sensitively aware of environmental variations? For it is a principle of physiology, which Swedenborg quotes with approbation in his work *On the Infinite*, that the membranes feel, and the fluids do not.

And yet, it is clearly to be seen from the mode in which the

¹² *Posthumous Tracts. The Red Blood.* Chap. 18.

¹³ *Economy Animal Kingdom.* Part I, Nos. 340, 600; Part II., 205, 219.

¹⁴ *Ibid.* Part I., No. 170.

¹⁵ *Ibid.* Part I., No 61.

¹⁶ *Ibid.* Part I., No. 173.

firmer-protoplasms are formed, that whatever it is that does the feeling in the membranes exists in a like or even pre-eminent degree in the vital fluids or bloods. Why then should not those fluids feel, or be sensitively aware of all environmental changes?

Still, if there be truth in the following suggestions, and if the universal law upon which they are based does indeed cover and apply to this particular case, this amazing thing may be most simple after all.

Feeling or sensitive-awareness depends on contrast, otherness. It cannot exist in actuality, however much it be present in potency, where there is no contrast. There must be something *objective* or *other*, for feeling to arise, to become actual; something definitely *reactive*. For there is no sensation without a reactive; as your finger tip does not feel itself, or apperceive itself in definite sensation, it is touched against something to which it is other. I submit the suggestion that the high living vital-fluids do not feel or are not sensitively-aware of environmental variations of any character because with a pure active fluid there is nothing reactive given. The fluid so perfectly and so instantaneously makes every vibration, undulation and impulse its own, its very self, that it is practically not objective to, or opposed to any variation impressed on it.

Now, vibrations or environmental variations which it receives and transmits with such readiness, it is as if it spontaneously originated them, it cannot be said to be objective-to, or *other than*; and where there is nothing objective and reactive given, there cannot be sensation, though the very sensitive substance be there.—It is somewhat like the transference of light and heat vibrations from the sun through the ether to the earth. The ether is so absolutely mobile and obedient a substance, that it adopts and transmits them as if they were its own, itself, without being warmed thereby.

While the living active fluid-protoplasm is purely fluid, then, *it is at one with its environment*. But when angular, inert particles of suitable fineness and subtlety begin to be adjoined to and composited in among the "ethereal units or molecules" of that living active fluid, so that to some degree its mobility, activity, reciprocity, responsiveness are tempered thereby, and it is rendered in some slight degree, fixed, weighted, and bound

down as it were, then in comparison with the perfect obedience, receptivity, activity of the pure fluid in itself, this composited and weighted fluid may be said to possess something of relative reluctance, slowness, reactivity, inertia. The fluid-protoplasm, when thus intimately adjoined to and composited in with inert angular particles, *is no longer* at perfect one with its environment; but by this "bound-down" state it is rendered *objective to its environment*; relatively reluctant, inert and slow in both reception and transmission of undulations, vibrations and variations.

In other words, the pure high unmixed homogenous vital fluid-protoplasm is so actively receptive that it is at one with its environment; but in the firmer-protoplasms by the adjunction of inert and heavy particles of the suitable and exquisite fineness it has been formed into something objective to its environment; something also relatively reactive,—for *slowness* is a reaction.

With the introduction of even the slightest otherness, objectivity, reluctance, reaction, contrast, between its own substance and powers of transmission, and the impressed variations and vibrations of its environment just as they come, sensitive-awareness of those vibrations, or *feeling*, becomes possible. Hence it is that the living active fluids do not feel and the firmer-protoplasmic substances do.

It would follow from this, too, that the Creator Himself and all spiritual forces and influences could act upon the organism of man all the time through the medium of the high, the universal, the absolutely obedient human spirituous fluid, and the wide ranging subservient alert animal spirit, without man as to his *sensating* and *reactive* substances ever finding it out.

Perhaps this is how Providence keeps out of sight and awareness in its organic operations in man; so that the man can neither oppose it nor make himself one with it.

But to return to our subject: It is possibly for some like reason, under the same universal law, that although the ethers of the Spiritual Universe are living, and the one passioning substance, in itself inherently and of its own nature at once *passive* and *sensitive*, in all the Creation, yet they cannot be said to be a living-being, feeling and aware! They obey too

well; are in themselves too utterly fluid, and receptive of all vibrations impressed upon and communicated to them, whether from the Spiritual Sun within, or from the natural ethers without, for the potential feeling to become actual sensation. For the attainment of which latter, they likewise must first be framed or composited into something other, something reacting and objective-to the incoming inflowing vibrations.

IV. *Possible Philosophical and Scientific Basis of the Fact That Man's General State is not Changeable After Death.*

A profound question arises based upon the fact that the human organism possesses three distinct fluid-protoplasms, discretely discriminated from each other. It is a question thus formulated by Prof. Mann:—"According to general principles there must be a third degree of unconsciousness which should correspond to those depending on red blood and white blood, respectively. It should be connected with the purest blood. Query: Has this anything to do with death, i. e., is the simple cortex a heart whose lungs first come into function upon birth into *the life*?"

It is of interest to note that this human-spirituos-fluid is drawn forth wholly and entirely at death.¹⁷ There might be something worth considering in this: that this human-spirituos-fluid, being formed of the First Aura, is thus formed according to Swedenborg's predicates of the First Aura, of a substance prior to all other substances of the natural Universe, not subject to destruction from any accidents occurring on the planes below; and one which from its perfect fluidity, mobility, responsiveness and absence of "resistance" may be said to fulfill the predicates of a *frictionless fluid*. Now it is a thesis of Physics that a current of motion once set up in a frictionless fluid is permanent,—and without variation, pending change impressed upon it by causes as competent as availed to set it up. Since then this First Aura is *in plenum* throughout the natural universe in which universe men are formed, that human-spirituos-fluid, first formed, correspondent and other self of the

¹⁷ *Economy Animal Kingdom*. Part II., Nos. 350, 352.

soul, and supremely active in its kingdom, must be in the nature of a current set up in the volume of this First Aura ; a current set up by the Soul, for the Spiritual has "inside hold" on this First Aura ; a wonderful and complex current everywhere weaving and conspiring into the human form. At first it would of course express in its flow the *lines* and *curves* of the species and the heredity.

Now it is possible that the *experiences* which this human-spirituos-fluid undergoes in the life of the body, or its organic connection with the substances of the lower planes, and activity thereon, *may be the competent means* which produce individuating variations in its first established currents.

If this be true, death itself, as the separation of the human-spirituos-fluid from its organic connections in the body and the dissolution of that body into its elements, would be the precise thing which would render all the individuating variations impressed upon its currents during its intimate connection with its own body, now permanent and invariable forever after.

And this, by reason of the simple fact that the human-spirituos-fluid is formed of and in the First Aura ; which in fulfilling the conditions of a frictionless fluid would also by virtue of being such a fluid render all currents or variations of current once set up in it perpetual. If then the human-spirituos-fluid which is released from its organic connections at death be permanently adjoined to the spiritual body, something like this would give a basis in philosophy and scientific fact for the statements made in the Doctrines that the results of human life upon Earth are permanent to all eternity ; and cannot be changed after death, or separation from the natural body.

In considering the human-spirituos-fluid formed from the First Aura as in the nature of a current set up in that Aura and everywhere weaving and conspiring into the human form, the picture presented is a miniature of that which exists in its entirety and the vastness of its sweep in the angelic spiritual universe. For there the entire ether of that whole Universe thus weaves and conspires into the immensity of the human form forever. It is from this fact profoundly that this angelic spiritual universe is called the Maximus Homo. And perhaps all the *little homos* of the created human race find their place in

that vast sphering Homo somewhat as the little magnets on earth are placed in the great world-magnetic sphere, i. e., by means of the small private individual spheres encompassing them. But a consideration of this topic belongs rather to the Law of Spheres, or the manner in which encompassing ethereal-vortices move material bodies by the instrumentality and intermediation of the halitus of homogeneous particles which is round about them.

THE MATHEMATICAL POINT.*

In a paper read before the Principia Club of Philadelphia on February 14th by Rev. J. F. Potts, and since published in the April number of *New Church Life*, reference was made to Swedenborg's philosophy as teaching that the universe was created out of mathematical points, which the writer of the paper considered to be nothing. If this charge were true, then Swedenborg's system of philosophy would indeed be "so much useless and superceded rubbish,"¹ and all of his philosophical system would have to be discarded, for this point is, as it were, the staple on which the whole of his philosophy hangs, and in rejecting it we virtually reject the whole system.

It seems almost incredible that anyone who knows anything at all about Swedenborg's science should attack this point, for the reason that Swedenborg distinctly states, "that from nothing, nothing can come forth."²

In his treatment of the subject in the *Principia*, Swedenborg warns us not to think of the point from time and space, as it cannot be thought of from these, except analogically.

Geometricians do this in their conception of the mathematical point. It is conceived of as prior to geometry and hence cannot be defined by geometrical terms, but yet as being the cause, or the causate of all things geometrical. Length, breadth, and thickness cannot be predicated of it, for these are only on the plane of geometry. But because these dimensions cannot be predicated of it, is it on that account noth-

¹ *New Philosophy*. Vol. II., p. 59.

² *The Infinite*, p. 57.

* This is part of a paper read before the Principia Club at Huntingdon Valley.

ing? Is will nothing? is thought nothing? or is endeavor nothing? and yet can space be predicated of these? As Swedenborg puts it: "A simple ens cannot be conceived of geometrically, yet it is not on that account nothing."³

Now since it is not nothing it must be something, although not necessarily something material. Swedenborg calls it "pure motion"⁴ and defines what he means by this, and at the end of his explanation he adds: "But if the reader still entertain a doubt and cannot yet comprehend what motion is without something substantiated, or what is meant by pure and total motion in the simple, I would observe that it is its state, should this appear equally to require explanation I say that it is its conatus [or effort] leading to a certain motion, and if this be not satisfactory, then I add that it is all these taken together. I cannot give a more clear and full explanation of the interior nature of the simple, unless indeed the following be so regarded, viz.:—that in things subject to geometry there can be no state nor conatus without motion; while in things that are beyond the reach of geometry, that is, in things simple, there can in like manner be neither state nor conatus without motion; yet with this difference, that in things geometrical they are distinct, and one is the cause of the other, while in the simple they are not distinct, but one is co-existent with the other and all together present one simple mode, and constitute a simple ens."⁵ Let us keep this definition in mind, viz., that it is conatus to motion, together with this, "that it exists from the Infinite,"⁶ and compare it with the following: **What is from the spiritual world in natural things is called a force implanted at the first creation, but it is conatus; on the cessation of which action or motion would cease.* (So it is) with the motion of the muscles . . . unless there were in it a conatus from the man's will and thought it would cease in a moment, for it is according to rules known in the learned world that when *conatus* ceases motion ceases; also, that everything of determination is in conatus, and also that nothing real exists in motion except conatus. **That this force or conatus in action*

³ *Principia*, p. 56. ⁴ p. 55. ⁵ p. 59. ⁶ p. 54.

⁷ *Arcana Cælestia*, n. 5173.

* The italics are ours.

or motion is something spiritual in what is natural is clear.” † Add to this also the following: “From influx there is conatus, from conatus there is force and from force there is effect,⁸ and again the following: The internal of motion is conatus or moving force.”⁹ These passages seem to us to agree fully with the one quoted from the Principia, and clearly state what he there stated, perhaps rather obscurely. The Influx from the Lord when it becomes the something spiritual is what is natural, or when it becomes *conatus* or *moving force* is what Swedenborg described in the Principia by the natural, or mathematical point, which, let it be remembered, he also calls *conatus*, *pure motion*, and the *seed of the universe*.

Our whole difficulty, it seems to us, in regard to this subject arises from this: that we have not a clear conception of what this “something spiritual in the natural” is, or in other words we do not clearly understand what “conatus” is, and until we do, more or less obscurity will attend our conceptions of the beginnings of nature.

Now since Swedenborg also calls the natural point a seed, let us briefly compare the formation of man with the creation of the universe, for in the microcosm we have an image of the macrocosm. In the seed there is the conatus from the influx from the Lord to produce a form receptive of love and wisdom, or a human being; from this seed there is produced, first, the simple cortex, then from the simple cortex there proceeds the simple fibre; likewise the cortical gland is produced from it [simple cortex], and this cortical gland, or perhaps we had better say the cortical glands, for there are many of them, then becomes the active centre from which by means of the simple fibre as a reactive the whole fabric of the human body is successively formed. The analogy to the macrocosm is apparent. The seed is the point or simple,—the first natural production as also the first natural recipient of the Influx from the Lord. The simple cortex is the first natural substance or first finite; from this by derivation are found the particles of which the first element consists, corresponding to the simple fibre; like-

⁸ *Arcana Cælestia*, 5116.

⁹ *Ibid*, 9473.

wise from it, that is, from the first natural substances, are derived the actives which constitute the sun, corresponding to the cortical gland, and which then act upon the first element, bring it into motion and by its reaction build up the solar system.¹⁰

To this we might add that there is nothing in the whole universe that did not begin from its point, seed or conatus.¹¹

CHARLES E. DOERING.

NOTE AND COMMENT.

The present number of *The New Philosophy* is sent to many New Church people not yet subscribers, in the hope that after a careful perusal of this issue they will feel sufficient interest in the journal to aid in its publication by becoming subscribers; and that possibly they may also feel impelled to join the Swedenborg Scientific Association.

The subscription price is \$1.00 per annum, which may be sent to Carl Hj. Asplundh, Huntingdon Valley, Pa. The uses of the Swedenborg Scientific Association are set forth on the inside front cover. All members may subscribe to *The New Philosophy* at half price, or 50 cents per annum.

As a Supplement to this issue will be found an article on the "Credibility of Swedenborg's Science," by the Rev. W. F. Pendleton. This paper was originally published in *New Church Life*, but owing to its great value we have made arrangements to republish it here. Our readers will be the gainers by giving this article a careful reading.

THE SWEDENBORG SCIENTIFIC ASSOCIATION.

ANNUAL MEETING.

The Fourth Annual Meeting of the Swedenborg Scientific Association will be held in New York City, Monday and Tuesday, May 27 and 28, at the Rooms of the American Swedenborg Printing and Publishing Society, No. 3 West 29th street.

MONDAY, MAY 27.

10 A. M. Meeting of the Executive Committee.

11 A. M. Meeting of the Board of Directors.

¹⁰ Compare *Divine Love and Wisdom*, n. 316, 366.

¹¹ See *Divine Wisdom* (A. Ex.) III., 2. *Spiritual Diary*, 2628.

- 2:30 P. M. Meeting of the Association.
 Report of the Secretary.
 Report of Treasurer.
 Report of the Board of Directors, incorporating the reports of the committees appointed to edit the new editions of the *Principia*, the *Animal Kingdom*, and the *Lesser Principia*.
 Report of the editors of *The New Philosophy*.
 Communications from the Swedenborg Philosophy Club of Chicago, the Principia Club of Bryn Athyn, and other communications.
- 4:30 P. M. *The Annual Address*, by the President of the Association, Rev. Frank Sewall.
8. P. M. Evening Session. The following paper will be presented for discussion: "*The Relation of Swedenborg's 'Principia' to his 'Animal Kingdom.'*" by Rev. W. F. Pendleton.

TUESDAY, MAY 28.

- 9:30 A. M. Meeting of the Association. Election of officers.
- 10:30 A. M. The following papers will be presented for discussion:
The Identification of Hydrogen and Third Finities, with Scientific Verification of Swedenborg's Postulate, by Miss Lillian Beekman; to be presented by Rev. L. P. Mercer.
The doctrine of Spontaneous Generation, compared with the theory of the creation of man in the 'Worship and Love of God,' by Prof. C. Th. Odhner.
Swedenborg's and Newton's theories of Light and Colors contrasted, by Mr. Alfred Stroh.

All reports and communications for the meetings should be sent to the undersigned before May 20th.

The public is invited to attend the general meetings.

By order of the Board of Directors,

C. TH. ODHNER,

Secretary of the Board of Directors.

 NOTES IN RECENT SCIENCE AND PHILOSOPHY.

Nature announces the proposed erection of a monument to the "Originator of Modern Knowledge of Magnetism." Members of the medical profession will erect a full length statue in Colchester, in England, in memory of Dr. William Gilbert, the famous physician to Queen Elizabeth, whose work, *De Magnete*, published three hundred years ago, "constitutes the bed-rock of modern knowledge of magnetism." We have been surprised to find no mention of Gilbert among the

authorities quoted by Swedenborg. Will some member of the Association write a comparison of Gilbert's system with that of the *Principia*?

Dr. Sanderson Christisin, in his brief work on *Brain in Relation to Mind* (Chicago; Meng. Publishing Co., pp. 143), describes the modern theories regarding the special functions, sensory and mental, of various organs of the brain rather skeptically. The views are anti-materialistic.

Dr. Frank Rall publishes his Inaugural Dissertation (Halle; E. Karras, 1899, pp. 70) on *Leibnitz's Idea of Substance*. Leibnitz was led through his criticism of Descartes' conception to his own notion of substance and to the position that this substance must explain the actual world. The writer discusses Leibnitz's theory of the Monad, its *vis passiva* and *vis activa*, the *vis passiva* being the principle of matter or the *materia prima*. "This *materia prima*, or principle of resistance, is not to be regarded as material in any ordinary sense, it has nothing of the nature of stuff in it, but is pure force, an original and essential characteristic of the immaterial and non-spatial monad."

This Dissertation by Dr. Rall will appeal especially to students of Swedenborg's Philosophy who are interested in the problem of the first entity or "simple" out of which the world as a natural universe is built. It is well known that Swedenborg acknowledges his indebtedness to Wolff's publications as "confirming" his own views, although his own *Principia* was written two years before he had consulted Wolff, and Wolff is the disciple of Leibnitz. The Monadology of Leibnitz is elucidating to the subject discussed in Swedenborg's *Principia* and even embraces many principles that enter into his spiritual philosophy.

Professor J. E. Creighton describes the aim of the mechanical school of modern Psychologists in contrast with the older methods, as follows: The older systems "describe mind as a system of functions of a self and thus afford what at least approaches to a philosophy of mind. On the other hand, an influential and somewhat numerous group of scholars at present insist on making psychology a 'natural' science. By that they mean, if I understand their position correctly, that the same logical demand which requires that the physical world should be described and explained as it would be if it were independent of consciousness also obliges us to consider the content of consciousness as it would exist if it were independent of any principle of intelligence. . . . The philosopher to avoid confusion will find it necessary to distinguish between these two psychological standpoints."

(See article, "Methodology and Truth," in *Philosophical Review*, January, 1901.)

RECENT PROGRESS IN TELEOLOGICAL DOCTRINE.

Nothing is so noteworthy in recent Philosophy as the growing recognition of the doctrine of the "End," or purpose in creation, involving as this does the recognition of a personal creator and a change from the mechanical to the spiritual interpretation of the universe. This "End" appears in the new interest in the emotional side in psychology, in the voluntary or moral element in education and in the finding of the origin of motive and force in will. In Ormond's book, which we here notice, the "feeling" referred to is more nearly what Swedenborg terms perception, this being the "higher immediacy," the immediate knowledge of the will. The "lower immediacy" is sensation.

Alexander Thomas Ormond, in *Foundations of Knowledge* (Mac-Millan Co. New York, London, pp. 528), aims to emphasize the claims of feeling as a factor in ultimate certainty of knowledge along with those of intellect and will. The affirmation that a thing is true is said to rest on the conviction that it is implicated in the rationality of the world. This conviction rests in the three degrees of the relation of the knowing activity to experience, which are as follows: (1), The "lower immediacy" in which simple sensation dominates. (2), The "mediacy" (means or cause?), that point in experience when feeling and action are in a sense forced asunder and a mediating term, reflection or deliberation makes its appearance. (3), The "higher immediacy" which is to be regarded as dominantly emotional. A similar superiority of feeling over knowledge and volition is suggested in the statement as to the first purpose of consciousness: "What consciousness seeks in the world as its very last end, is a state of feeling, a satisfaction in which it can rest."

Mr. Storrs Turner, in his recent work, *Knowledge, Belief and Certitude* (London, Swann Sonnenschein Co., pp. 484), contends that science is not adequate to concrete reality, while its pretension to present the whole is vain. "In psychology the standpoint of the ideal spectator is inadmissible and philosophy has failed because of the same abstraction. But among concrete ends we find our conviction as to the same knowledge satisfied. Real knowledge belongs to the teleological sphere. This conclusion as to the failure of speculative and the success of purposive reason surprised Mr. Turner with the force of a revelation. . . ."

Knowledge, Belief and Certitude is by no means a worthless book. How and why Mr. Turner came to his estimate of various views and systems, and rather than that estimate itself, is the thing worth studying.—H. W. B., in *Nature*.

Von Hermann Schwarz, in his *Psychologic des Willens zur Grundung der Ethik* (Leipzig, 1900, pp. 391), holds that a true ethics is still to be written because the "nature of the will is as yet essentially unknown." Unlike Schopenhauer and Nietzsche, who view the will as controlled by innate impulses and the desire of pleasure, he regards the will as original, self-dependent and autonomous, and holds that a true sys-

tem of ethics will be grounded in a proper estimate of the successive values of will, as it progresses from the mere desire of appetite to the intelligent willing, or choice, and lastly to the willing of what is personal in preference to what is merely of condition; the worth of character as above circumstance. Hence comes the true ethical principle which places self-denial above self-affirmation, and self-affirmation above the pursuit of a pleasure.—*Philosophical Review*, January, 1901.

Stephen Sheldon Colvin, in the *American Journal of Psychology*, discussing *Extreme Idealism*, gives among the definitions of "reality" that of Professor Royce in his *The World and the Individual*. The "real" for Prof. Royce is the *purpose* which the idea serves, a purpose which we consciously entertain in the selection of the idea. "So far as this purpose is ideal it is logical, so far as it is consciously entertained it is psychological." But Prof. Royce departs from pure idealism in thus giving undue prominence to the teleological and volitional elements in reality. Moreover he is ultimately forced to reconstruct reality, not as ideal, but as actual, under the title of the "absolute consciousness."

Mr. Colvin's own theory of reality is, "Reality is neither matter nor thing-in-itself, as most realistic systems of philosophy imply, nor is it merely ideal, but it is best defined as activity. Being is that which acts; and ultimate reality is a system of ordered activity in which every part is related to every other part."—Ira Mackey, in *Philosophical Review*.

This we may observe is a very interesting illustration of the approach of modern philosophy to Swedenborg's Doctrine of the Three Discrete Degrees; End, Cause and Effect, in which doctrine the End is the Real, the Cause is the Ideal, and the Effect is the Actual degree.

PHYSICS AND FAITH.

In *Science* for February 15 appears the address of H. Carrington Bolton, the retiring President of the Chemical Society of Washington, D. C. The address is remarkable for its frank admission of the limitations of natural science and its dependence on the exercise of faith in that which it is beyond the power of the senses to perceive.

The "science of the invisibles and imponderables" seems as requisite in physics as the presuppositions of a spiritual and non-spacial substance in philosophy and theology.

Science we may feel assured can suffer nothing from the admission of such enlightened principles as are here expressed. After speaking of what might be the evolution of man's experience through the opening of one sense after another, including even that "sixth sense,"—of the invisible force exerted within, which we know as muscular energy or will power, and yet cannot see or feel or hear, and referring to the necessary exercise of faith in the unseen, demanded by every scientific hypothesis of universal import, Mr. Bolton goes on to say:

"Many problems defy the efforts of materialistic philosophers to solve them. The origin of matter and motion; the initial source of energy as well as the relation of gravitation to other forces; the positive nature of the interstellar ether imagined as a vehicle for the transmission of light, not to mention proofs of its existence; the true inwardness of actinism, of Roentgenism, and of the rays named after Beckuered; the ultimate identity in essence of the so-called elementary bodies;—some of these problems will undoubtedly be solved, as knowledge of the natural world increases; but others are destined to remain inscrutable to finite minds and as such may be called the scientific 'mysteries.'

"These problems arise in every department of human knowledge. The student of Chemistry does not have to look far afield to encounter mysteries, though he does not commonly so style them. What do we know actually of the chemical force called affinity? Why does one element force another out of combination with a third? Is it unfair to scientists to say that they sometimes take refuge in obscure language to veil their ignorance? It may help our imagination to affirm that carbon and other elements occur in 'allotropic' forms, but does this statement adequately explain the phenomenon?

"An hundred years ago the properties of water were said to be caused by its 'aquosity!'

"Most scientists having acquired this mental training, in which acts of faith are demanded at any step, find it natural to apply this faith to their hypothesis of a spiritual world. They thus acquire belief in an inscrutable Divine Being, who exercises a mighty wisdom and power in the guidance of the material universe, and who has made himself known to humanity by revelation." . . . "To such persons it does not seem more difficult to believe in spiritual force and its influence on mankind than to believe in the existence of energy and its effect on matter."

"Matter," writes an American scientist, "is the thing perceived; spirit is the thing perceiving: matter is the passive, spirit the active principle. The very origin of our notion of force is the consciousness of our own mental energy, and the universal energy of Nature is an effluence of the Divine Being."

"Scientific faith bears fruit in the steamship and in the telegraph; Christian faith in works of mercy and charity and in a life of love shown toward mankind and to God; it is the—

"Subtle chain
That binds us to the Infinite."

"The supreme goal of the student of science was admirably conceived and expressed in a single sentence by the renowned Kepler, when he wrote nearly three centuries ago: The Scientist's highest privilege is to know the mind and to think the thoughts of God!!! *Science*, Feb. 15, 1901.

SUPPLEMENT.

THE CREDIBILITY OF SWEDENBORG'S SCIENCE.*

(Reprint from *New Church Life*.)

IN this body and on this floor, the truth and usefulness of Swedenborg's Philosophical System has been called in question, and it becomes necessary for some one to come forward as a defender of the same; for it ought to be defended and its integrity maintained,—not for the sake of preserving Swedenborg's reputation as a scientist, as a philosopher, as an intellectual giant, not for the purpose of showing that Swedenborg anticipated many modern discoveries, not because it may be used as a means of evangelization in the learned world,—these things may have a place among the reasons for upholding the truth of his philosophy, but their place is subordinate and subsidiary to the great use his philosophy is to be to the New Church itself; because they furnish a foundation and basis upon which the spiritual philosophy of the Writings rests; because all its universals and many of its particulars are adopted and restated in the Writings; because an intelligent knowledge of it is necessary to a complete understanding of the Writings; and because the natural truth contained in it is essential to our New Church education. I cherish, therefore, and would express the most earnest and profound conviction, that the destruction of a faith in Swedenborg's system of science and philosophy would be a dire calamity to the Church. I feel called upon, therefore, to say a word in defence of that which is the dearest and most precious heritage of the Church, next to Revelation itself.

I would respectfully suggest to those who assail the truth of this system, that so far their work is purely negative, and that it is incumbent upon them, before they destroy our faith, to be ready to give us something better; construction must immediately follow destruction, or only waste and ruin is left. A work that is purely and simply destructive is not in the way of order, and does not imitate the methods of Providence.

*Read before the Principia Club, of Philadelphia, at Bryn Athyn, Pa., on February 11th, 1901.

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There is another point for which I would in the outset beg consideration, which is this: if errors are to be found in a given system, they are to be found in the affirmative study of it,—a principle of criticism so often lost sight of that it appears almost like an unknown truth and one which in its first statement tends perhaps to excite incredulity. But it is a truth based upon a fundamental law of heaven.

We read that when the angels draw near to a spirit newly arrived from the natural world, they do so in an affirmative spirit and with an open mind, hoping and wishing to find reigning in him a good end, or a love of good and truth. If they do not discover this they turn away with regret, feeling no delight in the fact that they have discovered evil or the falsity of evil in another; but if they find good as the ruling principle, they rejoice, and see in such a spirit the promise of a great use in heaven; and they pay no regard to faults of mind or character, considering them as of no moment, and as things which will in a short time disappear when the illuminating rays of heavenly light are poured upon them.

So it is with the true critic of the works of men. Any human work, or any book written by man, will be approached by such a critic in an affirmative spirit, realizing full well that the negative attitude blinds the mind, darkens the understanding, obscures the intellectual vision, dulls and weakens the faculty of intellectual discrimination, closing the rational mind; instinctively perceiving, what is well known to the angels, that everything is to be regarded affirmatively at first, and that there is no injury or danger in this to a well ordered mind: not only no injury but a very great good; and that the false if lurking is all the more easily discovered thereby; for a heavenly light always illumines the affirmative mind, and guides it to just conclusions, since its background is charity, and a looking to the Lord.

A true critic will not stop at the threshold of a book, and stumble over the blurs and blemishes that lie upon its surface, but he will go immediately to the heart of the thing, and see if this heart be sound; and if he finds that the heart or spirit of the book is sound, that its end is good, that its purpose is true, that its general principles are in agreement with universal laws, that they have been expressed with ability and force, he will re-

joyce and commend; he will not see or regard the little blemishes or errors that may appear in the circumference; for in reality they are not errors, but merely dim shadows that disappear when reviewed in the light of the general principles of truth the book is intended to set forth. But if he finds the book unsound at the core, that it has been conceived in an evil purpose and that the faults of this evil lurk throughout, covered over by spurious appearances of truth, he will not rejoice, but with a word of warning to the passer-by, directing his attention to the truth that has been falsified or perverted, he will close its pages and turn away with sorrow and regret.

The system of philosophy that comes from the pen of Emanuel Swedenborg is entitled to such a fair and affirmative examination, and we have the right to expect it at the hands of Newchurchmen, who live and spiritually prosper in the blaze of heavenly sunlight that shines upon the world through the mighty brain of this man, chosen of the Lord, educated under the Divine auspices from his early youth, and thus prepared to become the efficient agent of the grandest revelation ever vouchsafed to man. But, some one replies, you exalt Swedenborg's science too much; you place it alongside of the Writings, and give it a Divine authority. If this were true it were a grievous fault, and grievously shall we have to answer for it. But the charge is not true, and experience has shown that the difficulty and danger is the other way; of which the indifference of Newchurchmen generally to the science of Swedenborg is a proof, an indifference that is a cause for mourning. Where are the men who have mastered his system? Let the reverberating echoes answer. There are a number who find errors, or say that it is obsolete and antiquated; and the majority, like Gallio of old, care not for these things; but the belief in it, and an appreciation of its worth, are confined to a few.

But let us suppose that the charge is true, and that such a danger really confronts the Church. What is the duty of him who sees the danger? Let him show in an appropriate and rational manner,—in such a way as to bring conviction to the understanding,—that it is exceedingly unwise and unsafe to the Church to place any writing, even Swedenborg's, on a par with Divine Revelation; that such a course would tend to close the mind to the real

value of his system, that it would tend to create a persuasive faith even in Revelation itself. But let him not, in his zeal for uprooting an error, undervalue the truth of this great philosophical system; and especially let him not in his zeal be carried on to the extreme of attempting to destroy it. A rational faith in the Writings cannot be built up on the ruins of Swedenborg's science. Is it wise, is it rational, is it just to attempt to destroy the faith of a few Newchurchmen in what they believe to be the greatest system of rational philosophy that ever came from the brain of man, because you see or think you see a danger of exalting it beyond its proper bounds and limits,—the danger of attributing to it immediate Divine inspiration? Assail the error, but do not attempt to undermine and destroy philosophic truth in order to remove the error. Are we to deprive ourselves of the natural truth taught by Swedenborg as by no other man, because possibly some one may in his zeal and enthusiasm exalt it to the dignity of revelation? Is an excessive zeal for natural truth to be corrected only by destroying that truth? Because Malvolio is over virtuous, shall Sir Toby be deprived of food and drink? Because the drunkard abuses the natural gifts of God, shall his temperate neighbor be deprived of them? Because the child burns his finger, shall the candle be snuffed out, and the house left in darkness? Let us use the light which the Writings give us, and follow reason and discrimination in this thing. The immediate work of God in Revelation is not exalted by making a wreck of another work of God, even though that work be mediate and remote. The Divine work of Revelation is not aided and promoted by removing the efficient agencies for its administration among men. I would say this of any system of human thought, I would say this of Evolution, to some the great bugbear of modern science. I would say this of the "higher criticism" that is being abused to undermine the faith of men in the Word; that is, I would say, Turn not away from the truth because of error and abuse. And shall I not say the same of the philosophy of Emanuel Swedenborg, in which we find no perversion of the truth of nature, no abuse of the gifts of God, no effort to close the human mind to heaven and the Lord? I therefore appeal for a candid and affirmative examination of this philosophy,—not on the ground of authority, *but for its self-evident truth.*

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I would here say a word about the use of the terms philosophy and science as applied to the system of Swedenborg. I believe either to be correct. Swedenborg indeed speaks of himself in the Writings as having been a philosopher, or a teacher of natural truth, and it would therefore be proper to call his system a philosophy. The term science used broadly covers the same ground; and it is not misleading, unless we understand the term to mean physical science merely, such as physics and chemistry, as modernly understood. If so used it would be misleading. Swedenborg was not a physical scientist; that is, he was not a student and investigator of mere effects, or physical phenomena. For this he depended upon the researches of others. He soared into the world of natural causes, and from this interior world of nature he drew near to things of physical sense, approaching them from within, or by a prior way; and I have an abiding faith that the principles of his philosophy intelligently applied will explain all the physical phenomena of nature, and that they anticipate *a priori* all the modern discoveries, and many that have not yet been made. I have this faith because I find him expounding the universal laws of nature; and universals include all particulars, even to the lowest and least. The man who will go with Swedenborg into the interior realm of nature and return with him to its outer boundaries will find all the later discoveries involved in his principles, if not actually described by him.

But do not make the mistake of supposing that Swedenborg was a physical scientist as that term is now understood. The physical science of his day was crude and general as compared to what it is now; and Swedenborg depended upon this science as the basis of his inductions; and this crudity appears in the terms which he uses. But avoid also the mistake of supposing that because the contemporary physical science was crude and general, that it was not sufficient for his purpose. Let us not unduly depreciate the work of the scientific men of the seventeenth and eighteenth centuries,—the work of such men as Malpighi, and Boerhaave, and Harvey and Boyle, men who were giants in their time, and in their chosen fields of work. I wish you could read the tribute which Swedenborg pays to Leeuwenhoek in the third volume of the *Economy*, yet untranslated. In fact the physical science of that time, as far as it goes, was as true as it is now. More was known than many

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are ready to believe; and we learn from the Writings that some things were known then that are rejected now. It is not the number of things known that provides the elements of success, but the ability to use what is known, to handle skillfully the instruments which are at hand even though they be crude. We live in the days of the magnificent ocean steamer; Columbus discovered a continent in a caravel; Swedenborg discovered a world with the crude instruments of his time, a world unknown save to those who know Swedenborg and know him as a philosopher. But it is sufficient to say that there was enough known to furnish Swedenborg with the timber of the ship which he built with his own hands, and in which he sailed into the limitless sea of the invisible world of nature, making discoveries which are unacknowledged by scientific men, and hardly acknowledged in the New Church. "'Tis true, 'tis pity, and pity 'tis, 'tis true."

Let me repeat what was said; that Swedenborg's philosophy is entitled to a fair and affirmative consideration at the hands of Newchurchmen; and let me in addition lay before you what seems to me to be the fair manner of procedure in any investigation of the subject. A Newchurchman so minded will go at once to the very heart of the system, that is, to its universals. He will ask, Is there a true idea of God? Do we find the conception of a spiritual Sun? Does Swedenborg see that the human form is the form of all forms? Do the fundamental laws of Influx, of Degrees, of Correspondence, appear? Is there an idea of a universal order under a universal Providence? Is there a perception of the law of Series, which teaches that there is a connected chain of causes from the First which is God even to the last and lowest effects, and that even effects themselves are in such a chain or series? Any one familiar with the system of Swedenborg is ready to answer these questions at once in the affirmative; and such a person will expect to find no fundamental error where such laws are the dominant factors; though no Newchurchman will of course expect to find the same clearness of universal vision as when afterward the Lord began to speak through him to all mankind; he will simply see the Lord's Providence preparing him to be his efficient and faithful servant in His Second Coming.

In the first place, then, what was Swedenborg's idea of God? It is not necessary to pause long upon this; it can be made plain

in a few words; we are not left in doubt concerning it. In a letter to Dr. Beyer he says:

"I was forbidden to read writers on dogmatic and systematic theology, before heaven was opened to me; because unfounded opinions and inventions might thereby have easily insinuated themselves to me, which afterwards could have been removed but with difficulty." (*Document 234.*)

This means that no false idea of God must be allowed to enter the interior thought of his understanding; therefore the Divine Providence was with him protecting, guarding, even from his youth, that he might not enter into interior consociation with the spirits of the Dragon, but that he might be consociated instead with the angels of heaven, and that he might be thus protected from the "unfounded opinions and inventions" of man. But this matter is settled in a few simple words in the Revelation itself, as follows: On one occasion in the spiritual world, some dignitaries of the Church were "talking together about three Divine Persons from eternity;" one of them set forth his views, endeavoring to prove this false view of God. Swedenborg answered him in full, but we are only concerned here with one little sentence in his reply, "From my infancy, I have not been able to admit into my mind any other idea than that of ONE GOD." (*T. C. R.*, n. 16. In the original Latin "one God" is in small capital letters.)

There is other evidence, but this is sufficient. This is the teaching of the Lord concerning His servant,—that this man, chosen and prepared for the great office of Revelator, in the real thought of his mind, never had from his infancy any idea of three Divine Persons from eternity, never had any materialistic conception of God. We are justified then in the conclusion that the idea of one God reigned throughout his philosophy.

It has been said, however, that Swedenborg could not have had a true idea of God before heaven was opened to him, since he occasionally uses language, even as late as the writings of the *Adversaria*, indicating that there was in his thought the idea of three persons of the Trinity. Those who have said this have not fully investigated the subject of Swedenborg's theology before the opening of his spiritual sight, and have not reflected on the fact that the sentence just quoted from the *True Christian Religion* is

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decisive, and that all his theological statements in the works written before the *Arcana* are qualified by it. "From my infancy, I have not been able to admit into my mind any other idea than that of *one God*." To such persons Swedenborg would speak as he spoke to the angels on one occasion, as recorded in the *True Christian Religion*, n. 26. "When I heard these things the angels perceived in my thought the common ideas of the Christian Church, concerning a trinity of persons in unity, and their unity in the trinity, relating to God; and also concerning the birth of a Son of God from eternity; and then they said, 'What are you thinking? Do you not derive those thoughts from natural light, with which our spiritual light does not agree? Wherefore, unless you remove them from your mind, we shut heaven to you and depart.' But then I said, 'Enter, I beseech you, more interiorly into my thought, and perhaps you will see an agreement.' They did so, and saw that by three persons I understood three proceeding Divine Attributes, which are Creation, Redemption and Regeneration; and that these are attributes of one God," etc.

Swedenborg, therefore, would say to those who read the *Adversaria*, and works written before it, and who there see the appearance of three persons. "Enter, I beseech you, more interiorly into my thought, and perhaps you will see the idea of one God;—perhaps you will not detect anywhere any materialistic conception of God." This would indeed be a good rule for the critic of Swedenborg's scientific works to follow, in respect to all things which do not appear to agree with the Writings or with common knowledge. Enter more interiorly into his thought; and this may easily be done in the light of his universal principles. I suppose it is unnecessary to say that those of us in this Club, who believe in Swedenborg's science, do not claim for him the illumination such as he had afterward, whether on the subject of God, or on any other subject. In all his soaring in the realm of natural truth he reached a limit that he could not pass, and which no human being could pass without Revelation. He indeed soared like an eagle far away from the beaten paths of men, immensely farther than any other man ever has, or ever could, because he unlike other men was being prepared to become the instrument of the great Revelation.

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I. And now do we find in his philosophy the conception of a spiritual sun? The teaching in the *True Christian Religion*, n. 75, is, that a knowledge of the spiritual sun is necessary in order to obtain a just idea of the creation of the universe; and the assertion has been made that as Swedenborg did not know of a spiritual sun, his philosophy of creation is not to be trusted. If it be true that Swedenborg had *no* idea of a spiritual sun, then it would have to be admitted that his treatises on the creation would have but little if any more value than those of other men who have written on the same subject; and we should be compelled to class him as a materialistic philosopher up to the time of the opening of his spiritual sight. But there is not a materialistic conception in all his science from beginning to end, and we are not driven to any such alternative. Swedenborg did have a knowledge of the spiritual sun! Not the knowledge he had afterwards, when heaven was opened to him and he saw that sun in all its glory; but he did have a knowledge of it, sufficient to exempt him from the charge of materialism, and to make his previous teachings on creation of immensely more value than the teachings of other men. But let us hear his own testimony.

In the *Economy of the Animal Kingdom*, n. 254, he says, "There is nothing more usual, even in the Holy Scripture, than a comparison of God with the sun." In n. 255 he says, "As the sun is the fountain of light and the distinction thereof in its universe, so is God the sun of life and of all wisdom." In n. 256, "God is the life of the universe, as the sun is the light of the universe." In n. 257, "As the sun of the world flows in one only manner, and without unition, into the subjects and objects of its universe, so also does the sun of life and of wisdom." In n. 260, "As the sun of the world flows in by mediating auras, so the sun of life and of wisdom flows in by the mediation of His Spirit." In n. 261, "As the sun of the world flows into subjects and objects according to the modified character of each, so also does the sun of life and of wisdom." In n. 266, "Inasmuch as the one sun is within nature, the other is above it." In n. 267, "Furthermore, by the omnipresence and universal influx of this life into created matters, all things flow constantly in a provident order from an end, through ends, to an end." Note here the doctrine of influx. In the *Hieroglyphic Key*, Example viii, "God is the sun of wisdom,

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is wisdom itself, as the sun of the world is the sun of light." See also the work on the *Soul*, Thesis v.

In view of these statements, and others similar, let it not be said that Swedenborg had no knowledge of a spiritual sun; for it had already been given him to see in a general manner that there are two suns, one natural and the other spiritual. And the student of Swedenborg's philosophy will find not only a conception of a spiritual sun, but *initial* conceptions of all the other fundamental doctrines of the Revelation that was afterwards given through him. In fact, this was the method of his preparation, under the leadings of Providence. He was not introduced in one leap or bound into the blaze and glory of the light of the spiritual world. His illumination was successive and progressive. It is so with all preparation. Every man is prepared for his use by the generals of that use given him in advance of actual introduction; these generals prepare him. A man is prepared for the understanding of the Word by the generals of the Word given him in advance for this purpose; he is prepared for heaven by the generals of heaven put forth from heaven to prepare him; even as the blood prepares the food for itself by sending forth from its bosom the various salivary streams. The law is universal. Swedenborg is no exception to the rule; and as we read his scientific works we are filled with wonder at finding things we thought were only in the Writings. But this explains it. He must be prepared according to this law for the greatest work ever performed by human being. He himself tells us that he was prepared by the Lord from his early youth, and this was the manner of his preparation, namely, by putting into his mind, through the medium of his own researches, the fundamental laws of nature representative of the fundamental laws of the spiritual world, attended here and there with a glimpse, a vision as from afar, an intuition, an intimation of something yet to come, but leading him onward step by step until the opening of the light of the perfect day. Let those who deny or underestimate his previous teachings be careful that they are not carried too far.

2. Does Swedenborg see that the human form is the form of all forms? I pass this by for the present, as the subject is too vast a one to discuss within the limits of this paper; merely asserting that it is the essential idea in his doctrine of Forms, and that

it is involved or expressed throughout in his treatises on the human body.

3. Do the fundamental laws of Influx, of Degrees, of Correspondence appear? I would remark first, that the image of the spiritual world is impressed upon the natural world; we may therefore expect to find the universal laws of the spiritual world pressing as it were into nature, and represented in it. Swedenborg, with an acknowledgment of one God, with a general knowledge of a spiritual sun as the source of all created life, saw exhibited in nature the laws of which we speak; he saw spiritual law in the form of natural law,—or spiritual truth in the form of natural truth,—and his understanding was thereby enlightened and prepared to become the receptacle of spiritual truth and teach it to mankind. Why was this? Why was he a philosopher, or teacher of natural truth, before he was a theologian or teacher of spiritual truth? He answers this question in the Writings, and in a letter to Oetinger. To Oetinger he says that “spiritual truths have a correspondence with natural truths,” and adds, “I was introduced by the Lord first into the natural sciences, and thus prepared; and in fact from the year 1710 to the year 1744, when heaven was opened to me.” (*Document 232*. See also *Influx*, n. 20, and *T. C. R.*, n. 850.) He was introduced by the Lord into natural truth, and thus prepared.

And now a word about influx. I take the following from the *Economy of the Animal Kingdom*: “Unless the sun flowed in unceasingly, all things formed out of nature would perish, and nature herself would return to her source; unless God flowed in unceasingly, all things gifted with life would die, and the universe would be annihilated; for whatever exists, must subsist by that from which it first existed” (*E. A. K.* II, 255.) Again, “As the sun flows universally, that is to say, most singularly, into the substances of its universe, and constantly so emprinciples them as to enable them to exist in a natural manner; so God flows most universally, and hence most singularly, into all things, and constantly vivifies them.” (*Ibid.*) This number occurs in the series where he is treating of the two suns; and you will observe that the idea of influx necessarily carries with it the idea of a spiritual sun; Swedenborg had an idea of the one, and therefore he had an idea of the other. And the idea of influx carries with it also

the idea of degrees and of correspondence. (See also the same work, Vol. II, 257, 267, 301, and the treatise on the *Soul*, Nos. 542, 556.)

How about Degrees? Let us examine again the *Economy of the Animal Kingdom*. In Vol. I, 579, he affirms the necessity of a Doctrine of Series and Degrees as an introduction to a Rational Psychology. In Vol. I, 580, he says that "the science of natural things depends on a distinct notion of series and degrees." In Vol. I, 581, he declares that the doctrine of series and degrees teaches "in what manner things are successively subordinated and co-ordinated, and in what manner they co-exist simultaneously in subordination and co-ordination," etc. Here is a distinct conception of discrete degrees. In Vol. I, 583, he speaks of degrees of subordination and degrees of co-ordination, making it clear that he sees in nature degrees of two kinds, such as are called in the Writings degrees of altitude and degrees of latitude. (See also Vol. I, 269, 580, 587, 601, 632, 648, 649; Vol. II, 205, 210, 211, 281, 290.) You will of course not expect to find the doctrine of degrees, or any other doctrine, stated clearly and authoritatively as they are afterward stated in the Writings. It is sufficient here to know that he did have a conception of discrete degrees, and at the same time of influx and of correspondence; and that it was necessary that he should so have, in order that he might be provided with a key to unlock natural causes, and by natural causes be prepared to see spiritual causes, or to have the great world of spiritual causes revealed to him.

He has much to say about Correspondence in the *Economy of the Animal Kingdom* and in the treatise on the *Soul*; and the *Hieroglyphic Key* is a treatise on the subject. In the *Economy*, Vol. I, 176, he puts forth the idea that the things of a superior degree are so much more perfect than those of an inferior degree that they agree only by correspondence. In Vol. II, 281, of the same work, he gives four rules by which we may "discover and recognize what in a superior degree corresponds to a given thing in an inferior degree." In Vol. I, 648, he lays down five rules for determining the same thing. In the *Animal Kingdom*, n. 293 (chapter on the Kidneys), he says, "In our Doctrine of Representations and Correspondences, we shall treat of both these symbolical and typical representations, and of the astonishing things which occur, I will not say in the living body only, but

throughout nature, and which correspond so entirely to supreme and spiritual things that one would swear that the physical world was purely symbolical of the spiritual world. . . . This symbolism pervades the living body; and I have chosen simply to indicate it here, for the purpose of pointing out the spiritual meaning of searching the reins." He refers in the beginning of this quotation to the *Hieroglyphic Key*, of which we shall speak presently. In the *Worship and Love of God*, n. 55, he says, "Correspondence is of such a nature, that by the simple transposition of the words signifying natural qualities, we are introduced, by the merest natural and moral truths, into real spiritual truths." Again in the same work, n. 65, "There is nothing whatever extant in nature but typically resembles its own origin or soul. And this soul is from heaven," etc. Again, in n. 74, "the ancient fables . . . are mere representations significative of things, and similar to celestial representations. . . . Thus they express the human intellect by horses. . . . The sciences and intelligence they express by nymphs," etc. Then he adds, "The fables of the ancients were mere representations drawn from heaven; hence their minds were nearer to heaven than ours; for we are not even aware of the existence of such representation." In the *Hieroglyphic Key* we have an entire treatise on correspondence, from which we shall quote a few sentences. "There is a correspondence and harmony between all things, namely, of natural with spiritual. . . . The Egyptians appear to have cultivated this branch of learning and to have signified these correspondences by a vast number of different hieroglyphics, not merely expressive of natural, but also at the same time of spiritual things" (*Example xvi.*). "The spiritual world is the region of antitypes or examples; the animal Kingdom is the sphere of images and types; nature is the realm of shadows or resemblances. There are many species of representations or correspondences" (*Example xxi.*). The last sentence in the book is this, "It is good to interpret the Holy Scriptures on these principles, for the spirit speaks spiritually as well as naturally." He sees here correspondences in the Word of God, as well as in the ancient fables, and in nature.

For want of space I pass by the subject of Order and of Series. Those interested will find a full treatment of them in the *Economy of the Animal Kingdom*. There is one law of order, however, that I cannot forbear to mention, because of its great importance,

and because of the help it was to Swedenborg in opening to him the realities of invisible nature, namely, the law that nature is the same in greatest and least things. He makes mention of this law in his scientific works throughout, but we shall make only one quotation here. In the *Economy* (Vol. III, 215) he says, "What nature is in greatest things and in things obvious to the sense, such also she is in lesser, yea in the least things." Swedenborg, under this law together with the others we have mentioned, was able to penetrate the mysteries of nature, far beyond the realm of the microscope and of chemical analysis, and unravel problems such as no other man could do, ignorant of these laws. And what did he find? what did the Lord reveal, when heaven was opened to him? Nothing else than this, that these laws were Divine, universally operative in the spiritual world as in the world of nature. And what of the law in question? He was taught that "heaven is like itself in greatest and least things" (*Heaven and Hell*, Nos. 72, 200). Why is this law universal in both worlds? He was taught the reason,—we are taught the reason;—and what is the reason? Because "the Divine is the same in greatest and least things." See *Divine Love and Wisdom*, Nos. 77-82, where you will find an exposition of this most universal truth. It was necessary that Swedenborg should have this law as it is operative in nature as a part of his preparation to understand the realities of the spiritual world; and in his preparation we are prepared, you and I and all of us.

I have endeavored to set forth these principles at some length, because they are all-pervading in his science, and establish that science as a system of natural truth, beyond all doubt and cavil, and confirm the teaching in *Influx*, n. 20, where we read that Swedenborg was once asked, how from being a philosopher he had become a theologian? He replied, "In the same way as that in which fishermen were made disciples by the Lord; and that I too from my earliest youth have been a spiritual fisherman." The questioner asked, "What is a spiritual fisherman?" Swedenborg replied, "A fisherman, in the spiritual sense of the Word, signifies a man who investigates and teaches natural truths, and afterwards spiritual truths in a rational manner." When this is read, standing as it does in the Divine Revelation for the New Church, there ought to be no need of further argument; for in the light of it a New-

churchman is able to see that Swedenborg's philosophy must of necessity be a system of natural truth, and that he was not allowed by the Lord to roam at will in the realm of natural error, and then by some Divine miracle be rescued from the baleful effects of it, and without previous warning or preparation suddenly introduced into the atmosphere and light of spiritual truth. Such is not the Divine method of operation with the sons of men, much less with the instrument and servant of His Second Coming.

And now I wish to lay before you a truth of prime importance in the subject under consideration, namely, that there is in the Writings of the Church a restatement of the fundamentals of the philosophy or science of Swedenborg. We can indeed recognize throughout the Writings an agreement of the spiritual laws which are there, with the natural laws in the scientific works, and so far I have not been able to see any spiritual law in the former contradicting any natural law in the latter. It has been asserted that there are such contradictions, and I have heard some put forward, but in every case so far, to speak frankly, the assertion has come from a want of knowledge of the subject. But we are concerned at this point with the restatement in the Writings of the fundamentals of his science.

There is much more of natural philosophy and science in the Writings than is generally known or appreciated, or can be seen in the ordinary course of reading; and it is perhaps still less known that the science in the Writings is the same as that in his previous works throughout; put in a more general form, indeed, but still restated and confirmed in the light of heaven. This can only be seen clearly by a reader of the Writings, who is at the same time familiar with the scientific works. But I shall endeavor to present a view of this matter by citations from the Writings, which will show to him who observes and reflects that the generals and fundamentals of Swedenborg's philosophy are repeated in the Writings, thus establishing it as a new science for the New Church.

It should be remarked that his scientific works are two-fold; one class treating of the laws of nature in general, and the other of those laws as exemplified in the human body. The general propositions we are about to give from the Writings cover these two classes of subjects, and confirm his previous teachings in the

two classes of works mentioned. We shall present first the teachings of the Writings that directly restate and confirm in a general manner the philosophy of the *Principia* and that of the work on *Chemistry*. These teachings are:

That the sun is nothing but fire, mere fire, pure fire, elementary fire. (*A. C.* 5079; *Inf.* 9; *D. L. W.* 89, 157.)

That in the sun there is fire; the fire itself of the sun does not pass to the earth, but light in which there is heat from the fire of the sun. (*A. C.* 8328.)

That the sun of this world consists of created substances,—the activity of which produces fire. (*T. C. R.* 472.)

That through the atmospheres the sun exercises all its power, and produces all its effects outside of itself. (*A. E.* 726.)

That creation proceeds to ultimates by successive degrees of compression and composition. (*D. L. W.* 184, 190, 207, 302.)

That the earth and all things on it are created from the sun by means of the atmospheres. (*D. L. W.* 302, 303.)

That the substances and matters of the earth have been created by the sun through its atmospheres, because nothing can come forth except from something which is prior to itself. (*D. L. W.* 302, 303, 305.)

That the atmospheres store up the fire of the sun in themselves, temper it, and carry it down as heat to the earth, and in like manner the light. (*D. L. W.* 174.)

That the atmospheres from the sun to the earth are discreted into degrees; and they stand related as simples, congregates of these, and as congregates of these again, or composites. (*D. L. W.* 184.)

That there are three atmospheres below the sun, the magnetic aura, the ether, and the air; (and also a fourth, if the watery atmosphere be included). (*T. C. R.* 32. *Coronis* 17.)

That there are as many degrees of atmospheres as there are degrees of heat and light. (*D. L. W.* 183.)

That the atmospheres are formed to receive the heat and light which is from the fire of the sun, and carry them down in their bosom to the earth, and this by successive degrees, which are discrete. (*D. L. W.* 158, 174, 183, 191, 192, 197, 223, 299; *Inf.* 16.)

That the substances and matters of which the earths consist are the ends and terminations of the atmospheres, whose heat has end-

ed in cold, their light in darkness, and their activity in inertness. (*D. L. W.* 305.)

That in their progression downward the atmospheres decrease, and continually become more compressed and inert, and at last in ultimates so compressed and inert that they are atmospheres no longer, but substances at rest, or substances fixed as are matters of the earth. (*D. L. W.* 302, 303.)

That the atmospheres are the active forces, the waters are the mediate forces, and the earths the passive forces, from which all effects are produced. (*D. L. W.* 178.)

The atmospheres in ultimates are forces by which the substances and matters of the earth are actuated into forms. (*D. L. W.* 311.)

That the atmospheres actuated by the sun hold all things in connection. (*D. L. W.* 152.)

That the atmospheres are forces by which the substances and matters of the earth are actuated into forms, and are held together in forms both within and without. (*D. L. W.* 311.)

And again, that substances and matters are held together in connection by their encompassing atmospheres. (*D. L. W.* 302, 310.)

That the atmosphere is such in its least parts as it is in the greatest. (*T. C. R.* 364.)

That in the greatest and least things of the universe there are action and reaction. (*D. L. W.* 263.)

That no effect can exist in the universe without an active and a passive. (*Inf.* 11. *S. D.* 2722.)

That for anything to be produced there must be two forces, an active and a passive. (*A. C.* 7754.)

That there is in all things of nature an effort (*nisus*) to return to their origin. (*D. L. W.* 311.)

That each thing in nature exists from something prior to itself, and this in a regular chain or series even to the First. (*A. C.* 4523, 4524.)

That salt is not only the cause of savor, but also of odor. (*A. C.* 3718; *Adv.* 3:5431.)

That there is in salt a fiery principle which causes it to be conjunctive. (*A. C.* 9207.)

That salt conjoins all things, even water and oil, which otherwise could not be conjoined. (*A. C.* 10300.)

I would that I had time to make more clear to you that the entire philosophy of the *Principia* and of the *Chemistry* is reproduced in these general statements of the Writings, and in other statements that might be given. I must rest satisfied, however, with merely calling your attention to a few of the points mentioned, which are: that the sun is pure or elementary fire produced by the activity of its finites; that the sun produces from itself atmospheres by means of which all things of the earth are created; that the fire of the sun clothed by the atmospheres descends by three discrete degrees to the earth; that these results are produced by successive degrees of compression and composition; that in all things of the created universe from the greatest to the least, both in things visible and invisible, there is an active and a passive, or in the language of the *Principia* an active and a finite,—creation begins as soon as there is passive.

But I cannot stop to expound this matter, though it is of such surpassing interest,—the fundamental law of all creative operations,—that in greatest and least things, visible and invisible, there is an active and a passive. The *Principia* is an exposition of this law from beginning to end. The general statements, I have quoted from the Writings, show further that all the substances and matters of the earth are held together in connection by their encompassing atmospheres; here we find in the Writings the fundamental law, the real interior cause, of all chemical union, as fully expounded in the work on *Chemistry*. But we must for the present pass this by. The quotations concerning salt are made, because his theory of salt is a universal in his chemical system, and also in his philosophy of the blood.

Let us now make a few citations from the Writings concerning the human body, which, with many more like them, confirm Swedenborg's teachings concerning the true physiology of the human body, as given by him in the series of works on the Animal Kingdom; remarking in general that these teachings in the Writings, concerning the laws, and the operations of law, in nature in general and in the human body in particular, present facts and principles that are for the most part unknown or unacknowledged by modern science; which latter seems to constitute a bar and a hindrance to their full reception by many in the New Church at this time.

THE CREDIBILITY OF SWEDENBORG'S SCIENCE.

In confirmation of the philosophy in the series of works on the human body the Writings teach,—

That the body is created according to the order of the whole natural world. (*T. C. R.* 71.)

That the body is an organ composed of all the most secret things of nature, and according to the secret forces and wonderful modes of flowing. (*A. C.* 4523.)

That there are organic forms in the human body so pure that they cannot be discovered by the eye, whether naked or assisted. (*A. C.* 4224.)

That the ether flows in at the pores and holds together in their forms the interior viscera of the whole body. (*A. C.* 3628.)

That the soul is from the father and the body from the mother. (*T. C. R.* 103.)

That the cerebrum is dedicated to the understanding, and the cerebellum to the will. (*D. L. W.* 384; *T. C. R.* 160; *Inf.* 13.)

That the voluntary sense is proper to the cerebrum and the involuntary sense to the cerebellum. (*A. C.* 4325.)

That fibres from the cerebellum rule also the voluntary parts, which is especially manifest when man is asleep. (*A. C.* 9683.)

That the cerebrum sleeps, but the cerebellum never sleeps. (*A. C.* 1977.)

That fibres from the cerebrum exhibit the voluntary sense in the parts which surround the body, and that fibres from the cerebellum exhibit the involuntary sense in the interior viscera of the body; for which reason man has no sense thereof, neither are those parts under the disposal of the will. (*A. C.* 4325.)

That the muscles and the skin, and also the organs of the senses, receive fibres for the most part from the cerebrum; hence man has sensation and voluntary motion. (*A. C.* 4325.)

That the membranes of the brain enter into all things of the body. (*T. C. R.* 60; *S. D.* 1730.)

That the brain is in a constant state of animation, that is, of expansion and contraction. (*S. D.* 1793; *Adv.* 990; *Cf. D. L. W.* 412; *T. C. R.* 577.)

That the pituitary and viscous matters of the brain are excreted through the cribriform plate into the nostrils. (*S. D.* 1793.)

That the purest substances of the food are absorbed by the tongue, and taken immediately into the circulation, or direct to the brain. (*A. C.* 5175; *S. D.* 1021, 1035, 1742.)

That there is in the blood and in the fibre an animal spirit, which is the vital essence of the body. (*A. C.* 9154; *A. E.* 1084; *S. D.* 914, 1968, 3459.)

That the animal spirit is formed in the cortical glands of the brain. (*S. D.* 1059.)

That the animal spirit from the brain, descending by the jugular vein, meets the chyle supplied by the thoracic duct, and both proceed together to the heart, to be formed into red blood. (*S. D.* 914, 1130.)

That the lungs by their respiration act upon the whole body, even to its inmost parts, by means of the menbranes, coverings, and sheaths. (*T. C. R.* 577; *D. P.* 180.)

That all the motions of the body depend upon the respiration of the lungs, and the systole and diastole of the heart. (*H. H.* 446; *D. Love V.*; *D. Wis.* VI., VII.)

But that the heart without the respiration of the lungs does not produce any motion. (*T. C. R.* 87.)

That, (since all sensation and voluntary motion are dependent on the respiration of the lungs) there is no bodily sensation, nor voluntary motion till after birth, when the lungs are opened. (*A. C.* 3887.)

That the kidneys purify the serum of the blood, and the renal capsules the blood itself. (*S. D.* 960, 962, 966; *A. C.* 5391.)

That the renal capsules attract the purer blood and return it to the heart, that it may not all be absorbed by the spermatic vessels. (*A. C.* 5391; *S. D.* 968.)

That the renal capsules and the Thymus gland perform their chief use before birth, and to new born infants. (*S. D.* 968, 1049; *A. C.* 5172.)

The same uses in general are ascribed to the liver, the pancreas, the spleen, the lymphatic vessels, etc., in the Writings as in the *Animal Kingdom*. (*A. C.* 5183; *E. U.* 132; *S. D.* 1005-1019.)

That the return of the fibres to their primes is effected through the blood vessels. (*D. L. W.* 316.)

That the blood and the other fluids do not follow the same law of gravitation as that which prevails outside the body. (*S. D.* 3727.)

These are a few general statements from the Writings that are at the same time the generals of his philosophical series on the

human body, as given in the treatises on the Animal Kingdom. More can be given; but there is enough here to show that there is in the Writings a general restatement and confirmation of his philosophy of the human body; and the affirmative student, versed in his science, will see this at once. If you do not see it on the first reading, you will see it the more you read, the more you enter into it studiously, and in the true spirit of research; and seeing so much of it repeated in the Writings you will advance with a degree of confidence that you have before you the very system of natural truth, of which the Writings speak in *Influx*, n. 20, and elsewhere; you will read and study with trust and confidence that you have before you a system containing the universal laws of nature, universals that cover and contain all particulars. Not that you will hold the same mental attitude toward them as a whole as you hold to the Writings; not that you will see them as an immediate revelation from God out of heaven: For you do not ask when you read the Writings, Is this true? or discuss whether it be true. But you will feel yourself free to ask this in reading his scientific works. You will be free because the Writings have made you free, and they have furnished you a standard of judgment; and with such a standard you will go forward affirmatively, and with confidence; but with any other standard, such as that of modern science, the truth of Swedenborg's philosophy will elude your grasp and you will see—errors.

To return for a moment to the subject of the science taught in the Writings,—let me ask, Can a faith in this science hold together with a denial of the system of natural truth which he taught as a philosopher? I present this for your serious consideration; and also this, that when you are disposed to deny the truth of any proposition in Swedenborg's science I would recommend that you examine the Writings carefully first, for you may happen upon a restatement of the same proposition. Let there be caution, and prudence, and the avoidance of hasty judgments.

You may ask, however, a question that has been often asked, and say—"We have the Writings, what need have we of Swedenborg's scientific works?" I would answer this question fairly and fully, and hope to be able to do so more fully than is possible within the limits of this paper. I hope to be able to show that they are needed for the understanding of the Writings; that they are needed for a new science in the New Church; that they are need-

ed for a new education in the New Church. As Swedenborg was prepared by it to understand the laws of the spiritual world, so will we be aided by the same to understand more fully the laws of the spiritual world as revealed in the Writings. The minister and student of the Writings who has not been so aided has lost an opportunity, he has missed the sense and feeling of gratitude to the Lord's Providence for such a help in his studies and in his teaching. And his feeling of gratitude will swell when he thinks of the new science that is to come, and the new education; for he will realize that where there is a new Theology there must of necessity be a new science, and where there is a new science, there must of necessity be a new education; and he will be thankful to the Lord and His Providence that so much of this work has already been done for the New Church through the instrumentality of him whom the Lord was preparing for the office of Revelator.

You who wish to investigate the laws of nature, you who wish to enter the realm of natural truth, you who wish to sail on a voyage of discovery into the pathless ocean of the interior world of nature, take passage on the good ship built by Emanuel Swedenborg. He sailed in it himself, and he left it as a legacy to us; it has survived the dust and decay of over a hundred years, and its timbers are as sound today as when they first passed from the hand of the builder. It is folly to build a ship of your own when so good a one has been provided to your hand, with sails set and colors floating to the breeze, magnificently equipped and furnished for the voyage. Attempt not to enter upon a voyage of discovery in an unknown sea, floating upon a mast taken from the wreck of a stranded vessel. Stand not upon the shore expecting to explore this sea looking through a microscope. Ah, the ship is ready, but the passengers are few! Yet it will live for many and many a hundred years to come, and there will be many to sail in it! Few now, but many then! I look upon the meagre list of the past, and I see the names of a Wilkinson and a Farrington. These, and others like them, have passed away to the world beyond the sea; and from the place where they are I think I hear their voices saying, Disperse the mists which rise up from the low grounds and valleys of modern science, and then thou can'st see clearly to remove the mote from the philosophy of Swedenborg. W. F. P.