THE NEW PHILOSOPHY

A QUARTERLY MAGAZINE
DEVOTED TO THE INTERESTS OF
THE SWEDENBORG SCIENTIFIC ASSOCIATION

VOLUME X
1907

THE SWEDENBORG SCIENTIFIC ASSOCIATION,
PHILADELPHIA,
1907

INDEX FOR VOLS. I—XIII

(1898—1910)

BOUND IN VOL. XIII

(1910)

IV

THE NEW PHILOSOPHY.

VOL. X. JANUARY, 1907. No. 1.

THE SENSES.

PART IV. OF THE ANIMAL KINGDOM, BY EMANUEL SWEDENBORG.

CHAPTER V. (*Continued*).

(*Concerning the Ear.*)

184. Natural harmony is the cause of affections and affections are the causes of the changes of state. 1. As has been observed in other senses. 2. The form will be such that quality thence results. 3. The quality is judged according to the harmony in which the ear, and especially the brain, are.

185. *The ear does not judge or sensate concerning harmonies, but the brain does so, where lies the soul in its own organism of sensation.* 1. The ear indeed according to its state brings to the brain a harmony agreeable to its own form. 2. Thus an injured ear brings a false harmony. 3. But I am here speaking of a well constituted ear, which corresponds to the organism of the brain. 4. Similar things may be added in regard to the other senses.

186. *In the ear there are three degrees of harmonies, or more, according to the concentrations of sounds.* 1. One species of harmony in the external ear. 2. Another in the cavity of the tympanum. 3. A third in the labyrinth. 4. These harmonies, however, do not all agree. 5. And one reduces the other to its own convenience. 6. Thence there is a correspondence of all.

187. *The first harmony is between quantities in the auditory tube.* 1. As was said above. 2. A sound higher and stronger induces another change of state. 3. Or between general quantities. 4. Whence exists the rudest harmony.

188. *In the auditory tube there also exists a harmony among qualities, which results in one perceptible sound.* 1. How many things are concentrated, successively and at the same time, in the external ear is evident from things before said. 2. These many things, however, represent one thing. 3. Thence there is a first and greatest unity, in which there are infinite varieties. 4. Thence there is sound sweet, harsh, soft, pleasant, unpleasant, etc. 5. This obtains in every tone.

189. *In the auditory tube there exists a harmony between the successive qualities of sound.* 1. This is general for it exists between general sounds. 2. It is such as is the first collation.

190. *A sound harmony exists between quantities concentrated in the membrana tympani.* 1. These can be called quantities of the quality of that degree. 2. Thence indeed there is a more articulate concent of sound.

191. *In the membrana tympani there exists a simultaneous harmony in every unity.* 1. For that unity is very gross, as has been shown. 2. Thence is the harshness of the voice, and the softness, and many other things.

192. *In the membrana tympani exists a successive harmony between the quantities of sound.* 1. Music is concerned with these things. 2. Not so with the prior. 3. It is natural. 4. Thence it is made artificial. 5. It is not so in the prior, for that is purely natural, etc.; in songs it can turn somewhat.

193. *In the fenestra ovalis and in the labyrinth there exist similar harmonies, but purer, between the parts of the parts.* 1. For what the part contains in itself as to its discriminations this the labyrinth discovers. 2. For thus it is parted into its own degrees and parts. 3. Thus there are similar harmonies therein, that is to say between quantities, united in their very quality, and between the qualities themselves.

194. *The brain becomes conscious of these harmonies; thence its state is changed, and agreeably the state of the organ.* 1. An organ which is instrumental cannot be affected without its principal being affected. 2. Thus correspondence and communication does this. 3. We know how it is affected from the softness and sweetness of sound. 4. How it is affected from concent. 5. How from concent quality is produced.

195. *All these harmonies cannot be described geometrically except imperfectly, for no art exhausts all things.* 1. All causes have their own harmonies. 2. All harmonies have their own forms. 3. All forms have their own geometry. 4. All geometry has its own laws and analyses; thence it is evident how infinite are all things.

The labyrinth or vestibule, the annular circles and the cochlea.

196. *Experience.* The labyrinth is where the vestibule is, which is the cavity constituting the middle part of the labyrinth to which the fenestra ovalis constitutes the entrance. There are three semicircular canals, the greatest, the middle and the smallest. 5. They open their mouths into the vestibule. The cochlea is the part opposite to the canals, making two and one-half turns, in which there is a nucleus and a canal, divided into two by a spiral lamina; the one of which opens into the vestibule; it is called the scala vestibuli; the other goes by the fenestra rotunda into the cavity of the tympanum; it is called the scala tympani. A thin membrane is distributed through all the cavities of the labyrinth, arising from expansion of the auditory nerve. These expansions are by Valsalva called the sonorous zones. The canal of the auditory nerve is larger, in which there are small formina to the labyrinth. A soft nerve is distributed through the labyrinth. A hard one communicates branches to the dura mater, to the tympanum and to the external ear. There are arteries from the external and internal carotids. There are veins partly to the jugulars, partly to the sinuses of the dura mater.

197. The periosteum of the cochlea and of the canals is continued over the walls of the cavity, and incloses the two fenestrae. The spiral septum of the cochlea separates itself entirely from the semicanals, from base to apex, where it leaves a little opening, by which the extremities communicate with the canal. A wider opening approaches the oblique circuit of the fenestra rotunda; a second opens into the vestibule; the extremities are entirely separated by the continuation of the periosteum. The Pars mollis of the nerve extends to the great internal auditory foramen, where fibres by innumerable foramina penetrate to the base of the cochlea, partly by the periostea of the semicircular canals, partly to the canals of the cochlea.

197ª. 24. *Analysis. All unities, which are confusedly concentrated in the middle of the membrana tympani, are more exactly distinguished in the fenestra ovalis.* 1. For unity comes thither. 2. It comes by the ossicula and stapes, as also by the periostea. 3. It proceeds from the peripheries to the centre. 4. It is like an undulation which covers the surface. 5. That fenestra must be considered as the area of many chords. 6. Thus it can be compared simply with a chord, from which we know, how when it is touched a tremor runs through it from a point touched near its fastening. 7. In order that all the tremors may enter it is necessary that the stapes should be fastened at the circumference. 8. And at the same time a kind of local motion must bring in that modulation, just as the air is first modified.

198. *In order that the fenestra ovalis may receive the confused unities of the membrana tympani, it is very necessary that there be of a certain measure, and the finer the measure is the more correct it is, and at the same time the nearer it is to the fenestra ovalis, and the more it is bound to the stapes, the more distinctly it brings the sense of unity to the membrana tympani.* 1. This can best appear from the strings of an instrument. 2. In that the nearer to the fastening they are touched the sharper they are. 3. Likewise the thinner the

thread or string. 4. And many things which concur in this consideration.

199. *The unities of the membrana tympani consist of successive things.* 1. For the whole simultaneous was at first successive. 2. It is only the dullness of the sensation which causes it to appear simultaneous. 3. In one tone there are infinite things, especially in a tone of the first and second degree; it is the work of the fenestra ovalis that these things may be distinguished.

200. *The unities comprehend in themselves diverse quantities and their degrees.* 1. This we hear from the sounds themselves as that they are lower or louder. 2. Thence is accent. 3. Thence is pleasantness according to degrees and unpleasantness. 4. These things are transferred into the fenestra ovalis which distinguishes them. 5. For it consists in greater or less pressure and action.

201. *The unities comprehend in themselves differences or discriminations of quality.* 1. As, for instance, coarse and fine or sharp. 2. This arises from different velocities, or, not from degrees but from movements. 3. Unity comprehends such infinite differences; thence is the interior difference of voice and of sound, and their pleasantness.

201a. *Unity comprehends in itself a whole harmony.* 1. Thence is its pleasantness. 2. Its softness. 3. Its hardness and harshness. 4. The grace of the voice, etc. 5. This together with degrees of quantity produces that which is said to be pleasant and sweet.

202. *Unity comprehends in itself changes of state arising from harmony or disharmony, which are also distinguished in the fenestra ovalis.* 1. The change of state taking place in the membrana tympani rebounds into the fenestra ovalis. 2. This takes place by the muscles of the malleus and incus. 3. By the nerves and the chorda tympani. 4. Also by many other causes, of which we have spoken above when treating of the tympanum. 5. A nerve also runs through every side and all the ossicles, in order that a similar change of state may take

place in the fenestra, but more distinctly. 6. Therefore all things are distinguished in the fenestra ovalis. 7. Wherefore the fenestra ovalis by means of the stapes is a common sounding board, as in instruments. 8. Therefore it can be drawn back to the borders, and stretched apart. 9. It reaches especially to the cavity of the membrane.

203. Changes of state are induced by every movement, (more than any one can imagine), general and particular.

(*To be continued.*)

SWEDENBORG'S METHODS OF WORK.*

BY ALFRED H. STROH.

In approaching the subject of Swedenborg's methods of work the following principle of interpretation should be kept in mind, namely, that the works of an author interpret themselves. In the numerous scientific and philosophical works of Swedenborg, published and unpublished, the student may read the story of Swedenborg's progress in that preparation which was designed to make him the unique instrument by which the crowning revelation was given to mankind, the revelator fully furnished with the science of both worlds, and capable of being consciously in both worlds at one and the same time. From the Writings of the New Church we learn that from early youth Swedenborg was a fisherman in a spiritual sense, that is, an investigator of natural truths. "A fisherman, in the Word, in its spiritual sense, signifies a man who investigates and teaches natural truths, and afterwards spiritual truths, in a rational manner." (*The Intercourse of the Soul and the Body,* No. 20.) This, then, is the general view which must

*Read at the Annual Meeting of the Swedenborg Scientific Association, New York City, April 28, 1906.

be taken of Swedenborg's preparation, and in the light of it the particular examination of the methods of work followed by Swedenborg stands forth as a subject of absorbing interest. When all of the evidence is accessible, the biography of Swedenborg may be written; at the present time we can see but the main outlines.

For ten years, from 1699 to 1709, Swedenborg studied at the University of Upsala, and published in 1709 a thesis on *Selected Sentences* of Publilius Syrus Mimus and Lucius Annaeus Seneca, the preparation of which, as Swedenborg says in the first of his letters, cost him "a good amount of labor." (Dr. R. L. Tafel's *Documents,* Vol. I., p. 202.) In those days a thorough study of the classics occupied a large part of a student's time, and when Swedenborg, at the age of twenty-one, left his Alma Mater he had seen that reflected light from the Ancient Word which the precious heirlooms of Greece and Rome preserved during the dark ages, lighting up the Renaissance and cheering the minds of men until the dawn of the new age. While still a junior, Swedenborg proposed a discussion of natural laws, but he was overruled by the seniors of his "nation." The subjects discussed in the meetings of the "nation" were generally of a moral or classical nature, and Swedenborg's nascent love of the natural sciences here showed itself and raises the question as to the preparations he made in them before leaving the University. No doubt he read Descartes, and that he did not agree with the views of the Cartesianism of two of the Upsala professors is shown by a letter to Eric Benzelius, written in 1718. In it Swedenborg says:

"I send you something new in Physics, upon the particles of air and water, proving them to be round, which may militate against the philosophy of many; but as I base my theory upon experience and geometry, I do not expect that any one can refute it by arguments. Preconceived ideas from Descartes and others will be the greatest obstacle to it, and will cause objections. Dr. Roberg, who, in everything that is minute and subtle is himself subtle, is best able to judge

respecting it: if you would therefore be kind enough to leave this with him, I should like to hear his opinion. If Prof. Valerius would lay aside his own and his father's Cartesianism, his opinion would also be valuable to me. I have materials enough on this subject to fill a large book, as is done by the learned with their speculations abroad, but as we have no appliances here for such large publications, I must cut my coat according to the cloth, and introduce only the most general views. The use of this seems to me to enable us more thoroughly to investigate the nature of air and water in all its parts: for if the true shape of the particles is once discovered, we obtain with it all the properties which belong to such a shape. I hope that this rests on a solid foundation. In future I should not like to publish anything which has not better ground to rest upon than the former things in the *Dædalus*." (Documents, I., pp. 296-297.)

This quotation indicates very clearly Swedenborg's state of mind in 1718, a little before the publication of the work on *Chemistry* and the *Miscellaneous Observations* in 1721 and 1722. He had been abroad in England and the Continent studying the physical sciences, and becoming imbued with the views of the English *a posteriori*, experimental school, by reading Boyle, Newton and Locke. Having returned to Sweden in 1714, he was introduced to Chalres XII, became the assistant of the engineer Polhem, and applied himself diligently to mathematics, mechanics, geology and chemistry, all of which were afterwards of great use to him in his official capacity as a member of the Royal College of Mines. It would appear that Swedenborg and Polhem held various geological, physical and chemical theories in common; they were both of them ardent followers of the experimental school and sought to establish it in Sweden by publishing the first Swedish scientific magazine, the *Dædalus Hyperboreus*. When Swedenborg wrote the letter quoted above he was still in a tentative mood in regard to his theories as to the nature of the particles of air and water. This is further shown by the opening words of the paper *On the Nature of Fire and Colors*. Swedenborg says:

"[It is a question] whether one may judge, with any degree of certainty, respecting the nature of fire and colors simply by a comparison

with water and its nature, for although there may be many external similarities for the sake of comparison, nevertheless they may be of quite another quality. Would it not be better, perhaps, to take those very qualities of fire and colors which we know by experiments, and thus, as we think and investigate, direct ourselves to a knowledge of their nature? For, if we proceed by means of other elements, which are more visible to our sight and knowledge, we may soon be deceived into accepting certain notions which in themselves are contrary to the truth,—just as if one were to make conclusions respecting the shape of angels from the shape of men, simply because both are living and have the general senses, such as sight, hearing, etc."

Possibly the Cartesianism to which Swedenborg was opposed was some special form at Upsala, for as a matter of fact there is a remarkable resemblance between the physics of Swedenborg and Descartes. In the little work of the year 1718, *The Motion and Position of the Earth and Planets,* Swedenborg refers to Descartes and Newton in the Preface in connection with a proposed *Theoria Telluris.* But at this period Swedenborg was not so much a student of scientific literature and theories as a few years later on, but rather grappled with observations and experiments at first hand. His general attitude towards the Sacred Scriptures and scientific work is well portrayed in the little geological work *On the Height of Water and the Strong Tides of the Primeval World,* in which proofs from Sweden are presented. The Preface reads:

"From the Word of God we have the first knowledge of the universal Flood, which covered all the four parts of the world like an Ocean, and destroyed all the previously created work of God together with all animated things which existed on the dry ground. And had not Noah been provided with a new machine wherewith to move on the surface of the waters, all that had life on it would have been destroyed in the Flood before-mentioned, and the memory of it would for all time have been effaced, and the earth upon which we now live, would, like another abandoned planet, have circled around its Sun without containing anything more remarkable upon its surface than a Mars or a Jupiter. There is no one who denies that this universal Flood covered the earth; but worldly wisdom is not content with this fact, but wishes also to have a word to say in the matter; therefore

she investigates and gathers proofs from the things which the Flood has left behind. To this curiosity has also led my thoughts, encouraged also by the idea that it furnishes corroboration of the truth, and, as it were, continues its own praise and recommendation. And as I know that it will serve to corroborate the Word of God and the truth, I entertain the hope that what I have, with the kindest intentions, asserted and pointed out, may be interpreted by others with equal kindness. At least this will be gained, that thinkers in southern countries, who have labored on this problem, will find clearer proofs and traces from our North than they themselves possess."

Beginning with an examination of the comparatively external departments of the physical sciences, Swedenborg soon passed over to the interior problems of the constitution of matter, its origin, its motions. Swedenborg was keenly aware of the difficulties of his problem. Let us observe how he regarded it when he penned in 1720 the paper *On the Falling and Rising of Lake Venner:*

"Although we are groping in darkness as to all that which concerns the finer constitution of nature, still it may be that we will gradually be enlightened concerning it, by leading ourselves forwards by means of experiments and by supporting our thoughts by geometry and mechanics; even as to water and its nature we are indeed very foolish and ignorant. But that water contains within itself such a volume of gas that we can hardly believe it, is evident from many proofs; also how water expands itself by means of heat, as well as by means of cold, is shown by many proofs, concerning which more information will be given in that which I will bring forward concerning the interior nature and quality of water. Meanwhile, so long as proofs are wanting, principles should not be assumed and hypotheses defended, as they would then rather deserve to be called figments than principles. Therefore the kind reader may consider this as a prelude and a preface, by which a kind judgment is invited as to that which will be presented concerning the interior nature and quality of water."

Swedenborg now proceeded to earnestly apply his proposed method, leading himself forward by means of experiments, and supporting his thoughts by geometry and mechanics. He worked out his first *Principia,* commonly called *The Principles of Chemistry,* and partly printed it at Amsterdam in

1721. In the introductory remarks to the reader we may see that his method of approaching the interiors of nature was now fully formed. He says:

"The reader will be equally astonished with myself, that the knowledge of invisibles has remained hidden from the learned world up to the present time, when so many experiments respecting them are on record. If we look to Physics, we shall find that it abounds in experiments and discoveries! More light has been shed upon it in the way of experiment during the last century, than in any previous age; indeed, so far as facts are concerned, it has reached a meridian degree of brightness. If we consider Chemistry, with what experiments is it not enriched! So greatly has it exercised the industry of the learned, that we possess thousands of guides towards penetrating its secrets. If Geometry, to what a height has it not been carried by the men of science of our time! It seems indeed to have scaled the sacred hill, and for all human purposes, to have attained the utmost perfection. If, therefore, a thousand signs indicate one thing, we must suppose, as the subject is purely geometrical, that it may eventually be discovered and demonstrated. For what are Physics and Chemistry? What is their nature if not *a peculiar* mechanism ? What is there new in nature, *which is not geometrical?* What is the variety of experiments, but a variety of *position, figure, weight,* and *motion,* in particulars? Since then we have several thousand experiments, indicating the nature of the various metals, salts, and elements; and since these bodies entirely consist of groups of particles, varying in their shapes and positions; in which, again, there is a certain geometrical arrangement; we have grounds for concluding that these subjects may at least be demonstrated. To this end, I have collected experiments from the best authorities, as Boyle, my own countryman Hjærne, Boerhaave, Lemmer, and others, which I have added to and partly repeated; I have also applied geometry to the investigation of causes, and have at length formed principles in accordance with my data. It is for the reader to judge of what I have done, and may it meet with his approbation.

"In the work itself, I intend to show the theory of the other metals, salts and elements, according to the same connection and order. In this Prodromus I present only a specimen."

How significant is this introduction! How philosophical are the sentences which define interrelation of physics and chemistry with geometry, mechanics, and experiment! This intro-

duction expresses the very essence of Swedenborg's philosophy of nature. He dared to conceive of the whole nature in a mechanical and geometrical sense, and the guide in the investigation is experiment. After having collected experiments from the best authorities, having added to them and partly repeated them, Swedenborg says, "I have also applied geometry to the investigation of causes, and have at length formed principles in accordance with my data." And he continued to do it for twenty-three years. The *Miscellaneous Observations* constitute a practical application of this method to geology and cosmology. The portions of *The Genuine Treatment of Metals,* the work on the *Magnet,* the *Lesser Principia,* and the *Prinicipia* itself are further applications. In the *Principia,* in the first chapter *On the means leading to true philosophy and on the true philosopher,* the same note heard in the introduction to the *Chemistry* is sounded again, but he who hearkens may be so fortunate as to hear the overtones of a *philosophia prima* of nature which, when once heard and enjoyed, introduces its harmonies ever new and more interior. Only thus may the finer constitution of nature, and of that epitome of nature, the brain and its body, be comprehended! Only thus may we grasp the secret of the commerce between the soul and body in its mechanical aspect!

It is sometimes supposed by readers of Swedenborg's scientific works who are not aware of the foundations of experience, geometry and reason upon which the *Principia and Economy* rest, that those works are theoretical, *a priori* weavings of a subtle imagination, and that only in the *Animal Kingdom* is the *a posteriori* method employed. But this supposition falls when the form of presentation is seen to be quite subsidiary to the actual process of development. If we go behind the scenes we find masses of extracts from the best authorities, and preliminary applications of geometry and reason in the formation of principles, which principles are then set forth *a priori.* These preliminary studies or note-books here referred to are preserved in considerable numbers in Stockholm, and our As-

sociation will perform a great service in seeing them through the press, for they must be made accessible if the whole story is to be told. They fill the silent years between the *Miscellaneous Observations* and *Principia,* the *Principia* and *Economy,* the *Economy* and *Animal Kingdom,* in all twenty-one years, during which Swedenborg printed nothing at all, but was preparing the materials for the press. By understanding the sources and the methods of work employed in treating them we shall better understand the finished products.

In conclusion, we must not fail to observe the new motive which is first heard in 1736. At that time Swedenborg had some dreams which he thought sufficiently remarkable to note down. They have not been preserved, but we are taught in the *Spiritual Diary* that for a number of years Swedenborg had been guided in his work by dreams. Surely the evidence of this is plain in the *Economy,* while in the case of the *Worship and Love of God* the manner of guidance is recorded in the *Dream-Book.* It thus appears that when Swedenborg had exhausted the mechanical aspect of things a special guidance was given him as an introduction and special preparation for his purely spiritual work.

In the Writings the method is not Swedenborg's, but the Lord's, and what we may see exemplified there, is that which is taught explicitly in them, namely, that in all revelation the Divine Truth is revealed *in* the vessels which are in the mind of the revelator, or in the minds of those to whom the revelation is made. In Swedenborg's own case the vessels are rational ones, and in the scientific works we may see how were formed the vessels which could afterwards be used as containers of the crowning revelation to mankind.

University of Pennsylvania, Philadelphia, April, 1906.

REPORT BY MR. ALFRED H. STROH.

It is with great satisfaction that I submit to the members of the *Swedenborg Scientific Association,* through the pages of its quarterly Bulletin, the Report, just received from Mr. Alfred H. Stroh, of the progress attained in the publication of Swedenborg's Scientific works under the auspices of the Committee of the Royal Swedish Academy of Sciences at Stockholm organized for this purpose, and of the plan projected for a complete collection of biographical and bibliographical *Archives,* and for an edition of the *Opera Omnia* of Swedenborg to be put forth here at the seat of his own, earlier academic labors, and accompanied with the tributes of the illustrious scholars who are his fellow academicians of to-day. The work thus going forward is such in its magnitude and worth as to inspire every member of our Association with new zeal and devoton in sustaining it, and the eminence of the scientists who are laboring in Stockholm to rescue from oblivion and save from possible destruction the works of the even as yet but partly discovered "Aristotle of the North" is such as to warrant the special attention and enlist the co-operation of the learned men and institutions throughout the scientific world. We bespeak especially the attention of the librarians of Scientific Institutions, and Universities, and Colleges to the Circular to be sent out regarding the early publication of the Vols. I-III now ready, with introductions by the illustrious scholars, Nathorst and Arrhenius, of the Royal Academy, and to the volumes to follow on the Brain, with the introduction of the renowned anatomist, Professor Gustav Retzius, of the Commission of the Royal Academy, having in charge the investigation and publication of the scientific works of Emanuel Swedenborg.

FRANK SEWALL,
President of the Swedenborg Scientific Association.
Washington, D. C., January, 1907, 1618 *Riggs Place.*

THE PUBLICATION AND INVESTIGATION OF SWEDENBORG'S WORKS AT STOCKHOLM.

REPORT BY MR. ALFRED H. STROH.

Rev. Frank Sewall, M. A., D. D., President of the Swedenborg Scientific Association:

Since arriving at Stockholm last July I have been busy with the investigation and publication of Swedenborg's works, and have continued to act as the official representative abroad of the Swedenborg Scientific Association, according to the resolution passed at Washington in 1904 at the Annual Meeting. The action of the General Convention last May in supporting the work here, and the continuation of the support from the Academy of the New Church, will contribute essentially to the result in which all students of Swedenborg are so deeply interested, namely, the rapid publication of the manuscripts of Swedenborg and the republication of the rare works out of print. This is the main work of the mission, but in addition I am making such supplementary investigations of Swedenborg's works as a whole, and in particular of his biography and position in the history of philosophy and the sciences. as time and circumstances will permit.

Readers of *The New Philosophy* for the last five years will find there a number of reports and articles describing the inception of the work here and the progress which has been made by the Swedenborg Committee of the Royal Swedish Academy of Sciences in the publication of an edition of Swedenborg's scientific works. But it may be of present interest to briefly review the work since its beginning and to describe its present condition and future prospects.

The founding of the Swedenborg Scientific Association in 1898 marks the beginning of a new era in the study of Swedenborg's works, not only of the scientific and philosophical ones, but also of the Writings or theological works, for not

only have students begun to investigate Swedenborg's scientific statements and his philosophy of nature and of man much more completely and thoroughly than ever before, but it has also become quite clear that thousands of passages in the theological works treating of scientific or philosophical subjects may be paralleled or connected with similar passages in the earlier works. There is here a great field of study and interpretation which has produced good fruits even now, although so comparatively little of the field has been cultivated, but it will certainly produce a great deal of good and valuable fruit in the future, when a larger area is available. At present many of the works are still unpublished, but a considerable number will see the light in the next few years, and it will be shown below how *all* of the works may be published in a uniform and complete edition.

The Association first turned its attention to the question of republishing the English translation of the scientific works, but in 1901 active steps were taken to copy certain of Swedenborg's MSS. and to publish them in America, as the result of a plan laid before the Association by its Treasurer, Mr. Carl Hjalmar Asplundh. He was also the agent of the Convention and Academy in their enterprise of phototyping the *Diarium Spirituale*, and the work of copying the MSS. as well as of editing the *Diarium* was placed in charge of the Rev. Joseph Boyesen, of Stockholm, until the summer of 1902, when I was sent to Europe as the agent of Mr. Asplundh. During the following year many of the scientific MSS. were copied, and some of the copies were carefully collated with original MSS., while Vols. II. and III. of the *Diarium* were nearly completed.

In the meantime a new movement had joined hands with the Association and as a result the work on the MSS., etc., has developed to such an extent that a comparatively complete survey in print of the contents will be possible within the next few years. Professor Max Neuberger, of Vienna, had delivered an excellent address on Swedenborg's philosophy of

the brain, and also inspired an official document deploring the fact that a large work by Swedenborg on the brain was still lying in manuscript. As a result of Dr. Neuberger's action Professor Gustaf Retzius, of Stockholm, in the spring of 1902 made an examination of the manuscripts, but found difficulty in deciphering them. By a happy coincidence we met some time after my arrival in the summer, and began an investigation which brought out some interesting points. As a result of the great energy and interest of Professor Retzius the Swedenborg Committee was appointed by the Royal Swedish Academy of Sciences. The committee reported favorably, the printing of a series of scientific works was begun early in 1903, and since then I have been engaged in editing and seeing through the press three large volumes of the scientific works, as reported in detail in the July issues of *The New Philosophy* for the last few years. Other volumes are planned, and the Academy of Sciences has recently made an appropriation to continue with the printing of Vol. IV., Swedenborg's first work on the *Brain,* while Professor Retzius has most generously offered to pay the expenses of printing Vols. I. to III, and of the copying of materials for the whole edition. Introductions for the edition as a whole and for the various volumes will be furnished by the members of the Swedenborg Committee. An edition of 500 copies is being printed of Vols. I to III, and it is to be hoped that sufficient subscriptions and donations will be received so that a larger edition and also plates may be provided for the future volumes. Any one interested in this matter of donations, the making of plates, or the support, by special contribution, of the objects of the mission here in Stockholm, may communicate with the President or Treasurer of the Association, or directly with the undersigned, when full particulars concerning the special needs of the work will be furnished. Permission to make plates has been received from Professor Retzius, and the making of them would be a preparation for the publication in the future of a complete edition of the works of Swedenborg, *Opera Omnia*

Emanuelis Swedenborgii. Every line by Swedenborg which has come down to our times should be printed as soon as possible, and what could be better than to make plates of the works now in hand, and later on of the few which would remain, and gradually issue, in chronological order, all of the works and fragments? Another help in this same direction will be furnished by a medium which will now be described.

There are excellent prospects for the publication in Stockholm of a serial to be called *The Swedenborg Archives,* to contain Swedenborg's entire correspondence in the original languages and in an English translation, together with most of the records contained in Tafel's *Documents*, and miscellaneous, historical and bibliographical contributions, as also articles and reviews by specialists, such as the members of the Swedenborg Committee, who are deeply interested in this project and have promised their contributions for it. The original materials by Swedenborg to be published in the *Archives* should also be preserved in plates so as to be available for the proposed *Opera Omnia.*

The liberality of Professor Retzius has made it possible to have copies made of all documents by or concerning Swedenborg not contained in the Library of the Royal Swedish Academy of Sciences. This is the first necessary step, not only for the publication of the *Opera,* but also for the *Archives,* and students of Swedenborg will never forget the enlightened interest and liberality which has made all this work possible. So much for the printing of the works and records. A few words will now be added concerning the investigations which have been carried on since those made by Dr. R. L. Tafel from 1868 to 1870.

The investigations of Dr. Tafel were those of a pioneer, and have been fundamental to all subsequent work. He not only revised and republished, in English, most of the documents and information already obtained by previous research, but also unearthed a great deal of new information and edited a copious collection and commentary in his *Documents concern-*

ing the Life and Character of Emanuel Swedenborg. But even in his own days additional information came to light, as, for instance, the verses by Swedenborg on the marriage of Johannes Kolmodin and Beata Hesselia, published in 1700, when the author was but twelve years of age,—which verses were referred to by Dr. Tafel himself in his *Swedenborg and the Doctrines of the New Church.* Documents also came to hand in England, and were duly reported in print by Dr. Tafel. Still other Swedenborgiana were brought to light by the researches of the Rev. E. J. E. Schreck, in Holland; and the Rev. C. Th. Odhner by his researches in Stockholm was enabled to publish a considerable collection of additions to the *Documents* by Dr. Tafel. The same investigator performed a fundamental work for the bibilography of Swedenborgiana in general, from 1688 to 1850, and for the history of the New Church, by the compilation of his *Annals of the New Church,* the result of much investigation and labor in America and Europe, and the first bibliography which endeavors to aim at complete treatment. The Rev. James Hyde has also in recent years made researches in Europe and America with the special end in view of a complete Bibliography of Swedenborg's works, and when his work is published it will undoubtedly be found to fill a great gap, for Mr. Hyde's researches have been very wide and thorough.

Our researches have been carried on in America, England, France, Holland, Belgium, Germany, Denmark, Norway, but especially in Sweden, where the sources at Lund, Scara, Linkoping, Upsala and Stockholm have been examined. The results have been most gratifying. A number of new works, poems and miscellaneous documents by Swedenborg have been brought to light, many of which have not before been known to New Church students, while a great mass of new information has been collected concerning Swedenborg's works and documents; his life and travels; portraits of Swedenborg, his relatives, friends, teachers and contemporaries; his connection with universities and learned societies, etc., etc. The plan is

to print most of the works themselves in the edition now in hand by the Swedenborg Committee, and also in the proposed *Opera Omnia;* to gradually edit in the serial *Archives,* the letters and miscellaneous documents by or concerning Swedenborg, observing in so far as possible a chronological order in the arrangement, and adding biographical, historical and bibliographical information in convenient form. The *Archives* will contain the original Swedish, Latin, French, German or English of the letters and documents, and this will be especially valuable to the student, who has hitherto not had access to most of the originals, which still lie in manuscript or have long been out of print. Since most of the originals are in Swedish libraries, the text can be very carefully edited here in Stockholm. Swedenborg's scientific correspondence is being edited in Vol. I. of the edition of the Academy of Sciences, and the same volume is to contain a new *Chronological List* of Swedenborg's MSS. and printed works from 1700 to 1772, together with references to subsequent editions of the original Latin and Swedish texts. This is the first and fundamental work, and both the letters and *List* will be reprinted in the *Archives,* the letters accompanied by an English translation and by numerous notes in an Appendix. A substantial contribution has also been received for the preparation of a complete *Bibliography of Swedenborgiana in Scandinavia,* to be executed by Miss Greta Ekelof, the copyist since 1902, of numerous works and documents by Swedenborg, and now an Assistant Librarian in the Royal Swedish Academy of Sciences. All works by Swedenborg, works concerning him and his literary productions, and also all New Church literature, contained in the principal libraries of Sweden, Denmark and Norway, will be carefully listed, and every effort will be made to collect from all parts of the world the literature still lacking, so that when the *Bibliography* is complete it will first of all show what literature is available in Scandinavia, the natural centre, and secondarily take note of the literature not available there. Societies or individuals desiring to contribute old or recent

publications, or any rarities, should forward them to the *Royal Library, Stockholm,* or to the undersigned at the address given below. If two or more copies of a given publication are available, they will be gladly received by the principal libraries in Sweden, the librarians of which are much interested in completing the collections of Swedenborgiana and have asked me to collect all works by or concerning Swedenborg, and New Church literature in general, including periodicals, etc.. so that the country, which produced Swedenborg may have access to the later, as it already possesses the most complete collections of the earlier literature. As many as six copies of any publication whatever can if forwarded to me be easily placed in the principal libraries of the Scandinavian North. This matter is also of special interest to New Church students of Swedenborg who may happen to visit Sweden, for the libraries here should contain the whole literature for purposes of reference.

It is very desirable that all societies or individuals who are interested in the objects referred to in the present communication, and able to do something to forward their accomplishment, should communicate with the President or other officials of the Swedenborg Scientific Association, or directly with the undersigned.

Respectfully submitted,

ALFRED H. STROH,
Library of the Royal Swedish Academy of Sciences,
Stockholm, Sweden.

December, 1906.

The incorporation of the Swedenborg Scientific Association has been effected in accordance with the action of the last annual meeting under the laws of the State of Pennsylvania.

SOME THINGS OF HEREDITY, NATIONALITY AND ENVIRONMENT THAT INFLUENCED THE CHARACTER OF EMANUEL SWEDENBORG.*

BY ALEXANDER P. LINDSAY.

As the twenty-ninth of January approaches, the common inquiry among Newchurchmen is, What phase of Swedenborg shall we consider this year? This question is made more difficult by the fact that Swedenborg exhausts almost every known field of learning. No subject seemed too difficult for him, he mastered all. However, for the present, let us turn our attention from that which he accomplished and consider some of the potent factors in the molding of his life and character. The heredity, nationality and environment of Swedenborg contributed much towards fitting him for his life work.

The progenitors of Swedenborg were illustrious men; men such as Gustaf Vasa, Englebert and others. They were diligent, energetic, possessed of a great amount of physical endurance, and simplicity of mind. In Jesper Swedberg and his father we see these traits of character standing out more plainly than in any of their ancestors; and finally we see them culminate in Emanuel Swedenborg.

Jesper Swedberg came of the Darlecarlians, the staunchest of the Swedish nation. He was one of the few men of his time who had the courage to stand before the world and denounce the pernicious doctrine of faith alone. Indeed we see him at all times incorruptible, honest and humble, God-fearing, and commanding the respect of his king. He banished vanity and luxury from his home as base intruders, and took great care that his children should be educated in spiritual things.

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*Prepared for a celebration of Swedenborg's birthday, January, 1907.

Were we to look in upon this great man any evening we would find him with his family gathered about him at the fireside, there reading to them and conversing with them on the Word of God.

These are a few of the traits inherited by Swedenborg, showing how the Divine Providence manifested itself throughout the past ages, preparing for that great work which was to be given the world in seventeen hundred and forty-five. This, however, was not all that Swedenborg inherited. The effect that nationality had upon his character must also be considered. He was a Swede, and inherited from that nation the faculty of interior thought. Indeed it was this very faculty of interior thought that reached its highest perfection in Emanuel Swedenborg, and, perverted, made of the Swedish nation, as the Writings tell us, interiorly one of the worst in Europe. Perhaps no better illustration of the worst abuse of this faculty can be found than in Swedenborg's great contemporary, Charles XII, who bent every energy towards accomplishing his own ends. Here we see two great men standing side by side. One, the highest example of Heavenly influences coming to man; the other, an instance of its worst abuse. Swedenborg did not use this faculty for his own aggrandizement, but for the enlightenment of the world, and one need only glance at the works of this man to see how perfectly sincere and humble he really was.

Besides inheriting from the Swedish nation a mind that could think interiorly, Swedenborg also acquired from the Darlecarlians, their great love of freedom; for the Darlecarians were among the few people of Europe that had never been reduced to a state of slavery. They were a simple minded people fulfilling their duty in the mines of their province, digging for the mineral wealth of the world, and it is probably that from this love of delving for the precious metals beneath the earth that Swedenborg in after years was inspired to search for those spiritual treasures which the Lord gave him in such abundance.

These are a few of the causes—the effect was yet to come.

This inheritance of Swedenborg from his ancestors was like a mere seed which, though planted in good soil, might have perished from neglect. But the good qualities which it represented were yet to be influenced by his environments.

The environments of Swedenborg were different from those of other men. He was taught to read and meditate upon the Word of God; he was taught to renounce that false doctrine of faith alone which had devoured so many human souls. Here again we see the Divine forces at work implanting in this man remains that in after life were to be used by him so effectively; implanting in this fertile soil the seed, which, cultivated by study and perseverance and watered by the pure love of truth, grew and yielded fruit in abundance. Thus was the idea of one God so firmly implanted in the mind of Swedenborg while he was still a child, that in after years it never ceased to be inmostly in all his thought, whether in everyday life or the profoundest studies. The God of our universe foresees what environments will give man the greatest freedom and lead him to the greatest good which he is capable of receiving. Thus was he influenced by the environments of his early years. He was yet to travel in foreign countries, he was yet to come in contact with the great minds of his age. The results may be seen in the works he wrote prior to his illumination. His travels undoubtedly broadened his character and added much to the store of knowledge he had already acquired. His contact with men in the world at large gave him opportunities to see how few were willing to lay aside all idea of their own honor and seek the truth for the truth's sake, as by this means only could a true science of philosophy be established. Swedenborg sought truth for its own sake, and while giving us the results of his labors, he was being prepared for a greater use to mankind, that of Swedenborg the Revelator.

LINES ON ORIGIN AND DESTINY.

It has been said that a scientific age will produce no poetry, science seeking prose as its best expression. Nevertheless, the sublime facts of science may inspire minds to poetic utterance. The following verses possess a dignity of form as well as content, that warrant their appearing in a journal of philosophy.

F. S.

I.

Origin.

In the beginning, on that lonely morn,
Before the mountains and the hills were born,
Ere the revolving cycles wrought the birth
Of varied natures from the fertile earth,
Jehovah only was. The eternal Source
By which the wheeling planets shape their course;
In never-ending orbits on they move,
Impelled by constant inflow of His love.
His mighty love through many a force proceeds,
With attributes to meet creation's needs;
Impersonal, but with unfailing strength,
It gathers into substance-form at length,
Condensing into gaseous nebulæ
From which vast worlds have sprung, to circle free.

II.

Birth.

Have you ne'er seen, from mountain fastness high
A filmy cloud come floating thro' the sky,
And how it broods above some quiet stream,
Absorbing to itself a mist of steam?
'Tis so the spirit, seeking to be born
In some new sphere, on some clear-promised morn,
Takes up, to clothe upon its naked heart,

The substances best fitted for the part.
For matter is inert and without form
Until the spirit, palpitating, warm,
Doth seize upon it as it lieth prone
And mold it, plastic, to become its own.
Organic nature, if we see aright,
Is but a veil to shield the spirit's light.

III.

Death.

Death comes to all things, howsoever loath,—
Mutation is the law of Nature's growth;
Th' enduring rock itself at last shall yield
And, crumbling, perish to enrich the field.
Disintegration sets the atoms free
To find existence in a new degree.
The best may struggle onward and aspire,
Freed from the weight it rises higher.
Divine economy must know no loss,
Each separate element its level finds
For still no consciousness of ego binds—
No entity is carried as they cross.
As Natures strives to mount from plane to plane,
For spirit, as for substance, death is gain.

IV.

Destiny.

When life had gained its highest form in man,
The sense of self acknowledgment began.
The noblest beast, with instinct from its birth,
Has no conception that *he* walks the earth;
While man, of god-like mold, regarding aught,
Sees self in all his conscious, waking thought.
This held in common with naught else below,

Shall immortality on man bestow:—
Serene, sublime, if he may find the grace
To recognize his Maker, face to face,
For him there is no death,—a casting off
Of grossest fiber in the mortal slough,
A little sleep, a waking in the light,
A life of glory where there is no night.

MARIAM (MRS. W. S.) ADAMS.

Green Forest, Ark., October, 1906.

NOTE AND COMMENT.

THE NEW ENGLISH EDITION OF THE PRINCIPIA is now going through the press in London, so that we may shortly look for the announcement of its publication.

The *League Journal* for September of this year devotes the larger part of its space to an appreciation of Swedenborg's scientific and philosophical writings and of the work of the Swedenborg Scientific Association, including a sketch of the work being carried on in Sweden under the commission of the Royal Academy of Sciences. The number contains as frontispiece an excellent portrait of Swedenborg the Academician (1733), which was recently brought over to this country, and now hangs in the library of the Academy at Bryn Athyn, Pa.; also autograph portraits of Dr. Gustav Retzius and Prof. Max Neuburger. We welcome with grateful appreciation this valued co-operation of our contemporary in arousing interest in the important work we are aiming to accomplish.

The *Journal of Philosophy, Psychology and Scientific Methods,* in the number for October, contains a review of Dr. Sewall's *Reason in Belief: or Faith From an Age of Science,* recently published by Elliot Stock in London. The reviewer says: "The argument of the book is purely philosophical, rather than theological. . . . . It will appeal to the *thinkers* among scientists. On the rank and file, the gatherers and classifyers of facts and the specialists, it will make little impression. On the other hand, it will appeal to a large class of thinking men within the Christian Church who are perplexed as to the rationality of the Christian doctrine. For this it will have a classifying and helpful message. . . . The book is free from any polemical tone: its temper is sane and sweet, humane and philosophical."

"THE NEW NEBULAR THEORY." Students of Swedenborg's *Principia* will be interested in the "new theory of the formation of the planets," as set forth by G. E. Gore in *Knowledge and Scientific News* (London), and quoted in the *Literary Digest* of November 3d.

Thus Dr. Gore says:

"The idea that the planets were formed by the condensation of rings detached from a nebulous mass is a hypothesis for which we find no warrant in the heavens. Laplace's idea of a nebular hypothesis was probably suggested by a consideration of Saturn's rings. But modern researches on tidal action tend to show that this wonderful system was not originally formed as a ring left behind by Saturn during the progress of condensation from the nebulous stage. More probably the matter composing the rings was originally separated from the planet in one mass. . . .

"We see in the heavens numerous forms of nebulæ—spiral nebulæ, planetary nebulæ, etc.—but there is no real example of a ring nebula. Those which have been termed 'annular nebulæ' are most probably spiral nebulæ seen foreshortened. . . . To any one who still persists in maintaining the theory of ring formation in nebulæ it may be said that the whole heavens are against him." . . .

"Compelled, therefore, as we apparently are, to abandon Laplace's nebular hypothesis in its original form, are we, therefore, obliged to relinquish all attempts to explain the formation of suns and solar systems from the consolidation of gaseous matter? By no means. The heavens, which are clearly against Laplace's hypothesis, are strongly in favor of a new theory, a new cosmogony, which will probably stand the test of mathematical analysis. This is the evolution of suns and systems from spiral nebulæ. Of the half million nebulæ discovered with the Crossley reflector, a large proportion are spiral, and the study of these remarkable and interesting objects will probably form an important portion of the work of future astronomers.

"Laplace's original nebula was gaseous, and a gaseous spectrum shows bright lines. But the spectrum of the spiral nebulæ is *continuous*, indicating that they have partially consolidated from the gaseous state. We can, therefore, easily imagine that masses might be thrown off or detached from the parent mass by the centrifugal force of the rotation. This seems much more probable than the formation of rings from a highly tenuous nebula. . . .

"The new cosmogony will, of course, raise many very difficult questions in celestial mechanics, and will give a considerable amount of work to mathematical astronomers before it can be placed upon a satisfactory basis; but the work which has been already done by Chamberlin and Moulton shows clearly that the spiral theory is far superior to

Laplace's nebular hypothesis, which should now be definitely abandoned and consigned to the limbo of unproved theories."

In the account of Swedenborg's Astronomical Theories given in Tafel's *Swedenborg, the Philosopher,* p. 326, we find this account of the contrast existing between Swedenborg's nebular theory and that of Laplace:

"*The Distribution of Orbs into a Solar system.* According to the Swedenborgian Theory the planetary bodies originated near the solar equatorial surface by the disruption of a crustaceous belt as stated above, *i. e.,* the belt gyrating with the sun removes itself to a farther distance and by its removal becomes attenuated till it bursts and forms into larger and smaller globes, that is, forms planets and satellites." [See *Principia,* Part III., Chap. IV., n. 5.] After the disruption the crustaceous pieces, as planets, launched out and extended their excursions from the sun to various distances in the zodiacal plane of the great vortex or system. In this respect it differs from the Laplacian Hypothesis, which affirms that the planets have been left at their respective distances by the *contraction* of the solar mass which originally returned to the successive distances of those planetary orbits.

"Hence it follows, (says Swedenborg) that these bodies direct their course into the vortical current according to their magnitude and weight; that they continue more and more to elongate their distance from the sun until they arrive at their destined periphery or orbit in the solar vortex, where they are in equilibrium with the volume of the vortex." *Principia,* Part III., IV. 7.

The point of difference between the Laplace theory and new theory seems to be that the former was that of centripetal force or condensation; the latter that of the centrifugal force. Swedenborg's theory is always that of force acting from within outward, from centre to circumference: Laplace's is just the contrary. It is interesting to see the modern confirmations of this principle in Dr. Gore's statement that the idea that the planets were formed by the *condensation* of rings detached from the nebulous mass is an hypothesis which finds no warrant in the heavens, whereas we can easily imagine that masses might be thrown off or detached from the parent mass by the *centrifugal* force of the rotation.

The American Association for the Advancement of Science held its annual meeting at Columbia University, New York, during the holiday week, 1906-'07. The membership of the Association numbers some 5,000, and the attendance at the meeting, including the affiliated associations, reached about 1,500. While the Swedenborg Scientific Association is not as yet included the sections or the affiliations of this

vast body of American scientists, yet a number of members of our body are related through our affiliated body, the American Philosophical Association, on whose membership roll are Lewis F. Hite, Alfred H. Stroh and Frank Sewall, the two last being present at the New York meeting. Professor Hite in the meeting of the Philosophical Section read a paper on "Knowledge as Immediate Experience and a Function of Love," which led to an interesting discussion. Mr. Sewall replied to Prof. Hyslop's discussion of the value of Psychic Research, challenging the body so-called to produce any substantial or useful knowledge of "a spiritual world or a world of immortal personalities," through the mere study of thought transference and hypnotism, which phenomena are exhibited constantly by spirits inhabiting this world, and whose ability to read the thoughts of others enables the medium or revelator to practice all kinds of deceptions.

The annual address before the General Association dwelt on the refreshingly new topic of education in the light of the new science, and while it noticed some new phases in the changing of values of different branches, it failed to arrive at any principal as to what constitutes the real education, or the true method of arriving at it. The fact, however, that the American Association has created a new Section, L, on Education, is itself encouraging as showing a return to a better appreciation of the ideal state of knowledge. Professor William James, of Harvard, who presided over the session of the American Philosophical Association, played one of his neat jokes on the assembled sections of scientists and philosophers in advertising his subject as "Surplus Stores of Energy"—naturally leading the subtle inquirers who had followed Professor Ostwald in his new theory of *Energetics* last year to expect something further in this line; whereas the paper itself took up the strictly Swedenborgian theme of energy as will power, and these "stores of energy" as the ability of man to use his will much more than he does in special, strenuous and prolonged efforts to accomplish a desired end. Unhappily Professor James adduced as an example of this vast store of will-energy and power of control a poor Hindoo devotee of his acquaintance who had, by such strenuous effort to overcome the body, succeeded in becoming about as useless and of as little account to anybody but himself as a mortal could well be. The question of the use to which these stores of will should be applied was hardly touched upon.

Addresses of welcome were given by President Butler, of Columbia University, who, also with Mrs. Butler, received a vast number of guests at the reception in the beautiful Earl Hall on Thursday evening. On Saturday some 2,000 assembled to see the busts of distinguished American naturalists unveiled at the Museum of Natural History, and

the magnificent new buildings of the City College of New York were visited, and a luncheon was given there on Saturday. The new Byzantine chapel of Columbia University, soon to be dedicated, was open to visitors, and many admired its dignified and beautiful proportions and exquisite wood carving in the choir. The chapel gives religion a worthy domicile in the imposing quadrangle of classic structures.

The American Association will hold its next annual meeting in Chicago in the holiday week of 1907-1908. It was noticeable that in the Philosophical Association the majority of the papers were on topics more or less psychological rather than purely philosophical, while the psychological discussions verged so nearly on physiology that one reached almost a continuous degree of mind and body in place of the discrete degrees which Swedenborg assigns them. In this way it was felt, too, by some, that philosophy itself was being obscured and marred by its being brought into such close touch with the crude experiments of natural science. It was not surprising that the Psychological Association from being a merely affiliated association now, this year, has been made a full-fledged, or shall we rather say all-round-shod member of the Association for the Advancement of Science. That the same absorption of the Philosophical Association has not taken place will be regarded as a matter of congratulation by those who still maintain that a discrete degree exists between the sciences of matter and the sciences of mind. F. S.

AN APPEAL.

To the Members of the Swedenborg Scientific Association:

The Publication of the Scientific and Philosophical works of Swedenborg from the original MSS. and other documents, undertaken in Stockholm, by the Royal Swedish Academy of Sciences, with the co-operation of the Swedenborg Scientific Association, and under the editorship of Mr. Alfred H. Stroh, will begin with the issuing, in the near future, of the following volumes of the series, namely:

Vol. I. GEOLOGY.
Introduction by A. C. Nathorst.
Vol. II. CHEMISTRY, PHYSICS, MECHANICS.
Introduction by Svante Arrhenius.
Vol. III. COSMOLOGY.
Introduction by Svante Arrhenius.

These volumes will be followed by four others treating of the Brain and other topics included in Swedenborg's *Economy of the Animal Kingdom*, with introductions by Gustav Retzius and S. C. Henschen. The world-wide fame of these specialists in the various de-

partments of science who constitute the Committee of the Swedish Royal Academy, and who will write the introductions to the several volumes appertaining to their respective fields, will make this publication a memorable event in the history of science, and will challenge the attention and interest of all scientific bodies of high rank. The treatises themselves will be published in the original Latin, but the introductions will be in English, and will be of such interest, even to the layman of our own Association, as to fully warrant the price of the subscription for their own satisfaction.

The Price.

The volumes will be published by the Royal Academy in Stockholm, at $2.00 each, or $6.00 for the first Series of Three Volumes treating of the Physical World, and will be sold only by subscription at this price.

Free of Duty.

By arrangements with the Smithsonian Institution, at Washington, all copies subscribed for, whether by learned societies, librarians, universities, colleges or individuals in this country, (subscriptions being sent direct to the Royal Academy and not through any book-selling agency deriving a profit), will be imported free of duty and distributed free of expense, through the Smithsonian Institution, to the individual subscribers.

It is incumbent upon the members of the Association to secure as many subscribers as possible for the three volumes now in press, and thereby to increase the fund which shall enable the Royal Swedish Academy to carry on the work so nobly, generously and auspiciously begun. It will not be difficult for our individual members to find a grateful recipient and custodian of these important volumes in the public college libraries of their respective vicinities, and many will find satisfaction in having the works accessible in their own private collections.

Subscriptions or cash payments for one volume or the three now being issued, and also subscriptions and donations for the forth-coming volumes may be sent directly to

The Swedish Royal Academy of Sciences,
Care of Mr. Alfred H. Stroh,
Stockholm, Sweden.

Or to C. E. Doering, Treasurer of the Swedenborg Scientific Association, Bryn Athyn, Pa.

Or to the undersigned,

FRANK SEWALL, *President,*
1618 Riggs Place,
Washington, D. C.

THE NEW PHILOSOPHY.

VOL. X. APRIL, 1907. No. 2.

THE SENSES.

PART FOUR OF THE ANIMAL KINGDOM, BY EMANUEL SWEDENBORG.

CHAPTER V. (*Continued.*)

204. 25. *The general distinction between bones, which create harmony, induce harmony, affection and general mutation, under which the distinctions of the part are more perfectly perceived.* 1. These distinctions produce musical harmony. 2. From which a conclusion can be drawn as the harmony of the unities. 3. A similar harmony reigns in general, the rules of which we know. 4. In simultaneous tones is represented every successive harmony, for it is perceived as simultaneous. 5. Nor is it other than the form. 6. And the distinction is between quantities and qualities. 7. Or between degrees and moments: degrees have respect to quantities, moments to celerities. 8. We seek in particular that harmony which is of the whole volume. 9. Nature grasps it. 10. Art knows a few things; 11. and both together [nature and art] grasp it most perfectly. 12. This the fenestra ovalis into which all these harmonies, affections and mutations of state redound, distinctly re-presents. 13. These harmonies, etc., move the soul sensibly. 14. And they move the least fibers of the brain, which thus dispose the general state. 15. By means of the muscles, the ligaments, the ossicles, and especially by means of the stapes which coheres and is attached to it, [the fenestra ovalis], recedes or approaches, thus contracts or dilates. 16. The particular state concurs with the general, or that of the nerves (*filorum*) and fibres.

205. *Distinctions still finer, and their harmonies, affections and mutations of state, are also induced, which are within every unity of the unity, but which do not reach the perception of our mind.* 1. For which reason those ossicles have been invested with a very thin periostium. 2. The stapes is perforated, and is traversed by the ether. 3. And the fenestra consists of the most subtle nerves (*filis*). 4. The state is the best, if all degrees of the states rightly agree, and one represents itself in the other. 5. Then the alternation [of state] which becomes sensible, is most delightful for thereby latent affection is aroused.

206. 25[a]. *All these things are distinctly transferred into the fenestra ovalis, by the ossicles, and immediately by the stapes.* 1. The stapes can generally recede and approach. 2. It can bring in every state variously,—the thinner the membrane is, the greater capacity it has for more changes of state. 3. Not all the changes of state can be described, since successive changes are heard as simultaneous. 4. There are general, particular and most singular changes. 5. The most singular do not reach the consciousness of the mind, except generally as a kind of delight or undelight, the color of which we cannot give. 6. For an application to our state takes place,—we judge naturally by what agrees.

207. *The distinctions are also transferred by the periosteum of the cavity of the tympanum and by the air.* 1. They all produce one cause. 2. From a concurrence of concord, many distinctions effect the one cause more certainly. 3. Then also from concurrence they produce harmony, affection, and mutation of state of various degrees. 4. For they constitute one series.

208. *It happens in the fenestra ovalis as in the air, namely, that there is a local motion [which] goes forth into conatus, and thus propagates the modification.* 1. The pulse is the local motion. 2. Thence there is an alternate tension and relaxation. 3. The one and the other membrane separate and come together in the circumference. 4. This is alternate local

motion, or loco-motive pulse. 5. The air itself also requires this and connects the cause, by contiguity, or in the air, and by continuity, or in the membrane.

209. *From this pulse the tremor is transferred into the continuous bone which is at the circumference, and indeed instantly.* 1. Thus the very distinction of the unity is transferred into the osseous substance. 2. Wherefore also it is transferred into the continuous air. 3. This is the general of this degree; every degree has its own general. 4. This general is propagated still more widely than the other general, into the cavity of the tympanum; for the more pure and subtle it is the more widely it is diffused. 5. Thus it is sent into the cranium, the meninges, the pia mater, the nerves, etc. 6. Thus through the pulse and the local motion, it emulates the air.

210. *From this pulse and the vibration of the fenestra, all this now distinct modification is communicated by the stapes to the interior membrane of the fenestra, wherefore also to the periosteum of the labyrinth.* 1. This is communicated as well by the slight tremor of the intermediate bone, 2. as by the attachment of the circumference; 3. and of the whole plane. 4. For there is a continuous exterior membrane of the cavity of the tympanum; the other membrane is continuous with the labyrinth. 5. There can be no distinct transferrence of the tremor without the stapes except an indistinct one.

211. 26. *Every distinction therefore, and the like, returns into the whole periosteum of the labyrinth, or of the vestibule or semicircular canals, and of the cochlea.* 1. Therefore the fenestra ovalis is the first and principal thing of all these from which a distinct modification returns, and is scattered around. 2. Such as it is in the fenestra ovalis such is it when diffused through the whole. 3. The very figure, form, connection and continuation, yea the position urges this; thence the [modification] flows forth the same in all directions. 4. Wherefore the periosteum is continued to the canals and to the cochlea, as will be seen.

(To be continued.)

THE PUBLICATION OF SWEDENBORG'S SCIENTIFIC TEXTS AND RESEARCH WORK ON SWEDENBORGIANA AT STOCKHOLM AND UPSALA.

Rev. Frank Sewall, M. A., D. D., President of the Swedenborg Scientific Association:

In a communication sent you three months ago and published in the January *New Philosophy,* I briefly described the inception and progress of the work on Swedenborg's MSS., etc., which has been in hand since 1902 under the auspices of the Swedenborg Scientific Association and the Royal Swedish Academy of Sciences through its Swedenborg Committee.* I shall now communicate some additional information concerning the progress of the printing of Swedenborg's texts and concerning some interesting researches at Stockholm and Upsala.

As stated in the *New Philosophy* and in the *New Church League Journal* for January, the edition of Swedenborg's

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*After consultation with Professor Gustaf Retzius the following particulars may here be added in amplification and correction of information already in print concerning the history of the inception and progress of the work in charge of the Swedenborg Committee. After the examinations of the MSS. and printed works of Swedenborg made by Professor Retzius and myself in the autumn of 1902, there was no plan to publish even as late as November 23d, when at a private meeting of a number of scientists Professor Retzius remarked that a statue of Swedenborg ought to be erected in Stockholm. At this meeting some of Swedenborg's works were on exhibition, and the *Principia* in the original edition with its remarkable plates of the solar chaos was the subject of special interest and discussion. After this meeting rapid progress was made, and on December 11th Professor Retzius made the proposal in the Academy of Sciences that the Swedenborg Committee be appointed. The Committee reported favorably on April 8th, 1903, and the printing was then begun, starting with the *Lesser Principia,* although the plan for the edition was completed subsequently and considerably modified and extended from time to time. When I returned to America in the autumn of 1903 the work of editing was continued

scientific texts to be issued by the Royal Swedish Academy of Sciences is planned to contain seven volumes, the first three comprising Swedenborg's contributions to Geology, Chemistry, Mechanics, Physics and Cosmology, the remaining four his contributions on Anatomy and Physiology. Among various additional materials for the volumes are Swedenborg's scientific correspondence for Vol. I., and a *Chronological List of Swedenborg's Manuscripts and Printed Texts,* to be printed in separate form as an Appendix to Vol. I., and to contain not only all the MSS. and original printed texts as referred to in the Rev. James Hyde's recently published *Bibliography,* a very pains-taking and valuable work, but also a number of works by Swedenborg in manuscript and print not there referred to. The volumes of the edition will also contain Introductions in English by the members of the Swedenborg Committee and Historical and Textual Notes by the editor. For the sake of convenient reference to a given entry in all the volumes a *General Index* will be added when the printing of the texts is completed, instead of scattering the references to a single subject through the seven volumes. This will also permit of a chronological arrangement of the references under each subject. The printing of the letters in Vol. I. is now nearly completed, the concluding portion of Vol. II. is well advanced, and the texts for Vol. III. are completed. A *Circular* concerning the publication of the edition and especially of those three volumes will soon be distributed, and subscribers may in the meantime address their subscriptions to the President of the Swedenborg Scientific Association, the Rev. Frank

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by means of the mails, and a visit to Sweden in the summer of 1905. The plan for my return to Sweden and residence here until the work shall be completed was formed in America, not as the result of a direct request from Professor Retzius, but on the formal invitation of the Treasurer of the Swedenborg Scientific Association, the Rev. Charles E. Doering, although Professor Retzius has frequently welcomed me back to Sweden and sustained the printing and researches in the most hearty and liberal manner.

Sewall, 1618 Riggs Place, Washington, D. C., or to the Treasurer of the Association, the Rev. Charles E. Doering, Bryn Athyn, Pennsylvania, or to the undersigned at the address given below. The price per volume for Vols. I. to III. is two dollars, or six dollars for the set of three volumes, as already announced. The volumes will be delivered to subscribers in America free of further charge.

In my former communication mention was made of a plan to make plates of the texts now being printed, to facilitate the proposed future edition of the *Opera Omnia* of Swedenborg's texts. This plan has met with such encouragement that there are strong hopes of its realization. Mention was also made of the publication of all original documents by or concerning Swedenborg in the *Swedenborg Archives,* and in the same connection of a complete *Bibliography of Swedenborgiana in Scandinavia,* to contain not only references to all manuscripts and publications as referred to in Tafel's *Documents,* Odhner's *Annals,* and Hyde's *Bibliography,* but also many additional references. These projects have received much encouragement, and Professor Gustaf Retzius has authorized the copying of all documents or by concerning Swedenborg for deposit in the Library of the Royal Swedish Academy of Sciences, while Commodore O. W. Nordenskjoeld has made a generous contribution for the *Archives* and *Bibliography.* Never before have the prospects of success in the publication of Swedenborg's works and documents and of historical information concerning him been so bright as now. In the ordinary course of things, a strong flood of light will be thrown upon these relics of the "Aristotle of the North" during the next few years, and new chapters will be written in the scientific history of Sweden and in the history of philosophy.

It may be of value to describe in some detail the contents of the three volumes, the printing of which is now nearly completed. *Vol I.* will contain a general *Preface* for the edition as a whole, by Professor Gustaf Retzius, President of the Swedenborg Committee, describing the history of the Committee's

work and the plan of the edition. Then will follow the *Introduction* by Professor Alfred G. Nathorst on Swedenborg's contributions to Geology. After these introductions, which it should be observed are in English, follow the Swedish and Latin texts by Swedenborg, treating for the most part of geological subjects, the longest one being the *Miscellanea Observata.* Then come about ninety letters of Swedenborg's scientific correspondence, including not only his own letters, but those of Polhem, Eric Benzelius, and others. Most of these letters have never been published in the original, and as the English translations are incomplete and inaccurate, the original text will be welcomed by students with special interest. After the *Letters* come the *Historical and Textual Notes* by the editor, in English, and, as a separate publication in the form of an Appendix, a *Chronological List of Swedenborg's Manuscripts and Printed Texts. Vol. II.* will comprise an *Introduction* by Professor Svante Arrhenius on Swedenborg's Chemistry and Physics; the *Prodromus Principiorum Rerum Naturalium,* usually referred to in English as Swedenborg's *Chemistry;* all the other little works published by Swedenborg at Amsterdam in 1721 at the same time as the *Prodromus;* the *Dædalus Hyperboreus* and a collection of short works and papers from 1715 to 1722, and the *Historical and Textual Notes. Vol. III.* will contain an *Introduction* by Professor Svante Arrhenius on Swedenborg's Cosmology; the second or *Lesser Principia;* Part III. of the "larger" *Principia* of 1734, and other cosmological contributions, and the *Historical and Textual Notes.* Each volume will fill about 400 pages and will contain a number of figures or illustrations, some of them never before published. Vols. I. to III. will give the most complete view of Swedenborg's philosophy of the physical world ever furnished. Vols. IV. to VII. are planned to contains Swedenborg's works on the Brain and his most important contributions to anatomy and physiology, including the *Œconomia Regni Animalis* and the *Regnum Animale.* Swedenborg's own valuable unpublished *Indexes* to the

latter two works will be included, and when the edition is completed a *General Index* of all the volumes will be added.

Besides the research work on the manuscripts of Swedenborg, and other documents relating to them, in Stockholm, researches have also been carried on at Upsala in the library of the "nation" in which Swedenborg was a student two hundred years ago, and in the University Library "Carolina Rediviva," concerning the student life of Swedenborg's time and the history of the University during that period. The results of these researches, when added to those made in Scandinavia and other parts of Europe since 1902, furnish a very considerable body of new doctumentary information concerning Swedenborg's personal and literary biography which, it is hoped can be reported in full in the *Swedenborg Archives*. In the Royal Library at Stockholm I was so fortunate as to discover a few weeks ago, an old printed catalogue of the large library in Swedenborg's possession at his death; there were over five hundred volumes in the ancient and modern languages, on scientific, philosophical, historical, and theological subjects, evidently the accumulation of a lifetime, made in the course of Swedenborg's extensive travels and studies. A new light has also been thrown on Swedenborg's university life and philosophical antecedents by the investigation of the fierce "Cartesian Controversy" which raged at Upsala during the latter half of the seventeenth century, just before Swedenborg's student life from 1699 to 1709, between the Aristotelians and the Cartesians. The issue resulted in a great victory for the Cartesians, the establishment of greater freedom of thought, and a new era of scientific and philosophical thought in Upsala and Sweden. I hope to present a more detailed account of these researches in some *Notes on Old and New Swedenborgiana* for the next *New Philosophy* and in a paper for the next Annual Meeting of the Association.

A number of new manuscripts by Swedenborg have recently been brought to light in the Archives of the House of Nobles and in the Library of the Royal Swedish Academy of Sciences,

and some clues have been found of additional new manuscripts. The Academy of the New Church has recently made a generous contribution which will enable me to extend the researches in Sweden, and Professor Retzius has also furnished the means for a journey of investigation to Russia, Poland and North Germany, the immediate reason being the discovery of some new manuscript letters by Swedenborg in Russia. I shall also take the opportunity to search for new Swedenborgiana in the libraries at St. Petersburg, Koenigsberg and elsewhere.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences, Stockholm, Sweden, April, 1907.

NOTES ON OLD AND NEW SWEDENBORGIANA.

BY ALFRED H. STROH.

New Manuscripts by Swedenborg Found at Stockholm.

After the preliminary investigations of 1902-1903, and of 1905, which resulted in the finding of a number of manuscripts and printed works by Swedenborg in the libraries of Sweden and at Greifswald in Germany, I have again taken up the research work for new Swedenborgiana here in Stockholm, and hope to extend the work in various directions both in Sweden and outside of it. The Archives of the House of Nobles have yielded four new manuscripts in Swedenborg's handwriting concerning the geneology of the Swedenborg family, and my attention was also directed to the original manuscript paper on the inlaying of marble slabs, which Swedenborg read before the Royal Swedish Academy of Sciences, and which was published in the *Proceedings* for 1763. There are considerable differences between the MS. and the printed paper. New information concerning some unknown memorials by Sweden-

borg has also been lately secured at the State Archives. There are many references to Swedenborg in the unprinted *Minutes* of the Royal Swedish Academy of Sciences, which I am now carefully examining. It was pointed out several years ago by the Rev. C. Th. Odhner that the *Minutes* record the proposal by Linnæus in 1740 of Swedenborg for membership.

Swedenborg's Connections with Universities, Learned Societies and Libraries.

After researches at Upsala University in 1903 concerning Swedenborg's studies at the University and his connection with the Scientific Society at Upsala, reported in part in *New Philosophy* and *New Church Life,* I inspected in 1905 the autograph of Swedenborg, written in 1712, in the Visitors' Album at the Bodleian, Oxford, and also received a type-written copy from the Royal Librarian Dahlgren, Stockholm, of a fragment of a diary by Anders Hesselius, in which he mentions in 1712 that Emanuel Swedberg had left for Oxford. Hesselius was on the point of leaving for Pennsylvania from London, and had met Swedenborg there. It is not clear whether Swedenborg did much work at Oxford; probably he visited the venerable University just as he visited many others on the continent. At Greifswald he remained for some time on his return to Sweden in 1714, printing some small works. Later on Swedenborg made use of the Library at Leyden University, and that he was active in making additions to the Library of Upsala is plain from his numerous letters to his brother-in-law, Eric Benzelius, the Librarian. It was in the home of this great scholar that Swedenborg spent his days while studying at the University of Upsala, and that Benzelius greatly influenced the studies of the young student and directed his path into the field of natural sciences is plain from many evidences. Benzelius was the chief founder of the Scientific Society of Upsala, with which Swedenborg was also connected from the beginning. Many years later Swedenborg was elected to membership in the Acade-

mies of St. Petersburg and Stockholm. It has been stated that Swedenborg was a fellow of the Royal Society of London, but my researches at the headquarters of the Society at Burlington House in 1905 did not confirm this. Some of the works presented by Swedenborg to the Royal Society have unfortunately passed from its possession by auction. The Library of Linnæus is preserved at the headquarters of the Linnean Society, Burlington House, and among the books are some of Swedenborg's works. Some of the books have in recent years been returned to Sweden. In passing it may be noticed that the earliest autograph of Swedenborg is written in a scientific tract from the library of Linnæus, and now in the Library of the Royal Swedish Academy of Sciences.

The "Cartesian Controversy" at Upsala.

The general trend of Swedenborg's studies at the University of Upsala, in the Philosophical Faculty, were undoubtedly deeply influenced by a fierce controversy which occurred during the latter half of the seventeenth century between the Aristotelians and Cartesians at Upsala. The Aristotelians were strong in the Faculty of Theology, while the Cartesians drew their support from the Faculties of Medicine and Philosophy, and also from the Faculty of Law. The philosophy of the University, founded 1477, had been Aristotelian except for the ruffle caused by the anti-Aristotelian movement of Ramism, but not long after the death of Descartes at Stockholm in 1650 a violent controversy broke out at Upsala which is referred to as the "Cartesian Controversy." It is not clear whether Descartes himself had any connection with the great upheaval, although in 1652 Queen Christina ordered that no priest should receive a professorship in the Faculty of Philosophy. In any case there was a clear cut issue between the new revolutionary mechanical theories of Descartes and the old metaphysical philosophy of Aristotle. The theologians finally carried the controversy to the House of the Clergy and the King, Charles

XI., the result being a great victory for the Cartesians. As a consequence, the philosophical atmosphere at Upsala was greatly changed just before Swedenborg's entry from 1699 to 1709, and this no doubt explains the remarkable similarity of Swedenborg's physical theories to those of Descartes.

Stockholm, April, 1907.

TWO NEW LETTERS BY SWEDENBORG AND POLHEM.*

The Scientific Society of Upsala† had its first beginnings in 1710, the founders being Eric Benzelius and some of the Professors of the University, while Swedenborg, absent in England, communicated with individual members and later on forwarded a number of communications which were read at the meetings of the Society, as appears from its Archives and from Swedenborg's scientific correspondence. It does not appear that Dr. R. L. Tafel had access to the Society's Archives, and the two letters which here appear for the first time in English are not contained in the *Documents concerning Swedenborg* edited by Dr. Tafel. The Society underwent a number of reorganizations, which explains the fact that although both Swedenborg and Polhem had been connected with it for years they accepted invitations to become members as late as 1728 and 1729.

Emanuel Swedenborg to Anders Celsius, Secretary of the Scientific Society of Upsala.

Most learned Secretary!

I had the honor of receiving by the last post a kind invitation to become a member of the Literary and Scientific Society, for which I should render humble thanks to the Royal Society, but as I suppose that this may be done by the Secretary, my most

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*Translated by Alfred H. Stroh from the original Swedish, *Nya Kyrkans Haerold,* Stockholm, July-August, 1903, pp. 112-115.

†Cf. *Swedenborg and the Scientific Society of Upsala, New Philosophy,* Oct., 1905, pp. 298-299.

submissive wish is, that the Secretary would be pleased to report my thanks for me, giving assurance that I for my part will not neglect to supply the Royal Society with such things as my slight experience can produce, which can afterwards be subjected to the more mature examination of the Royal Society as to whether it merits being published in the *Acta* or not. I have now for ten years collected everything which serves for the explanation of metals and the mineral kingdom, and am now thinking of beginning in a few weeks to put the collection and extracts in order and afterwards let them be printed abroad, but before I send away such material I wish to first have the honor of communicating the same, in order that that may be selected from it which may perhaps serve to be put in the *Acta;* the work referred to will be pretty extended, which may be seen from a specimen which I may have the honor of sending over during the winter, which concerns iron and the methods of working it, together with all other observations which have been made concerning the same metal by various persons. If life permit I also think of making use of such a collection, and in consequence of it to show forth principles of the Nature *expriori* and *posteriori,* (*expriori et posteriori principia Naturae*), on which occasion I suppose that I shall have found one thing or another which concerns the working of the magnet and similar matters.

As soon as I have some leisure time, I wish to write out what I have collected on pure copper as well as concerning the precipitations by which copper has been obtained in several Swedish mines, with one thing or another concerning these matters which is not yet known to the learned world, together with observations which have been made with the water of the precipitations at Fahlun, by which the iron of the same mine is changed into copper.

I remain, always, now and hereafter, the most learned Secretary's most obedient servant,

EM: SWEDENBORG.

Stockholm, Nov. 27, 1729.

Christopher Polhem to the Scientific Society of Upsala.

Most revered, reverend, well-born, noble, and learned joint members of the Library and Scientific Society!

The great honor and good attention which the Library and Scientific Society has been pleased to show and cherish for me, by honoring me with membership in their newly established Society of learning, this I acknowledge with most dutiful reverence and thanks, hoping that God's indulgent blessing will prosper their good work, to the honor of his name, as an ornament and advantage to the fatherland, and to the pleasure and honor of the members.

I congratulate the members of the Society, who have already been assured of receiving so great and noble a man for President, who, next to the Society, which is so fine an ornament, would appear greatly to contribute to the work which in the future will produce that fruit as to which other nations are so diligent, and which has the effect that their countries increase daily in wealth, power and authority; I mean the arts and sciences, which can support and maintain more persons than could the land's rude products alone.

I also congratulate myself that I have been permitted to live to the time when I may see the seed for the fruit which will probably put the fatherland in a good condition in the future, although Mars, Mode, Monopoly and Misuse have worked so diligently against it; but I regret that my declining years should be so near at hand that I now can not perform the services, by means of travels and investigations of nature, which it is incumbent upon absent members to perform. Therefore, if I have leave, I wish to have recommended the Mineral-surveyor Wallerius, who has the best opportunities with such matters in these parts; likewise the Assessor Swedenborg, the capacity and skill of both of whom I long ago observed, during the time when I had the honor of being acquainted with them in my humble house. They will I suppose be so much

the more disposed to this as their natural inclinations and curiosity strive towards such things. I shall also not neglect to contribute what my humble fortune will permit, especially for a beginning which the learned abroad would rather desire, such as knowledge concerning the constitution of our seas, marshes, and dams, with their ices, rifts, openings in the ice, whirl-pools, etc.; also about the brightly shining mountain fires, which are seen from time to time, concerning * * * weatherings of the ground, and the other things concerning which it would be interesting to obtain a correct physical knowledge, for the improvement of philosophy.

In connection with the points transmitted regarding the Society's organization, I have nothing to remark, after they have already been so well and masterly considered.

I have the honor to recommend myself to the Society's continued favor and good consideration, and remain,

the Literary and Scientific Society's
most obedient servant,
CHRISTOPHER POLHEM.

Stiernsund, April 17, 1728.

REVIEWS.

THE PHILOSOPHY OF CREATION.*

Whoever enables his fellowman to view the multitudinous and fascinating facts of science in the light of true philosophy, performs an inestimable service to mankind.

The false, irrational theology of the past, blinding men to the truths of the Christian religion, and keeping them in bond-

*THE PHILOSOPHY OF CREATION. *The System of Physiology from the Standpoint of the Christian and the Word.* By George Henry Dole, Author of "Divine Selection, or Survival of the Useful," etc. New York: The New Church Board of Publication, 3 West Twenty-ninth Street. xvi + 379 pp.

age to itself, intolerant of any independent investigation of theological truth, constantly opposed likewise the search for truth in the domain of science. The resultant mutual antagonism of theology and science has strangely led to a divorce of the two, whereas the world and its laws are most certainly of God, are expositions of His nature and must, inevitably, be recognized by theology. The truly wise scientific investigator rejoices together with the humble theologian, to see the Infinity, the Love, the Intelligence, and the Power of God reflected in all the work of His hands, even the outermost and most material. No man can be a thorough worshiper of God if his natural science be not under the sway of his Divinely enlightened reason.

And yet the fact that science can occupy a ground by itself, and theology another, is an indication of the discreteness existing between the two. It is one of the properties of discrete degrees that each can exist apparently disconnected from those above it, when in reality such is not the case. Science unless in subordination to reason, and this to the spiritual, and this again to the celestial, runs riot. On the other hand, reason cannot be formed without science, neither can the spiritual without reason, nor the celestial without the spiritual.

Science, bringing us the facts of God's ultimate creation, is absolutely essential to the formation of man's intellect.

But that is a mistaken and false intelligence and wisdom which does not acknowledge the Divine, but nature only; for in this case man thinks only from the senses of the body, and such a man is sensuous and not truly learned, whatever his reputation to the contrary may be.

It is a fundamental principle of Swedenborg's profound philosophy that the facts of science, entering the mind as so many specific knowledges, are arranged in the mind in accordance with one's attitude toward the Divine. Where there is a true acknowledgment of God and of heaven, there the knowledges are arranged in the order and form of heaven, and thus receptive of the light of truth. Thus by the higher inflowing

into and acting upon the lower is the intermediate—the reason —formed.

A mind is clear, luminous and perceptive, according to the abundance of his science and the orderliness of the arrangement of its details. But where there is no recognition of God, the facts of science are arranged in the mind in an inverted order, which Swedenborg speaks of as the form of hell, which shuts out the light of heaven, or Divine Truth, though possessing a seeming light of its own, which he likens to the light possessed by certain nocturnal animals and birds to whom sunlight is darkness and darkness is light.

The cultivation of the natural sciences, when carried on in due recognition of their exalted purpose in the Divine economy, is therefore an essential in the formation of the truly human character. Indeed Swedenborg lays stress on the fact that without his own training as a scientist and philosopher, he could not have served his Lord and Master Jesus Christ as a Theologian. And of the "Angelic Wisdom respecting the Divine Love and the Divine Wisdom," he says, in effect, that it was written and published because "the angels lamented before the Lord, that while they look into the world, they see . . . among men about . . . the creation of nature no science upon which their wisdom might rest."

The book before us takes this view of science as paving the way for the true philosophy of life whose highest attainment is the recognition, love, and worship of God; and so is very beautifully and appropriately entitled, "The Philosophy of Creation: the System of Philosophy *from the Standpoint of the Christian and the Word.*"

Among its excellencies we especially note in the first place that it brings Swedenborg's philosophy within the range of the general reader, and in the second, that it applies this philosophy to the science of the present day. These are valuable features in view of the vast accumulation of scientific facts since Swedenborg's day, and the theories that have meanwhile been built up upon them. The book will prove very helpful to

the busy man who has not the time to enter exhaustively into present-day problems.

In the precursor to this volume, the very readable little book, entitled "Divine Selection; or, The Survival of the Useful," the author had challenged the world of modern science by announcing the law of use as governing the creation, existence, and development of Nature. This larger work begins with a rapid review of the theories of creation; then analyzes the doctrine of evolution, summarizing his earlier treatment of the subject; defines the relation of science and religion; devotes a chapter to Revelation; treats in a profoundly philosophic, yet clearly understood manner, of the Creator; recognizes the necessity of discrete degrees in creation and sustentation; tells of the design and structure both of body and soul, and their sensation; describes and explains the various natural forces and their relations; treats of the organism of plants and animals, as also of the creation of the first living forms; explains the law of correspondence and influx; and after dwelling on the human form and the development and destiny of man, arrives at the climax of his reasoning, in the closing chapter on "The Assumption of the Human and the Glorification of the Lord,"—a subject that no strictly so-called scientific mind of the day would probably touch, but one which, nevertheless, involves the whole philosophy of nature's being and existence.

He is a firm believer in the axiom of Revelation, that "In the beginning was the Word, and the Word was with God, and the Word was God. All things were made by Him, and without Him was not anything made that was made. In Him was Life." And though very far from accepting the Scriptures in a literal sense, such as the description, in Genesis, of the creation of the world, as setting forth in fact the process of the creation of the material universe, he nevertheless holds fast, throughout his book, to the postulates that there can be no creation without a Creator, and He the Divine Man; and that the Creator reaches down into His creation by a wonderful

chain of successive adaptations and envelopments of Himself, which, in consonance with Swedenborg's nomenclature, he calls discrete degrees.

This subject of discrete degrees is particularly prominent in his work, since, without it, the whole subject of creation cannot be understood. So important is it, that the only illustrations in the book are diagrams designed to make this subject clear to the apprehension of every reader.

We meet it at the very outset. In contrast to the prevailing theory that primordial substance possessed an inherent power of evolution, is the recognition that Life and matter are distinct and inconvertible. God is life, and never parts with it. Matter is dead. God possesses power; matter none. God constantly acts upon matter and inflows into it shaping it to its end; matter cannot act of itself.

This universal discreteness between Life, or God, on the one hand, and nature on the other, resolves itself into many steps, or planes, or degrees.

There is an immense step between God and the world of matter. Between the two and quite distinct from either is the world of spirit. Again there are degrees in this spiritual world, and in the natural world, nor can there ever be a leveling of these steps. They are absolutely fixed, the lower being always subordinate to the higher; less perfect, less responsive to higher influences, grosser. Life, which, in absolute form, is only in the Creator, streams into the various discrete planes of creation, successively from highest to lowest, presenting on each successive plane the phenomena peculiar to it.

Examples of such discreteness are to be found in the phenomenon of sound, which is a property of the air, as contrasted with color which is proper to the ether. The two atmospheres air and ether are discrete: so are its phenomena. Gravity is a phenomenon of a still higher atmosphere,—the aura. The greater and less perfection of various kinds of animals, is due to their being embodiments of one or more of these degrees.

And yet, it is owing to this very discreteness, that the whole

creation, spiritual and natural, presents a unity of plan, a harmonious correlation and subordination of parts, of which the human body, the most perfect masterpiece of physical creation is the arch type. The soul of the whole cosmos being the Lord.

It would lead us too far to enter into the details of the author's presentation. Sufficient if we have so whetted the appetite of the reader that he will procure the book for himself.

E. J. E. S

BIBLIOGRAPHY OF SWEDENBORG'S WRITINGS.*

At this time, when interest in Swedenborg and his writings is more active and widespread than ever before, a bibliography of those writings is more than welcome. The handsome volume of 743 pages compiled by the Rev. James Hyde and recently published by the Swedenborg Society of London, furnishes an almost complete list of the literary productions of Emanuel Swedenborg, from the poem written by him as a boy of twelve to the manuscript he left unfinished when he was called to his mission in the other life.

We glean from the preface that this work was nine years in the making, and involved the examination of fifty public and private libraries, both in Europe and this country, and the files of sixty periodicals. "As in other works of the same kind," he writes, "no pretense of finality and absolute completeness is put forth." But the omissions are comparatively few, consisting principally of a few editions of the theological works and of manuscripts brought to light by the researches of Mr. Alfred H. Stroh, some of which have been translated and published in *The New Philosophy* since the *Bibliography* went to press.

**A Bibliography of the Works of Emanuel Swedenborg, Original and Translated.* By the Rev. James Hyde. The Swedenborg Society (Instituted 1810), 1 Bloomsbury street, London, 1906. 743 pages.

The author has performed his task with the most careful attention to detail. If the original manuscript has been preserved, it is described and its place of custody noted. Then an exhaustive description is given of photolithographic reproductions, original editions, reprints, translations and various editions of translations, and whenever possible the names of the translator or revisor, the number of copies printed and the library nearest to London where a copy of the particular edition may be found, unless it is in the library of the Swedenborg Society. Many interesting facts are brought out by the *Bibliography,* as, for instance, that the *Animal Kingdom* was translated into French by J. P. Moet. However, the manuscript in three volumes was purchased by J. A. Tulk, and its whereabouts are now unknown.

The work will supplement Tafel's *Documents,* because it gives a more complete bibliography, and Odhner's *Annals,* because it is brought up to date. It will be an invaluable aid to the student of Swedenborg, not only because of its completeness and accuracy, but also because its subject matter is arranged in chronological order, thus enabling the investigator to trace the development of Swedenborg's mind from boyhood up to the climax of his scientific and philosophical career, when he passed over into the domain of theology, for which all his previous studies had been but the preparation. No doubt in years to come, fragments, letters and smaller manuscripts, besides those already known to have been lost, will come to light. These may be readily added to the *Bibliography,* to complete and round out the material for such a study.

H. F.

NOTE AND COMMENT.

In the nine items published in a recent number of *Science* under the heading of "University and Educational News," four are devoted to the amount of donations received, one to a professorship for rent, three to personal news or statistics, and not one to the mention of any contribution to knowledge from the institutions named. Educational progress seems to be largely identified with educational endowments.

In the Patent Office at Washington is a book on "The Development of the Mercurial Air Pump: by Silvanus P. Thompson." Of the upward driving pump, he says: "It was invented by Emanuel Swedenborg, the famous theosophist, and is described in his *Miscellanea* published in 1722." A description follows with picture, and concludes with the words: "Swedenborg's instructions are precise." The author says that sixty years elapsed before another form of mercurial air pump was devised.

The two hundredth anniversary of the birth of Carl von Linnæus, the "Father of Botany," will be celebrated at Upsala, May 24th. The Smithsonian Institution has recently received an invitation from the University there to send representatives to take part in the ceremonies. It is printed in Latin upon a double sheet of parchment. The cover is ornamented with a handsome design in colors and a picture of the Botanical Institute of Upsala. No doubt similar invitations have been sent to other scientific societies and institutions in this country and in Europe. Scientists the world over, recognize Linnæus as the greatest botanist who ever lived. Those who are especially interested in Swedenborg will remember Linnæus as having proposed the latter to membership in the Swedish Royal Academy, although according to Dr. Tafel, they never met, personally. No doubt Linnæus was more or less familiar with Swedenborg's writings, for several of them were found in his library after his death. (See pages 170-1 of this issue.)

Swedenborg's work on *Tremulation* receives the following tribute: "I purchased Swedenborg's work on *Treumlation* for the purpose of learning about vibrations of which we hear so much. You will find

instruments for vibratory massage in many doctors' offices, and in sanitariums. Swedenborg has a fuller explanation than we find in most of the later works." (From a letter by Dr. Emil Theilman, of Kansas City, Mo., to Rev. Laudenberger.)

It is reported that Swedenborg's body, which now lies beneath the little Swedish church at Princess Square, London, will be removed to the Swedish capital, and buried beside the remains of Benzelius. This would be a fitting, though belated tribute, to one of Sweden's most illustrious subjects.

The Swedenborg lectures by the Rev. John Whitehead are awakening considerable interest in the localities in which they are being delivered. The series given at Sheaf's Hall, Boston, last winter is now attracting large audiences to Small Hall, Y. M. C. A. Gymnasium, Nashua, N. H. Mr. Whitehead also proposes to lecture in Sheaf's Hall, May 5th, 12th and 26th, and June 2nd, on "The Philosophy of Christian Science, as Viewed from the Philosophy of Swedenborg."

The teaching of Swedenborg that *use* determines the structure of an organ or viscus, and the quality of its secretions, is very aptly confirmed by the following from *Revue Scientifique:** "The influence of the perceptions on the saliva has been clearly shown by the experiments of Malloizel and Victor Henri, who have studied directly in the dog, the secretion of the submaxillary gland. The sight of food was found to provoke even a more abundant secretion than its ingestion; and, curiously enough, the nature of the saliva is adapted not only to the kind of food taken into the mouth, but even to the element perceived, when its nature is not unknown to the animal. The sight of salt provokes a clear, liquid secretion, while with meat there is obtained a very viscous, thick liquid. And not even perception is necessary. A pure mental image provoked by association will suffice. . . . Pavlow has made special experiments on the stomach. The odor of food also provokes a secretion there. He has also studied the influence of taste by an ingenious device, . . . and has proved that when a dog swallows small pebbles, salt, balls of starch or an acid liquid, the glands of the stomach remain at rest, while, when meat or sugar is given to it, an immediate flow of secretion is evident."

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*See *Literary Digest,* Vol. XXIX, p. 757.

THE TENTH ANNUAL MEETING OF THE SWEDENBORG SCIENTIFIC ASSOCIATION will be held in the Sunday School rooms of the Philadelphia Society of the New Church, 22nd and Chestnut streets, Philadelphia, Pa., May 23rd, 1907.

9:30 A. M. Meeting of the Board of Directors.

10:00 A. M. Meeting of the Association.

12:00 A. M. President's address.

3:00 P. M. Paper by Rev. C. Th. Odhner: A plan for revising the numbering of Swedenborg's scientific works.

Paper by Mr. Alfred H. Stroh: Swedenborg's Philosophical Antecedents.

REGINALD W. BROWN,
Secretary.

By order of the President.

THE NEW PHILOSOPHY.

VOL. X. JULY, 1907. No. 3.

TRANSACTIONS

OF THE

TENTH ANNUAL MEETING

OF THE

SWEDENBORG SCIENTIFIC ASSOCIATION

The Tenth Annual Meeting of the *Swedenborg Scientific Association* was held at the Sunday School Rooms of the Philadelphia Society of the New Jerusalem Church, 2129 Chestnut street, in the city of Philadelphia, on Thursday, May 23rd, 1907.

FIRST SESSION.

1. The meeting was called to order by the Rev. Frank Sewall, A. M., D. D., at 10:00 A. M.

2. The reading of the Minutes of the last Annual Meeting, printed in *The New Philosophy* for July, 1906, was dispensed with.

3. On motion, duly seconded, the Minutes were approved as printed.

4. The Chair appointed the Rev. Alfred Acton and Mr. F. E. Gyllenhaal a Committee on the Roll. The Committee subsequently reported the following members and visitors in attendance at the sessions of the Association:

MEMBERS.—*Boston, Mass.*, Mr. Horace P. Chandler, Rev. H.

C. Hay; *Brookline, Mass.,* Rev. Samuel M. Warren; *Bryn Athyn, Pa.,* Rev. Alfred Acton, Rev. Reginald W. Brown, Dr. Geo. M. Cooper, Rev. Chas. E. Doering, Mr. Gerald S. Glenn, Mr. Leonard E. Gyllenhaal, Rev. C. Th. Odhner, Miss Venita Pendleton, Mr. John Pitcairn, Miss Alice K. Potts, Mr. E. F. Stroh, Rev. Homer Synnestvedt; *Buffalo, N. Y.,* Prof. Thos. French; *Chicago, Ill.,* Rev. John W. Stockwell; *La Porte, Ind.,* Mr. Wm. Niles; *Nashua, N. H.,* Mrs. Emily F. Barnes; *Norwalk, Conn.,* Miss Frances Seymour; *Philadelphia, Pa.,* Dr. Felix A. Boericke, Dr. E. A. Farrington, Mr. K. Knudsen, Mr. A. L. Tafel; *Primos, Pa.,* Mr. Roy S. Davis; *Richmond, Va.,* Rev. J. B. Spiers; *Washington, D. C.,* Rev. Frank Sewall.

Visitors.—*Baltimore, Md.,* Rev. L. H. Tafel; *Boston, Mass.,* Mr. Benj. Randall, Rev. John Whitehead, Mrs. J. Everett Young; *Bridgewater, Mass.,* Rev. H. Small; *Bryn Athyn, Pa.,* Rev. W. H. Alden, Miss Olive Bostock, Miss Phoebe Bostock, Miss S. Falk, Miss A. E. Grant, Mr. F. E. Gyllenhaal, Miss Gwladys Hicks, Miss M. Hogan, Mr. E. E. Iungerich, Miss Cyriel Odhner, Miss E. Pendleton, Miss C. Pendleton, Miss E. Potts, Miss L. Potts, Rev. E. S. Price, Mrs. H. G. Stroh, Miss L. Vickroy; *Cambridge, Mass.,* Mr. E. K. Bray, Mr. and Mrs. G. E. Morgan, Mr. W. R. Reece, Mr. C. E. Ritter; *Chicago, Ill.,* Mrs. M. Bishop; *Philadelphia, Pa.,* Rev. H. S. Conant, Mrs. E. C. Iungerich, Mrs. Wm. McGeorge, Jr., Mr. E. A. Parker, Rev. J. E. Smith, Miss M. Smith, Mrs. C. Smith, Mr. A. Steiger; *Switzerland,* Rev. Adolph Goerwitz; *Wheeling, W. Va.,* Miss Clio Pollock; and others.

5. The Secretary's Report was read. (See p. 211.)

6. The Treasurer's Report was read. (See p. 217.)

7. The Chair appointed Dr. Felix A. Boericke and Mr. Horace P. Chandler a committee to audit the Treasurer's Report. (See further Minute 46, 1907.)

8. The Report of the Board of Directors, including the letters and reports noted in Minutes 9 to 20, 1907, was read.

9. Report of the Executive Committee that the only special

business transacted had been to fix the time and place of the Annual Meeting.

10. Resignation of Dr. Harvey Farrington as editor of *The New Philosophy*. (See p. 221.)

11. Letter from Mr. Marston Niles. (See p. 221.)

12. Letter from Mr. Edmond Congar Brown.

13. Report of the Committee on a New Edition of the *Animal Kingdom*. (See p. 222.)

14. Report of the Committee on the translation of the *Lesser Principia*. (See p. 222.)

15. Report of the Committee on the Translation of *De Sensibus*. (See p. 222.)

16. Report of the Committee on the Translation of Swedenborg's Early Scientific Treatises in Swedish. (See p. 223.)

17. Report of the Committee on the Publication of Swedenborg's Scientific Manuscripts. (See p. 225.)

18. Report of the Committee to present Proposals relating to the sending of Mr. Alfred H. Stroh to Sweden. (See p. 226.)

19. Report from Mr. Stroh on the Copying and Publication of Swedenborg's Scientific Works. (See p. 226.)

20. Report of the Committee on Incorporation (see p. 228) including the Charter (see p. 229) and the By-Laws (see p. 231) of the newly incorporated *Swedenborg Scientific Association*.

21. On motion, duly seconded, the Report of the Board of Directors, including the Report of the Committee on Incorporation and the above-mentioned reports presented by the Board, was approved.

22. It was moved by the Rev. Samuel M. Warren, and seconded by Mr. Horace P. Chandler, "That this (the unincorporated) Association be hereby dissolved."

23. The question was asked whether unpaid dues would be cancelled by such action. It was pointed out by the Chairman of the Committee on Incorporation that such would not be the case, provision having been made by former action of the un-

incorporated body to transfer all assets and liabilities to the incorporated body.

24. It was also asked whether due notice of the steps involved in Mr. Warren's motion had been given to the members of the Association. This question was answered in the affirmative.

25. The motion to dissolve (see minute 22, 1907) was carried unanimously.

26. It was then announced that all members of the unincorporated Association had become members of the incorporated *Swedenborg Scientific Association* according to Article I, Section 1, of the By-Laws adopted by the incorporators at a meeting held on April 18, 1907, and approved by the unincorporated Association according to Minute 594, and that the Association was now ready to elect officers for the ensuing year.

27. *Voted* that the Chair appoint a committee of three to nominate officers for the ensuing year.

28. The Chair appointed the Rev. Samuel M. Warren, the Rev. H. C. Hay, and Dr. Felix A. Boericke a committee on nominations.

29. It being so moved, the meeting listened to a paper on *Swedenborg's Philosophical Antecedents,* written and communicated for the occasion by Mr. Alfred H. Stroh.

30. Mr. Stroh's paper was discussed by Messrs. Odhner, Sewall, and Acton.

31. The Committee on the Roll made a preliminary report presenting the names of twenty-four members and thirty-four visitors then present.

32. At 12 o'clock the President, Dr. Frank Sewall, read his Annual Report and an Address on *Swedenborg and the Modern Doctrine of Reality.*

33. On motion, duly seconded, the Association voted to take a recess until 3 P. M.

SECOND SESSION.

34. The meeting being called to order by the President at 3:00 P. M., proceeded to the election of officers.

35. The Committee on Nominations reported the following nominees:

For *President:* Rev. Frank Sewall, A. M., D. D.

For *Directors:* Dr. George M. Cooper, Rev. Chas. E. Doering, Rev. Reginald W. Brown, Mr. Horace P. Chandler, Mr. Marston Niles, Dr. Felix A. Boericke, Mr. Adolph L. Tafel.

36. Nominations from the floor were called for.

37. *Voted* that nominations for President be closed.

38. On motion the Secretary was instructed to cast the ballot for President.

39. The Secretary having cast the ballot reported that the Rev. Frank Sewall had been unanimously elected President.

40. The following gentlemen were nominated as Directors from the floor, and their nominations seconded: Mr. Edmond Congar Brown, Dr. E. A. Farrington, Rev. C. Th. Odhner.

41. The Rev. C. Th. Odhner begged to have his nomination withdrawn.

42. The meeting proceeded to ballot for Directors with the result that the following gentlemen were elected:

Rev. Reginald W. Brown (10 votes); Rev. Charles E. Doering (9); Dr. Felix A. Boericke (9); Dr. George M. Cooper (9); Dr. Ernest A. Farrington (8); Mr. Horace P. Chandler (6).

43. On motion, duly seconded, the vote for the six above-mentioned gentlemen as Directors was made unanimous.

44. The Rev. Alfred Acton offered the following resolution:

WHEREAS, Since the last meeting of the *Swedenborg Scientific Association,* the Rev. L. P. Mercer has passed into the spiritual world; be it

Resolved: that the following testimony to his uses in our midst be spread upon the minutes, and that a copy thereof be sent to Mrs. Mercer:

From the inception of the *Swedenborg Scientific Association* Mr. Mercer has evinced the greatest interest in its growth and prosperity, and his noble devotion of time and affection to the extension of an interest in Swedenborg's Science, and of a study of the Scientific works, has been an inspiration and encouragement to the continuance of our work, the value of which it would be difficult to overstate.

When a member of such distinction, and so universally beloved and admired as our brother, is called away from us, and enters upon the life of the spirit, it seems fitting for us to express our affection for him, and our hope that his spirit may ever remain with us, and continue to inspire us with confidence and hope, as he was wont to do in the flesh.

45. The resolution was seconded by the Rev. Chas. E. Doering and unanimously adopted by a rising vote.

46. The Auditing Committee reported that it had examined and found the Treasurer's Report correct.

47. The Rev. C. Th. Odhner presented a paper on *A Proposal to Re-number Swedenborg's Scientific Works.*

48. Mr. Odhner concluded his paper with the following resolution:

Resolved: that a committee be appointed by the President of this Association, to take into consideration a plan for easy reference to Swedenborg's Scientific and Philosophical Works.

49. The resolution was seconded, and after some brief discussion unanimously carried.

50. The Rev. Samuel M. Warren suggested that the Association communicate to Mr. Alfred H. Stroh, in the form of a motion, an acknowledgment of his services, encouraging him to continue the work he has undertaken.

51. The President expressed the great pleasure it would be to him to be the bearer of such a motion, as he expected to visit Sweden during the coming summer.

52. The Rev. Alfred Acton accordingly offered the following resolution:

Resolved: that the President be requested to convey the

appreciation and congratulations of this Association to Mr. A. H. Stroh and to the Heads of the Commission which is in charge of the publication of Swedenborg's Works.

53. The resolution, duly seconded, was unanimously carried.

54. On motion, duly seconded, it was voted that the thanks of the *Swedenborg Scientific Association* be extended to the Philadelphia Society of the New Jerusalem Church, for the use of its rooms.

55. The following proposition in a letter from Mr. Marston Niles was taken up for consideration, namely: "That due notification of our lately achieved incorporation be made by some brief paper, to be sent for publication to the New Church periodicals in this country and in England, in which subscriptions and legacies will be solicited, stating also briefly our ambitions and our needs." (See p. 221.)

56. The Rev. Chas. E. Doering moved that the Secretary be instructed to carry out the purpose of Mr. Niles' proposition.

57. The Rev. Alfred Acton moved as an amendment to Mr. Doering's motion, that Mr. Niles' proposition be reported favorably to the Board of Directors.

58. Mr. Doering withdrew his motion and the amendment was put and carried.

59. The question of providing for the making of plates of the works of Swedenborg now being published by the Royal Swedish Academy of Sciences was considered.

60. Mr. Doering gave an estimate of the cost of preparing plates, stating that it costs 20 cents a page to make matrices of *papier-mache,* but that there is risk of such matrices being easily injured by dampness; that to make permanent plates would cost 80 cents per page.

He also stated that the type for the first three volumes now almost ready has been distributed, and that it will not be possible to procure plates for these, urging that some immediate provision be made for preserving plates of future volumes, as

the Royal Swedish Academy does not propose to make plates on its own responsibility.

61. Dr. Sewall said that he had thought that the best way to promote the making of plates was to enlarge the subscription list for the volumes already advertised.

62. In answer Mr. Doering said that he wished to correct the impression, which has spread among many, that the proceeds of the subscriptions will go to the making of plates. He explained that the proceeds of such subscriptions will be applied to the publishing of future volumes, and that the Royal Swedish Academy will not make plates without our paying for them.

63. The Rev. C. Th. Odhner thought that it is more important for us, at present, to provide for the publication of translations of Swedenborg's Scientific Works.

64. *Voted* that a committee be appointed to undertake the raising of funds for making plates of the future volumes which the Royal Swedish Academy proposes to publish.

65. The chair appointed Rev. C. Th. Odhner and Mr. Alfred H. Stroh a committee to carry out the purpose of Mr. Odhner's resolution. (See Minutes 47 to 49.)

66. *Voted* that the Treasurer be authorized to procure an edition of five hundred copies of such portions of the treatise on *The Senses* as have appeared in the pages of the *New Philosophy,* after they have been suitably revised.

67. Mr. Reginald W. Brown gave an oral report of some geological studies made in Sweden during the summer of 1906, in connection with certain places and phenomena referred to by Swedenborg in his geological observations. Mr. Brown spoke in general of the evidences which Swedenborg gives of the former submergence of northern Europe, and particularly of what he says in this connection about Kinnekulle and the neighboring elevations, Billingen and Hunneberg. Swedenborg's interpretation of the structure and origin of Kinnekulle was compared with the interpretation of the geologists of the present day.

68. On motion, duly seconded, the Association adjourned at 4:50 P. M.

REGINALD W. BROWN,
Secretary.

SECOND MEETING OF THE BOARD OF DIRECTORS OF THE SWEDENBORG SCIENTIFIC ASSOCIATION (INCORPORATED).

THURSDAY, May 23rd, 1907.

1. The meeting was called to order by the President, the Rev. Frank Sewall, A. M., D. D., in the Sunday School Rooms of the Philadelphia Society of the New Jerusalem Church, at 5 P. M.

2. There were present Messrs. Sewall, Doering, Boericke, Farrington, and Brown, constituting a quorum.

3. Dr. Felix A. Boericke was elected Vice-President.

4. The Rev. Reginald W. Brown was elected Secretary.

5. The Rev. Chas. E. Doering was elected Treasurer.

6. Dr. E. A. Farrington was chosen editor of the *New Philosophy.*

7. Mr. Niles' proposition (see Minutes of the Association 55 to 58, 1907) was taken up for consideration.

8. *Voted* that the Secretary be instructed to carry out the purpose of Mr. Niles' proposition.

9. *Voted* that the Rev. Joseph E. Rosenqvist's name be added to the Committee on the Translation of Swedenborg's Early Scientific Treatises in Swedish.

10. The question of a suitable seal for the Association was discussed, and it was decided that the Board should act as a committee to plan for the same.

11. *Voted* that the Treasurer be authorized to have suitable stationery printed and distributed among the officers of the Association.

12. On motion the Board adjourned to reconvene at the call of the President.

REGINALD W. BROWN,
Secretary.

ANNUAL ADDRESS OF THE PRESIDENT.

SWEDENBORG AND THE MODERN DOCTRINE OF REALITY.

To the Swedenborg Scientific Association:

As at our last annual meeting, our Association has to record but little actual progress during the past year in its own work of publishing and translating. The interesting work *De Cultu,* in process of publication by the Rotch Trustees, is at a temporary standstill during the absence in Sweden of its translator and editor, Mr. Stroh. The progress in the Latin edition of the work *De Sale* is also temporarily suspended; and the translation of Part IV. of the *Animal Kingdom,* on the Senses (*De Sensibus*), progresses but slowly in the pages of the Quarterly Bulletin, having now reached paragraph 203, in the Chapter on the Ear. The new edition of the *Principia,* the responsibility of whose editing and publishing is now entirely with the London Society, must be near at hand, as the printing has been some time in progress. But all these items of seemingly diminutive and slow work in our immediate charge are happily offset by the imposing and beautiful initial volume of the Latin edition of Swedenborg's Scientific and Philosophical works undertaken by the Swedenborg Commission of the Royal Swedish Academy of Sciences in Stockholm, the final editing of which is indeed in the hands of our agent and colleague, Mr. Alfred H. Stroh. The first volume is a handsome quarto, printed in such a style as to make the edition to which it belongs truly a monumental one. Like the others of the first three volumes of the series already mentioned, this awaits only the English introduction to be furnished by a learned member of the Commission before being given to the public.

The very element of delay is however a feature in the propaganda of Swedenborg's Science which is fraught with the strange advantage of finding the advancing thought of the learned world more and more prepared to weigh and appre-

ciate intelligently the principles he sets forth. The world instead of advancing away from Swedenborg is slowly and steadily, as the decades of wonderful scientific development roll by, advancing toward him; and judging from the past half century since the inaugural publication of Swedenborg's *Principia* and *Animal Kingdom,* under the auspices of the first Swedenborg Scientific Association, in London, we may very reasonably anticipate in fifty years from now a vastly higher and more intelligent appreciation of Swedenborg's scientific system, both in purely scientific and philosophical circles, and in the theological world as well.

In fact, when we look back to the days of the first appearance of the *Principia* and the *Animal Kingdom,* while we can well appreciate Emerson's concern at the colossal soul they exhibit, and his prediction that these works would "flutter the robes of the university professors," still we cannot much wonder that the science of even that comparatively recent period did not seize hold of these profound theories of Swedenborg, as practically serviceable to its investigations. If science has progressed since then into any more exact knowledge of fundamental cosmic principles I think every one must admit that this has been a progress toward a position where it can enter more and more upon Swedenborg's plane of view, and therefore find his system a means of real and vast illumination.

Even in theology it is only very recently that writers have begun to awake to a consciousness of the value of Swedenborg's cosmology in arriving at a rational view of the science of discrete degrees between matter and spirit, and therefore of the correspondence of these two planes or worlds of being. The nexus between mind and body, that which Swedenborg calls the Limbus or the soul's clothing from the "purest parts of nature," the procession of the finite from the Infinite, the operation of a certain mechanism even in the processes of the soul itself, and the whole social economy exhibited in an image in the human anatomy, all this which plays so vital a part in

the higher study of man as a religious being and a subject of immortality, can never be rationally comprehended, not to say scientificially, without a knowledge of the great principles of the *Principia* and of the *Regnum Animale.* While a reference to the scientific works of Swedenborg for corroboration or illustration of a theological statement would hardly ever be found in the sermons or spiritual essays of that period, we have come now to a condition when many a theologian finds that unless he can obtain support for his spiritual belief in some analogies in the *Principia* and *Œconomia* of the physical and animal universe, he is at a loss to meet the critical inquiries and doubts of this scientific and analytical age. Instances of such practical application of the scientific works to the elucidation and the support of the theological may be seen in recent articles in New Church periodicals.*

In view of this slow process of the maturing of human knowledge and its progress in grasping fundamental truths, we may dismiss all impatience at the very gradual and long deferred recognition of Swedenborg's scientific system, and at the same time rejoice that now, when under distinguished and most favorable auspices Swedenborg's complete works are to be given to the learned world through the noble enterprise of the Royal Swedish Academy of Sciences, of which he was in his day an honored member, there are indications that in the highest philosophical and scientific lines of present thought there are shaping themselves vessels for the grateful reception

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*See *Elementary Correspondences,* by I. H. H. Gosset, in the *New Church Review* for April, 1907, in which the nature and relation of the three planes of the mind—sensuous, intellectual, and voluntary—and of these three to the subconscious and to the vital principal itself, are illustrated by Swedenborg's doctrine of the four auras of the natural universe, namely, the First Aura or Universal Element, the cause of gravity; the Magnetic Aura; the Ether; and the Air.

See also an article by Dr. Goyder in the *New Church Magazine* for December, 1906, in which the nature of man's spiritual or immortal body is discussed in the light of the doctrine of a nexus in the universe between the natural and the spiritual worlds.

of those long withheld principles. For our consideration at the present hour let us look, if only in a glance, at the single interesting topic of the relation between

SWEDENBORG AND THE MODERN DOCTRINE OF REALITY.

Perhaps it would take a longer time than we have at our disposal for our whole theme, to define to the average man what the modern doctrine of reality is. But when Emerson said in his essay on *Swedenborg the Mystic:* "This man who appeared to his contemporaries a visionary, and elixir of moonbeams, no doubt *lead the most real life of any man then in the world:* and now when the royal ducal Fredericks, Christians, and Brunswicks of that day have slid into oblivion, he begins to spread himself into the minds of thousands,"* he was using the word *real* doubtless more wisely than even he himself knew, and in the sense that we may call modern.

I do not mean, let me hasten to say, by the modern sense of the real, the sense of it as matter, or at least as the gross bulk of things which we handle with our senses. The science of today has happily left behind the gross materialism which would confine its concept of substance to matter in these grosser and ponderable forms. The matter it deals with is a substance conceivable purely by the imagination and by no means accessible to sense, and yet strictly amenable to the laws of geometry and mechanics. Whether its units of energy are motions, or spheroids, or vortices, whether they exist in the will, or in some primal constitution of matter as such, or in a "conatus in the infinite," to use Swedenborg's definition, they are all pure concepts capable of being talked of only in symbols, and handled only in their grosser forms as they descend in appearances (phenomena) to our senses.

Dismissing therefore this idea that the modern doctrine of

**Representative Men.* Boston: Houghton, Mifflin & Co. Little Classics edition, p. 83.

reality identifies the real with only the tangible and the visible, we may venture so far as to give a positive definition of reality in the phraseology of today, namely, that Reality is the whole of Experience. Whatever man experiences is real, for the experience itself is real, as it is this of which man is most intensely conscious; and what cannot be experienced is not real, or cannot be real. This, in so far as it emphasizes experience as the criterion of reality, is called pragmatism in current philosophical terminology, although it is in reality no new thing, and so far as it represents any substantial truth as distinguished from a form of words or definitions, it would require no new name.

It is true, however, that just as we have seen that the scientific conception of matter no longer necessarily implies merely the tangible and ponderable mass, so experience in the language of modern philosophy implies by no means merely the sense-perception of things. The whole of experience embraces, besides the immediate products of sensation, all the mental processes by which these are brought into relation and go to form thought and conclusion. As quoted in my address last year from Professor William James's article on *Radical Empiricism,** "The relations that connect experiences must themselves be experimental relations; and any kind of relations experienced must be as 'real' as anything else in the system." If, then, we regard the whole reasoning process only as experience of the relations of things, which is as real as the experience of the things themselves, then we have the whole of experience embracing the two worlds—the *mundus intelligibilis* as well as the *mundus sensibilis.*† I speak of the rational process as an experience of relations and as being a very important part of a world of pure experience, notwithstanding all the efforts of the pragmatists to reduce even these logical relations to a kind of physical or sensuous experience. For after all it

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**New Philosophy,* July, 1906; p. 71.

†See Kant's *Inaugural Dissertation,* 1770.

is only on the ground of the reality of these relations of the logical order as experienced by the mind, that any knowledge can be had of even the things that come to us in the successive shocks of the physical sensation. But once admitting this experience of the logical relations to be a real experience, then the universe exhibits not only the great theatre of secondary causes and their effects, but also the universe itself as related to its own great First Cause in the Infinite God. This relation, then, logically perceived, becomes a part of pure experience, and a part of that reality which is the whole of experience. We are thus brought in this analysis of the modern doctrine of reality very close to Swedenborg's doctrine as set forth fully in his essay introductory to the *Principia,* entitled: "Concerning the Means which conduce to True Philosophy, and concerning the True Philosopher." In this remarkable essay—in which it is not now a bold assumption to say will be found, rather than in Descartes or in Bacon, the real beginning of the new philosophy and the new science of the present and coming age—Swedenborg designates the means conducing to a knowledge truly philosophical as these three: *Experience, Geometry,* and the *Faculty of Reasoning.**

By Philosophy Swedenborg understands here what we would call natural philosophy, or the knowledge of the mechanism of the world or of whatever in the world is subject to the laws of geometry, and which it is possible to unfold to view by "experience assisted by geometry and reason." The last clause is important as showing how the field of experimental knowledge is enlarged by rational knowledge. It is remarkable that Swedenborg uses Philosophy in this strictly mechanical experimental sense, not excluding a deductive method, but insisting always on the substantial entity of the things dealt with in distinction from any mere ideas. Even in his pursuit of the soul, he sought, throughout all his scientific system, for some substantial thing or subtle essence working in the body, if not a

*See *Principia:* Part I, Chap. 1, p. 2.

geometrical part of it. In Swedenborg's philosophy, too, the Infinite as a purely philosophical concept was the necessary complement to the finite. It is in the later theological system that Swedenborg, after his illumination, introduces an entirely new name for philosophy, a name that exalts and glorifies it, crowning it with a title that all its devotees from the earliest age would gladly have seen it bear, namely, The Angelic Wisdom, *Sapientia Angelica.* In all its wide surveys, embracing the worlds of spirit as well as the worlds of matter, and contemplating the presence and activity, not of a mere logical necessity, the Infinite, but of a personal, divinely human God, it is angelic wisdom that he is discussing, a system of knowledge indeed still pragmatic as resting on experience, but comprehended from a higher and more universal plane than is possible in an experience confined to this world alone. The wisdom which deals with the subjects of the Divine Nature which is Love and Wisdom, with the Creation of the world from and by means of these, and with the government of the world and of mankind by a Divine Providence, this wisdom is called angelic, not because it was imparted by angels, but because it is the wisdom of this higher plane of experience itself, which belongs to the angelic or immortal sphere of existence.

Returning to Swedenborg's doctrine of Experience, we find that it necessarily embraces as a vast factor the use of the reason. It is an arduous attempt, he says, to explain philosophically the hitherto secret operations of elemental nature, far removed as they are, and almost hidden from our view.

"In making the attempt I must endeavor to place, as it were before the eyes, those phenomena which Nature herself is most careful to conceal, and which she seems most unwilling to submit to investigation. In such an ocean I should not venture to spread my sail without having experience and geometry continually present to guide my hand and watch the helm. Experience may be defined to be the knowledge of everything in the world of nature which is capable of being received through the medium of the senses. These various things may be termed the objects of the senses, and phenomena drawn from the great store-house of natural things. For they embrace everything, whether

in the elementary kingdom, or in metallurgy, chemistry, botany, anatomy, etc., in so far as we can ascertain *a posteriori* the manner in which it affects the senses or acts."*

This extremely sensational doctrine of experience, as defined so far, would seem to coincide quite fully with the extremest pragmatism; but here as everywhere in studying Swedenborg we must follow him step by step, and not presume to judge him half way in his argument. He always proceeds by discrete degrees. The steps are distinct and clearly defined, and so we know what he means by every term he uses. While the term "experience" as he uses it here, is confined to the knowledge of things through the senses, yet this very knowing, like every effect, is a discrete degree, involving in itself higher degrees of knowing, which are essential in arriving at a philosophic or real knowing of things.

And it is right here that Swedenborg in his essay comes to the relief of the pragmatists of today in the embarrassment in which they find themselves when confronted by a strange adversary, the arguments which science herself presents from the ground, not of materialism, but of idealism. When the modern pragmatist says, "only that which is experienced by consciousness is real, and this real experience involves the sense-percepts which are possible if not actual," then the scientist inquires, "but how about the reality of things not presentable to the senses of a beholder, or that have existed in past time—have they no reality?" To which the answer is readily given: "They have indeed a reality, through the experience of memory, or of induction of or from past experience." But Science, still not satisfied with this basing of reality on sensuous experience, asks again: "But how about the reality of those cosmical conditions which existed in ages before man's existence, and therefore before any conscious experience of

*_Principia:_ Part I, Chap. 1, p. 3.

them was possible? No man had perceived them; no man had thought of them; had they any reality?"*

It were easy indeed to sweep these things away entirely from a world of pure experience by saying, as implied by one pragmatist, that they are things not profitable to think, because yielding no actual results,† but here science, armed now with a Minerva-helmet of pure idealism, says: "Yes, but if by reasoning *a posteriori* from present effects, we can conclude as to what must have been their antecedent conditions or causes, and this regardless entirely of whether there was conscious life on earth or not, and if we then conclude a certain state of this planet to have been a real one, was not that reality an actual reality then as it is now to our thinking mind to-day? And if it had actuality, where did it get it?"

The answer of the pragmatist does not seem a very clear one, and it leads us to doubt whether the reality it deals with be indeed the "whole" and not a very small and misleading part of experience. Thus the reply speaks of the antecedent reality as a kind of reflected reality, or reality "in the making," somewhat perhaps as the human rational faculty may itself have been blindly groping its way out of the elemental dust. Professor Dewey, one of the leading philosophers of the pragmatic school in this country, says, for instance, that "the geological facts" of the scientists we have referred to, "are not real, but they are reality in the process of transformation toward experience;" meaning apparently that geological facts occurring before man's existence became reality only when ages afterward they were thought of by the scientist.

It is not in our province here to explore the solution of the difficulty afforded by Swedenborg's higher philosophy, that is,

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*For this discussion see the article on *Pure Experience and Reality*, by Professor E. B. McGilvary, of Wisconsin University, in the *Philosophical Review* for May, 1907.

†"We should be wise to restrict our philosophic discussion to what is experienced or at least experienceable." Prof. William James: *Journal Phil., Psy., Scientific Meth.*, Vol. IV., p. 106.

by the theological idea involved in the doctrine of the Eternal Word or Wisdom, which existed before all worlds and by whom and from whom all things were made. It is sufficient merely to name this doctrine as showing how the doctrine of reality as pure experience may be only the affirmation that all creation is but the product of the thoughts of God, rendered by the creative act objective to Himself. Thus according to Swedenborg, things do not get their reality from men's thinking them, but from God's thinking them. The Infinite Divine, from Love which is its essence, through Wisdom which is its form or idea, thinks things into actuality on the plane of uses; and therefore all creation has an abiding actuality independent of the thoughts of man.

Here I wish rather to pursue Swedenborg's definition of Experience. to show how helpful it is in its support of all that is valuable in modern pragmatism and in supplementing its many and serious defects. He says:*

"Let it not however be imagined that any experience or knowledge derived *a posteriori* and confined only to one man or even to one age is sufficient for exploring the hidden paths of nature. To crown the investigation with success we require the experience of many ages."

But this accumulation of experience is not all that is needed. Yet it *is* needed; it is the fundamental knowledge upon which the system is built up.

"It is impossible to receive knowledge immediately from the soul; man attains it only through the medium of the organs of the senses; . . . the *means* therefore of all our wisdom are to be found in experience."

But now comes the important complementary statement:†

"He who retains all the natural experience of the world laid up in

Principia: Part I, Chap. 1, p. 4.
†*Ibid.* p. 14.

the memory is not on that account a philosopher and capable of knowing the causes of things and of reasoning *a priori;* for to do this he must know moreover how to digest all things analytically by means of geometry and rational philosophy. It is thus that a man may first become a philosopher, may be enabled to penetrate into the causes of things, and may afterwards *from causes speak by means of experience.*"

Having treated of the mechanical or organic world (as realized in "experience"), Swedenborg now proceeds to speak of the "second means leading to wisdom" which are "geometry and rational philosophy."

"For mere experience is incapable of unfolding anything and of reducing it to its more simple parts; it cannot so arrange facts that bear a resemblance to each other as to discover what was unknown by observing its similarity to things that are known, for this is the office of reason."*

Going on in his wonderful description of the mechanism of nature, and its analogy to a certain mechanism in the soul itself, he proceeds to consider those things not embraced in the sphere of the geometrical and the mechanical, namely, the *Infinite* and the *Soul, Providence* and the *Nature of Love.* For, to quote:

"There are innumerable things which are not mechanical nor even geometrical; such is the Infinite and whatsoever is in the Infinite; . . . this can by no means be explored by geometry because its existence is prior to geometry, as being its cause. There are also many other things the nature of which, though they originated from the Infinite and began to exist with the world, has not yet been discovered by any geometry or any reasoning philosophy; for instance, that intelligent principle which exists in animals or the Soul. . . . Among other things that occur in the world and cannot be called geometrical is a Providence respecting all things, which is infinite in the Infinite, or in the Being who is provident in the highest degree; . . . and another thing inexplorable by geometry is the nature of Love."†

Ibid. p. 15.

†*Ibid.* p. 25, *seq.*

The transformation of these unknowable into knowable elements is the theme of this introduction to the *Principia*, and it is the key to the whole doctrine of reality—as experience.

"The philosopher sees indeed that God governs His creation by rules and mechanical laws, and that the soul governs the body in a similar manner. . . . But to know the nature of that Infinite Being is beyond the sphere of his limited capacity.*

Are we, then, to remain forever hopelessly agnostic? No, for here come in these two factors, experience and the rational faculty, in their mediatorial capacity, coincident with nature itself:

"Nature is the first beginning of the changes that occur in the world or mundane system; or, as nature is the motive or active force or collection of forces by which those changes are occasioned, it follows that the world is dependent upon nature and is inseparable from it; and nature also is nothing without the world. But the Infinite is still infinite independently of the world. . . . They are children who confound Nature and the Infinite together, for nature is an effect or causate or thing caused, while the Infinite is its efficient and cause. Nature, however, when once produced may be called the efficient and cause of the world in so far as afterwards (*i. e.* in time) all things successive exist by derivative forces and modifications. But nature cannot be called the First Cause, for no other notion can be formed of the first motion or mode, than that of its immediate production from the Infinite. . . . Now as all nature—the whole mundane system—is the work of God, as all contingent circumstances before the world was produced and completed are to be ascribed to His wisdom, therefore true philosophy leads to the most profound admiration and adoration of the Deity; nor can anything be found to diminish, but infinite things to increase, this admiration; as when a man sees that all things are of the Infinite, and that in respect to the Infinite he himself, as a finite being, is nothing: when also he sees that all his own wisdom and philosophy are, in respect to the Divine, in the same proportion as the finite to the Infinite—that is, as nothing.

"Neither does true philosophy detract at all from miracles; all things being ascribed to the Divine Omnipotence, as the origin of the world, and its formation by various contingent means and successive muta-

Ibid. p. 35.

tions. No contingent mean, tending to the perfection of the world, can exist, which is not a miracle. The world itself is a miracle; whatever exists in any of its kingdoms, whether in the animal, the mineral, or the vegetable, exists by a miracle, because it exists by a contingent mean, which by a series of others, is terminated in the Infinite itself, as in the first cause of all contingent means. For it cannot be denied that intermediate causes and changes proceed successively from the Supreme Being, Who produces all things in the most perfect manner, and conducts them to their destined end. Now what He thus produces by contingent means and causes, cannot be said to be contrary to the order of universal nature, but according to it; and although there should appear some things that are not in conformity with the nature of our world, or not agreeable to the mechanism of our mundane system, yet even in this case they must exist from certain causes, which, like the world itself, derive their origin from the Infinite alone."*

Here is affirmed the most positive and the only rational system of evolution; as otherwise, without an infinitely intelligent plan and law there could be no system. But here also is the relation of human knowledge to this Being of the Infinite. The world, formed by nature, or the whole finiting process out of the Infinite, becomes the theatre of human seeing and knowing of the Infinite, in being the theatre of means, the whole of experience. Our experience is not of the Infinite but of the finite, and this we can turn into the knowledge of science by means of the soul's rational faculty, the third of the means to a true philosophy.

"The third means by which we may arrive at a true philosophy in cosmology, and at the knowledge of occult nature, is the faculty of reasoning. Let experience and geometry be given; that is, let a man possess the utmost store of experimental knowledge and be at the same time a complete geometer, and yet suppose him to be deficient in the faculty of just reasoning, or of comparing the several parts of his knowledge and experience, and representing them distinctly to the soul; he can never attain to the mysterious and inward recesses of philosophy. Knowledge without reason—a heap of many things in the memory without judgment to separate and distinguish them, and without the talent of deducing the unknown object of inquiry from certain

Ibid. p. 37.

known data, by means of the rational or geometrical analysis—in a word, the possession of the means without the faculty of arriving at the end, do not create a philosopher; nor will any laurel wreath, plucked from the sacred hill, be entwined by the maids of Parnassus around the brow of him who is destitute of this talent. The faculty of reasoning justly, and of arriving at the end in view by the proper means, which are experience and geometry, is the characteristic of the rational man.* . . . The rational principle in the soul does not consist in knowing many things which the world naturally exhibits and represents to the senses; for this knowledge refers itself to the world, the senses, and experience. The rational principle does not consist in knowing the figures and spaces in which motions terminate; for this is the province of geometrical science. The rational principle does not consist in knowing the proportion between figures and spaces, and the other rules and proportions of motion, by which the world acts and produces its phenomena; for this belongs to nature, mechanics, science, and philosophy. But the rational principle does consist in knowing how, and at the same time being *able* to arrange into such order and connection the reasons or proportional facts known from the world, as to view their analogy: yet this presupposes an active principle or a certain force, impelling into motion all those things which inhere, as it were, scientifically in its organs; that is, it presupposes a soul.†

The soul therefore is represented as the interpreter of the world to man, not by virtue alone of what it experiences from the world without, but by virtue of this inner force acting by a certain law called the rational principle—a principle inherent in the soul as its very distinctive nature.

The experience of such a soul as the adequate interpreter of the world of reality would depend not alone upon that universality of things experienced, referred to by Swedenborg as the gathering up of all the several experiences of the past as handed down in history, but it depends on a still more wonderful inherent power which is described imaginatively in Swedenborg's picture of the soul or man in his state of integrity. There the soul is described not only in the exceptionally slow process of its growth, developing according to a certain har-

Ibid. p. 29.
†*Ibid.* p. 28.

mony with every force and motion in the elemental world, but also in its full, final development being actually responsive intuitively to everything not only in nature but behind nature in the Divine Cause itself. Because this picture of the soul in its state of integrity—being the concentrated experience of the entire world, like the universe reflected in a crystal drop, or like the intelligent monad of Leibnitz which knows all things by virtue of its harmony with all—because this picture is unique in the history of philosophy, it deserves being quoted in full, especially as it offers an entirely new and pregnant idea of the "whole of experience." First as regards the growth of man:

"During the growth of the tender parts possessing motion and life, every motion that was perpetually present must necessarily have left vestiges of itself, and must consequently have formed naturally its own mechanism, so as afterwards to be received still more interiorly, but in the same manner as in the yet tender substances. The man thus formed, in whom all the parts conspired to receive the motions of all the elements, and to convey them successively, when received, through a contiguous medium, to the most subtle, active principle, must be deemed the most perfect and the first of all men, being one in whom the connection of ends and means is continuous and unbroken. Such a most perfect material and acting being would in a short time acquire, by the aid of the senses alone, all the philosophy and experimental science natural to him, for whatever could present itself to his senses, would immediately flow, by connection and contiguity, to his most subtle and active first principle."*

"As, therefore, the whole man was constructed according to the motions of the elements, and those motions were capable of arriving, without interruption, through a medium so contiguous and tense, at the most subtle, active principle, what conclusion can we draw but that such a man must have enjoyed the most complete, perfect and distinct faculty of reasoning; that all the mundane system or motions of the elements must have been familiar to him after a little contemplation and custom; that every relation of their motions, being impressed upon all his organs, as it were, naturally and from his tender infancy, would be felt with perfect regularity from his external parts or senses to his soul; and that the soul, being furnished with such a body, would naturally be so well acquainted with geometry, mechanics, and the

Ibid. p. 39.

mundane system, as to be able to instruct herself without a master, from the simple contemplation of the phenomena of nature and the objects of sense. Such a man would be capable of taking his station, as it were, in the centre, and surveying from thence the whole circumference of his system at a single glance; he would be able to make himself acquainted with things present, past and future, from a knowledge of their causes, and of their contingent, given or supposed."*

Such would be the knowledge of reality by pure experience. But how different is the knowledge attained by the labored processes of science and philosophy, is now shown:

"In this state we see that no complete knowledge of anything can be acquired without the use of means; we see that nothing can penetrate to the ultimate active principle, or to the soul, except by means of continual experiments, by the assistance of geometry, and by the faculty of reasoning to be thus acquired: we see that the way which leads to this most subtle and intelligent *ens* is almost entirely closed, and capable of being opened only by continual cultivation and exercise, that is, by perpetual experiments and the practice of philosophizing, and by the faculty of reasoning thence acquired; we see that even then the way is not, as it was in a state of integrity, so open as to preclude the necessity or continual experiments and practice, by means of which, as things constantly present in the memory, all motions or affections may be remitted to the most subtle principles of our organization, and the passages thus kept, as it were, constantly permeable and open.†

But the most significant part of the doctrine of knowledge by pure experience, as distinguished from knowledge of the secondary or rationalizing order, is that the pure experience extends not only to the things sensuously experienced even in the most subtle fibres and their tremulations, but to a state of veneration of the Deity as their Infinite Source and Cause:

"I have affirmed that, in his state of integrity, man was master of all philosophy or mundane science, and this, too, of himself, by virtue of the perfect mechanism of his organization, that is, by nature; and that

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Ibid. p. 40.
†Ibid. p. 41.

being furnished with such excellent senses, nothing could be concealed from him, because he was formed according to all the motions and operations of the world and nature. I have said further, that nothing could exist in the world from the regular connection of causes, which would not instantly flow, as through a most clear and pellucid medium, with a certain sensation, to the mind; that is, that all the sensations of each of his organs would penetrate to their most subtle principle, without retardation, confusion, or obscurity. But when every modification in the world, of whatsoever nature, had thus arrived at its ultimate, or at his soul, it necessarily follows that his knowledge and attainments would there stop, and that he would regard and venerate, with a most profound admiration, those other and infinite things that exceeded the bounds of his intelligence; that is to say, that most vast Infinite—infinitely intelligent, infinitely provident—which begins where man and his finite faculties, intelligence and providence, terminate; he would see that in this Infinite all things have their being, and that from it all things have their existence. As, therefore, all his sensations thus necessarily penetrated to their ultimate seat without any intervening obstacle, and there subsided into a most profound veneration, it follows that this perfect man's veneration of the Deity was of equal extent with his wisdom, and as constant as the operation of his senses; we may therefore conclude, that the more profound is any man's wisdom, the more profound will be his veneration of the Deity."*

"What we venerate and love, this we worship; for the utmost degree of veneration conjoined with love must needs be active and operate, and must extend to the will and actions. . . . For the will is guided by the inclinations and desires of the soul and body; neither could the perfect man bring anything into act but what was applicable to the supreme adoration of the Deity, and to the giving Him thanks full of veneration and love. . . . We, therefore, conclude again that the wiser a man is the more he will be a worshipper of the Deity."†

This last sentence doubtless explains the illusive and mysterious title given by Swedenborg to that culminating work of his philosophical system, *De Cultu et Amore Dei,—The Worship and Love of God.* For this work is nothing but an imaginary statement of the world of reality, of its origin and development as seen in the pure experience of a soul in its state

Ibid. p. 43.

†*Ibid.* p. 44.

of integrity. It is pure experience untrammeled by the confusion and perplexity of half-seeing science and philosophy. Toward this true knowledge, the pure experience of the greatest reality, the perception of God in his world, lies, according to Swedenborg, all the progress of true wisdom.

When we consider the sublime height in this pure experience of the greatest reality to which Swedenborg had attained in the fields of mundane knowledge, and when we reflect that his experience did not end here, but later, as he believed, embraced the things heard and seen in the illimitable spiritual world, we can attach a new meaning to the philosophic term "the whole of experience," and may the more readily endorse the statement of Emerson, with which we set out, "that Swedenborg led the most real life of any man then in the world."

FRANK SEWALL.

Washington, D. C., May 11th, 1907.

REPORTS.

REPORT OF THE SECRETARY.

To the Swedenborg Scientific Association:

The minutes and reports of the last annual meeting, together with lists of the members and officers of the Association, have been published in the issue of *The New Philosophy* for July, 1906.

A list of the present members is subjoined, together with a record of the changes that have taken place during the past year. In addition three new members have been received: Miss Frances Seymour, Norwalk, Conn.; Mr. Robt. A. Shaw, Brooklyn, N. Y.; Mr. Richard Carter, Newtonville, Mass., making a total present membership of 172.

REGINALD W. BROWN,
Secretary.

LIST OF MEMBERS OF THE SWEDENBORG SCIENTIFIC ASSOCIATION, MAY 23RD, 1907.

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Stroh, Emil F., Bryn Athyn, Pa.
Sugden, Eben, 238 W. 73d St. New York, N. Y.
Synnestvedt, Rev. Homer, Bryn Athyn, Pa.
Synnestvedt, Paul, 6214 Wellesley Ave., Pittsburgh, Pa.

Tafel, A. L., 913 S. 49th St., Philadelphia, Pa.
Thompson, D. L., 394 Yonge St., Toronto, Can.
Thompson, Dr. Wm. H., 361 Cedar Ave., Cleveland, Ohio.
Thurston, Dr. Rufus L., 260 Clarendon St., Boston, Mass.
Tomhagen, Dr. J. A., 2433 Hermitage Ave., Chicago, Ill.

Van Buskirk. Mrs. V. H., Penn Ave., Peoria, Ill.
Vance, Dr. B., Springfield, Ill.
Vrooman, Rev. H., Box 454, Portland, Oregon.

Wagner, Adolph, 3856 Flora Boulevard, St. Louis, Mo.
Walker, Miss Mary K., 275 Clermont Ave., Brooklyn, N. Y.

Warren, Rev. Samuel M., 4 Milton Rd., Brookline, Mass.
*Welch, Chas. E., 204 N. St. Louis St., Los Angeles, Cal.
Werner, Percy, 5505 Cates Ave., St. Louis, Mo.
Westberg, Nils, Skipparegatan, 5, Stockholm, Sweden.
Wetherbee, J. Q., 12 Readington Rd., Hampstead, London, Eng.
Williams, John H., Urbana, Ohio.
Woodward, Dr. H. Wells, 1318 Mass. Ave., Washington, D. C.
Worcester, Rev. Jos., 1030 Vallejo St., San Francisco, Cal.
Wunsch, Henry, 555 Congress St., Detroit, Mich.

Honorary Members.

Retzius, Professor Dr. Gustav, Stockholm, Sweden.

New Members Received During the Year.

Barbour, E. D., 344 Beacon St., Boston, Mass.
Ford, L. P., 32 Victoria St., London, Eng.
Goddard, Mrs. J. F., 779 Carroll St., Brooklyn, N. Y.
Gyllenhaal, L. E., Bryn Athyn, Pa.
Kinmont, Miss Eleanor, Glendale, Ohio.
Law, W. H., 486 Euclid Ave., Toronto, Can.
McFall, Dr. W. A., 494 George St., Peterboro, Ont., Can.
Mitchell, Rev. E. C., 534 Summit Ave., St. Paul, Minn.
Nelson, Swain, Glenview, Ill.
Odhner, Rev. C. Th., Bryn Athyn, Pa.
Paine, Albert W., Bangor, Me.
Walker, Miss Mary K., 275 Clermont Ave., Brooklyn, N. Y.

Members Resigned.

Cline, Sam'l, Crossville, Tenn.
Cranch, W. A., Bryn Athyn, Pa.
Hobart, Miss C. A., Bryn Athyn, Pa.
Kent, Dr. J. T., Evanston, Ill.
Macbeth, Geo. A., Pittsburgh, Pa.
Meday, C. H., Pasadena, Cal.
Peck, Mrs. S. E., Elizabeth, N. J.
Whiston, Dr. E. A., Boston, Mass.

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*Dropped by mistake previous year.

MEMBERSHIP LAPSED.
(Minute 160.)

Edson, E. R. (present address unknown).
Gidiere, J. J. (present address unknown).
Neuberger, Dr. Max, Vienna, Austria.

MEMBERS DECEASED.

Bailey, E. F., Fitchburg, Mass.
Cockerell, Mrs. D'Arcy, Durban, Natal, S. Africa.
Mercer, Rev. L. P., Cincinnati, Ohio.

SUMMARY.

Total membership reported April 28, 1906	170	
Member dropped by mistake previous year	1	
New members	12	
		183
Members resigned	8	
Membership lapsed	3	
Members deceased	3	
		14
Present membership		169

FINANCIAL STATEMENT.

SWEDENBORG SCIENTIFIC ASSOCIATION, MAY 23, 1907.

RECEIPTS.

Balance on hand as per last report		$253 68
Membership dues	$151 00	
Subscriptions to *New Philosophy*	130 41	
Contributions	5 06	
Special contribution towards printing Fascicles	18 00	
Sale of S. S. A. publications, 26 Summary, 25 Fasc. 1 Pt. 1, 12 Pt. 2.	15 42	319 89
Carried forward		$573 57

EXPENDITURES.

Forward			$573 57	
Printing *New Philosophy*, April-Jan.	153 26			
Paper for *New Philosophy*	12 50			
Addressing envelopes, 3 issues	3 00			
Notices to members and subscribers	3 68			
Postage and sundries	11 48			
		$183 92		
Incorporation Expenses:—				
Engrossing Charter	15 00			
Master's fees, etc.	55 00			
For advertising notice of application for Charter	30 00			
Notary's fee witnessing signatures to Charter	1 00	101 00	284 92	
Balance				$288 65

SWEDENBORG MSS. ACCOUNT.

Balance as per last report		$29 16	
Paid to Miss Ekelof, drawings to "De Sale"		1 35	27 81

"WORSHIP AND LOVE OF GOD" ACCOUNT.

Balance as per last report		13 10	
Transferred to membership and subscription account		1 50	11 60
Total balance			$328 06

RECAPITULATION.

RECEIPTS.

Total balance as per last report	$295 94	
Total receipts	319 89	$615 83

EXPENDITURES.

New Philosophy and incorporation, etc.	$284 92	
Swedenborg MSS. account	1 35	
Worship and Love of God account	1 50	287 77
Balance as per cash book, May 23, 1907		$328 06

SUBSCRIBERS TO "THE NEW PHILOSOPHY."

Total, April 28, 1906	209	
New subscribers	17	226
Dropped by request	13	
Dropped; no attention paid to notices	5	
Deceased	2	20
Present list of paying subscribers		206

Free, 56; exchanges, 15.

ACCOUNTS DUE.

63 members owe for dues	$70 00
72 subscribers in arrears, owe	81 00
Total outstanding for dues and subscriptions	$151 00

C. E. DOERING,
Treasurer.

Audited and found correct, May 23, 1907.
(Signed) HORACE P. CHANDLER,
F. A. BOERICKE.

REPORT OF THE BOARD OF DIRECTORS.

1. Since the last annual report of the Board of Directors two meetings have been held, one in New York on April 28, 1906, at 4:30 P. M., and the other in Philadelphia on May 23, 1907, at 9:30 A. M.

2. At the meeting in New York in 1906 held immediately after the adjournment of the Association, the proposed charter was amended by inserting the words "into any language" after the word "translate" in the article relating to the uses of the Association.

3. At the same meeting the following resolution was adopted in persuance of the instructions of this Association: *"Resolved:* that the Rev. Chas. E. Doering, Dr. Frank Sewall, Dr. Geo. M. Cooper, Dr. Felix A. Boericke, and the Rev. Reginald W. Brown be appointed a committee of five to effect the incorporation of the *Swedenborg Scientific Association,* with full power to act."

4. Dr. Harvey Farrington was re-elected editor of *The New Philosophy.*

5. At the meeting in Philadelphia on May 23, the resignation of Dr. Harvey Farrington, as editor of *The New Philosophy,* was read,

and it was *voted* to accept Dr. Farrington's resignation upon the completion of the April issue of the magazine.

6. It was *voted* that all reports and communications be referred to the Association as part of the report of the Board of Directors.

REGINALD W. BROWN,
Secretary.

REPORT OF THE EDITOR OF "THE NEW PHILOSOPHY."

To the Swedenborg Scientific Association:

During the past year *The New Philosophy* has appeared quarterly as usual. The total number of pages is 152, of which about 40 are devoted to the following translations from Swedenborg:

1. *On Various Kinds of Soil and Mud;* translated from the original Swedish MS. by A. H. Stroh.

2. *New Ways of Discovering Mines and Treasure Deeply Hidden in the Earth;* translated from a copy of the original Swedish MS. by J. E. Rosenqvist.

3. *The Senses; Part IV of the Animal Kingdom;* nos. 173 to 211; translated by E. S. Price.

4. *Two New Letters by Swedenborg and Polhem;* translated from the original Swedish by A. H. Stroh.

Among collateral papers may be mentioned: *Swedenborg's Practical Life and Search for the Soul,* by John Whitehead; and *Swedenborg's Methods of Work,* by A. H. Stroh. A resume of Hans Schlieper's Berlin address on *Swedenborg's Natural Philosophy,* by Frank Sewall, and two communications from A. H. Stroh on the "revival of interest in Swedenborg in Europe," have also been published.

An *Index to Volumes VII to IX of The New Philosophy,* compiled by E. F. Stroh, was issued with the January number. This is perhaps the most important feature of the Bulletin for the past year.

The New Philosophy has assumed more definitely the function of reporting the progress of the important work going forward under the auspices of the Swedish Royal Academy in Stockholm.

In spite of these advances *The New Philosophy* has fallen short of what it should be as the official organ of the Association. It has been repeatedly late, which detracts to some extent from its usefulness. The distance between editor and publisher has been a handicap as well as the tardiness of the printer in getting out proofs, but many times I have had to wait for copy.

It seems difficult to get our members to write for the journal, and on account of urgent professional and literary duties, I have been unable to fill the pages myself. It, therefore, seems to me that the interests of *The New Philosophy* will be best served by my stepping out to give

place to one who is more favorably situated, and my resignation is now in the hands of the Secretary. Relinquishing the editorial chair does not mean that my interest in *The New Philosophy* will be any the less; in fact, I shall have more time in future to contribute to its pages.

In closing my report I offer the following suggestions:

1. That an editor be selected who is making Swedenborg's science a special study, and who is as near the printer as possible.

2. That the number of the Bulletin's exchanges be increased, so that the editor may keep in touch with the progress of science without being obliged to consult periodicals at public libraries, etc.

3. That the number of translations of Swedenborg be increased.

Respectfully submitted,

HARVEY FARRINGTON, M. D.,
Editor.

Chicago, Ill., May 17, 1907.

RESIGNATION OF THE EDITOR OF THE "NEW PHILOSOPHY."

Rev. R. W. Brown, Secretary.

Dear Sir: I hereby tender my resignation as editor of *The New Philosophy.*

Sincerely yours,

HARVEY FARRINGTON, M. D.

Chicago, Ill., May 13, 1907.

COMMUNICATION FROM DIRECTOR MARSTON NILES.

Reginald W. Brown, Esq., Secretary of the Swedenborg Scientific Association, Bryn Athyn, Pa.

Dear Sir: I thank you for closer notice of the meeting of the directors on May 23d. I am sorry I cannot be present. If I could be present, I would wish to add my vote to a proposition which I trust will be presented, that due notification of our lately achieved incorporation be made by some brief paper, to be sent for publication to the New Church periodicals in this country and in England, in which subscriptions and legacies will be solicited, stating also briefly our ambitions and our needs. In any exodus to be accomplished in this age a wholesale borrowing of the "vessels of the Egyptians" is absolutely necessary.

Very truly yours,

MARSTON NILES.

New York City, May 20, 1907.

REPORT OF THE COMMITTEE ON THE NEW EDITION OF "THE ANIMAL KINGDOM."

Rev. Frank Sewall, D. D., President of the Swedenborg Scientific Association.

Dear Sir: I regret very much to report that I have done no work on revising the translation of the *Animal Kingdom*, but my reason has been that besides being very busy I felt that any such work now would be practically useless in view of the fact that the probability of its being published is very remote.

When there seems to be a prospect of publication I shall be very glad to continue the work.

Yours very respectfully,

C. E. DOERING,
Chairman.

REPORT OF THE COMMITTEE ON THE TRANSLATION OF THE "LESSER PRINCIPIA."

To the Swedenborg Scientific Association:

The translating of the *Lesser Principia* is in progress, and as permission has been received from Professor Gustaf Retzius to make use of the ninety-nine plates lately used at Stockholm in the printing of the Latin text, I think it would be advisable to begin the publication of this work in the *New Philosophy* if the means to publish cannot be otherwise obtained. The work would fill about 200 pages, and ought to be in the hands of the English reader for purposes of comparative study, now that the new English edition of the *Principia* is being published.

Respectfully submitted,

ALFRED H. STROH,
Chairman.

Library of the Royal Swedish Academy of Science.
Stockholm, May, 1907.

REPORT OF THE COMMITTEE ON THE TRANSLATION OF "DE SENSIBUS."

Rev. Frank Sewall, President of the Swedenborg Scientific Association.

Dear Sir: The translation of Swedenborg's *De Sensibus* is hastening very slowly forward, as may be evident every now and then when the *New Philosophy* appears.

If one who is not a member of the *Swedenborg Scientific Association* may venture a suggestion, I would say that the book is too large a one to publish in a magazine like *The New Philosophy*. It takes too long to get it done in that way, and that manner of production does not constitute stimulus enough for the translator who is temperamentally somewhat in need of the goad. He can hurry at a considerable rate when he must.

Yours respectfully,

ENOCH S. PRICE.

Bryn Athyn, Pa., May 21, 1907.

REPORT OF THE COMMITTEE ON THE TRANSLATION OF SWEDENBORG'S EARLY SCIENTIFIC TREATISES IN SWEDISH.

To the Swedenborg Scientific Association:

The Committee is able to report that the Rev. Emil Cronlund, of Toronto, Ont., Can., has now finished the English translation of parts I and II of Swedenborg's scientific journal, the *Dædalus Hyperboreus*, or "Northern Inventor," *i. e.*, the parts published in January and April, 1716. The work is progressing slowly but continuously. Greater progress would, no doubt, be made, if steps were taken by the Association looking to the publication of the work. We recommend this subject to the consideration of the Association.

An interesting contribution to the work in which the Committee is interested, has been made during the year by the Rev. Joseph E. Rosenqvist, of Bryn Athyn, Pa., in the translation of Swedenborg's *New Ways of Discovering Metallic Veins*, written in Swedish in the year 1719. Mr. Rosenqvist's English version was published in *The New Philosophy* for October, 1906, and was reviewed in *New Church Life* for February, 1907, p. 100. Swedenborg's suggestions in this little treatise have, as an immediate result of the English translation, been utilized by the *Mining Topics*, a New York journal.

We would suggest that the name of the Rev. Joseph E. Rosenqvist be added to the membership of the Committee.

For the guidance of future translators we submit the following list of Swedenborg's early treatises in the Swedish tongue:

1. *Poem on the Wedding of the Rev. J. Kolmodin*, 1700. Translated by Mr. A. H. Stroh, and published in the *Mercury*, a Young People's Journal, published by students of the Academy of the New Church, at Bryn Athyn, 1905, p. 17.

2. *Poem on The Rule of Youth*, 1709. Not yet translated.

3. *Dædalus Hyperboreus,* 1716-1718. In process of translation.

4. *Plan for the New Literary Society in Upsala,* 1716. Not yet translated.

5. *On various kinds of Soil,* 1716. Translated by Mr. A. H. Stroh, and published in *The New Philosophy,* April, 1906.

6. *On Fossils,* 1716. Translated by Mr. A. H. Stroh, and published in his *Scientific and Philosophical Treatises by Emanuel Swedenborg,* Part I, Fasc. 1.

7. *New Methods of sailing against the Stream,* 1716. Not yet translated.

8. *Various Tests and Experiments,* 1716. Not yet translated.

9. *Plan for Screwjacks,* 1716. Not yet translated.

10. *Stereometric Proportions,* 1716. Not yet translated.

11. *Description of a Crane,* 1716. Not yet translated.

12. *Experiments on the Echo,* 1716. Not yet translated.

13. *On the Causes of Things,* 1717. Translated by A. H. Stroh and published in his *S. and P. Treatises,* 1906.

14. *On the Establishment of Salt Boileries,* 1717. Not yet translated.

15. *On Tin Works,* 1717. Not yet translated.

16. *A New Theory of the gradually decreasing Rotation of the Earth,* 1717. Not yet translated.

17. *Improvements at Carlscrona,* 1717. Not yet translated.

18. *On the Establishment of an Astronomical Observatory,* 1717. Not yet translated.

19. *On Commerce and Manufacture,* 1717. Not yet translated.

20. *On the Nature of Fire and Colors,* 1717. Translated by C. Th. Odhner, and published in Mr. Stroh's *S. P. T.,* 1906.

21. *Algebra,* 1718. Translated by the Rev. Emil Cronlund; the MS. is preserved in the Archives of the Academy of the New Church.

22. *On the Longitude,* 1718. Not yet translated.

23. *A new Arithmetic,* 1718. Not yet translated.

24. *On the Welfare of the Country,* 1718. Not yet translated.

25. *A Discourse between Mechanica and Chymica,* 1718. Not yet translated.

26. *On the Revolution and Position of the Earth and the Planets,* 1719. Translated by A. F. Bohman, and published at London, 1899.

27. *On the Height of Water,* 1719. Translated by A. H. Stroh, and published in his *S. P. T.*

28. *On Tremulation,* 1719. Translated by C. Th. Odhner, and published in Boston, 1899.

29. *On Blast Furnaces,* 1719. Not yet translated.

30. *On Money and Measures,* 1719. Not yet translated.

31. *On Metallic Veins,* 1719. Translated by J. E. Rosenqvist, and published in *The New Philosophy* for October, 1906.

32. *On Docks, Sluices and Salt Works,* 1719. Not yet translated.

33. *On the Fall and Rise of Lake Wenner,* 1720. Translated by A. H. Stroh, and published in the *S. P. T.*

34. *Methods for working Copper,* 1722. Not yet translated.

35. *On Swedish Money,* 1722. Not yet translated.

From this list it will be seen that of thirty-five different treatises by Swedenborg in the Swedish tongue, only ten have as yet been translated into English. There is, therefore, still ample scope for the activity of your Committee.

Respectfully submitted,

C. Th. Odhner,
Chairman.

REPORT OF THE COMMITTEE ON THE PUBLICATION OF SWEDENBORG'S SCIENTIFIC MANUSCRIPTS.

To the Swedenborg Scientific Association:

During the past twelve months practically no work has been done on the printing of *De Sale.* Although furnished with considerable prepared copy, the printer, for several months, did no new work. Finally, about six or seven months ago, it was found that he had suddenly given up business. Considerable time was taken by our treasurer, Mr. Doering, in establishing communications with him and in securing the copy, drawings, and plates belonging to *De Sale* which he had in his possession.

The firm to which the type of this work had been sold refused to continue the printing except at a considerable advance over the price we had been paying, and time was consumed in the endeavor to find another printer. As, however, it was impossible to secure similar type, and as most of *De Sale* is already set up, it was finally thought best to accept the terms offered.

Work was resumed some seven weeks ago, but, as yet, very little has been done by the new printer. He has printed little more than a single galley, and, as he seems to be wholly unfamiliar with Latin composition, his work is full of mistakes, which involve both delay and expense in corrections.

The MS. copy received from Stockholm contains 250 pages. Of these, 185 pages have been printed, (making 112 pp. small 8vo), and five are in type.

Respectfully submitted,

Alfred Acton,
Chairman.

REPORT OF THE COMMITTEE TO PRESENT PROPOSALS RELATING TO THE SENDING OF MR. ALFRED H. STROH TO SWEDEN.

To the Swedenborg Scientific Association:

The Committee appointed to memorialize the General Convention of the New Jerusalem and the Academy of the New Church to support Mr. A. H. Stroh in Sweden during his work of editing the Scientific Works of Swedenborg being published by the Royal Swedish Academy of Sciences, have to report that they did so memorialize the aforesaid bodies, and that the General Convention contributed $300.00 towards Mr. Stroh's support for the year ending June 1, 1907, and that the Academy of the New Church also contributed a like amount, which was later increased to $500.00.

As the work will take several years your Committee again appealed for funds, with the result that the same bodies have agreed to contribute $500.00 each for the coming year.

FRANK SEWALL,
Chairman.

REPORT ON THE COPYING AND PUBLICATION OF SWEDENBORG'S SCIENTIFIC WORKS.

To the Swedenborg Scientific Association:

In previous reports to the Association, and in two reports recently sent to the President, I have described in some detail the progress in the copying and publishing of Swedenborg's scientific works which have been going on for some years. This work has been steadily increasing in volume, until to-day it promises to place in the hands of students of Swedenborg practically all of the sources necessary for a general survey of Swedenborg's biography and of the system of philosophy constructed by him during the years 1710-1745.

Three volumes of the edition of Swedenborg's scientific works under publication at Stockholm by the Swedenborg Committee of the Royal Swedish Academy of Sciences are nearly completed. These three volumes contain many of the works which develop Swedenborg's philosophy of the physical world, and the subsequent volumes will contain most of his works in analysis of the human body. When this edition was undertaken by the Swedenborg Committee permission was received from Urbana University, the Association, and the Academy of the New Church, to make free use of certain copies of Swedenborg's MSS. in their possession. The Committee has also had a number of MSS. copied, and within the past year Professor Gustaf Retzius has authorized the copying of all original documents by or concerning

Swedenborg for deposit in the Library of the Royal Swedish Academy of Sciences, while Commodore O. W. Nordenskjoeld has contributed to the important work of editing and publishing the proposed *Swedenborg Archives* and a complete *Bibliography of Swedenborgiana in Scandinavia,* which have been referred to in previous reports. The work of editing Swedenborg is thus making great progress here in Stockholm, and in addition researches are being made not only in Sweden, but also beyond its borders, concerning new Swedenborgiana and the position of Swedenborg in the history of philosophy and the sciences. It is important that plates should be made of all Swedenborg's texts now being printed here, and there is hope of the accomplishment of this important work, the plan being to put the plates in the possession of the Association.

Fascicle 2, Part I., of the Association's series of *Scientific and Philosophical Treatises* by Swedenborg is now in press and will contain the following papers:

1. On various kinds of soil and mud.
2. New ways of discovering mines.
3. Swedenborg's letter to Jacobus a Melle.
4. Exposition of a hydrostatic law.
5. In general concerning the motion of the elements.
6. Arguments for the Principia.

The new edition of the *Worship and Love of God,* in press at Boston, has been delayed in publication during the past year, partly on account of the great pressure of other work here at Stockholm, and partly on account of the difficulty of deciphering some of the marginal notes at the close of Part I. But I shall be able to finish this important work before the next Annual Meeting of the Association.

Some months ago Commodore O. W. Nordenskjoeld presented me with two rare documents signed by Swedenborg, one of them containing a fine impression in wax of Swedenborg's signet. I now present them to the Association, together with some rare books from the library of Dr. James John Garth Wilkinson, part of which was recently sold at London. I shall forward these documents and books to the Secretary. They will be useful some day when the Association has its own headquarters and Library.

Mr. Robert A. Shaw, editor of the *New Church League Journal,* who visited Stockholm last October and thus had an opportunity of directly inspecting the work here, has most diligently co-operated in advertising the edition of the scientific works under publication here, and has called emphatic attention to the importance of the work in the columns of the *Journal.* The collecting of subscriptions for the volumes now advertised is an important help, for the financial support thus gained will increase the effectiveness of the work as a whole.

The proposal to the Swedish Government by the Swedenborg Committee of the Royal Swedish Academy of Sciences to have removed from London to Stockholm the remains of Emanuel Swedenborg shows what a disposition there is among the successors of the earlier Swedish scientists to do honor to the memory of a great Swede and a famous investigator. Over fifty years ago (1852) the same Academy honored the name of its great alumnus by striking the annual medal in memory of him: *"Tantoque exsultat alumno!"*

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences, Stockholm,
May, 1907.

REPORT OF THE COMMITTEE ON INCORPORATION.

Rev. Frank Sewall, D. D., President of the Swedenborg Scientific Association.

Dear Sir: At the annual meeting held in New York last year it was voted "That it is the sense of this Association that the Association be incoprorated upon the general lines of the plan outlined in the report of the Committee on Incorporation presented at this meeting, and that the Board of Directors be authorized and empowered to take such steps as may be necessary to carry this purpose into effect and upon such incorporation being effected to turn over to such incorporated body all the property now held by this Association or to which it may be entitled."

The Board of Directors at a meeting held immediately after the meeting of the Association, appointed a committee of five to take the proper legal steps to incorporate in the State of Pennsylvania.

These gentlemen had the charter drawn up in proper form and the matter was taken up with the courts of Philadelphia, who on the 20th day of October granted a charter to the five gentlemen whose names were subscribed thereto.

The charter and By-Laws adopted by the incorporators are submitted herewith as a part of this report.

Yours respectfully,

C. E. DOERING,
Chairman, Committee on Incorporation.

Bryn Athyn, Pa., May 22, 1907.

CHARTER OF THE SWEDENBORG SCIENTIFIC ASSOCIATION.

In the Court of Common Pleas, No. 2, for the County of Philadelphia of the June term, 1906. No. 2766.

In the matter of the Charter of the Swedenborg Scientific Association.

To the Honorable, the Judge of the Common Pleas Court of the County of Philadelphia, State of Pennsylvania:

Agreeably to the provisions of the Act of the General Assembly of Pennsylvania, entitled "An Act to Provide for the Incorporation and Regulation of Certain Corporations," approved the twenty-ninth day of April, A D., one thousand eight hundred and seventy-four, and the several supplements thereto, the undersigned, all of whom are citizens of Pennsylvania, have associated themselves together for the purpose and upon the terms and by the name hereinafter set forth, and to the end that they may be duly incorporated accordingly to law, hereby certify that:

ARTICLE I.

The name of the intended corporation is the "Swedenborg Scientific Association."

ARTICLE II.

The purposes for which the said corporation is formed under the third paragraph of the second section of said Act of Assembly, are as follows:

First. To preserve, translate into any language, publish, and distribute the scientific and philosophical works of Emanuel Swedenborg.

Second. To promote the principles taught in these works.

ARTICLE III.

The business of the corporation is to be transacted at the City of Philadelphia, State of Pennsylvania.

ARTICLE IV.

The corporation shall have perpetual succession by its corporate name.

ARTICLE V.

The said corporation shall have no capital stock.

ARTICLE VI.

The names and residences of the subscribers, all of whom are citizens of the United States, and four of whom are residents of Pennsylvania, are as follows:

Frank Sewall, Washington, D. C.
Felix A. Boericke, Philadelphia, Pennsylvania.
George M. Cooper, Bryn Athyn, Montgomery Co., Penna.
Reginald W. Brown, Bryn Athyn, Montgomery Co., Penna.
Charles E. Doering, Bryn Athyn, Montgomery Co., Penna.

ARTICLE VII.

The management of the corporation shall be vested in a Board of Directors, to consist of three (3) persons, and the names and residences of those who are chosen Directors for the first year are as follows:

Felix A. Boericke, Philadelphia, Penna.
Charles E. Doering, Bryn Athyn, Montgomery Co., Penna.
George M. Cooper, Bryn Athyn, Montgomery Co., Penna.

ARTICLE VIII.

The whole yearly income of the said corporation other than that derived from real estate shall not exceed the sum of twenty thousand dollars ($20,000.00).

Witness our hands and seals this ninth day of July, A D., one thousand nine hundred and six (1906).

FRANK SEWALL [L. S.],
REGINALD W. BROWN [L. S.],
FELIX A. BOERICKE [L. S.],
GEORGE M. COOPER [L. S.],
CHARLES E. DOERING [L. S.].

COMMONWEALTH OF PENNSYLVANIA, COUNTY OF PHILADELPHIA, *ss:*

Before me, a notary public in and for said county, personally appeared Felix A. Boericke, George M. Cooper, and Charles E. Doering, three of the subscribers to the foregoing certificate of incorporation, who, in due form of law, acknowledged the same to be their act and deed and the act and deed of their said associates, according to the act of Assembly in such cases made and provided.

In witness whereof, I have hereunto set my hand and affixed my official seal this ninth day of July, A. D., 1906.

[SEAL] EWERSON CONRAD,
Notary Public.

DECREE.

In the Court of Common Pleas, No. 2, of Philadelphia County, No. 2766, June term, 1906.

In the matter of the incorporation of the Swedenborg Scientific Association.

And now, October 20th, A. D. 1906, the foregoing certificate of incorporation has been filed in the office of the Prothonotory of said Court, since July 13th, A. D., 1906, and it appearing that publication of the intended application was made in the Public Ledger, a newspaper of general circulation in the City of Philadelphia, on the 30th day of July and 6th and 13th days of August, 1906, and in the Press, also a paper of general circulation of the same city, on the 30th day of July and 6th and 13th of August, 1906, and has been published once a week in both of said papers since that time, as appears by entry therein, and due proof of said publication having been herewith presented to me, I do hereby certify that I have perused and examined said instrument and find the same to be in proper form and within the purposes named in the first class of corporations specified in section 2 of the Corporation Act of April 29th, 1874, and that said purposes are lawful and not injurious to the community. It is therefore ordered and decreed that the said Charter be approved, and upon the recording of the said Charter and its endorsements, and this order, in the office of the Recorder of Deeds in and for the County of Philadelphia which is hereby ordered, the subscribers thereto and their associates and successors shall thenceforth be a corporation for the purposes and upon the terms and under the name therein stated.

[SEAL] MAYER SULZBERGER,
Judge, Resdg.

Recorded in the office for Recording Deeds, et cetera, in and for the County of Philadelphia, in Charter Book No. 33, page 474.

Witness my hand and seal of office this 26th day of October, A. D., nineteen hundred and six (1906).

[SEAL] WM. S. VARE,
Recorder of Deeds.

BY-LAWS OF THE SWEDENBORG SCIENTIFIC ASSOCIATION.

ARTICLE I.

Place of Business.

The principal place of business of this Corporation shall be at 1011 Arch street, in the City of Philadelphia, State of Pennsylvania.

ARTICLE II.

Membership.

SECTION 1. Any person wishing to co-operate in promoting the objects of this Corporation, may become a member, by presenting a written application to the Secretary, and by the payment of a fee of one dollar ($1.00) for the first year's dues. Provided, that all persons who shall be members in good standing of the unincorporated Association known as the Swedenborg Scientific Association at the time of its dissolution shall thereupon be considered members in good standing of this Corporation, their names to be placed upon the list of members on the date of such dissolution; and the first annual advance dues of each of such persons shall become due and payable on the date that his or her dues would have become payable, had the said unincorporated Association continued in existence.

SEC. 2. Any one may become a life member by the payment of the sum of twenty-five dollars ($25.00), and any one who shall be a life member in the said unincorporated Association at the time of its dissolution shall thereupon be considered a life member of this Corporation without further payment.

SEC. 3. Honorary members may be elected on recommendation of the Board of Directors.

SEC. 4. The annual dues of each member shall be one dollar ($1.00) payable in advance.

SEC. 5. Any member after having failed to pay his dues for two years, and after having been duly notified, shall be considered to have resigned from the Association.

ARTICLE III.

Meetings.

SECTION 1. The members of this Corporation shall hold one regular annual meeting in the month of May of each year, in Philadelphia, on a date and at an hour to be fixed by the Board of Directors, and notice of said annual meeting shall be given by mailing a written or printed notification thereof to the last known address of each and every member, at least two weeks' previous to such meeting, stating the hour and place of meeting.

SEC. 2. Special meetings may be called at any time by the President or any three Directors upon at least two weeks' previous notice to be given in the same manner provided for notification of annual meetings and stating the purpose and business of the meeting.

ARTICLE IV.

Quorum.

Until the annual meeting in May, 1907, three members of the Corporation shall constitute a quorum for the transaction of business. After that time seven members shall constitute a quorum.

ARTICLE V.

Board of Directors.

At the annual meeting in May, 1907, and at each annual meeting thereafter, the members shall elect from their number a president and six directors to serve for one year or until their successors are elected. The president shall be ex-officio a member of the Board of Directors, which shall, therefore, be composed of seven members.

It shall be the duty of the Board of Directors to devise ways and means to carry out the objects of the Association.

ARTICLE VI.

Officers.

SECTION 1. The officers of this Corporation shall be a President, a Vice-President, a Secretary, and a Treasurer. All (except the President) shall be elected by the Directors at a meeting to be held immediately after the annual meeting of the Corporation.

SEC. 2. In case of a vacancy occurring in the Board of Directors, or in any office, a majority of the Board may elect a person to fill the unexpired term.

ARTICLE VII.

Quorum of Directors.

Until the election of a Board of Directors at the annual meeting in May, 1907, three members of the Board of Directors shall constitute a quorum for the transaction of business. After that time, four directors shall constitute a quorum.

ARTICLE VIII.

Duties of Officers.

SECTION 1. It shall be the duty of the President to preside at all meetings of the Corporation and of the Board of Directors, to execute

all contracts required to be under seal, and to perform such other duties as are usually incident to his office.

SEC. 2. The Secretary and Treasurer shall perform the duties usually assigned to such officers.

ARTICLE IX.

Amendments.

These By-Laws may be altered, amended or entirely abrogated, by a vote of a majority of the members present at any annual meeting or at a special meeting called for that purpose.

MINUTES OF A MEETING OF THE INCORPORATORS OF THE SWEDENBORG SCIENTIFIC ASSOCIATION HELD ON APRIL 18, 1907.

1. The meeting was called to order at 2:15 P. M., at the office of Dr. F. A. Boericke, 1011 Arch street, Philadelphia, Pa.

2. There were present: Dr. Frank Sewall, Rev. Chas. E. Doering, Dr. F. A. Boericke, and Rev. Reginald W. Brown.

3. Dr. Sewall was elected temporary Chairman.

4. Mr. Brown was elected temporary Secretary.

5. By-Laws for the incorporation were presented and read.

6. On motion, duly seconded, the By-Laws were approved as read.

7. The meeting proceeded to the election of officers.

8. Dr. Frank Sewall was elected President.

9. On motion, duly seconded, the five incorporators were constituted a Board of Directors until the annual meeting in May, 1907.

10. The meeting of the Corporation adjourned, and a meeting of the Board of Directors was called to order.

11. The following officers were appointed to hold office until the annual meeting in May, 1907: *Vice-President,* Dr. F. A. Boericke; *Secretary,* Rev. Reginald W. Brown; *Treasurer,* Rev. C. E. Doering.

12. On motion, duly seconded, it was voted that the Corporation hold its first annual meeting at the rooms of the Philadelphia Society of the New Jerusalem Church on May 22d, 1907. (The date of meeting was subsequently changed to May 23d.)

13. On motion, duly seconded, the Board adjourned.

REGINALD W. BROWN,
Secretary.

OFFICERS AND COMMITTEES FOR 1907-1908.

PRESIDENT.—*REV. FRANK SEWALL, A. M., D. D.,* 1618 *Riggs Place, Washington, D. C.*

VICE-PRESIDENT.—*DR. F. A. BOERICKE,* 1011 *Arch Street, Philadelphia, Pa.*

SECRETARY.—*REV. REGINALD W. BROWN, Bryn Athyn, Montgomery Co., Pa.*

TREASURER.—*REV. CHAS. E. DOERING, Bryn Athyn, Montgomery Co., Pa.*

BOARD OF DIRECTORS.

The President, *ex-officio;* Dr. F. A. Boericke, Rev. Chas. E. Doering, Rev. Reginald W. Brown, Mr. Horace P. Chandler, 53 Devonshire St., Boston, Mass.; Dr. Geo. M. Cooper, Bryn Athyn, Montgomery Co., Pa.; Dr. E. A. Farrington.

EDITOR OF "THE NEW PHILOSOPHY."

Dr. E. A. Farrington, 2004 Mt. Vernon St., Philadelphia, Pa.

COMMITTEE ON A NEW EDITION OF THE "ANIMAL KINGDOM."

Rev. C. E. Doering, *Chairman;* Dr. Harvey Farrington, Mr. Alfred H. Stroh.

COMMITTEE ON THE TRANSLATION OF THE "LESSER PRINCIPIA."

Mr. Alfred H. Stroh, Rev. C. E. Doering.

COMMITTEE ON THE TRANSLATION OF "DE SENSIBUS."

Rev. Enoch S. Price.

COMMITTEE ON THE TRANSLATION OF SWEDENBORG'S EARLY SCIENTIFIC TREATISES IN SWEDISH.

Rev. C. Th. Odhner, *Chairman;* Rev. Emil Cronlund, Rev. Joseph E. Rosenqvist.

COMMITTEE ON THE PUBLICATION OF SWEDENBORG'S SCIENTIFIC MANUSCRIPTS.

Rev. Alfred Acton, *Chairman;* the President, the Treasurer, Mr. Horace P. Chandler, Mr. Alfred H. Stroh, Mr. Robt. B. Caldwell, Jr. (*New Philosophy,* 1901, p. 85; Minutes, 288, 345-347.)

KEEPER OF THE ARCHIVES.

The Secretary.

COMMITTEE TO PRESENT PROPOSALS RELATING TO THE SENDING OF MR. STROH TO SWEDEN.

The President and Treasurer.

COMMITTEE ON A PLAN FOR EASY REFERENCE TO SWEDENBORG'S SCIENTIFIC AND PHILOSOPHICAL WORKS.

Rev. C. Th. Odhner, *Chairman;* Mr. Alfred H. Stroh.

COMMITTEE TO RAISE FUNDS FOR THE MAKING OF PLATES.

Rev. C. E. Doering, *Chairman;* Mr. Robert A. Shaw, Mr. Horace P. Chandler.

THE NEW PHILOSOPHY.

VOL. X. OCTOBER, 1907. No. 4.

THE SENSES.

PART FOUR OF THE ANIMAL KINGDOM, BY EMANUEL SWEDENBORG.

CHAPTER V. (*Continued from p. 163.*)

(*Concerning the Ear.*)

212. *A similar distinct modification, by means of the fenestra ovalis, pours over into the fenestra rotunda.* 1. This also takes place by a triple way; 2. namely by the periosteum of the cavity of the tympanum; 3. by the air; 4. and especially by the fenestra ovalis, which is the regulator, and invites the correspondent local motion, and at the same time conveys the tremor to the little bones and to the internal membranes. Thus from the whole border a [tremor] similar to that which is in the fenestra ovalis falls into the fenestra rotunda.

213. *Therefore, the fenestra ovalis is the regulator, distinguishing the modifications of the unity of sound in the membrana tympani—it imparts local motion both to the bones and to the internal membrane, wherefore to the whole labyrinth; such therefore as it is in the fenestra ovalis, such it is everywhere propagated.*

214. 26a. *It is the same whether the labyrinth is full of air, or whether it is only full of ether.* 1. There are those who say that they have detected passages for the communication of air under the fenestra; see Casaubon. 2. There are those who teach that this office is given to the fenestra rotunda, but it is

not true. 3. The air shows its own apertures. 4. If the labyrinth is full of expanded ether it is just the same, for thus also there is an equilibrium of pressure. 5. The ether is the wing of sonorous modification. 6. Therefore it would seem that it could confer the same to the inmost parts. 7. It is enough if the tremor spread abroad through the membranes. 8. For there is no sound in the ear, sound is as it were felt in the brain, by the change of state and by tremors in the membranous, nervous, cartilaginous and osseous system. 9. Hence there may be sound without the ear in the brain alone.

215. 26b. *To sum up:* Those things which flow to the membrana tympani, and are obscurely received by it, or are borne off by the cavity of the tympanum, these are rendered more distinct in the fenestra ovalis: namely, the unities of sound themselves, their harmonies, affections, changes of state, these are rendered distinct in the fenestra ovalis; similar things are transferred through the whole labyrinth, where again in the semicircular canals, and especially in the cochlea, they become distinct, and are distinctly impressed on the nerves.

216. 27. *These things therefore are similarly propagated by the fenestra ovalis through the whole labyrinth and its periostea, and through the semicircular canals and the cochlea.* 1. All these things are protected by the same membrane, or by the continuous periosteum; 2. the semicircular canals by the same. 3. The cochlea by the same. 4. And because the thing is especially to be done in the cochlea, two doors open into it. 5. One opens on the side of the vestibule, the other on the side of the tympanum through the fenestra rotunda. 6. One aperture adheres to the fenestra rotunda, the other to the fundus or wall of the vestibule. 7. The tremor in the cochlea so completely concurs that it is the same everywhere, and thus from many causes one thing is accomplished, an equalization is brought about and thence a certain effect.

217. *But the reason for all this is, that here a distinct tremiscence or modification may distinctly tend into its own nerves, that from the nerves it may distinctly tend into the brain, and*

that thence a distinct sensation may arise. 1. For this reason the whole periosteum of the labyrinth is only an expansion of the nerves of the soft portion of the seventh pair. 2. The little branches of the nerve run through the semicircular canals. 3. They likewise run through the cochlea and the spiral lamina, from the axis itself. 4. So that every tremiscence may be poured abroad most distinctly into that nerve and indeed into the whole of it. 5. This is the reason for the whole organism of the labyrinth. 6. Otherwise distinct perfection would not exist. 7. For that very sound ought to be exalted by many modes, and to be poured into the whole nerve. 8. Nor is this into one part of it. 9. Nor is the sound alone, but also its harmony, affection, and change of state of all degrees, or of all things whatsoever that are in the least and the greatest sound.

218. 29. *The whole periosteum of the labyrinth is an expansion of the soft part of the nerve of the seventh pair.* 1. It appears as the inmost membrane of the fenestra ovalis. 2. It appears also as the inmost membrane of the fenestra rotunda; 3. of the walls of the labyrinth and vestibule; 4. of the semicircular canals; 5. of the cochlea. 6. Wherefore also it is the membrane which invests and subtends the spiral lamina. 7. Into this expansion is sent forth a modification by the fenestra ovalis.

219. *A general modification passes into the bones themselves to which the periosteum is bound.* 1. Wherefore it passes into the bones of the temples; 2. into the bones of the semicircular canals; 3. into the bones of the cochlea; 4. into the spiral lamina. 5. Thus most broadly into the whole neighborhood. 6. This general tremiscence harmonizes with the tremiscence of the periosteum, because it arises from the same origin or from the fenestra ovalis. 7. Thus the general is conjoined with its own particular, and all parts tremble together with the single parts in their own way. 8. The tremor runs through according to the organism, and produces effects according to the organism.

220. 30. *The semicircular canals perform that use,—namely, they receive the whole sonorous modification into their own periostea, and thus concentrate it into themselves;* for they are covered with a continuation of periosteum from the walls of the labyrinth. 2. Wherefore the modification is therein borne into an orb, and thus concentrated.

221. *Then further that they* [*the canals*] *may receive every tremor of the bones of the same degree:* 1. The canals indeed are not only membranous, 2, but also osseous; 3. and they adhere to the bones of the labyrinth. 4. Thus they receive the blows of the stapes and the pulsations of the fenestra ovalis by continuation.

222. *The canals receive into themselves tremors of a triplicate degree:* 1. The ultimate degree is of the little bones. 2. The middle degree is of the periosteum. 3. The inmost degree is of the fibrils by themselves. 4. In every single sound there lie that number of degrees of modification.

223. *They* [*the canals*] *also receive the tremulous air or ether, which being beaten back augments the tremor.* 1. If it be air, a repercussion takes place. 2. It is otherwise if it be ether; then the return is only into the fibrils or modes of the first degree. 3. It is not driven into spirals, wherefore there is the repercussion.

224. *They carry off these sonorous tremiscences by the fibres and little branches into the major branches of the nerves and thus into the trunks of the nerves:* 1. This is the principal use, 2. for the nerves run through them, 3. and they are there expanded into fibres and periostea.

225. *Every single sound or tone therein invites fibres or little branches of its own composition, and excites them into sensible tremiscence, and thus one sound is distinguished from another, not otherwise than when a motion is set up in one string another of the same tone is vibrated in another instrument.* 1. This experiment exists in the visible world, namely, that a consonance of one thing is moved by the consonance of another, thus that there may be a sympathetic quality even in

the nerves. 2. But the tremor from one chord does not come into the other consonance by means of the air, but by contact of the moved instrument. 3. It is permitted to see and hear sensible vibration. 4. There is a similar relationship in the semicircular canals. 5. For the nerves thus press the canals, in order that the tremulation may be concentrated into them, and the body of the canal trembles together with the periosteum. 6. In order to understand the causes of this phenomenon, it must be observed that every single sound has its own diverse quantity or degree, and diverse quality or swiftness of motion; just as the vibration of a string presses forward in waves shorter or broader altogether according to the composition and tension of the string, as is known. 7. The periosteum receives the vibration of the fenestra ovalis and carries it away into those canals, likewise also does the osseous wall. 8. When the nerve receives a composition corresponding to it, a tremor attacks this composition, not the others. 9. For if all vibrated, then there would be a confusion of waves, larger and smaller together, which would rather extinguish the tone. 10. A nerve gives forth branches of most diverse composition or degree, so that there may always be found several into which every tremor whatever may rush. 11. This is continued into the trunk itself, and for that reason those compositions and the trunks are vibrated. 12. Thus the same tremor always runs through the trunk even to the brain. 13. One degree of composition has its own maximum and minimum; the difference is only that it is not again composed, but consists of more and fewer fibres, whence is the same degree of composition. 14. There are contremiscences of triplicate degree in every sound; these will concord and produce one thing. 20. Wherefore by means of the canal all the sonorous contremiscences of triplicate degree are inborne by the trunk; if these things did not harmonize, sound would not be sensibly raised: 21. This is the second reason why agreeing things concord. 22. Otherwise, contrary to nature, there would be repugnance and extinction. 23. Wherefore this rule dominates: 24. Every fibre is free, and every composition of fibres.

226. *For this reason the sonorous tremor is borne into all the nerves however numerous they are, and into the trunks of the nerves, but therein it continues its own tremor according to the corresponding degree of composition, nor is it changed into another.* 1. So that if there be a tremor which requires the composition of five fibres, that tremor in every branch and trunk runs distinctly through five fibres at once, and implicates them in its waves. 2. So also it is in the trunk. 3. Every sound keeps its own composition even to the last. 4. Otherwise a coarser sound if it require the composition of ten fibres, which composition will correspond to it, thus ten fibres are traversed, because the sound is coarser.

227. *Thus by means of the semicircular canals every tremor is borne distinctly into every nerve and trunk.* 1. Both because the nerve runs through them; 2. and because it is bound to them. 3. The tremor is concentrated towards the nerves from the whole surface according to the little branches; 4. that it may be expanded therein into the periosteum with its branches.

228. *Thus collected the tremor passes from the canals into the more general trunk:* 1. Namely, into the trunk of the softer part of the seventh pair. It is regularly collected from the whole labyrinth.

229. *Thus it is not as a tube which breathes forth the air and thus sounds, as in acoustic tubes, nor do sonorous zones seem to be necessary, although the periostea do not strictly adhere to the walls.* 1. From the fallacies of the senses we can conclude that there are small tubes; 2. that there is a sound or whistling within; 3. just as in acoustic tubes. How incongruous this is, and contrary to the principles of nature, is observed at the first look. 5. The tubes are only to the end that the modifications may distinctly enter into the nerves, may distinctly come through to the brain and the cortical substance. 6. There the vibration and change of state make what is called sound. 7. Wherefore no sound drives the air into the walls of the labyrinth, the periosteum of which is called the sensory of hearing.

The Cochlea.

230. That the use of the cochlea is thus to distinguish this last sonorous modification, so that it may pass distinctly into the nerves, that thence discriminations of sensation may be perceived, is altogether undoubted; but in order to know how it effects this, its structure must be thoroughly examined. Concerning the cochlea the following things must be observed:

231. 1. *That the nucleus is an axis brought together from mere centers; thus it is to be called the central axis;* 1. for it is erected in the middle of the cochlea. 2. The spiral lamina constitutes its semidiameter. 3. The cochlea itself constitutes the peripheries. 4. Thus that axis or nucleus is a perpetual center or centers protracted into a continuous axis.

232. *In this center is the most quiet station of all, to which the mobile peripheries refer themselves as levers.* 1. Thus all the radii of the spiral lamina are semidiameters. 2. But they are drawn into a spiral flux.

233. *Wherefore that axis is hollow, and the nerve of the soft portion resides there and it traverses this as a fulcrum, in complete rest.* 1. This is evident from those who have described it. 2. Then that the nerve passes through; 3. and that thence branches are sent forth in every direction.

234. *Thus it represents a kind of cone, for it becomes smaller towards the lower parts.* 1. *As the trunk,* 2. so also the periphery itself.

235. 2. *The lamina spiralis, which consists of the thinnest and most highly elastic bone, is stretched forth thence like the area of a circle, but of a circle drawn forth into a spiral.* 1. Let a center, or section of the muscles, be assumed, and round about it a circular area. 2. If this be bent downward a spiral thence results; 3. as if all this congeries were soft, then it could be compressed into such an area. 4. This area would represent perpetual circles, which go forth from a centre and are terminated in a periphery. 5. Or if you wish to describe such an

area by wires [fila], if the wires were stretched downward, a similar spiral would be described. 6. For this reason a spiral is referred to a circle and a circle to a spiral as to its measure. 7. This is the regular spiral, there are also irregular spirals consisting of other curves and of ellipses. 8. Wherefore this lamina spiralis *can be called a perpetual semidiameter,* or *a perpetual area of a circle.*

236. *This lamina is invested with a thin periosteum, which is an expansion of the nervous fibres.* 1. It is so in the whole labyrinth; 2. and in the canals. 3. The branches themselves of the nerves break forth everywhere and spread themselves abroad.

237. *By means of this periosteum the pendulous lamina spiralis is attached at one side, in order that it may be more suitable and more prompt for giving out vibrations.* 1. As may appear from the description by Valsalva, 2. and by that of others; 3. but it forms a continuum by a continued periosteum.

238. *This lamina from base to apex decreases in the extent of its area or semidiameter, first decreasing in thickness or body, even until it ends in a membrane about the apex; but in the same manner it increases in aptitude for trembling, in elasticity,* etc. 1. Thus in order that all dimensions might be induced upon this lamina spiralis. 2. All degrees of elasticity from the greatest to the least of that same degree are indued upon it; 3. so that there may be no tremor, which may not find somewhere its own correspondence; 4. thus it is the most perfect organ for receiving all degrees of tremiscence and modification.

239. 3. *Similarly the nerves which flow into the lamina spiralis from the nucleus, decrease from the greatest to the least, to the end that in them may be found all distinctions of composition.* 1. For the nerves are disseminated through the periosteum of the lamina spiralis; 2. and perpetually decrease; 3. and are in proportion to the lamina, which serves as a base; 4. *for the periosteum itself,* which comes from the nerves, in-

creases in thinness in the direction of the apex of the lamina spiralis.

240. 4. *The circumference, which is the wall of the lamina spiralis, similarly decreases in fullness, thickness and fullness of commodification.* 1. This is in proportion to the lamina spiralis, 2. to the periosteum, 3. and to the nerves.

241. 5. *From this it appears that the lamina spiralis is vibratile, and constructed for receiving all quantities and qualities, or degrees and moments, or densities or celerities of the general modification;* 1. that is to say, a part of it is osseous and elastic; 2. wherefore there are tremors and pulsations; 3. especially of the stapes and in the fenestra ovalis; 4. if the vibration is reciprocal and the local motion alternate, 5. which is a general modification. 6. The general modifications are of infinite variety, as appears from musical instruments, where every tone or quality and celerity of sound has its own general. 7. The lamina spiralis is constructed for receiving these varieties.

242. *Thus there cannot be a general tremiscence which shall not somewhere in this lamina find its own correspondent.* 1. Because it possesses all degrees of amplitude; 2. all degrees of thickness and thinness; 3. all degrees of elasticity. 4. It can be compared with infinite composite nerves; where it finds its own correspondent there it is vibrated; 5. and thence the origin of its common tremor results; 6. which is then continued likewise through the whole lamina; 7. indeed it is also transferred into the whole of the cochlea, its surface and nucleus; 8. and terminates in the nucleus and nerve, where there is a similar rest or conatus, or a similar vibration, without local motion. 9. All this is as has been observed above in regard to air, or in regard to the origin of sound.

243. *This common tremor is insinuated by diverse ways, and there concurs,* namely, 1. by the fenestra rotunda, from the cavity of the tympanum, where this tremor reigns; 2. from the cavity of the vestibule, by the pulsation of the stapes; 3. by way of the semicircular canals; 4. by way of all the bones in

which the labyrinth is inscribed; 5. by way of the nucleus from the bones of the temples; 6. thence by the scala tympani, and the scala vestibuli.

244. 6. *The modification also, which is of the second degree, arising in the fenestra ovalis, by undulations from the periphery to the center also passes into the cochlea, and indeed into its periosteum.* 1. For this is distinguished from the bony or ivory-like part. 2. It is thinnest at the apex.

245. *This tremiscence likewise finds its own correspondent or tonic, which is modified with it, from which as from a beginning, a similar mode runs through the whole lamina;* 1. just as has been said of the bony part. 2. The causes were shown above, why that which is harmonious harmonizes; 3. and how this runs through the whole; 4. for thus that pendulous periosteum is suited to receive all varieties; 5. and still more and more distant ones than the bony part itself; 6. but they will correspond.

246. *Likewise also the nerve, which is implanted by branches of diverse dimension in the periosteum;* a similar reason occurs here as above.

247. *All this vibration and modification respects the nucleus and the nerve as their center to which they aim—into which they bring their modes.* 1. For they occupy the place of the center. 2. They are borne into antecedents. 3. There is a motion towards rest and conatus; 4. thus to the whole and entire nerve, so that there is no part of it that is not modified. 5. *It seems that the osseous part respects the nucleus, by the mediation of which this vibration is borne to the nerve, both thus mediately, and the membranous part the nerve itself, and thus immediately.*

248. *Into the same nerve and its trunk are borne the vibrations and modifications, which come from the semicircular canals and from those nerves;* 1. for all the branches come together in the nerve. 2. Thus do all the vibrations and modifications, 3. from many causes. 4. The modification or vibration comes together from the whole labyrinth, 5. from the whole

cavity of the tympanum; indeed those which come from the vestibule and the cavity of the tympanum are directed indeed into the two scalæ, but they come together and make one thing, for they communicate by the foramen into the apex, according to Winslow.

249. *They come together afterward into the common trunk in the Fallopian duct,* 1. where the hard and soft portions are together. 2. They come together by the long tract. 3. A similar vibration also enters the nerve there and vibrates it.

250. *From so many concurrent causes all things are held together and reduced to a harmony.* 1. The more similar causes which flow together into one thing, the greater the harmony, 2. especially in this cochlea; 3. if there be anything dissonant one thing corrects the other and reduces it to consonance, nature being leader. 4. So also does one ear for the other, 5. the canal for the cochlea, 6. the tympanum for the labyrinth, 7. one scala for the other, 8. the soft nerve for the hard, and vice versa. 9. From all this is the greatest harmony.

251. 8. *A triple degree of modification flows together into every sound, among which degrees there will be correspondence.*

252. *The ultimate degree is vibratory.* 1. It passes into the bones, as well into the membrana tympani, as by the pulsation of the stapes into the fenestra ovalis, 3. thus into the nighborhood of all the assembled bones and membranes. 4. This is represented in the fenestra ovalis by a common vibration, as in the nerves by throwing out from the line which infills the space, as by a reciprocal vibration in the fenestra ovalis. 5. It is represented in the lamina spiralis in its bony part. 6. It passes by the mediation of the nucleus into the trunk of the nerves.

253. *The middle degree is a modification.* 1. This begins in the fenestra ovalis, by the thinnest and swiftest undulations, 2. which take place in that area when moved this way and that. 3. Thus there are two modifications in one plane, the one of which does not impede the other, as everywhere. 4. This

degree is transferred into the periosteum and the membrane of the cochlea, 5. and thence by the branches into the nerves.

254. *The inmost degree flashes through the single fibres.* 1. This arises from the ether, which gives a turn to the wing and moves forward the modification. 2. Thus by the stapes the lamina acts upon the fenestra, 3. by the repercussion of the ether in the vestibule, 4. in the semicircular canals, 5. and by the flow of the ether in the scalæ cochleæ.

255. *These three degrees of modification constitute one sound, in which all things of the sound lie hidden together, and thus mutually correspond to each other, in order that one may excite the other.* 1. There is an undoubted correspondence of all three; 2. for there are varieties of all which will concord. 3. That the last degree excites the second is evident from the concordance of the strings or chords when the body of an organ is put in motion; 7. then also from causes spoken of above. 8. Many causes can be given, as, for instance, that the celerity of the whole and the celerity of the parts must agree; nor ought they to be irrational; when they cannot agree they mutually extinguish each other. 8. Similar is the matter of the second and of the third or inmost degree, 9. the concord of which is still more perfect. 10. The second degree similarly excites the first. 11. But how the first excites the second and the second the third, also appears from musical instruments.

256. 9. *That the cochlea is formed altogether for the cortical flow of the ether, sufficiently appears from its structure, and from the flow according to its structure.* 1. For the ether in the cochlea is turned through a double spiral; 2. that is to say, about the walls into a spiral from apex to base, 3. then in volume about the nucleus. 4. That the ether is turned through a double spiral, also see our philosophical principles in folio. 5. The higher indeed the form of the fluxion the more the spiral fluxion is duplicated by this mode, finally in the superior degree it is tripled, and so forth.

257. *This flow of the ether argues a first degree of modification, as does the air a second.* 1. The organism is alto-

gether according to the flux of the atmosphere. 2. Thus it appears that the ether possesses and actuates its own parts; 3. and so far as the air and ether agree, so far also do one and the other organisms of the ear. 4. The action of the ether is higher, whence it is purer.

258. *Wherefore sensations can by no means be understood, nor the organism of the ear, without a knowlege of the air and the ether, or of the atmospheres; for the one is constructed according to the nature of the other.* 1. Neither can interior sensations be understood; 2. for sensation is modification, life acceding.

259. *It is to be observed:* 1. that the semicircular canals are thus rationally co-ordinated, altogether as an analogue consisting of four boundaries, in which one has regard to the other, as has this to the third, and the third to the fourth. 2. Thus the trunks of the nerves, which the canals at last receive. 3. From this analogue the one continually reduces the other into its analogical relation, and holds it in it. 4. This relation regulates the cochlea itself, so that it may be held in a similar relation; 5. for the cochlea is the ultimate, which all the rest as media respect, that it may respect all the rest as its ultimate antecedents, or first posteriors, etc.

260. *It is to be observed:* 1. The celerities of one degree whether crasser or subtiler are undulous; they run through even from distance to distance in equal time. 2. The subtiler indeed make sharper waves, and the crasser greater waves even within the same time. 3. Otherwise the sucessive [tones] would not be distinctly heard, but one would run ahead of the other, whence there would be something indistinct. 4. The waves of many agreeing degrees similarly. 5. But the successions of the purer degrees are equal to the simultaneous things of the greater degrees; 6. for those subtile waves are as it were the beginnings of the greater, which for this reason can be called composition; 7. although they ought to be excited by an external cause at the same time as by an internal one. 8. In things of this kind consists the secret art of nature, which

comprehends in itself infinite things. 9. From this unique rule the matter can be explored. The qualities of substances are as their accidents. 10. Thus from substances and organisms we can learn how modifications take place, which are accidents. 11. Thence also the correspondence of the degrees can be judged and concluded.

In regard to other things see my former excerpts.

261. 10. How ideas coming forward from the articulate sound of speech pass over in the common sensory into similar ideas from visible things, cannot be given, before [we see how] visual modifications affect the same sensory.

CHAPTER VI.

The Eye and Sight.

262. *It is to be observed,* that according to the admonition one hears, I ought to refer to my philosophical principles, and to consider the levity, the gravity and the activity inscribed upon the pure; and let it be said that thus it is given me to fly wherever I wish.

263. 1. *Sensations can never be explored without the exploration of the auras; for the one refers most exactly to the other.* 1. This is evident from hearing and the aerial atmosphere, 2. from sight and the ethereal atmosphere, 3. and from a still superior sense which corresponds to a certain superior or celestial atmosphere. 4. The sensory organs themselves are constructed altogether according to the nature of the modification of those things. 5. Thus one respects the other as principal or instrumental.

264. *We are never admitted into the knowledge of these things unless we consider that as many prior atmospheres in order, so many sensations; wherefore there are three natural atmospheres to which is to be added a supreme:* namely, 1. air, 2. ether, 3. the celestial [aura], 4. finally the universal spiritual [aura] which is the supreme. 5. Unless there be a

correspondence of the universal world with the macrocosm, we shall never progress far in the matter of causes.

265. *If we explore the atmospheres, it is necessary that we explore their modifications; for modification is what produces the sensation extant in hearing and sight.* 1. Of what quality the modifications of the atmospheres are is not understood except from effects, 2. [perceived] by organs bound to those atmospheres.

266. *Nor [can we explore] modifications except by means of the doctrines of forms, of order and of series, finally of influxes.* 1. The doctrine of order teaches that the more perfect modifications are in the superior degree. 2. The doctrine of forms teaches of what quality is the more perfect form of fluxion which thence arises. 3. The doctrine of influxes teaches how the inferior obtains the power of acting from the superior. 4. The forms themselves of the fluxions indicate what are the qualities of the substantial forms; for they concur. 5. Wherefore corpuscular science is required; for the part is the last volume, and the greater when it is modified refers itself to it, and there subsists.

267. *These things have been taught in my philosophical principles, where the forms of the parts of each atmosphere have been treated of and delineated.* 1. These things were done for the present end; 2. now comes the application. 3. I pass over the delineations for they are there extant.

(*To be continued.*)

A PROPOSAL TO RENUMBER SWEDENBORG'S SCIENTIFIC WORKS.*

BY C. TH. ODHNER.

The announcement in the program of this meeting that I was to deliver "a paper" on the subject of renumbering Swedenborg's scientific works was due to a misunderstanding. I had casually mentioned my intention to present something on this subject at the meeting of the Association, and without further consultation I was put down for a paper. What I wish to present is simply a practical proposition, which can be stated in a few words.

I have for some time been distressed at the cumbersome way of referring to Swedenborg's scientific works which is made necessary by the present numbering in those works, and I was especially impressed with the desirability of a change, while editing a work by Miss Beekman in which hundreds of references are made. The same difficulty has, no doubt, been experienced by other students who have to make frequent references to the scientific works. In view of the constantly growing interest in Swedenborg's science, both within and without the New Church, the time now seems ripe to undertake a revision of the numbering, so as to make reference to them more convenient and time-saving.

In some of the works, notably the *Principia,* the numbers are often tremendously long, and reference to any special sentence can be made only by giving the page of the edition at hand—an unsatisfactory method, inasmuch as the paging varies in different editions. Some of the works, again, are divided into volumes, parts, chapters, sections, and numbers, each of which has to be mentioned in every reference. Imagine the bother to

*Read at the tenth annual meeting of the Swedenborg Scientific Association, Philadelphia, May, 1907.

students and writers, if the *Arcana Cœlestia* or *The True Christian Religion* were thus arranged—if, instead of writing down A. C. 762, we had to write "A. C. vol. III, part 2, section 4, chapter i, paragraph 14!" Only the most intrepid student would in this case make some fifty or sixty references in an article. There might, indeed, be less controversy in the Church, in such a case, but, on the other hand, less theological advancement.

The titles, also, of many of the works, are too long for ready reference, and there is not, at present, any generally accepted method of referring to them by initials or abbreviations, as there is in the case of the theological works. But if this Association could agree upon a system of easy reference to works and numbers, it is possible that all other students would soon fall into line. I would therefore propose that a committee be appointed at the present meeting to take this subject into consideration, with instruction to submit as soon as possible not only a list of abbreviated titles to all the more important works, but also a plan for the renumbering of all those works which at present are complicated in the way of numbering. All the works should be gone over by the Committee, in the original editions, or in the transcript or photolithographed copy of the manuscript, or in the original manuscript itself, in case the work has not yet been reproduced in any way, and the places where new numbers are to be inserted should be indicated by quoting the initial words of the sentences.

It would, of course, be well to retain Swedenborg's own numbering, wherever possible, and simply insert subdivisions in suitable places, as is done in all the new editions of the Writings. Swedenborg's own numbering should, in fact, be retained everywhere, but by the side of his numbers the new numbers could be inserted in small, black figures in brackets, as has been done in the translation of *De Sensibus,* now being published in *The New Philosophy.*

In order to secure uniformity in future editions of the works, and to make a success of the proposed renumbering, it

is necessary that this movement should issue from the Swedenborg Scientific Association. The members can, to begin with, agree upon a system of numbering, insert the new numbers in their own copies of the old editions, and follow it up in any new editions which may be issued by the Association. We can also make an appeal to the various publishing houses to adopt the system agreed upon, in any editions of the works which they may issue in the future. It is evident that such an appeal would come with much greater weight from the Association than from any individual member.

It is important that Mr. Stroh be a member of this Committee, and, in fact, have chief charge of the work of renumbering, as he is now editing new editions at Stockholm, and, moreover, is at work on a general Index to all the scientific works. I have no doubt that he would be glad to offer his services in the work. I would therefore offer the following Resolution:

"*Resolved,* That a committee be appointed by the President of this Association, to take into consideration a plan for easy reference to Swedenborg's Scientific and Philosophical works."*

OUTLINES OF SWEDENBORG'S COSMOLOGY.

Students of Swedenborg will welcome Miss Lillian G. Beekman's little work on Swedenborg's Cosmology. It is the first systematic attempt to correlate all of Swedenborg's teachings respecting creation, and represents the result of many years of study and research. Much of the material is presented in an entirely new light, and the text is illustrated by several fine colored plates. Lack of space forbids an extended discussion of the volume in this number of *The New Philosophy,* but it will be reviewed at length in a later issue. The thoroughly scientific tone of the work should give it a hearing everywhere.

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*This resolution was passed by the Association, and the President appointed Rev. C. Th. Odhner (chairman) and Mr. A. H. Stroh upon the Committee.

SWEDENBORG'S PHILOSOPHICAL ANTECEDENTS.*

BY ALFRED H. STROH.

Much has been written about the effect of Swedenborg's philosophy upon later students and writers; comparatively little about the effect which the predecessors of Swedenborg had upon him, and as to what extent he drew from their works. Neither will it be feasible to present in a paper to be read before the Association a tithe of the evidence which has been collected during the past few years concerning the sources which Swedenborg consulted and used; it will be possible only briefly to sketch the main outlines.

In the remarkable series of manuscripts and works produced by Swedenborg from 1710 to 1745 we have a system of philosophy ranging from the most general departments of physics to the most particular ones of psychology. Beginning with astronomy, mechanics, mathematics, physics, geology and chemistry, Swedenborg on the one hand made practical applications of his studies in the course of his official duties as an assistant to the engineer Polhem and as an assessor in the College of Mines, and on the other hand worked out a general philosophy and cosmology. This naturally led him into a host of metaphysical and psychological problems, which he sometimes treated abstractly and theoretically, at other times in close connection with anatomical and physiological subjects. In the last work of the series, the *Worship and Love of God,* he sums up the results of his thirty-five years of experience and thought. Swedenborg's progress represents in miniature the well known history of philosophical movements; beginning with the outside world, with physical questions, they produce

*Read at the tenth annual meeting of the Swedenborg Scientific Association, Philadelphia, May, 1907.

a row of introspective difficulties, leading to a critical mental science or psychology, and finally the results of the whole movement are crystallized in a system.

Fortunately for the student of Swedenborg's philosophy and literary biography, a catalogue of over five hundred of the works in his library has reached our times.* Dr. R. L. Tafel received a copy of this catalogue in 1883, thus some years after the *Documents concerning Swedenborg* had been published. He intended to print this list of references, but I do not know whether he did so. The catalogue refers to various Bibles, lexicons, dictionaries, encyclopedic works, grammars, histories and works on travel; to numerous works on physics, chemistry, mathematics, mineralogy, botany, anatomy, medicine, and to many miscellaneous works. There are various works by Boyle, Newton, Locke, Buffon, Linnæus, Wolff, Malebranche, Leibnitz. A companion of the entries with the references to works in Swedenborg's manuscripts and published writings shows that the collection of works listed in the catalogue was made by Swedenborg during half a century of his long life, in the course of his extensive travels and studies. Conspicuous by their absence are the works of the great Greeks and of Descartes, although it is quite clear from Swedenborg's references in manuscript and in print that he had access to those sources.

Probably nearly all of the works referred to in the catalogue of Swedenborg's library were acquired by him after his studies at Upsala had been completed in 1709, when he was twenty-one years old. The question now arises: What did he study at the University and what was the prevailing philosophy there dur-

*The title of the catalogue reads in English: *A List of the fine collection of books left behind by the Deceased, Wellborn Herr Assessor Swedenborg, in various languages and sciences, which will be sold in the Book-Auction-chamber in Stockholm, Nov. 28, 1772.* Stockholm, printed by Johan Georg Lange, 16 pp., octavo. See references in *Morning Light* and *New Church Life* for 1883. Copies of this rarity are preserved in the Royal Library, Stockholm, and University Library, Upsala.

ing his student days? The results of my researches last winter give a number of definite answers to these questions, and also explain numerous difficulties in Swedenborg's earliest letters and papers and in addition throw a powerful light on the relation of Swedenborg's physical philosophy to Descartes and Newton, and also to Polhem.

Let us imagine ourselves in the middle of the seventeenth century. The Reformation has produced a greater measure of mental and political freedom, but it has remained for a devout son of the Church, the Frenchman Descartes, to overthrow the ecclesiastical bulwarks of Aristotelian scholasticism, and, with the might of an intellectual giant, to reassert the freedom of the investigator and to found a new system of philosophy, psychology and physics. It is pathetic to read the biography of this great man, driven by the unsympathetic ignorance of his own people into a voluntary exile of many years in Holland, and again from the Lowlands to the distant North, to Stockholm, where he breathed his last after a visit of but a few months. But he had not labored in vain; his opposition to Aristotle, his brilliant use of mathematics and reason, convinced the thinkers of his times, and if we pause in this "conquering and commercial age" to examine and reflect upon the intellectual progress of the last three centuries, we shall be impressed with the far-reaching and enduring influence of this noble Frenchman, who spared no pains to convince his contemporaries of the truth of the great principles which he had discovered. Queen Christina, the intellectually gifted daughter of the great Gustavus Adolphus, had become deeply interested in the *Principia Philosophiæ* of Descartes, and, desiring to add the brilliant philosopher to the number of famous men adorning her court, invited him to Stockholm. He arrived in the beginning of October, 1649, but had barely established himself and begun to instruct the Queen, when he died, in the beginning of February, 1650. Whether he himself had any connection with the fierce "Cartesian Controversy" which not many years later broke out at Upsala University is not known,

although we know that not long after Descartes died Queen Christina ordered that no priest should be granted a Professorship in the Faculty of Philosophy at Upsala; Descartes had recently suffered from persecution in Holland.

We have now come to the point where Cartesianism becomes of direct interest in the analysis of Swedenborg's philosophical antecedents, for he was entered at Upsala University from 1699 to 1709, in the Faculty of Philosophy, and the philosophical atmosphere at the University had just been cleared by a terrific intellectual storm which had turned old traditions upside down and irrigated the soil in preparation for a new scientific harvest. Then as now the University was divided into the four Faculties of Medicine, Law, Philosophy and Theology. The University was founded in 1477, and was naturally saturated with the theology and scholastic philosophy which then prevailed; Aristotle reigned supreme in the philosophical camp except for the inroad which had been made by the anti-Aristotelian doctrine of Ramus. The Cartesian Controversy* began in the Faculty of Medicine, where the first Cartesian in Sweden, Olaus Martini Stenius, had been Professor. He was the teacher and predecessor of the famous anatomist and author of *Atlantis,* Olof Rudbeck. Professors Rudbeck and Petrus Hoffvenius had both studied in Holland, where Descartes had spent twenty years of his life and acquired a great influence. In 1663, in connection with a disputation of Hoffvenius, the rumor began to spread that Cartesianism had entered Upsala, which led to complaint on the part of the priests, in session at Stockholm. That the Cartesian movement met with opposition is further witnessed by some lines which a teacher in Linkoeping sent to Upsala by the hands of some departing students. He wrote: "Would

*My attention was first called to this controversy by Professor Karl Reinhold Geijer, who now occupies the chair of Theoretical Philosophy at Upsala, and I have also received valuable assistance from Former Librarian Claes Annerstedt.

that the atoms, pores, and effluvia of the sun might not obtain too great a dominion in your academy, so that the young men are drawn away by the desire of novelty from the useful and ancient manner of philosophizing, so that when returning to their parents they cause more pain than honor, not knowing anything else except how to prattle about atoms, etc." Although there was not lacking sympathy in the Consistory with this complaint, it was nevertheless felt to be a little too strong, and the Rector was instructed to give the author a "scrape." In 1664 the trouble about the new Cartesianism came up in the House of the Clergy and led to a four years' controversy, until 1668. Professor Hoffvenius was bitterly attacked by the Faculty of Theology, and later on Professor Rudbeck also came in for criticism on account of a disputation which was suspected of Cartesian tendencies. But the trouble gradually simmered down, although it was not removed. In spite of repression the new views made progress, and in 1686 the controversy broke out anew, this time on account of the Cartesianism of Professor of Mathematics Johan Bilberg, of the Faculty of Philosophy. The priests desired orthodoxy above all things and recognized their mortal enemy in the revolutionary Cartesianism. How could a Cartesian instruct the students in Aristotle's Logic, so necessary for the theologian? Every effort was now made by the theologians to stifle Cartesianism. They proposed to do it by forbidding the sale of his works in the book-shops of Upsala, by preventing any student from disputing or receiving a stipend if suspected of Cartesianism, by forbidding the professors to teach it publicly or privately. The priesthood sent a written complaint to the King, the wise Charles XI., describing in detail the dangers of Cartesianism and suggesting remedies. The defenders of Cartesianism in the other Faculties remaining firm, and the King having failed in his efforts to pour oil on the troubled waters, he finally appointed a Committee which reported on April 7, 1689, in favor of complete freedom of thought and teaching. This great victory for the Cartesians was in reality of fundamental im-

portance for the establishment of scientific research in Sweden, and not many years later we meet the names of Swedenborg, Celsius, Linnæus and others well known in the history of science; the Scientific Society was also established in 1710 by Eric Benzelius, the Librarian, and some of the Professors in the Faculty of Philosophy.

After this brief review of the Cartesian Controversy, which so deeply stirred the University, laid the foundations of a new school of thought, and thus established the Swedish scientific movement, let us now return to the early studies and works of Swedenborg. The Archives of the Westmanland-Dala Nation at Upsala inform us that in 1706, October 31, Emanuel Swedberg, then a Junior, proposed a disputation on "natural law," but was over-ruled by the seniors of the nation. The Rector of the University was present and had praised Swedberg's proposal, but the seniors considered that the juniors would thus approach too near to the seniors, and if permission were granted in this case a bad precedent would be established. This episode shows the drift of Swedenborg's thought as a student, for it should be observed that most of the disputations in the nation were concerning religious and moral subjects. Among Swedenborg's teachers in the Faculty of Philosophy were a number of scientists, as appears from his reference to them in the letters of the next few years; and that he was encouraged by his brother-in-law, Eric Benzelius, the chief founder, in 1710, of the Scientific Society of Upsala, to devote himself to the natural sciences, is clear from Swedenborg's references to the matter in a letter and in the dedication of the work on the *Infinite*. On leaving the University in 1709 Swedenborg disputed his thesis under the presidency of Magister Fabian Toerner, Royal and Ordinary Professor of Theological Philosophy. After spending some months at the home of his father and with the mechanical engineer Polhem, Swedenborg was enabled to set out in 1710 for England and the Continent; he did not return to Sweden until 1715. During the interval he diligently applied himself to the study of Newton and other

English scientists and philosophers, and, besides making progress in astronomy and mathematics, paid some attention to the technical sciences. Having returned to Sweden in 1715 he became the assistant of the engineer Polhem, and was appointed assessor in the College of Mines by Charles XII., who admired the young scientist and was much pleased with the publication of his *Dædalus Hyperboreus,* Sweden's first scientific magazine. The contents of this magazine exhibit Swedenborg's special interest at this time in practical mechanics and physics, but soon after we find him launching out upon the sea of theoretical science. I cannot but believe that his companionship with Polhem had much to do with this change in Swedenborg's work. An examination of his numerous MSS. shows that Polhem was a prolific writer concerning the very subjects which now occupied the mind of Swedenborg, who as we know was for a time of service to Polhem in the capacity of an amanuensis. A comparison of the little paper by Swedenborg's hand, entitled *De Causis Rerum,* with a large one by Polhem's hand, shows that the titles are the same and that the divisions have the same headings and treat of the same subjects. In another case we have a *Dialogue between Mechanica and Chymia on the Constitution of Nature,* written it is true by Swedenborg's hand, and containing many of the theories which are supposed to be his, since they are treated in the *Miscellaneous Observations* and other works written just before—but a large portion of the first draft of this important dialogue exists in Polhem's handwriting and there is no case on record of a dialogue by Swedenborg. I now think that the evidence is convincing that both *De Causis Rerum* and the *Dialogue* are not Swedenborg's but Polhem's; moreover Polhem wrote many other dialogues and papers on the same and on similar subjects, which are worthy of an exhaustive analysis. That Swedenborg held Polhem's work in the highest esteem is clear from the very title-page of the *Dædalus* and from Swedenborg's letters.

In January, 1718, Swedenborg communicated to Benzelius

"something new in Physics, upon the particles of air and water, proving them to be round." He thought that it might militate against the philosophy of many, that preconceived ideas from Descartes and others would be the greatest obstacle to it and would cause objections, that the subtle Dr. Roberg was best able to judge respecting it, and that if Professor Valerius would lay aside his own and his father's Cartesianism, his opinion would also be valuable. Two years later, Swedenborg, in again writing to Benzelius, referred to Benzelius, Descartes and Borellus, in connection with a theory of tremulations in the nervous system and bodily membranes, those three authors having treated of the same subject.* The references to Cartesianism in the first letter just referred to may easily be taken to mean that Swedenborg was opposed to Descartes' philosophy as a whole, but I think he refers only to certain details concerning the particles. If this is not the way in which to regard his statements how shall we explain the remarkable similarity which exists between the general series of Swedenborg's particles and vortices and those of Descartes? This similarity is so striking that it has been noticed by several authors, and if we take the pains to compare Swedenborg's philosophy with that of Descartes and Newton, we find Swedenborg for the most part adhering to the *Principia* of Descartes instead of to those of Newton, for Newton had rejected the theory of vortices and advanced a very different philosophy. It is remarkable that although Swedenborg in his early works is for the most part silent concerning Descartes, he repeatedly praises Newton, although clinging to the Cartesian theory of vortices. The explanation is to be found in the fact that Swedenborg was thoroughly imbued with the main principles of the Cartesian philosophy while still at Upsala: later he developed his own philosophy of the physical world, and, although recognizing Newton's greatness, continued to

*See also Polhem's criticism of Cartesianism in a letter dated September, 1716.

cling to the Cartesian theory of vortices and developed it *in extenso* in his own *Principia.* It is noteworthy that the works of Descartes are not listed in the catalogue of Swedenborg's library, but we know of one case where he presented to a friend one of the works from his library, namely, the two volume folio set of Swammerdam's *Biblia Naturæ* to von Hoepken; or he may have had access to the works of Descartes in some other library. In December, 1718, he refers to both Descartes and Newton in the preface to the little work on the *Motion and Position of the Earth and Planets,* in connection with a proposed *Theoria Telluris,* with which he says it would be necessary to compare the opinions of Descartes and Newton. Besides the general tendency toward Cartesianism which it seems Swedenborg derived from Upsala and the prevailing opinion in Sweden, it seems most probable that he became especially interested in the theory of vortices after having written his early works, for we there find much concerning the figures and positions of the particles, but little concerning their motions, although this is so priminent in the later *Principia.*

In some of Swedenborg's earlier MSS. we find references to the opinions of Kepler, Descartes and Leibnitz, with numerous references to the *Astronomy* of Gregory; and Newton is also referred to. Later in Swedenborg's psychological period we find references to Aristotle, Plato, Descartes, Leibnitz, Malebranche, Wolff; also to the Church fathers and to the Swede Rhydelius. But the philosopher whom Swedenborg held in highest esteem was Aristotle; he is simply referred to as "our philosopher" or "the philosopher." This makes the absence of references to Aristotle in the earlier works and manuscripts all the more striking, and illustrates very clearly Swedenborg's progress in philosophy. When he left the special study of the physical world and turned his attention inward, more and more confining his efforts to the analysis of the body, brain, animus, mind and soul, he of necessity, being at all times a wide reader, devoted much study to Aristotle and to

the modern rationalists Descartes, Leibnitz, Wolff, Malebranche, and others. Here then we find Swedenborg's later philosophical antecedents, including many of the most powerful minds which Europe has produced. A close comparative study of such historical materials as have been referred to in this paper will no doubt furnish the true background for a philosophical biography of Swedenborg. The work is but barely begun and yet it seems clear that, by further developing it, many difficulties will be solved and a comprehensive historical analysis of Swedenborg's system of philosophy will be made possible.

A "MODERN" VIEW OF SWEDENBORG.

Not long ago a short review, by H. Addington Bruce, of Swedenborg's "visions" in the spirit world appeared in the magazine section of several of the Sunday papers. The article is of interest, not only because it is unusual to find a sympathetic and appreciative view of Swedenborg in a newspaper, but also because of the theory put forward by the writer in explanation of Swedenborg's spiritual experiences.

The author's view is based upon the modern hypothesis of dissociation of personality. He supposes that poor health and close application to study developed in Swedenborg a condition resembling hystero-epilepsy with a tendency to hallucinations, in which his subconscious mind was temporarily dissociated from his conscious mind and rendered active. From this portion of his personality it is supposed that Swedenborg evolved not only his visions of the other world but also the great truths which he promulgated in his theological writings.

The well known anecdotes of the lost receipt and the Stockholm fire Mr. Bruce explains as instances of telepathy. He believes that Swedenborg's highly developed subconsciousness enabled him to receive impressions readily from the subconscious minds of other individuals—the commonly accepted modern view of clairvoyance and trance-mediumship.

The position taken by Mr. Bruce is typical of the present scientific world. He is convinced that Swedenborg was not, as many have claimed, insane, and apparently he adopts the view taken in his article in order to avoid the "spiritistic hypothesis." It is notable that some very eminent members of the Society for Psychical Research which he mentions have been forced to accept this very "spiritistic hypothesis" to account for some of the phenomena which they have investigated.

THE NEW PHILOSOPHY

I

A QUARTERLY MAGAZINE
DEVOTED TO THE INTERESTS OF
THE SWEDENBORG SCIENTIFIC ASSOCIATION

VOLUME XI
1908

THE SWEDENBORG SCIENTIFIC ASSOCIATION,
PHILADELPHIA,
1908

INDEX FOR VOLS. I—XIII

(1898—1910)

BOUND IN VOL. XIII

(1910)

THE NEW PHILOSOPHY.

VOL. XI. JANUARY, 1908. No. 1.

BEING AND EXISTENCE.

A PHILOSOPHICAL DISCUSSION.

BY FRANK SEWALL.

IN the series of papers of which the following is the first, it is my desire to examine philosophically the questions relating to Being, to Existence, to Creation, to Man and Man's Relation to Deity; to find in what central truths the three planes of human thought.—theology, philosophy, and science harmonize and are at one; and so to arrive at a recognition of God as abiding in and controlling, with the perfect and peaceful sway of infinite Love, Wisdom, and Power, the whole sphere of our and of all existence.

I. BEING.

Attention is first called to the most fundamental of all questions—The Nature of Being: What is it, to Be?

I call this the most fundamental of all questions because Being constitutes the first knowledge of man and is that fact which nobody can deny or without acknowledging which no thought or reasoning whatever is possible. In order to reason at all there must be a reasoner, therefore something is; if only the reasoner: but the process of our reason involves a variety of things from which to reason and about which to reason; therefore Being must comprise many things besides the reason. As this is that universal knowledge with which all must start,

our first inquiry is therefore "What is Being: what is it, to be?"

It may seem to many, at first glance, that this question is quite unnecessary since their idea of Being is a simple one, common to all minds alike; but a little reflection will show that this is not the case. Being means to some minds what it does not to others. A child may think there are no stars in the heavens at mid-day because we cannot see them. A savage might say that the earth *is* because he can tread on it and that above the earth nothing is because there is nothing to tread on; the early Ionic Philosophers taught that all being was originally some one of the physical elements; later the Eleatic school, that all being was mind and what was not mind was not anything. So we see that Being itself must be defined and must therefore be capable of some kind of analysis. Even if we say that "To be" is a simple idea; prior to the idea of being anything or nothing, of being this or that, the question will still arise, what is it for a thing *to be?* Is it for instance to be in intention, or in thought, or in fact? And if the latter only, then what is meant by the statement, which no one can deny, that every work of man involving thought or desire must have "been" in mind *before* it could have acquired any being in matter?

Now, when we talk of a *thing's* being we are not considering the simple idea of being but we qualify it by the idea of the thing it is. Thus to the universal substance we give a particular form and thus make a thing of it. To get at the idea of being pure and simple, without even calling it substance, we must take away therefore all idea of form or of any thing, or any possible object of thinking, as this or that. We then have left the idea, or at least the name, Being. Is there such a—we can not call it thing because it is not things we are here trying to name,—but is there any real content to this name—pure abstract Being? Surely there is no other name we can give it for that would be to qualify it—to make it the being of some thing. But that there is such a reality we are compelled to admit. Out of no Being no being could come. We can not conceive of Being having a beginning or

having an end. As far as thought goes it goes; and if thought stops it still knows by intuition that Being reaches beyond. Nameless, quantity-less, indefinable as this concept of Pure Being is, there are two things we therefore can assert of it besides its self-necessary reality. And these are its infinity and its eternity.

To this concept or primary reality Swedenborg therefore gives the name the ESSE and he says its sole attributes are "the infinite" and "the eternal." He also calls it the *Ipsum*, or the essential self—but this is evidently, in distinction, from that which is not self, and implies the idea of the other. To the ESSE, the pure Being, we therefore can attach only the ideas of the infinite and the eternal. But even these ideas are, in this connection, only negative terms and assert rather our inability than our ability to attach any form or any idea to simple Being. For in calling it infinite we merely say that we can give it no bounds in space; and in calling it eternal, that we can give it no bounds in time.

But the question now arises: is this pure Being, of which we can form no idea, while we are convinced of its eternal reality, all the Being there is? Is this the Being we are attempting philosophically to analyze?

That it is not is evident from the fact that there is Being which we consciously perceive and which we can definitely know and which we can see and touch. This also, although not infinite and eternal, is nevertheless to be classed under the term Being, and must come within the range of our inquiry as to what Being is. When we proceed to examine Being, therefore, the word does not mean, mere ESSE, mere pure Being in the abstract of which we can only say that it is infinite and eternal; but it means "All that is."

Now the moment we begin to examine Being in the sense of "All that is" we leave the idea of abstract Being and take up, instead, the idea of Existence; and we find that in reality there is no such thing as Being that does not exist. While we can form perhaps a dim conception of such Being apart from our conception of its particular form of existence, still we can not conceive of even that pure Being as not existing. But existing

Being is the being that we know; it is the "All that is;" it is the Being of which we form a part; it is the Being *in other parts,* in all the infinite variety of parts and kinds which we know through our senses. We dare not say, therefore, that we do not know Being or what Being is, since we do know it in that existence which is everywhere manifest to us.

We are quite ready to agree with the Agnostic's idea that of the pure Being, which we abstractly conceive of, the ESSE itself, we can know nothing, save to deny it any limit in time or space. But, far from this being the "All that is," this imagined Being, if it were without existence, would be mere nothing, a pure fiction of the mind. Says Swedenborg: "An Esse without a substance is a mere imaginary entity, substance being a subsisting entity; and whatever is a substance is likewise a form, for substance, too, without a form is a mere imaginary entity." (*T. C. R.* 20.) Also "An ESSE unless it exist is nothing, and in like manner an *existere* is nothing unless it be derived from its *esse.* Wherefore granting one we must grant the other."

However much then the Agnostic may deny his ability to know the pure Being which does not exist, we say that with that conception we have, whether in science or philosophy or revelation, nothing to do. But neither can the Agnostic any more than ourselves deny that all Being that *is,* does exist, and that therefore it has form and must come more or less within the range of our ability to know; since the existing world is that of which we form a conscious part and of which we are conscious and intelligent observers.

Taking then the existing world, the "All that is," as the object of our philosophic study, we cannot, (even as Agnostics), say that we know nothing of its inmost reality, until we can say that pure Being or this inmost reality does not manifest itself in this its own existence. If existence is the existing of that which is, then in knowing existence we must know in some manner or degree that which is, or the inmost reality.

II. Existence.

Taking then the word Being in the practical sense of the Existing, of the "All that is," and thus stepping out upon the plane of a real world of knowledge and not of imaginary entities which probably are nothing, we find that this Being, this "All that is"—far from being beyond analysis or definition—defines itself with absolute unerring accuracy to every mind that gives a little careful thought to any one object of its knowledge. We find that in the very existence of anything there is necessarily involved three entirely discrete degrees of Being, and that to know Being is at the same time to know these three degrees.

The existence of anything which can be an object of our knowledge involves in itself: I. the End or purpose from which it ever came to be; II. the Cause, or the manner how it came to be; and finally III. the Effect, or the thing itself as it is. Whether we take the world as a whole, or any least part of it, we find there is this involution in it of these three degrees of being: the end, the cause and the effect. If we take the "All that is" as the existence we are to study, we find, by the very necessary laws of our thinking, involved in it these three degrees of Being: the end or the Why of its existence, the cause or the How of its existence, the effect or the What of its existence. Nay, if we ascend to God, the supreme object of all contemplation and all knowledge—and regard Him not as an abstract nothing, but as an existing God—we then must know Him in His own infinite but self-derived degrees—namely God in that which is His own end or purpose of being; God in His own manner or Laws of existence, and God in His own Proceeding or outstanding effects.

I have said that these three degrees are involved one within the other. Thus that the end is in the cause, and that the end and the cause of anything are in the effect or the thing itself. Thus:

Illustration A.

In speech: in every sentence spoken which is in any speech as an effect, there is the thought, which shaped and articulated

it, which is its cause; and there is the affection or desire which prompted it, which is its end. Thus in the sentence spoken there are involved the three planes of its existence; the affection is in the thought, and the affection and the thought are in the words as uttered and as producing an actual material effect on the air. Such being the involution of being in the sentence or in the effect, the evolution of being will be the extraction of the meaning of the sentence from the words spoken—which we may call the study of the cause, or the manner how of the sentence; and then the extraction of the feeling or the purpose that lay behind the meaning, which we may call the study of the end (*Endzweck*), the motive or "reason why" of the utterance.

ILLUSTRATION B.

If we pick up a pebble from the pathway, the same trinity, eternal and divine, lies involved in its existence as in the nature of man, or as in the whole existing world. The pebble as we feel and see it is effect; but the effect never would have been but for a cause, and that cause never would have been but for an end or purpose that prompted it. The evolution of the real being of the pebble is the unfolding of a cause within the outward material shape and the unfolding of an end or destined use within the cause. For just as truly as there can be no effect without a cause, as truly can there be no cause without an end or purpose that brought it about. Therefore the end itself may also be and is sometimes called the First or *Final* cause (from *Finis*, the end) in distinction from the intermediate degree between end and effect, which we then may designate as the instrumental or efficient cause, being that *by* which the end proceeds to its effect.

Inasmuch therefore as the existence of everything that is involves these three degrees of Being, effect, cause and end, the knowledge of anything, to be a true or complete knowledge, must embrace the knowledge of: I. its ultimate form as effect: II. of its existence as cause; and III, of its being as end. Anything short of this cannot be called a complete knowledge of anything, much less a philosophy.

To know a thing philosophically we must be able to answer the three questions about it: Why? How? What? From what end or purpose does it have its being: by what law or cause does it derive its special existence? What has this end, by means of the cause, produced in effect? To answer these questions when asked regarding the "All that is" is the aim of the new philosophy.

It will be seen readily that to study existence from Being only, and so as end only or as an abstraction—would be no philosophy: no more is it a true science or knowing to study existence as mere effect. The only complete knowledge is a knowledge of effects from their causes and of causes from their ends. The only true knowledge of the world or of existence is therefore the knowledge of the plane of effect from the plane of cause and the plane of cause from that of end.

Science is therefore entirely justified in limiting the range of its investigation to the plane of effect or what it calls the "facts" of sensuous experience, and so in making the world of time and space the whole world of its handling and reporting. The only error would be in claiming that such a knowledge is the complete knowledge of the world, and that the all of Being contains nothing intelligible beyond the reach of this kind of investigation. Again science is quite right in saying, as Aristotle taught regarding Plato's ideas, that a world of ideas not embodied in existing things would be only an idle and useless world; and that therefore the place to study ideas is in the existent phenomenal world. But this is quite different from denying the reality of ideas and causes as constituting a degree of being discrete from that of the effect, although residing within the plane of effect, like the watch spring behind the movement of the hands upon the face.

(*To be continued.*)

THE SENSES.

PART FOUR OF THE ANIMAL KINGDOM, BY EMANUEL SWEDENBORG.

CHAPTER VI. (*Continued from Vol. X, 251.*)

(*The Eye and Sight.*)

268. 2. *There are many forms in order, inferior and superior.* 1. The first is the angular form,—they are of the entities of the earth. 2. The second is the circular,—they are of fluid entities or of waters. 3. The third is the spiral, such as is the air. 4. The fourth is the vortical such as is the ether, more subtile than the air. 5. The fifth is the celestial—it is of the whole universe and of nature, where the beginnings of the rest lie hidden. 6. The sixth is the spiritual form by which the universe is ruled, and from which are given the highest beginnings [or supreme principles (?)]. 7. The purely infinite occurs, nor is it form, but is of all forms of principles, from which flows spiritual form and essence.

269. 3. *Modifications of the angular form are called tremiscences, vibrations, in the greater forms oscillations.* 1. It is known how these modifications penetrate the whole continuum in an instant; 2. for instance, how when a small grain of dust is scraped upon a marble table there is a sound; 3. that is, from the vibration of the whole from the smallest origin, etc., etc. 4. But we will pass by these things.

270. 4. *Modifications of the circular form appear in waters:* 1. When it runs out from centers to peripheries by continuous rays and elevated surfaces, 2. one after the other in a continuous series. 3. There is an action from the center in the direction of a right line. 4. There is an action from every point of motion in a circle, which extends upwards and to the sides; 5. thence there is continuity; for a perpendicular line acts upon

the other with full force; 6. but the parts resist, thence they are impelled upwards and to the sides into the line of a tangent; 7. from which by the pressing in of the points they are turned into circles—8. into greater circles, the farther they are removed from the center. 9. Thence all those things which lie hidden in an undulation come together, and thence the single things are unfolded. 10. But a modification similar to these least things does not occur in the blood within the vessels; concerning which thing see the Economy of the Animal Kingdom.

271. 5. *Aerial modification is perpetually circular or it is spiral, that is, the form is in the force of the fluxion or motion, wherefore also the conatus;* 1. as above shown in the chapter on hearing. 2. There are three forces or potencies, which impel the aerial volume into this form: 3. The first is the determination itself of the parts in the direction of the diameter, for there is always a further progression of the part. 4. The second, when one part is about to press the other anterior one, then it touches several parts resisting obliquely, for the most part four, sometimes five or six, which are immediately borne off according to the impulse, thus each one of these parts in turn so many others. 5. The third is the trend of the part itself left to itself into a continual circle or spiral, for that is agreeable to its form. 6. See our philosophical principles; 7. for the part is a unit, the units of which consist of the parts of the superior atmosphere, in which there is a still more perfect nature and form of flowing, 8. and so forth. 9. These things conspire to a spiral form of the fluxion of the air.

272. *Every spiral fluxion produces particular fluxions, which are as it were such continuous parts.* 1. This is perceived from aforesaid considerations; 2. for progression according to a right line makes a general fluxion, or a solid spiral (*spiram cubicam*) which progresses from the center to the peripheries. 3. This is begun from the impulse alone of one particle obliquely against those in front of it, and at the same time a moving forward towards those things in front. 4. *This general spiral fluxion always becomes more sharp the*

greater is the periphery; 5. for the local motion is diminished in this ratio. 6. Especially is this the case in air, where there is a certain gravity and resistance. 7. Thus there is a small forward motion towards distant points. 8. *Thus this last spiral ends in a circle; thus it extinguishes itself spontaneously;* 9. that is to say, where there is no more local progression. 10. This is the reason of the extinction of this greater sphere, and it is the boundary of hearing. 11. These are the parts of the greater sphere.

273. *Every particular spiral ends in its very own part, which is the least volume, and is thus extinguished.* 1. These are the parts of particular spheres; 2. for every part is a least volume. 3. Every part thus becomes the center of its own sphere. 4. *Thus concur general action and determination through the diameter, with this concentration, and it modifies every single part,* 5. thus a double potency, whence there is an unfailing effect.

274. *The part itself is formed for this nature of modification, wherefore it is the last and first boundary, and the last and first modificatory potency.* 1. Thus the last returns to the first, 2. and is extinguished in every part. 3. Thus such a part harmonizes with a part.

275. *This modification of every part does not subsist, but passes over to its own interior parts, and indeed to the inmost parts.* 1. These thus become conscious of the general modification of the part; 2. for a part desires whatever it has from its own units, 3. and indeed from that form alone whence is the form of fluxion. 4. Thus in every part there is a kind of type of prior universal.

276. *Particular modifications, within the greater or general modifications, are of greater sphere the farther the motion is from the center, and, vice versa, they are the sharper about the center.* 1. Their impulse becomes continually less oblique. 2. The resistance becomes greater. 3. Thus they are twisted into smaller spheres, 4. which are part of the greater sphere.

277. *Thus the whole sphere of modification in the greatest effigy has respect to the sphere of modification of the part in*

the smaller effigy or in the smallest of that atmosphere. 1. Nature is similar to itself everywhere, in greatest and in least things. 2. The general form comes from the form of a part. 3. The form of fluxion, from the substantial form. 4. Thus one thing conspires harmonically with another.

278. *On this account this spiral form has reference to the circular form into which it terminates.* 1. In the sphere of general modification it goes off finally into the circular. 1. In particular forms, likewise; for every part of the air is spherical, as has been said. 3. Or, every part has reference to the form of general modification. 4. For which reason the spiral form is the measure of the circular; it ends in it, and has reference to it finally. 5. This is the cause of the spherical form of the parts of the air.

279. *These things have been delineated, described and shown in my philosophical principles.*

280. *That there is such a fluxion into a perpetual circle, this the old philosophers, especially the prince of them, smelt out;* 1. thus the thing is not new. 2. but agreeable to profound ideas. 3. Call forth Aristotle.

281. 6. *Let us now return to the ethereal atmosphere,* which is the cause of sight.

282. *The ether is likewise modified according to the form of its own parts, which is superior and more perfect, and is called a perpetually spiral or vortical form.* 1. This is the cause of magnetism, 2. and cannot be described except by the poles and great circles in the universe; 3. for every single part refers to the universe. 4. Whence is the determination of the universe and our system. 5. Astronomy alone detects its nature. 6. Its parts are more elastic [than those of air].

283. *The ether is modified in like manner by a certain mobile centre, and flows in like manner, and the motion ends in conatus.* 1. But since it is more elastic, the sphere proceeds farther, 2. and is more perfectly spread abroad; 3. in fact, almost indefinitely, respectively to the other sphere.

284. *The modification of the ether is into the vortical or perpetually spiral form,* 1. which is to be described together

with its poles, 2. and has been described in our philosophical principles, 3. and therein delineated.

285. *The modification of the ether likewise at a distance ends in a spiral form,* 1. like as the air ends in a circular form; 2. this is its greatest surface. 3. It is a general form.

286. *While the ether is being modified likewise also the air takes upon itself particular forms, which end in units and in parts,* 1. which are thus the centres of the modification, 2. and which centres are always held in their own form by the modification; 3. for all things conspire to this end.

287. *This form has a peculiarity, namely that it is excentric, wherefore it flows forth into new forms, or that whole sphere flows forth into another new one; which is the sphere of the spiral form.* 1. Its determination is double on account of its eccentricity. 2. Thus the sphere itself forms a new sphere, 3. which is a sphere of an inferior form.

288. *This determination is again concentrated into every particle of the air;* 1. thence is the beginning of its composition. 2. its conservative in its own state, 3. its correspondence; 4. the whole ether concurs to keep this correspondence open (*ad hanc patulandam*).* 5. Thus it holds it in continual connection.

289. *Nor does it hinder but that all modification may pass through a right line, for thither its full force tends; but the flow is in its own form,* 1. just as has been said of air. 2. But you will see these things profusely explained separately in the doctrine of forms.

290. 7. *Superior forms are still more perfect, as is the proximately superior form, which is called celestial.* This respects the inferior or vortical, as the vortical respects the spiral, and the spiral the circular.

291. *The supreme form is still more superior.* 1. It has in itself still more multiplied determinations. 2. Any superior form always adds something perpetual and infinite, as does the circular and the spiral. 2. But that finite which is linear and

*The word *patulandam* is not to be found in lexicons, either of classical or of low Latin, nor is a verb *patula* to be found.—Tr.

angular it always respects more from a distance, and indeed by degrees. 3. Finally nothing but the infinite occurs.

292. *But these things must be explained in a peculiar doctrine, otherwise we cannot know the causes of things, from the spiritual to the material, influx, correspondences.*

293. 8. These things having been demonstrated and confirmed it will become open and manifest:

294. That, in every superior form something perpetual, spontaneous and infinite accedes.

295. That in forms thus fluent there is neither levity nor gravity, but that a multiple spire wipes away all resistance.

296. That nature herself has inscribed herself upon the modifications, because she has inscribed herself upon the forms themselves, whence results the form of the fluxion.

297. That the one is correctly determined from the other, and is constantly held in its own connection and power.

298. That it is necessity which commands from first things to last, a first necessity being posited.

299. That in higher and more perfect forms there are peripheries from continuous radii, radii from continuous centres, wherefore that the peripheries are perpetual centres, thus there are equilibria.

300. Thus infinite modifications within the modications.

301. That the universal is represented in every part.

302. That the atmospheres mutually correspond to each other exactly.

303. And that [the same is true of] the part of every atmosphere.

304. That in such a form of fluxions no levity and gravity can be conceived.

305. That the general always conspires with the particular, and that the particular without the general cannot exist.

306. That nature is present in every place, although the distance may be very great, through her own modifications.

307. That the end is where the beginning is.

308. How divisibility tends, how one must understand that it is to infinity.

309. How penetrability tends, the beginning of sufficient

reason, and many things, concerning which the schools dispute.

310. Thus the causes of effects can be penetrated and understood, for all things coincide in these things.

311. One may understand what material is, and what the spiritual, and how materiality puts off accidents by elevation into higher forms.

312. And how the supreme inflows into lower things, and mediately into lowest.—or the soul in the body, its intercourse.

313. But here now we are to treat of, how articulate sounds flow into ideas, and into a kind of visual sphere; I will therefore not extend these discussions further.

314. 9. *The animal system is composed entirely in adaptation to the modifications of the atmospheres.* 1. Thus it is so composed that there may be corresponding organs. 2. There are modifications and sensations of those organs when there is life.

315. *The blood concurs with the modification of waters, according to the circular form.* See the *Economy of the Animal Kingdom.*

316. *The purer blood, in the smallest arteries and certain of the fibres, concurs with the spiral form, or with the form of the aerial atmosphere.*

317. *The animal spirit itself in the fibres concurs with the form of the fluxion of the ether or with the vortical form.*

318. *The first essence of the body which has life in it, corresponds with the celestial form.* 1. So that thus the soul is of the celestial form; 2. upon which are endued all the beginnings of nature. 3. It [the soul] is immediately ruled by the spiritual form, 4. that is to say, the human soul otherwise than that of brutes, which is of an inferior degree; 5. in which the animal spirit and the purer blood constitute the same thing.

319. *From the atmospheres now it will appear how every essence acts agreeably to its own nature.* 1. But here we will treat only of those correspondences which concern the modifications of the air and the ether, or which concern the sensation of hearing and sight.

320. 10. *In the animal kingdom all linear determinations*

are formed by the fibres from boundary to boundary; 1, thus so that the motions may not flow freely from the centre towards the ultimate peripheries, 2. but according to the fibres, 3. even to the beginnings of the fibres, or to the cortical substances.

321. *The very beginnings of motions in the sensations take place in the external tunics of the fibres; thence they pass over into internal things or into the animal spirits.* 1. The tunics of the fibres are external. 2. They are instrumental causes. 3. Thus all sensations arise from external causes; 4, *but the determination of the will is by internal causes, or is immediately into the animal spirit.* 5. Thus sensations ascend, the determinations of the will descend.

322. *The fibre itself being touched trembles from the beginning of the touch towards the other extremity; there are thin and very swift waves which creep through the fibres, which continue the motion begun.* 1. Every wave or vibration is a new beginning; 2, which is thus continued toward outmost things, 3, by the co-operation of the spirit it is moved forward into the fibres. 4. Wherefore the sensory fibres are fuller of spirit, wherefore they are softer, [than the other fibres].

323. *The spirit, thus modified according to the form of its own ether, runs forth and is modified;* 1, that is to say, by a double determination. 2. The first is in the vortical form; 3. but the tunic resists, that it may not run forth. 4. Wherefore it passes into particular modifications, 5. which are very sharp and very small according to the proposition that they are very near to the origins of motion; 6, for in every point exists a new origin of motion. 7. Thus it passes into its own part which is modified. 8. This part strives towards the other determination or into spiral motion; 9, wherefore its thinnest tunic (*tunicula*) flows forth according to a spiral motion, according to the observation of Leeuwenhock and others. 10. Thus it coincides in general and in particular.

324. *How the superior essence is modified by a still more superior form, or the celestial, when the tunicuæ of the fibres are drawn forth into a vortical form,* will be told elsewhere.

325. *When this spirit comes even to the cortical substance, then it runs forth according to every form of its own fluxion, to the type of which all determinations therein are formed.* 1. That the cortical substances are formed to that type must be demonstrated elsewhere; 2, for they are the most perfect forms of nature, 3, and indeed are forms within forms.

326. *That modification induces mutation of state and form upon those substances, according to their quantities and qualities; thence are ideas.* 1. That ideas are only changes of state induced by culture must be demonstrated elsewhere. 2. If the state in which one is to be changed, there is immediately the idea of sensation. 3. The more perfect form can undergo endless mutations of state, and the purer they are, the more endless. 4. In their power of mutation of state consists their perfection. 5. Thence is the idea of memory, the idea of imagination, the idea from hearing and sight. 6. There are as many varieties of mutation of state as there ever can be analogies in the calculus of infinites, 7, simple composites are again compounded.

327. *Mutations of state acknowledge that state in which they are for a basic state.* 1. If those mutations are very perfect, the more exactly are the mutations perceived. 2. If the change takes place inordinately, then that which is perfect is perceived as if it were imperfect, and vice versa, 3, for the formed state is in place of a base. 4. But this material is most prolix; it must be treated of in the Psychology.

328. *There are composite mutations of state which comprehend within them many simple ones,* 1, as may be evident from ideas. 2. Thus they pass up from the material idea to the intellectual, 3, and to the more intellectual by continuous compositions.

329. 12. *Every articulate sound causes, not only the whole cerebrum, but also some certain congeries, as also a single cortical part, to change their state;* 1, for there are three degrees of composition of sound. 2. The inmost composition goes to every single substance.

330. *A general change of the cortical substance excites a particular one; thus the degree of a minor articulate sound ex-*

cites a visual idea. 1. That correspondence has been spoken of above, 2, likewise of the causes. 3. All changes of state are formed by the senses; 4, thus auditory changes are in common with the visual. 5. This is of artifice not of nature; 6, wherefore the words of several languages excite the same visual idea; 7, for the idea becomes a general one, which corresponds to the interior as to its own particular. 8. The excitation of several such ideas from the memory, produces imagination which is similar to visual ideas, but with those ideas arranged in another order; 9, it is purely imaginative if only such things are excited as enter by the eye, as those of more common material things, 10. as in infancy. 11. But indeed ideas more abstract from these produce the intellectual. 12. But about these in our Psychological treatises.

331. 12. *That there is nothing more obscure* [*to the understanding*] *than light* [*lumen*], although we possess an endless number of documents of experience, and what the causes are, *see my former collections*, in the beginning concerning the eye.

332. *That sound and sight coincide in most things altogether as posterior and prior,* thus that we can be taught by the one concerning the other, as air and ether, *see the same excerpts.*

333. That sound and sight concord, as air and ether, the ear and the eye, the sonorous idea and visual ideas, *see the former excerpts,* that thus they differ little.

334. *Thus very many things can be here applied concerning the ether, which have been said heretofore concerning the air, and its modification, quantity, quality, harmony, etc.*

Light and Colors.

335. 1. *In order that a thing be particularly distinguished, it is necessary that there be a general under which and by which it may be distinguished; thus in order that colors may appear, it is necessary that there be a universal light.* 1. It is known that color does not appear at all without light, 2, neither do the differences of sight.

336. *There must be differences of light or of general modi-*

fication in order that images may appear with their form; 1, For to the extent that particulars differ from the general, to that extent they appear distinct. 2. There are at one time differences of parts of a general, which produce forms of images; 3. so there are at another time differences of light and shade; 4, as in the understanding there are the differences between good and evil, truth and falsity. 5. To the extent that the form of truth departs from the general form, to that extent it appears pleasant, conjecturable, etc.

337. *Differences of light and shade enable one to recognize the figure itself of an object*: 1, whether it be round, 2, or angular. 3. These differences are not apparent except proximately. 4. So also it is with contiguous and proximate things. 5. So also it is in the understanding. 6. This [figure] is quality.

338. *What is intermediate enables one to recognize size or quality;* 1, for everything appears as if present in the eye; 2, hence distance is measured by intermediates. 3. Without intermediates quality perishes, and the smallest is believed to be the largest, and vice versa. 5. So also it is in the understanding.

339. *Distance obliterates figure itself, and wipes out the angles, and makes them round;* 1. for the shade is confused. 2. The angles perish before the body [of the figure] does. 3. So also it is in the understanding.

340. *Use and the culture which endues nature, teach these things.* 1. Men have this knowledge from exercise. 2. Brutes have it from nature. 3. Optics is artificial, but becomes natural. 4. It [optics] all consists in the revelation of light and shade.

341. 2. *General light must arise from the sun, secondary lights arise from fires, from phosphorescent things, etc., in the sublunary region.* 1. These things are known. 2. The one and the other are from a similar cause; 3, for the effects are similar, 3, with a difference as between greater and lesser, more perfect and more imperfect.

342. *Light cannot have causes of origin different from those of sound, for it shoots forth from its own centres as does*

sound; 1. Wherefore the one can be examined from the other. 2. The difference is one of grossness. 3. The one is a modification of the air, the other of the ether. 4. Each therefore is outside its own atmosphere. 5. That light is of the ether or purer atmosphere, appears from the light in the vacuum of an air pump, 6, and in other places where there is no air. 7. It is the same whether there be much or little air.

343. *Therefore light must arise from some subject which being moved sets up a modification of the ether.. This motion must come forth from adequate bodies or subjects, in order that it can act in the ether suitably to its purity and celerity,* 1, as air does not sound unless there be a suitable subject, 2, and unless it be strongly urged even to resistance, 3, so that a stronger force may exceed its resistance; 4. so it is altogether with light.

344. *By such a motion set up, the ether is modified according to its nature;* 1, wherefore the nature of the modification is to be examined from the nature of the ether; 2. otherwise we shall not know where we are.

345. 3. *It follows from these things, that the solar ocean itself, which gives light to its own universe, sets up a certain local motion of the whole ethereal atmosphere of its own vortex.* 1. Its magnitude, 2, and active force, 3, will respond to the sphere of its vortex 4. so that it may reach to its utmost limits; 5, thus the one measures the other, and there is correspondence. 6. Then [we may know the correspondence] of the ether itself, of its modificability and elasticity.

346. *Wherefore that in the sun is a kind of animation, which perpetually drives off the circumfluent ether, and thus urges it into a certain local motion, and consequently into modification.* 1. Altogether as with the origin of sound. 2. the one explains the other.

347. *Thence the celestial aura or purest ether is urged into a modification agreeing with its forms.* 1. This is according to the doctrine of forms, of order and degrees, then of influxes. 2. That the celestial aura is carried off into a modification of the celestial form, which modification is to be described elsewhere, 3. agreeably to its parts. 4. Such generals and

similar particulars end in the ultimate peripheries in the vortical form, particulars similarly in the same and in their every part; 5, because that modification is of triple dimension, the second dimension of its vortical ends in a particular of the vortical ether, and thus bears that part away into a modification, and that modification is carried away into a gyral motion. 6. Its third dimension ends in a particular of the air as its outmost, or spiral modification, together with a modification of the vortical ether, 7. thus by the dimensions of the modifications it ends in every particle, which it carries away into a central gyre.

348. *The linear determination itself of the rays adds a certain particle, and sets up a mutation of state in it,* 1, altogether according to the mode of sound in the atmosphere, 2, by which we are taught; 3. thus there takes place a central gyration of every part, which gyration is light.

349. *The central gyration of every part of the air, and the vortical gyration of the ether, and the celestial gyration of the celestial aura, which mutually correspond to each other, (for they are concentrated into the parts), produces that which is called the modification of light.* 1. It arises from the solar animation, 2. and from the motion thence excited in the purest aura, 3. rectilinear pressure at the same time into every part. 4. It conduces that every single thing may live. 5. Thence also is heat, from the air, which is vibrated, 6, wherefore in dense air there is greater heat, in rarified air less, as on a very high mountain.

350. 1. Thence there takes place a concentration of the general modification into every part of every atmosphere in its order, yea, into every least part of the atmosphere; 2, thence there is a circumgyration of each one, 3, a perpetually renewed life, 4, an image of the universe in every part. 5, from the direct impulse in every motion into a local motion. 6. Thence there is in every part the animation of the universe. 7. This animation of every part is light. 8. Thence there is a reflection from every part, 9, from which are the images of objects.

351. *Light has a similar origin in the region of the atmosphere,* 1, that is to say, from the circumfluous parts in fl[illegible]e;

2. for flame excites such parts as those upon which it feeds. 3. This circumgyration pushes against the ether, 4, and puts on such a modification, 5, although with a difference.

352. 4. *From this origin it follows that every single interfering part is pushed against by the ether thus moved,* 1, not only by every part, which is constituted in gyratory motion. 2, but by the gyre of every vortical, 3, especially since there is such a form of fluxion, that every single part is in the centre, the periphery and the diameter at the same time. 4. Perpetual circumgyration argues that every interfering point is pushed against. 5. This is called reflection. 6. *Thus every single part is a centre of the general modification.* 7. *Thence is the conservation of all,—life anew.* 8. *It takes place with a rectilinear attack.*

353. *From this point thus struck, light is reflected along every radius or right line;* 1, indeed it is reflected along every angle of incidence; 2, but because the interfering parts are figured, there is nowhere but that there is a point, from which reflection takes place towards the eye. 3. A smaller part of the rays gives less light, wherefore shade.

Colors.

354. In regard to colors see *The Economy of the Animal Kingdom.* See also *ml former excerpts.*

355. *There appear in general to be two origins of colors,* 1. that is to say from direct and shining rays of the sun, 2, and from light itself without the sun.

356. *The origins of colors from the direct and shining rays of the sun, are those which pierce pellucid bodies when the sun is present:* 1, as the colors which are shown by pellucid bodies variously figured: 2. as by drops, bullæ, aqueous vapors: 3. by the bullular forms made of viscid and soapy [fluids]: 4, by things of divers forms made of glass, by globes, by spheres, full or empty, by prisms, parallelograms, polygons: 5, by other angular things variously cut, by glass, by crystals, by diamonds, and by other pellucid stones: 6, by glasses and at the same time waters, by which they [the rays] are variously

caught: 7, by ices of various kinds; 8, also by the diverse pellucidity of these things, 9, and their diverse coloration; 10, by their state more shady and more bright; 11, indeed by rays varied in infinite modes as to pellucidity, figure, form, tints.

357. *These origins seem to have for a basis the solar rays themselves, in each one of which there is represented an image of the sun, and of its flamy color,* 1. even so far that in the smallest point of all there is an image of the sun, 2. and indeed a solar centre, for it comes from the centre itself, where it is greatest; 2. this is as with the intensity or degree of light, which is in the ray, 3. and according to its very color, which is varied according to intervening clouds and other vaporiferous exhalations; 4. but these things only attenuate the vigor and brightness of the color; 5. thence arise differences of color, not in particular, but in general.

358. *Colors of this origin are exhibited both by reflection and refraction; then also at the same time by both;* 1. as appears from the iris seen through drops of water; 2. indeed from glass spheres pierced by reflected rays; 3. by prisms; 4. by cut diamonds, crystals; 5. thus by both reflection and refraction, 6. according to des Cartes and the experiments of several others, 7. especially according to the experiments of Newton.

359. *Colors of this origin, arising by various reflections and refractions, temper the rays themselves or the colors of the solar flame into more shady or into more and less luminous colors.* 1. As to how they are reflected in the parts themselves by which they are reflected: 2. every part reflects partly shade and partly light, 2. and that indeed according to the form of the parts, which form is, in things pellucid, for the most part spherical; 3. it is according to the interstices which absorb and pierce, and thus take away that part of the vigor and lustre in the ray, 4. and thus variegate the flamy color in the smallest rays.

(*To be continued.*)

Communicated.

THE NEW VOLUMES OF SWEDENBORG.

EDITOR OF THE NEW PHILOSOPHY:—The first of the three volumes of the Royal Academy's edition of Swedenborg's scientific works has reached us from Stockholm, having been completed by its painstaking editor with the general introduction to the series by Professor Retzius and the special introduction to this volume by Professor Nathorst, and laid before the Royal Swedish Academy of Sciences on September 11, 1907, a truly memorable date in New Church annals. The beauty of the large quarto volume, its fine paper, broad margins, clear type and goodly size of 400 pages are an index of the high importance attached to this new introduction of Swedenborg to the learned world; while the fac-simile of the House of Nobles' medallion on the cover and the fine portrait of Swedenborg from the painting of Brander, on the frontispiece, gives the volume a new personal interest to all admirers of the great "Aristotle of the North." The title page, in Latin, would read in English: "Emanuel Swedenborg's unedited or out-of-print Works on Natural Subjects, now edited under the auspices of the Royal Swedish Academy of Sciences. I. Geology and Letters. Prefaced by Gustaf Retzius. Introduction by Alfred G. Nathorst. Edited by Alfred H. Stroh. Stockholm, Office of the Afton bladet. 1907." The preface and introduction are in English, the first occupying some six and the latter some thirty pages. Besides the geological papers, which treat of the former height of water on the earth's surface, petrifactions, fossils, strata, etc., and the three parts of "Miscellaneous Observations" on metals, fire, strata of mountains, etc., there are ninety-three letters to, by or referring to Swedenborg. These contents are in Latin and Swedish. The preface to the geological treatises by Professor Nathorst, of the Royal Academy and the University of Upsala, will be of interest to scientists at large, because it is written from a purely scientific standpoint, with no bias whatever from the religious or theological motive. The writer is quite as free to criticise and reject as he is to accept Swedenborg's proffered explanations of the formation of the earth's crust, but the following brief quotation will show that he felt that he was dealing with a subject well worth the attention of scholars of any age. At the beginning, Professor Nathorst says:

"In studying Swedenborg's contributions in the field of geology we must admire the many-sidedness and the sharp observation of which they bear witness. * * * If from the modern standpoint we attempt to analyze the proofs mentioned by Swedenborg we find as is natural

that some of them cannot be regarded as valid, while, on the other hand, others are still valid."

But at the conclusion of the profoundly interesting survey which he gives of both Swedenborg's treatises on the Flood or the Height of Water, and on Metals, Fossils, etc., he says:

"From the account given in the preceding pages the statement made in the beginning of this introduction is qualified, namely, that Swedenborg's contributions in the field of geology are of such a significance and sweep that they alone would have been sufficient to have secured him a respected scientific name. * * * One immediately notices in studying Swedenborg's geological writings that an investigating nature of the highest rank is in question, which on a solid foundation and with sharp powers of observation noticed everything, even what was apparently insignificant, in order to draw conclusions from it, and which, when possible, endeavored to control the correctness of the same by experiments. The wealth of observations which he collected from various parts of Europe is astonishing, and he did this at comparatively early age. * * * The many-sidedness to which his geological works bear witness is truly remarkable; nearly all questions of great significance for the geology of that time are touched upon by him, and still these works are but the minor portion of his whole scientific activity, which in many respects was far ahead of the times. For he was also a mathematician, astronomer, cosmologist, physicist, mechanic, chemist, anatomist and physiologist. What Anders Retzius said concerning Swedenborg's *'Regnum Animale,'* that it was a 'wonder-book' in which are found ideas belonging to the most recent times, a compass, induction and tendency which can only be compared to that of Aristotle, seems, after the experience now attained, to be capable of application to practically the whole of his scientific activity. His was a mighty spirit, of which our country has the more reason to be proud because it was united with a personality in every respect noble and unassuming."

Such a tribute as this, coming from the authority of a present-day scientific body of the highest standing, is of far greater value as a testimonial to the integrity and mental calibre of the chosen apostle of the New Dispensation than those of Emerson or Wilkinson even, occasioned by the first publication in English of the scientific works, in the middle of the last century; for neither of these writers could utter the verdict of the science of to-day. It is well worth the long and persistent labors of the Swedenborg Scientific Association, sustained as these have been by the liberality of the Convention and the Academy of the New Church, to see the tenth year of its organization crowned by such an unlooked-for result as has providentially been brought about in this munificent and monumental enterprise now initiated by the Royal Swedish Academy of Sciences; and all who have watched the faithful and courageous efforts of our devoted agent, Mr. Stroh, in bringing to light lost or forgotten matter in the libraries of Scandinavia and

elsewhere, and in carefully deciphering, editing and seeing through the press these papers now given and to be given in the forthcoming volumes to the public, will welcome with delight these words of full recognition of his work from Professor Retzius, the head of the Royal Academy's Committee, who in his Introduction to the present volume, after describing the "accident" by which Mr. Stroh became known to them and his ability was made available for their projected work, says:

"The arrangements for the publication and also the printing itself of these three volumes have involved considerably more work and taken much more time than could be calculated from the beginning, and the work has now been going on over four years. To Mr. Alfred H. Stroh is first of all due the honor of having directed and carried out the actual editing of these volumes. * * * Difficulties have been met with, not only in selecting the writings and documents which should be included in this series, but also in searching for and examining manuscripts and correctly analyzing them, the manuscripts being in various libraries and even in various localities. In doing this Mr. Stroh has spared no pains. Without his lively interest and great special knowledge of the Swedenborg literature in question it would have hardly been possible to carry through this work. And I, who have been a witness at close hand of the carrying out of the work, cannot praise Mr. Stroh's disinterested and untiring activity in the publication of these writings enough; wherefore I wish on the part of the committee here to express to him our warm thanks. The thanks of the committee are due to Urbana University, the Academy of the New Church, and the Swedenborg Scientific Association, all of America, not to mention other societies and individuals, for their kindness in permitting the Swedenborg Committee to make free use of copies of manuscripts, etc. The Swedenborg Scientific Association has also gathered means for the support of Mr. Stroh in Sweden and has heartily co-operated in other ways."

The contribution of Urbana University above referred to is the complete transcription from the Photolithograph Latin text of the Work on the Brain, done by the late Rev. Philip B. Cabell, while professor at Urbana, in some 900 pages, which was sent from the University library, where it had been preserved, to Stockholm, at the desire of the Royal Academy's Committee; this work on the Brain being that in which the interest of the Royal Academy was first specially awakened through the inquiries of Dr. Neuburger, of the University of Vienna. The "means gathered for the support of Mr. Stroh" refer to the contributions of the General Convention and of the Academy of the New Church made in response to the petitions from year to year of the Swedenborg Scientific Association.

As a strictly scientific body the Royal Academy can deal more appropriately with the Swedenborg Scientific Association in the prosecution

of its work than with any distinctly ecclesiastical or religious organization. It is for this reason that the prospectus-circulars now sent out by the Royal Academy asking for further subscriptions to the series of the three volumes now about completed mention only the "Treasurer of the Swedenborg Scientific Association, Bryn Athyn, Pa., as the financial agent in America for collecting and forwarding subscriptions.

Let none of the subscribers or those who may yet subscribe be afraid lest the present volume on Geology, etc., being published in Latin and Swedish, will have nothing of interest for them. The introduction by Professor Nathorst is in English, and it gives so thorough an analysis of the contents of the volume in condensed and graphic language, illustrated very finely with Swedenborg's original plates, that it makes very fascinating reading for any intelligent student. Especially will the reader be interested and amused with the account of the finding of the bones, now stored up in the *Gustavianum* Museum at Upsala and labelled by Lillieborg in 1802, the *Hunterius Swedenborgius* or the "Swedenborgian Whale." The studies of strata, fossils, composition of mud, interior of the earth, the at one time prevalence and subsidence of a flood, etc., are quite as interesting, even at this day of advanced knowledge or speculation, as when written, for if they do not answer the questions of to-day, they still ask them, and leave a wide field of inquiry still open.

My recent visit to Stockholm and pleasant journeyings, partly in Mr. Stroh's company, amid the scenes of Swedenborg's own scientific and academic studies, and especially my delightful acquaintance with Professor and Mrs. Retzius in their beautiful and hospitable home, enables me to appreciate more than I otherwise could the manifold bearings this publication of Swedenborg's works under the auspices of the Royal Academy itself will have upon the future truer estimates of Swedenborg by the world at large; and all these happy experiences only lend a deeper and richer meaning to Swedenborg's own chosen motto, *"Dominus providebit"*—"the Lord will provide."

FRANK SEWALL,
President of the Swedenborg Scientific Association.
Washington. D. C.

THE WORK IN SWEDEN.

EDITOR OF THE NEW PHILOSOPHY:—Readers of the *New Philosophy* have no doubt followed with much interest the newly awakened activity of the world at large relative to Swedenborg's science, particularly the interest of the Royal Swedish Academy of Sciences, which has undertaken the publication in seven large quarto volumes of many of the scientific and philosophical works of Swedenborg. It may therefore be of interest to add a word supplementing the various reports which have been published from time to time.

During the past summer I had the pleasure of visiting Sweden and of seeing Mr. A. H. Stroh at work editing the Scientific works of Swedenborg now being published by the Royal Swedish Academy of Sciences.

By prearrangement I met Mr. Stroh and Dr. Sewall at Gotenburg and there a number of matters of interest to the Scientific Association were considered, especially the publication of the catalog of Swedenborg's works which were sold at auction after his death. The catalog is in possession of the Royal Library and they have kindly given their consent to its publication. The publication was unanimously agreed to by all of us and since then it has been printed in Sweden, and is now on sale in this country. A study of this catalog will be valuable in determining to some extent the sources from which Swedenborg drew his information.

While in Gotenburg we had the pleasure of seeing the portrait of Swedenborg's mother in possession of Baron Knorring. This beautiful picture has been described in the *New Church Life,* Nov., 1907, p. 689. It is very desirable that it should eventually come into possession of some public institution.

In Stockholm the interest to a New Churchman centres around the Royal Academy of Sciences, where most of the Mss. of Swedenborg's works are kept. The examination of these documents was peculiarly delightful and interesting. While there I had the good fortune to see not only the Mss. actually belonging to the Royal Academy of Sciences but also some of those from other libraries which are being made use of in the present publication of Swedenborg's Scientific works. It was very clear to me from even a brief examination of the Mss. that many of them are most difficult to read, and that Mr. Stroh, the editor, has an arduous task before him. This is true not only of the numerous letters, but also of the work on the Brain. Some of this has been transcribed by Rev. P. B. Cabell, but even his transcription requires very careful comparison with the original Mss.

At the time of my visit the work had progressed so far that volume I. containing Swedenborg's contributions to Geology, was in type. (This volume has since been completed and mailed to the subscribers). Volume II, containing Swedenborg's work on Chemistry with plates and experiments, and the *Dædalus Hyperboreus*, was over two-thirds done. The portion not yet printed comprised part of the *Dædalus* and the introduction by Prof. Arrhenius. Volume III. containing the *Lesser Principia,* was all in type, except the introduction. A copy of this volume was on exhibition at the meeting of the Swedenborg Scientific Association last spring.

It was hoped that these three volumes would all be in the hands of the subscribers before the end of the year. 1907, and that a good beginning would be made with volume IV., which is the first of the volumes on the *Brain,* but there seems to have been some unforeseen delay.

While in Stockholm I could not neglect the opportunity to examine

the Mss. of those Theological works in the Academy of Sciences which are not yet phototyped. I refer particularly to the three large works, viz., the *Index Biblicus,* which is now being phototyped by the Swedenborg Society of London; the first draft of the *Arcana Cœlestia,* all of which is preserved excepting the Ms. of volume I; and all of the first draft of the *Apocalypsis Explicata.*

There is no doubt that the Ms. of the *Arcana Cœlestia* is disintegrating, and it will be a matter of time only when it will be illegible. There are blots and spots which have made the paper so brittle in places that it is now actually crumbling to pieces. The same may be said of the first draft of the *Apocalypsis Explicata.* The great need of making these Mss. accessible to the Church by phototyping has been remarked by various men at different times, and it is to be hoped that steps will be taken looking toward their being preserved in permanent form.

CHARLES E. DOERING.

Bryn Athyn, Pa.

REPORT FROM MR. A. H. STROH.

Rev. Frank Sewall, M. A., D. D.,
President of the Swedenborg Scientific Association:

Some of the information which I shall record in this communication is already well known to you and to Treasurer Doering, as we had the opportunity of discussing the work here during your visit to Sweden last summer. But there is also some news, and besides, the readers of the *New Philosophy* may welcome a continuation of former reports.

Vol. I. of the new edition of Swedenborg's scientific texts was laid before the ordinary meeting of the Academy of Sciences on September 11th. The Appendix and Notes, to be published separately, are to include certain contributions which have not yet been received, together with historical and textual notes. Introductory materials and notes have now been received from Professor Arrhenius, but there is still much work to be done before Vols. II. and III. can be published. The extension of the series of volumes by the inclusion of the entire *Principia* of 1734, and even of the works on *Copper* and *Iron,* is now under consideration, and those three works, constituting the *Opera Philosophica et Mineralia,* may be included in the series if a sufficient number of subscribers can be secured. The best way to publish the three volumes in question may be to reproduce them in fac simile. These works are at the present time arousing some interest among mineralogists in Sweden, and there has even been planned an edition in Swedish.

As a result of the great interest which you and Treasurer Doering took in the catalogue of Swedenborg's library, which you inspected in the Royal Library here at Stockholm, I discussed ways and means with Treasurer Doering and Professor Retzius, with the result that the zinc plates of the catalogue, to be used for the reproduction in the

Appendix to Vol. I., were made at once and a fac simile edition of 600 copies with the title *Catalogus Bibliothecæ Emanuelis Swedenborgii,* etc., was printed on genuine, wood free, imported Dutch paper. Copies may be secured from the Association. It seems likely that the first eight pages only of the catalogue refer to Swedenborg's library, the two Appendices having another origin. This would mean that Swedenborg's library consisted of some 400 vols. The high value of these references to Swedenborg's sources will be appreciated by every careful student.

The little work by Swedenborg on Charles XII., seen at the Griefswald University Library during my visit in 1905, is being reproduced in a fac simile edition, one of the two copies at Griefswald having lately been presented to the Library of the Royal Swedish Academy of Sciences, no copy having thus far been found in Sweden. As a result of efforts to collect Swedenborgiana for the libraries here and elsewhere in Scandinavia, some valuable accessions have recently been received. The Librarian of the Academy of Sciences is prepared to receive copies of all editions of Swedenborg's texts, as well as of biographical Swedenborgiana and reference works. The Swedenborgiana are to be kept in a special room in the new Library of the Academy to be built at Frescati near Stockholm.

A new edition of Professor Nathorst's introduction to Vol. I., on "Emanuel Swedenborg as a Geologist," including a number of changes and additions, is now in press; a large edition will be printed.

All the printing referred to above, as well as matters in connection with the distribution of Vol. I., keep me very busy, but still I have found time to make preparations for the first issue of the proposed *Swedenborg Archives,* to plan for a "Swedenborg Museum," and to supervise the phototyping of the *Index Biblicus,* recently placed in my charge by the Swedenborg Society of London. The Museum referred to deserves a few words of description. After receiving knowledge of the existence of a fine portrait of Sara Behm, Swedenborg's mother, it occurred to me that a collection of portraits of Swedenborg, his parents and relatives, such as Eric Benzelius, together with various works by Swedenborg and objects which belonged to him, should be placed in some suitable building in Stockholm and be open to inspection by the public. With this end in view I some months ago approached Dr. Upmarks of the "Northern Museum" (*Nordiska Museet,* a recently opened museum of Scandanavian ethnology), and received such encouragement that a list of objects was prepared and submitted to him, and afterwards to Dr. Salin, the chief of the museum. He has become so impressed with the desirability of a "Swedenborg Museum" that he has promised to arrange and open one in the near future in a special room devoted to the purpose. This he was the more willing to do as the Museum already possesses a fine portrait of Swedenborg by Fredrik Brander, painted a year before the one by the same painter in the Academy of Sciences (reproduced in Vol. I. and also separately), as well as Swedenborg's organ, summer house, and his violet glass orna-

ments which once adorned the roof of the summer house. It is in the ethnological park "Skansen," a department of "Nordiska Museet," that the summer house, and in it the portrait of Swedenborg, his organ, etc., have been visited in recent years by New Church visitors from America and England. I have secured a number of objects for the proposed museum by applying to the members of the Swedenborg family and others.

The documents and books referred to in my last report, as well as two silver medals of Swedenborg struck by the Royal Swedish Academy of Sciences, and by the Royal Swedish Academy [of Letters], which I received from Professor Retzius, have been forwarded to the Secretary of the Association in the care of Treasurer Doering and of my friend, Amandus Johnson, M. A., a fellow of the University of Pennsylvania, who is investigating the history of the Swedish colonies in America, and is returning to America.

In conclusion, I must express my appreciation of the encouraging message from the Association which you personally conveyed to me, as well as my conviction that the visits to Sweden last summer of yourself and Treasurer Doering will be of much value for the work here and for the uses of the Association. The great importance of the publication of Swedenborg's scientific works, undertaken by the Association and the Academy of Sciences, is becoming manifest and awakening active interest not only in America, but also in England and other countries. By the publication of Swedenborg's own works, and by historical and critical information concerning them, many misconceptions will be removed and the way prepared for intelligent study.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, December 10, 1907.

THE "OPEN COURT" ON KANT AND SWEDENBORG.

EDITOR OF THE NEW PHILOSOPHY:

The *Open Court** in its August number in a notice of my work on "Reason and Belief"** dwells at some length on that portion of the chapter on the "Personality of God" which deals with a discussion of the question raised some years ago between the *Open Court's* editor, Dr. Paul Carus, and the famous Parisian priest and orator, Pere Hyacinthe, regarding the possibility of a "super-personal God" or a kind of eternal personality beyond our comprehension or any of the attributes we attach to personality. As the editor does not attempt to

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*Open Court. Monthly Magazine—Chicago. Dr. Paul Carus, Editor.

**Reason and Belief, or Faith for an Age of Science, by Frank Sewall: London: Elliot Stock. 1906.

justify his position over against my criticism, but only to explain his own position more clearly, I will not here enter into the discussion in detail, only expressing my regret that Dr. Carus has not, at least, explained how God can be even a "prototype of mind" and not be personal in the sense in which I have used the term, namely that of an intelligently guided will. But I must call attention to what I believe is a mistaken idea of the editor in regard to a subject incidentally brought into this discussion, namely, that of Kant's real relation to Swedenborg. In this connection Dr. Carus speaks of Kant's wholesale rejection of Swedenborg and his remarkable visions "as sufficiently proven." And as the means of this "sufficient proof" he refers to "Kant's book on the Visions of Metaphysics and the Metaphysics of a Visionary" (*Sic.*). Now it is interesting to know that the only existing English version of Kant's witty little book, whose true title reads: "The Dreams of a Spirit-Seer, illustrated by those of Metaphysics" * is that of the late Rev. Emanuel Gorwitz which I edited and to which I furnished the introductory Essay on the "Relation of Kant to Swedenborg." In this introduction I pointed out how for politic reasons known to the philosophical faculties of those days of Hume's popular skepticism, Kant found it an ingenious device to laugh at these "Dreams" in his little book while he quoted from them the profoundest ideas of his philosophy in his lecture room. That Kant was really deeply affected by Swedenborg's doctrine of the two worlds and by Swedenborg's description of the real nature of the spiritual world is testified to by a number of eminent philosophical authorities quoted in my Introduction to the volume named. In referring Dr. Carus to this brilliant little work, which I am quite ready to do even "as a Swedenborgian," I am quite confident that if he will read not only the introduction and its historical argument, but also between the lines of the "Dreams" the spirit which really controlled the writer, he will see that it is not so "unsafe" as he thought for me to refer to Kant as an authority, in support of my contention as to the dependence of all science on the soul's power of appreciation and thence the personality of the infinite Power.

FRANK SEWALL.

Washington, D. C. November, 1907.

A NEW DEFINITION OF LIFE.

"Directivity"—is the latest name we have met with as the modern scientists' definition of life. It is suggested in an article of no little interest and ability contributed by the Rev. Professor G. Henslow. M. A., F. L. S., of Leamington, England, to the Hibberts' Journal for October. The writer, who owes his indebtedness for the term to Pro-

*Kant's *Dreams of a Spirit Seer*: Published by Swan, Sonnenshein & Co., London—MacMillan Company, New York.

fessor A. H. Church, F. R. S., argues that after all the convertible and reduceable materials, embodiments and even forces of the living organism have been reached and named by the modern investigator of life, there remains still something as yet unnamed which must nevertheless be included in the final summing up. No strictly physical analysis, chemical or otherwise, reaches this peculiar entity, but a rational analysis most emphatically demands it, This element is what the writer ventures to call by the name Directivity, because this seems to be the peculiar quality and function of this inmost ingredient of living forms. It is that which determines the forms which the nourishing foods or saps shall take on in animal or tree. It is that which turns apparently the same soil ingredients into an apple tree and into a pear tree growing side by side; or that which enables the same food eaten by a cat and a crow to go, in the one, to produce fur and in the other feathers. Of course the field of application and illustration is as wide as the universe and the question becomes one of very fundamental moment, and yet the author concludes it has never been answered in any of the analyses of life furnished by modern science. He calls the element "directivity" and he very properly discriminates between this and "force"—the common term into which all the unlikely problems of life's activities are accustomed to be tossed for explanation by the ordinary physical scientist. It is, he says, not "force" because it is that which stands behind force and directs it, even chooses for it, in what way it shall act. He quotes from Croll's Work: "What Determines Molecular Motion: the Fundamental Problem of Life"—the statement that "no force can direct itself . . . . that which directs is not a force itself." He even goes further as his logic indeed compels him to go, and says that Directivity involves a "Director."

Life thus in its first essential or ingredient becomes identified with the one intelligent and voluntary Director of the Universe.

To one who accepts Swedenborg's definition of Life as essentially love acting by wisdom into use this term "directivity"—will seem by no means an inapt one in itself and as possibly very happily chosen as a medium for the discussion with physicists of the relation of the physical to the vital or spiritual planes of being. The more it is examined the more this concept of "directivity" seems to embrace the real things it must stand for—namely, will, intelligence, and action,—the three degrees of the divine source of the universe according to Swedenborg. For directivity implies a motion or purpose which is of the will, a choice of judgment which is of the intellect and an actual employment of force in executing this will. The student of Swedenborg will especially recognize the illustration the article affords in its discussion of "force" of the manner in which the "discrete degree" between effect and cause or between body and spirit comes to be of the most practical assistance in solving these ultimate problems of life and its embodiments.

F. S.

THE NEW PHILOSOPHY.

VOL. XI. APRIL, 1908. No. 2.

REPORT ON A GENERAL INDEX TO SWEDENBORG'S EARLIER WORKS.

1. A complete general Index to Swedenborg's earlier works,—poetical, scientific, and philosophical,—has been a long-felt want in the New Church. In view of the more general interest recently awakened both within and without the Church, this need now appears to have become imperative, and the time seems to have arrived when the compilation of such an Index should be undertaken.

2. *Former Indexes.* Particular indexes to some of the scientific works have, indeed, been prepared, as to the *Principia,* the *Infinite,* the *Economy,* the *Animal Kingdom,* and the *Soul,* but all of these are either too brief, or too incomplete, or too inaccurate, to be of much value for thorough and comparative study. Of the great mass of minor treatises, there are no indexes whatever, and the same applies to many of the larger works, so that the volumes on *Generation,* on the *Senses,* on the *Brain,* on the *Fibre,* the *Worship and Love of God,* and the *Adversaria,*—all these, and many more, are virtually sealed books to the Church as a whole, when yet all these works abound in teachings of the most vital importance for the correct understanding of the very Theology of the Church, not to speak of their bearing upon Science and Philosophy in the light of Theology.

3. *The new Index to be all-inclusive.* The more these works are being studied, the more evident it becomes that

Swedenborg's life and mission, the nature of his preparation and illumination, his wonderful anticipations of modern Science, and his own great system of Natural Truth, can never be properly understood without access to all that he ever wrote. The realization is growing in the Church that everything he wrote is of profound value, that every sentence and word is of importance and was used deliberately, that nothing can safely be omitted or slurred over. Take, for instance, his very earliest production, the *Marriage Ode,* which he wrote in the year 1700, when a boy of twelve years of age. We find even here beautiful, heaven-inspired ideas of the eternity of marriage, tiny seeds destined to bear blossom and fruit in the subsequent greater works. The proposed Index, therefore, should be truly general, including everything written by Swedenborg, from this first poem to the last page of the *Adversaria,* and including every subject and every name to which he refers.

4. *Character of the Index.* Any index will necessarily be more or less of a makeshift. What is really needed, and what will ultimately be compiled, is a *Concordance* to all these works, similar in scope to the Rev. J. F. Potts' *Concordance* to the Theological Works. Such a Concordance, however, is out of the question at the present time and, probably, will remain so for many years to come. In the meantime a General Index, such as proposed, will be of great service in spite of necessary limitations, and will also prepare the way for a future Concordance.

A mere word-index, however, will not be of practical value. It might contain a thousand references to the "Blood," but unless each reference were accompanied with some words describing its nature, the mass of references would discourage instead of assisting the student. The Index, therefore, must be more or less descriptive, and in some cases somewhat approaching the nature of a Concordance.

Again, the proposed Index will have to be the production of many men, as no one man seems to be prepared to undertake the whole work at the present time. A number of

scholars in the Church have, however, signified their willingness to undertake the indexing of special volumes, and if all work together according to a general accepted plan, the compilation of a General Index can be looked for in the course of a few years. Where many hands have been at work, inconsistencies and omissions are inevitable, and complete uniformity unattainable. Nevertheless, each competent scholar is able to make a *good index* in his own way, under the general plan, and the collection of all these indexes will be far better than nothing. In the preface to the General Index, when pulished, each worker will, of course, be credited with his own work.

5. *History of the present movement.* A paper proposing the compilation of a General Index was read at a gathering of gentlemen in Bryn Athyn, on Jan. 14th, 1908. General interest was manifest, and another meeting was held, two weeks later, for more particular consideration of the subject. A temporary committee was then appointed to develop the details of the plan. At a subsequent meeting, the recommendations of the committee were adopted, and a permanent committee was appointed with instructions to draw up and distribute a complete plan of work. The same is herewith submitted to all persons interested in the undertaking.

6. *A catalogue of all the works,* with initial abbreviations of their titles, for ready reference, was first prepared, and, as finally adopted, is published at the end of the present Report. The preparation of the Catalogue was facilitated by consulting Hyde's *Bibliography of Swedenborg's Works.* Two catalogues were prepared, one in alphabetical, the other in chronological order. The fixing of initial abbreviations of titles involved much study. Avoiding any abbreviations that might be confused with those adopted for the Theological Works, by Mr. Potts in his Concordance, the policy was adopted to fix very brief initials for the larger works, and suggestive abbreviations for the smaller, less well-known works, to which but few references will be made.

7. *Re-numbering the works.* As to the proposed re-num-

bering of each work, for more ready reference, it was concluded that it will be best to retain Swedenborg's own numbering, or the numbering fixed by the translators of the current English editions, whenever such numbering is consecutive throughout a work, or not too cumbersome for Index-reference. In other cases, as in the *Principia,* the work *On the Infinite,* the *Chemistry,* and some other works, it will be necessary to introduce a new and consecutive numbering in the margin, in the hope that students will introduce the same numbering in their own copies of the work, and that editors of future editions will do the same, for the sake of harmony with the General Index. The re-numbering of such works will be made by the committee, in consultation with the persons who have undertaken the indexing of the same.

8. *General Rules.* It is an axiom among indexers that "the Indexing problem changes with each new book undertaken," and this truism applies very evidently to Swedenborg's earlier works, which treat of many and diverse subjects. We must depend, therefore, in the chief instance, upon the good sense of each indexer, but, for the sake of general uniformity, the following rules should be observed:

a) Each work should be indexed directly *from the original,* Latin or Swedish, comparing, of course, with existing English editions.

b) Each worker should carefully *read through* the work under hand, before beginning the index.

c) Each worker should procure a copy of the excellent work on *Indexing,* (Bulletin 94), published by the New York State Library, in 1905. Copies may be procured through the Academy Book Room, at the price of 15 cents. We regard the careful study of this practical (and entertaining) little manual as almost indispensable to the attainment of the greatest possible uniformity in the present undertaking.

d) Let each one make his own individual plan, as here published, as *plain and simple* as possible, avoiding intricacies and peculiarities of arrangement.

e) Remember that it is better to err on the side of too

great fulness, in indexing, than on the side of meagreness, since it is easier, afterwards, to cut out superfluities than to supply lacunæ. *Do not fear making the Index too full.*

f) Keep in mind that the Index is to be primarily for the *use of students.* Avoid efforts to explain or interpret. Do not attempt to make classifications, but keep to the general alphabetical arrangement.

g) Each compiler should carefully *verify* his index, after completing it, and before finally writing it out.

h) The Index is to be simply a *word-index,* when subjects and names are merely mentioned *in passu,* or in cases of purely technical description, or in the case of quotations from other authors.

i) It is to be a *descriptive Index* in all cases where Swedenborg makes any comments or draws any conclusions, or introduces any principles and teachings of his own.

j) The entries in such cases should be *brief as possible,* the substance of the passage to be summarized in a line or two, without introducing the whole passage.

k) When it seems necessary to make an *extended entry,* introduce the same under the most important word, and then make free use of cross-references to the heading under which the full entry will be found.

l) Whenever the compiler feels doubtful as to the translation of a certain word, or feels the need of special care, *the term in the original* Latin or Swedish should be written in parenthesis after the English word in the heading.

m) In general, the heading should be a *noun or a substantive* phrase. When *adjectives* are inseparable from the nouns, write the adjective first, i. e., "spirituous fluid," not "fluid, spirituous;" "animal spirit," not "spirit, animal."

n) Avoid *unimportant* words for headings, and never use prepositions, articles, conjunctions, and other obscure words, as key-words.

o) *Allusions* should be carefully noted, but key-words in this case should be entered in brackets.

p) Be careful to note under *"Swedenborg"* anything referring to him as a person.

9. *Particular directions.*

a) In making the *first draft* of your index, use the 3x5 inch, manilla-paper slips, which will be supplied by the Academy Library, or any other slips of *uniform* size, which will be easy to handle when classifying alphabetically.

b) Having completed and verified his index, the compiler should *write out* his entries on the Library cards which will be supplied by the Academy Library. Those who do not rejoice in the possession of a good hand-writing, should make every effort to cause the entries to be type-written.

c) Each card should contain *only one* entry, except when the same subject is mentioned twice in the same number.

d) The following samples will serve as models for entries:

Simple Cortex.
Sn. 1—the organ of intellection or inmost sensation, 7, 11.
——— contained in each cortical gland. 4.

Angular Forms.
O. 64—origin of material bodies.

Only-Begotten.
Pr. 105—became Man, in order to restore Nexus with the Infinite.

Boerhaave.
Ec. 45—on Red Blood, q.

Red Blood.
Ec. 45—Boerhaave on, q.

10. When the compiler has finished his Index, he will turn the cards over to the Committee. The cards will then be incorporated, alphabetically, with the cards of the other Indexes, in a special catalogue case in the Academy Library, where it will be preserved until the General Index is ready for publication. In the meantime, the Index, as it is being compiled, is open for reference by the scholars of the Church.

11. The Academy's Librarian will enter the cards not only alphabetically, but also chronologically, so as to exhibit the growth of each idea in Swedenborg's mind.

12. When the whole Index is ready, a general editor will be appointed, to reduce the whole to the greatest possible uniformity, and prepare it for final publication.

13. The following abbreviations are recommended in order to facilitate the work:

d. = described.
ex. = explained.
def. = defined.
ill. = illustrated.
m. = mentioned.
q. = quoted.
ref. = referred to.

14. In order to secure uniformity, the various compilers should communicate frequently with the Committee. As each one has finished the first draft of the index to the first chapter of a work, it would be well to submit the same to the Committee for examination.

NOTE.—See catalogue of Swedenborg's works on page 56 of this issue.

C. TH. ODHNER,
WM. H. ALDEN,
EMIL F. STROH,
Committee.

BEING AND EXISTENCE.

A Philosophical Discussion.

BY FRANK SEWALL.

III. Trinal Monism.

Having glanced briefly at what is involved in the idea of Being, as an object of thought, it will be profitable here to consider briefly another fundamental concept—which is practically the same but at the present day is discussed under another name, namely, the Nature of the One. What is Monism? If all is reduceable to a One, what is that One? Is it material? Is it spiritual? Is it without quality whatever? Is it something or nothing? If something—how are we to conceive of it?

THE NATURE OF THE ONE.

The most mischievous error in the conception of the One is that this primal principal of universality, unity and harmony from which, or in which, all things have their real being. is an Absolute. For it is clear that there is, or can be, no absolute One—whether as considered numerically or intrinsically. For the Absolute means the unrelated, and One as the first of a series is certainly related to all that follows; it has no numerical meaning whatever, except as related to a series.

If, on the other hand, we try to think of One not as first of a series but as all absolutely, then there is nothing to make it *one*, nothing to distinguish it from the simple nothingness of the unthought. So if we discuss the One at all, we must first begin by distinguishing it—by conceiving it as an object of thought: and this, of course, renders it no longer an absolute.

One, intrinsically regarded, then, is not absolute. For if we regard it even most abstractly as Being, or, as the whole

of being, it is related to the not-being, and, as a whole, is related to its parts; and in analyzing Being, in order to distinguish it from nothing, we have had to give it qualities, that is, to make it something—or the being of something rather than the being of nothing. This being of something, therefore, has a nature—however abhorrent this idea may be to the devotee of pure Absolutism. The Absolute, if you please to call it so, the Primal One—Pure Being—has a nature, a *natura,* that is a becoming something. While it forever is, it is also forever being born; and it is born in becoming something—or from a state of simple being becoming an existence. While at first, considered as pure ESSE, it has no conceivable attributes except those of infinity and eternity, which are simply the absence of finition or qualification—it is in existence that being acquires essentials capable of being defined or thought of. Therefore, the stage by which pure Being exists, or becomes the Being of Something is a stage of definition. Swedenborg designates as the first "Finite" that which is distinctly conceived and born of the Infinite in the making of a world. [See *Principia:* Ch. II. *On the Infinite:* Ch. I.] The quality of that first motion in the Infinite, which is the "point" or "first simple," is its quality of "finiting," that is, of defining. (See *Summary of Principia:* II:20.) Thus it is by definition that things become and definition is a purely mental act. Things do not define themselves. It is by definition that things or something exists out of Being; or it is by definition that Being is born (*natum*) into existence and that nature (*natura*) is: just as it is by the Word that all things were made; and it is by definition that the One becomes an existing reality to our thought. But the nature of the Infinite and Eternal One must be that which it has by virtue of its own being and from no other source or cause. It must be a nature which is intrinsic to the being and becoming of any thing as such.

In examining into this nature of the One, as necessary and intrinsic, we found in our discussion in the last chapter, that this nature is trinal, in that it involves the three elements of

what it is, *how* it is, and *why* it is. In other words, reduced to a formula the nature of every thing that is, involves the three principles, the End from which: the Cause by which: and the Effect in which the thing exists. No thing or class of things not even the infinite One exists, except as something distinguishable from other things—the Infinite as distinguishable from the things contained in itself. "God is infinite," says Swedenborg, "and he is called infinite because he has these infinite things in himself: *quia infinita in se habet.*" This distinguishing element of a nature or of a thing is its form; and, therefore, we may call the form, the cause of a thing because it is what makes it be what it is and not something else. But behind this form or instrumental cause, *causa efficiens,* each thing must have an originating end or final cause, *causa finalis,* a purpose or first motion which conceived the form or the mode of causing and bringing forth the effect.

In the Infinite itself this first cause is the real *causa sui,* the Cause of Itself, in being the End which takes form in the efficient causes—as Love takes form in Wisdom,—and by these proceeds to actualize itself in effects. But the principle is true of animate and inanimate things alike; of things finite or of the Infinite. A thing is what it is because of its cause, and its cause is shaped by the end which lies behind or within it, and both end and cause reside within the effect as in their ultimate. In the Infinite, the end is self-moved or self-originated—and the cause is self-caused as having that first end in it.

In finite things, the ends and causes are secondary, operating from the essential End and Cause in the Infinite.

Thus the End, Cause and Effect, pervade each and every thing of the universe and embrace all being in their system of trinal Monism.

IV. The Pragmatic Test; or the World as We Know It.

From this theoretical statement of the nature of the One if we proceed now to apply this principle to the world as we

know it, our problem reduces itself simply to seeking in creation as an effect the inner planes of cause and of end.

To say that there is no end, and that there is no cause, and that all is effect, is both a contradiction of terms and a violation of the principles of all science. For, first, if the effect exist, there must be a cause, since there can be no effect without cause; and, secondly, that which we know as the objective world or as matter is effect, since it is in itself void of every thing which is causative or can account for its own being. Moreover, science is correctly defined as a knowledge of facts in their relations to law. The facts themselves are not the law; the facts are what the senses perceive. The law is what the intellect deduces or comprehends. One apple falling from a tree does make a law of gravitation; but neither do a thousand apples falling make such a law any more than one. Each apple falling is simply a fact by itself, having, as a material phenomenon, no power to make or cause others to fall. The law of gravitation is something which the *mind* perceives as a "way how" nature is made to act, and, as it is the mind and not the senses that perceives this *way how*, as "law," therefore, we may hold that the law exists in that which is not nature, but is in nature as cause is in its effect, or as the mind is in the body.

Unless matter makes itself and moves itself, therefore, we must look somewhere else than to matter for that which is the cause of matter and of physical locomotion.

And this brings us to the recognition of that second law of the degrees of being, viz.: that besides being three in number,—end, cause, and effect,—these are entirely distinct, one from another, and can by no means be confused, merged one into the other, or substituted one for the other. In the infinitely many series of such units of end, cause and effect, embraced in the whole range of existence from God down to matter, that which is effect in one series may serve often as end in another. An impression received in my mind as effect may be the end or originating cause of my effort to produce the same or a different effect in another; but in the same series

the end must be end and never cause or effect, although in these; the cause must be always cause and never effect, although in the effect; and the effect must remain ever effect and only effect, although in this effect reside both the end and the cause. Moreover the cause, although not the end, yet derives all its existence from the end; and the effect, though not the cause or the end, yet derives all its actuality from the reason why, and the manner how of its being. For if there was no *purpose* of its *being* and no *manner* of its *becoming*, it simply would never have existed.

Does some one say—but here is an elementary atom; it simply is; there was no purpose for making it, and no manner or law of making it? But science to-day has stepped far beyond the stage of being satisfied with the "simply is" of knowledge. Least of all is it satisfied, as the restless search of its laboratories testifies, with the *name* of an ultimate atom or indivisible unit of matter so long as behind the name are playing all sorts of multitudinous forces and essences. Whatever name be given to this ultimate basic unit of the physical universe, whether atom or electron or ion or vortex or energic, how can one call that a simple which is the complex of innumerable effects involved in its production, and which contains in itself potentialities which only the minds of countless generations will be able to discover and put to use. In other words, no atom is so simple as not to have its Why and its How; and the how and the why of its being are, with its actual existence, the discrete degrees that together constitute it an atom.

In relation to this search of science for an ultimate permanent reality in matter the following extracts from an article by B. Latour, in the *Cosmos* (Paris) of November 2, 1907, are of interest, especially to the student of Swedenborg's *Principia* with its distinctly stated theory of the successive degrees of atmospheres and their respective forces and functions, viz., the atmospheric air, the ether, and the aura:

"Not long since," says Mr. Latour, "matter—the chemical atom—appeared as a somewhat complicated structure, of variable form according to the chemical elements under con-

sideration—the carbon atom was different from that of hydrogen, that of gold, etc.; and these structural differences of the atomic elements corresponded to differences in their physical and chemical properties. Side by side with matter, all physicists agreed in recognizing the existence of a medium having special properties—the ether—in which ordinary matter is plunged. This etheric medium is indispensable to explain the propagation of the vibratory movements that constitute light, radiant heat, and electric waves. Matter and ether were supposed to be indissolubly linked together, and mutually interpenetrable, but while they entered in common into divers physical phenomena, their natures remained completely distinct and they seemed irreducible, the one to the other.

"To-day the position of science is changed—another step has been made toward unity. Matter and ether are no longer two distinct constituents of things, and, paradoxical as it may seem, matter has given place to ether. Matter, which for the purpose of our common and gross experimentation, appears to be in some sort the sole fundamental physical reality, is now only a modification of the ether. Regarding the nature of the ether, on the other hand, there continues to be deep mystery, and even its more important and primordial properties are the subject of discussion among scientific men, some attributing to it extreme tenuity, others regarding it as the densest of all known substances." * *

"Modern physicists having gone still further in the path of unification; they tend to consider the electron itself as a local modification or deformation of the ether. . . . On this theory the forces that manifest themselves between electrons are attributed to a sort of elasticity in the ether, of which their very existence is a proof. . . . .

"Thus, owing to this last hypothesis of the constitution of the electron, the ether, that was devised to explain certain phenomena of heat, light, and electricity, becomes in addition the unifying element in molecular and electromagnetic theories. So, also, in all the phenomena of the physical world we meet electrons. . . . .

"When the electrons are in motion, we have an electric current. There are certain free electrons that move from atom to atom; this is the case of a current in the interior of a metallic conductor, and self-induction, that important phenomenon that appears at every alteration of current, is nothing but the electromagnetic inertia of the electrons. In electrolysis, or chemical decomposition by electricity, we have a different kind of current, due to the movement of the ions into which the substance is decomposed. An ion, on the new theory, is a chemical atom or group of atoms having electrons in excess (in which case it is electrically negative) or in deficiency (when it is positive). These electrified particles are set in motion in an electric field, and move toward the electrodes plunged in the fluid to be decomposed.

"When the electrons vibrate, they generate in the surrounding ether electromagnetic waves, which include those of light and radiant heat. If an electron is suddenly arrested in its movement, there is an electric shock that travels through the ether like an explosive wave through air; this gives rise to the *X*-rays."

And the writer concludes with the admirable and, it would seem, only rational accounting for so wonderful an evolution of media and forces, namely, in a divine disposition or manner-how in their very coming into existence.

"In this bold and triumphant flight of science toward a larger and more comprehensive synthesis, we may detect a homage—perhaps too unconscious—to the unity of divine truth and to the simplicity of that eternal wisdom which, at the basis of the created universe, has disposed all things regularly, in number, weight, and measure."—*Translation made for The Literary Digest.*

(To be continued.)

THE SENSES.

PART FOUR OF THE ANIMAL KINGDOM, BY EMANUEL SWEDENBORG.

CHAPTER VI *(Continued from p. 22)*.

(Colors.)

360. *These changes happen just according to the obliquity of the wall upon which they impinge, and by which they are reflected,* 1. for to whatever angle the variation approaches. 2. it is attenuated or condensed more or less in shade, 3. as well particularly as in the volume, or, in part or in general, in species or in kind; 4. from this fact we measure colors by the rays in glass.

361. *This is the reason why we are induced to believe that every single ray has its own color in it, and that just so many as are the diverse rays, so many are the colors.* 1. Thus the eye induces the mind to believe. 2. since in every single ray is the color of the solar flame, or there is an image of the sun, 3. as may appear from the solar rays and from other fires seen obliquely, which rays are diffused directly from the flame. 4. But this color, such as is in the flame, is in place of a base, which is tempered by shades according to objects in part and in general. 5. Hence the specific differences in colors according to the degree of solar light and the shady or lucid quality of objects. 6. Nor are like colors easily shown by fires and sublunary flames, both on account of a defect of vigor, and because a general shade surrounds them. 7. This appears from the concentration of the same light, whence arises a kind of whiteness, with some tint of the flame.

362. *These colors must be called fleeting, for when the sun does not appear they vanish, nor are they shown forth by the light alone;* 1. for they do not exist except with the direct rays of the sun; 2. for their basis is that every single point or every

single part of the ether represents the sun. 3. Wherefore also they can be concentrated, as in burning mirrors, 4. whence there is heat and fire.

363. 2. *The origins of colors from light alone without the presence of the rays of the sun, in which rays is an image of the sun, are as follows:* 1. There is light everywhere, 2. whether it be solar, or of wax [candles], or flämy, or phosphorescent. 3. in many objects of the mineral kingdom, whence are the colors of minerals, of metals, of precious stones, in which there is at the same time a lustre, and of other stones, in which there is not a metallic lustre; 4. especially in subjects of the vegetable kingdom, 5. in which the parts are arranged in a most orderly manner, so that in every blossom, rose, blade of grass, fruit, their juices, oils, spirits, syrups, [there is color]; 6. also in the animal kingdom, especially in the blood.

364. *This color appears as though inseated, but yet it likewise arises from the modification of light;* 1. wherefore pictorial colors are most diverse. 2. These colors are laid on everywhere, so that they look to every direction whatever of the rays of the sun; 3. especially is this the case in liquid colors; 4. from their mixture one color arises; 5. a very small grain will tinge a large volume of water; many [other things might be said].

365. *This color arises from the modification of light in the smaller compositions of angular parts,* 1. thus in forms angular and terrestrial, 2. which are polygonal and diversely arranged, 3. very beautifully in the subjects of the vegetable kingdom.

366. *All the smallest parts shine and are pellucid,* 1. as may appear from all things of whatever color they are, that by the transposition of the parts they can receive a pellucid character; 2. thus it is with variously colored stones, precious and ignoble. 3. This takes place in the objects of the vegetable kingdom by certain penetrating spirits, 4. by the melting of their ashes, and many other things.

367. *For producing those colors at the least a double degree of composition is required, if not a triple;* 1. that is to say,

the smallest parts which transmit and likewise reflect. 2. These parts according to their angular forms variously modify the light and shade, 3. or harmoniously, or according to mere analogy or the relation of shade and light. 4. Thence is the inmost cause of variegation, wherefore of modification. 5. The second composition, according to its porous arrangement, either absorbs the light, as in various crypts and caves, in which the light is turned into shade, or into what is opaque and obscure, 6. whence is blackness. 7. or repels it variously, and for the most part inordinately, whence is whiteness; thus blackness and whiteness arising thence or from a pair of the second composition are the bases of their coloration. 8. These bases are varied in diverse manner; the varieties are as many as the varieties between whiteness and blackness, and as many as are the varieties between blackness and whiteness so many are the varieties between shade and light. 9. This is the more general and basic variegation of every part of a compound. 10. Yet this composition hardly falls under the power of the microscope; 11. and if it so falls, in such case that coloration perishes, together with the blackness itself which results from many things.

368. *Variegated reflection from more simple parts, when this is given for a base, produces colors which appear constant, as in pictures, flowers and other things.* 1. For those colors do not appear without that base, which is blackness or whiteness of what is diverse. 2. This whiteness or blackness cannot come except from many things taken at the same time. 3. Then when it (the whiteness or blackness) is present generally, those things appear single; the variegations or modifications of things are distinctly according to our rule. 4. Otherwise they would not appear. 5. Thus light without the sun produces colors, but first it will be a general to which, as to a base, the colors may be referred. 6. In a word these parts can be compared to mirrors, glasses. when on the one and the other side there will be a leaf white or black, in order that the reflections may appear.

369. *Thus the causes of each origin concur; but these lat-*

ter are modifications composed of endless other things by variegated reflections, which have reference to their bases or to the general of the compound, wherefore to blackness or whiteness. 1. Therefore these colors are variegations of general whiteness or blackness by the variegated reflections of light and shade in the smallest particles, in themselves pellucid; 2. thus they are polygons, variously angled, hollowed, plane, round; 3. but they perish without their own general.

370. *Wherefore these causes are constant, and may be considered to be in the particles themselves;* 1. as for instance in the blood, 2. in flowers, roses, syrups, etc. 3. Wherefore they can be variously changed by oppositions, indeed can take on colors green, red, etc.; 4. wherefore according to the destruction of the composition, 5 according to the opposition of other things, so that another form of general composition may come into existence; 6. according to poor completion of the composition; 7. and by endless other variations.

371. *Such a part in a pellucid volume tinges the whole volume with its own color;* 1. as in waters; 2. in crystals and glasses or solids. 3. A little can make the whole volume thus to be translucent, 4. for it is a kind of foundation of new light; 5. and all the rays thence emerging are re-produced as if from the volume itself; each ray refers to its own origin, as each ray to the sun, as has been said above. 6. But more rays enkindle the color, fewer attenuate it, or make it weaker.

372. *The more compact is a simple part, as in metallic parts, the more the color thence shines with a metallic color.* 1. Metallic elements are more compact. 2. These elements reflect the light from many parts. 3. They are less porous. 4. All things therein are more simple. 5. Hence there is a higher degree of density, which thus exalts the color, and renders it shining. 6. Wherefore also the surfaces are more polished and less rough. 7. Thence that polish invades the color, and superadds something as it were more perfect, which is not in stony, saline, still less in woody parts.

(To be continued.)

Communicated.

REPORT FROM MR. A. H. STROH.

Rev. Frank Sewall, M. A., D. D., President of the Swedenborg Scientific Association.

In a communication dated December 10, 1907, (See *The New Philosophy*, January, 1908), I described the progress of the work here at Stockholm; the publication of Vol. I. of the edition of Swedenborg's texts, with introduction by Professor Alfred G. Nathorst, laid before the ordinary meeting of the Academy of Sciences on September 11; the publication of the facsimile Catalogue of Swedenborg's library, as well as the proposed publication of other Swedenborgiana and the prospects for a Swedenborg Museum. Since December much additional progress has been made, and I shall now proceed to describe the status of the printing up to date, as also the other projects which will be of interest to members of the Association and readers of *The New Philosophy*.

The printing of Swedenborg's scientific texts and other Swedenborgiana.

Having received last November from Professor Svante Arrhenius introductory matter and notes concerning Swedenborg's contributions to chemistry, physics and cosmology, I made the necessary preparations for the appearance of Vol. II. of the texts, *Cosmologica*. This volume, containing the second *Principia* ("Lesser Principia"), *Arguments for the Principia, Summary of the Principia*, and *Third Part* of the *Principia* of 1734, with the Introduction by Professor Arrhenius on *Emanuel Swedenborg as a Cosmologist*, was laid before the ordinary meeting of the Academy of Sciences on the 12th of this month (February) by Professor Gustaf Retzius, president of the Swedenborg Committee. Professor Retzius also laid before the Academy a beautiful photograph of the portrait of Swedenborg, by Fredrik Brander, painted in 1768, and now in the possession of the "Northern Museum," where it will form part of the "Swedenborg Museum." This remarkable portrait, which will appear in Vol. II., was painted by Fredrik Brander in 1768, one year before his second (?) portrait of Swedenborg, which, in 1844, came into the possession of the Academy of Sciences. The portrait of 1768 is, perhaps, the best likeness of Swedenborg in existence.

It may be of interest to explain in some detail, the changes which have been made in the three volumes now in hand, and why their

publication has been delayed. The reader of *The New Philosophy* for the last few years will have observed that work was begun with the "Lesser Principia" in 1903, but as interest in Swedenborg's MSS. increased the scope of the proposed publications was gradually extended until, finally, three volumes were in hand, two of which have now been laid before the Academy of Sciences. In the autumn of 1906 it was supposed that the three volumes would be ready for publication the following spring, but during the winter the collection of letters in Vol. I. was considerably extended, and the *Chronological List* of Swedenborg's Manuscripts and Texts also required so much that Vol. I., *Geologica et Epistolæ*, did not appear until September, 1907. Still, more work, in great part unforeseen, was required before the introductory matter and notes for Vols. II. and III. could be furnished in November, 1907. Then it was decided to issue as Vol. II. the *Cosmologica*, formerly referred to as Vol. III., to print the notes by Professor Arrhenius on Swedenborg's physics and chemistry in the *Appendix* to Vol. I. and in Vol. III., and to further extend the latter volume, including a suitable introduction for the miscellaneous contents, which will supplement the *Prodromus Principiorum* of 1721 and the *Dædalus Hyperboreus*, etc. Not only will the student of Swedenborg's early texts welcome the appearance of the miscellaneous rarities to be included in Vol. III., but the volume will be of special value in connection with the early history of the Scientific Society of Upsala, the Bicentenary of whose foundation will be celebrated in 1910. Swedenborg was for years closely connected with the Scientific Society.

The following materials are now planned to be included in the Appendix to Vol. I.:

1. An English translation of Professor Hjalmar Sjogren's contribution in Swedish concerning Swedenborg's MS. on *Metallic Veins*, recently published in the December issue of *Geologiska Foreningens Forhandlingar*, Stockholm.
2. The text of Swedenborg's MS. on *Metallic Veins*.
3. The text of Swedenborg's MS. on *Soils and Muds*.
4. A *Chronological List* of Swedenborg's MSS. and printed Texts.
5. Catalogue of Swedenborg's Library.
6. Notes.

The contribution by Professor Sjogren is of much interest in connection with Swedenborg's mineralogy and doctrine of effluvia, and the publication of the two MSS. by Swedenborg will make accessible in Vol. I. all his shorter geological contributions, which have been included in Part I. of the Association's series of *Scientific and Philosophical Treatises by Emanuel Swedenborg.*

Since the distribution of the *Prospectus* last September, interest has been strengthened in the proposal to include in the edition a photo-

lithographic facsimile of the *Opera Philosophica et Mineralia* of 1734, as Vols. IV. to VI. This could easily be accomplished if a sufficient number of orders can be secured in America and England, and then the student of Swedenborg's physical philosophy, and of the later works on anatomy, physiology and psychology, would possess in the edition a working library of practically all of Swedenborg's works on natural science and philosophy. The great collections of notes and extracts which Swedenborg has left us, while of much importance for the student of Swedenborg's biography and the development of his comprehensive researches, form a class by themselves.

At the meeting of the Academy of Sciences on February 12, when Vol. II. of the texts was laid before the meeting, Professor Mueller was also made a member of the Swedenborg Committee in succession to Professor Loven. The new member of the Committee is Professor of Anatomy at "Karolinska Institutet," the Medical School of Stockholm. At the same meeting Professor Retzius laid before the Academy, in connection with the portrait of Swedenborg, referred to above, a fine collection of photographs of a number of the Academy's portraits, received from Mr. Robert A. Shaw, of Brooklyn. The photographs include several distinguished members of the Academy, who were friends of Swedenborg, or admirers of his works.

The Catalogue of Swedenborg's Library, printed here last November by Aftonbladet's Press, from the zinc plates made for the *Appendix* to Vol. I. of the scientific works, and with the assistance of the Association, have aroused considerable interest, not only in Sweden, but also in America and England. It is considered as certain by all the librarians and students here, whom I have consulted, that the two appendices to the *Catalogus* do *not* refer to Swedenborg's library. In this connection it is also of interest to consider the question, whether many works were removed from Swedenborg's library before the auction catalogue was published, either presented to friends by Swedenborg himself or disposed of by his heirs. It is, of course, very difficult to arrive at accurate conclusions as to the extent of such disposal, but we know that Swedenborg presented some works to friends, notably, the two handsome folio volumes of Swammerdam's *Biblia Naturæ* to Von Hopken. A few days ago there was sold at Rhenning's Antiqvariat, here in Stockholm, to Mrs. Hierta-Retzius, who intends to present it to the "Swedenborg Museum," a handsome folio volume, interleaved, with the autograph, "Em: Swedenborg:" on the title-page. This work, *Synchronistische Universal = Historie * * * von Theodor Berger, D. * * * Coburg, und Leipzig * * * 1755*, is, as indicated by the title[1], an historical reference work.

[1]Synchronistische Universal = Historie der vorgenehmsten Europæischen Reiche und Staaten, von Erschaffung der Welt bis auf das jetztlauffende 1775. Jahr, aus bewæhrten Urkunden, mit beyge-

The contents are very interesting, indeed, and it is significant in connection with the question of Swedenborg's library, that this work, dated 1755 on the title-page, came into Swedenborg's possession long after his spiritual eyes were opened, and that it is not mentioned in the auction catalogue. There are no annotations in the body of the work, but a few of the interleaved pages have been torn out.

Preparations are nearly completed for the facsimile edition of Swedenborg's *Festivus Applausus in Caroli XII. adventum in Pomeranian suam.* 28 pages in small quarto, printed at Griefswald, in 1714, and known to students of Swedenborg since 1905. As mentioned in my preceding communication, one of the two copies seen at Greifswald has lately been presented to the Library of the Academy of Sciences, Stockholm.

After long preparation, the beginning of a volume on *Emanuel Swedenborg as a Scientist,* has been made, with the printing of a revised edition of Professor A. G. Nathorst's Introduction on *Emanuel Swedenborg as a Geologist,* and the other introductions for the edition will follow serially in due course. Preparations have also been made for the first issue of the *Swedenborg Archives.*

The removal of Swedenborg's remains from London to Stockholm. The Swedenborg Committee of the Royal Swedish Academy of Sciences having advocated the removal of Swedenborg's remains from London to Stockholm, the Academy of Sciences approached the Swedish Government. The Swedish Government has, this month, provided that the cruiser "Fylgia," when touching next April at Dartmouth, England, shall receive Swedenborg's remains and convey them to Carlscrona, Sweden, where the Academy of Sciences will take charge of them and provide for their burial in the churchyard of Solna, near Stockholm, where Mrs. Hierta-Retzius has provided a site next to the tomb of the poet and late Royal Librarian Snoilsky. The remains of several great scientists and poets lie at Solna, and it is proposed to raise over the tomb of Swedenborg a handsome marble monument with a bronze medallion and inscriptions. There has also been much discussion as to the building of an imposing mausoleum.

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fuegten Anmerkungen, darinnen einige vorkommende historische Zweifel erotert, und die beruehmtesten Gelehrten dergestalt angefuehret werden, dasz, vermittelst einer Tabelle, was zu einer Zeit merkwuerdiges vorgefallen, auf einmal ueberschen werden kan, in XXXVIII Tabellen entworfen, und mit noethigem Register verschen von Theodor Berger, D. der Buergerl. Rechte und Welt = Geschichte oeffendichen Lehrer auf dem academischen Gymnasio zu Coburg. [Vignett, "cadunt et surgunt."] Coburg und Leipzig, Druckts und verlegts Georg Otts, Herzogl. Saechs. Hof = Buchdrucker und privil. Buchhaendler. Anno 1755.

The "Swedenborg Museum."

As referred to in my last communication, Dr. Bernhard Salin, the chief of the "Northern Museum," Stockholm, had promised to arrange and open a "Swedenborg Museum." In December I submitted to Dr. Salin a final list of objects, and he has this month begun collecting them for the proposed museum, which will be placed in a special room in the Northern Museum. The Rev. C. J. N. Manby has warmly seconded our efforts by appealing in the February issue of his monthly, *Nya Kyrkans Tidning*, for suitable objects and for contributions to purchase a portrait of Swedenborg's mother and other rarities.

Swedenborg's works and Swedenborgiana for Scandinavian Libraries.

Besides the measures mentioned above, to preserve and honor Swedenborg's memory, of interest even to those who are not special students of his works, there is a project which cannot but appeal to every thorough student of Swedenborgiana, namely, the collecting of all editions of Swedenborg in the libraries at Stockholm and Upsala. Hearty interest has already been shown in this matter in Europe and America, and a number of valuable contributions have been made, particularly to the Library of the Academy of Sciences, where accessions will be especially welcome. Most of Swedenborg's MSS. are there and the study of them is greatly facilitated by the editions of texts as well as by biographical Swedenborgiana and reference works. All editions of Swedenborg's works, as well as all works of a collateral nature, including journals, catalogues, announcements, etc., etc., will be welcome at the Royal Library and at Upsala University, as well as at Lund University. There are also two other Scandinavian libraries to which contributions might well be made, the Royal Library at Copenhagen, and the University Library at Christiania. At all of these libraries there already are good collections of Swedenborgiana, as I have seen by personal inspection, and the Royal Library has the most complete collection of printed editions of Swedenborg in existence, due to the indefatigable work of former Librarian Klemming. Certain works by and concerning Swedenborg would also be useful in the State Archives and Northern Museum, Stockholm, and in the Diocesan Libraries of Linkoeping and Skara. Anyone desiring special information concerning these library matters should address the president of the Association, the Rev. Frank Sewall, 1618 Riggs Place, Washington, D C., U. S. A., or the undersigned.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, February 25, 1908.

CATALOGUE.

OF

SWEDENBORG'S POETICAL, SCIENTIFIC AND PHILOSOPHICAL WORKS.

(WITH ABBREVIATED TITLES FOR EASY REFERENCE IN PREPARING THE GENERAL INDEX.)

Ac.	*Action.* 1741. pp. 10. Latin in "Opuscula Philosophica." English in "Posthumous Tracts." Indexed by C. Th. Odhner.
Ad.	*Adversaria.* 1745-1747. Latin, London, 1847. Four vols.
Alg.	*Algebra.* 1718. pp. 135. Swedish in Academy Library. Eng. MS. translation, ibid.
A. S.	*Animal Spirit.* 1741. pp. 13. Latin in "Opuscula." Eng. in "Posthumous Tracts." Indexed by C. Th. Odhner.
Arith.	*New Arithmetic.* 1718. pp. 28. Swedish MS. in Royal Library, Stockholm.
Bl. Fur.	*Blast Furnaces.* 1719. pp. 32. Swedish in "Noraskog's Arkiv," in A. L. Eng. Preface in Doc. I:404.
Body	*Observations on the Human Body.* 1734. pp. 8. Latin in Photolith. III. Eng. in Fascicle I. part 2. Index by G. M. Cooper.
Br.	*The Brain.* 1740. Three vols. Latin in Photolith. IV. Eng. in part, in R. L. Tafel's edition, 1882 and 1887.
Br. A.	*Addenda on the Brain.* 1740. Latin in Photolith. VI. pp. 265-322. Eng., in part, in Tafel's ed.
Br. Ex.	*Excerpts on the Brain.* 1740. Latin in Photolith. III.
Bredberg.	*Poem on Bredberg.* 1707. pp. 1. Latin original in Astronomicum Argumentum; copy in A. L.

Brenner. *Poem on Sophia Brenner.* 1710. pp. 1.
Latin original in A. L.

Carlskrona. *Improvements at Carlskrona.* 1717.
Swedish in Photolith. I. pp. 127-129.

Camena. *Camena Borea.* 1715. p. 93.
Latin in A. L. Index by E. S. Price.

Causes. *Causes of Things.* 1717.
Latin in Photolith. I. 24-27. Eng. in Fascicle I, part 1. Index by E. C. Bostock.

C. C. *Cerebrum and Cerebellum.* 1740.
Latin in Photolith. V.

Cer. *Cerebrum.* 1744.
Latin in Photolith. VI. Eng. in Tafel's translation (scattered).

Ch. *Chemistry.* 1721. pp. 199.
Latin in A. L. Eng., London, 1847. Index by R. W. Brown. (Including "Nova Observata.")

Ch. XII. *Memorial on Charles XII.* 1740. pp. 3.
Swedish in Nordberg's "History of Charles XII." Eng. in Doc. I:558-565.

Coin. *Restoration of the Coinage.* 1760.
Swedish in Kahl's "Nya Kyrkan," part II. Eng. in Doc. I:504.

Commerce. *Commerce and Manufactures.* 1717.
Swedish in Photolith. I. pp. 68-73.

Cop. *Copper.* 1734. p. 386.
Latin. 1734. Eng. MS. trans. belonging to L. P. Ford, London.

Cop. Mem. *Memorial on Copper.* 1722. p. 2.
Swedish in Photolith. I. p. 201. Eng. in Doc. I:498.

Corr. *Correspondence and Representation.* 1741.
Latin in Photolith. III. pp. 183-191. Index by C. Vinet.

Corp. Ph. *Corpuscular Philosophy.* 1740. p. 1.
Latin in Photolith. VI.. Eng. in Fascicle I, part 2. Index by G. M. Cooper.

Crane. *Description of a Crane.* 1716.
Swedish in Photolith. I. pp. 102-104.

Currency. *Memorial on Currency.* 1760.
Swedish in Kahl, part II. Eng. in Doc. I:497-503.

Decl. *Declination of the Needle.* 1740.
Swedish in Academy of Sciences. Eng. in Doc. I:568-577, 584-585.

Deluge. *Indications of the Deluge.* 1721.
Latin in "Acta Literaria." Upsala, 1721, part III. pp. 192-196. Eng. in "Misc. Observations." pp. 149-153.

D. H. *Dædalus Hyperboræus.* 1716.
Swedish and Latin in A. L. Eng. MS. trans. in A. L. Index by E. L. Cronlund.

Docks. *Docks and Salt-works.* 1719. p. 8.
Swedish in Library of A. S. P. & P. Soc., New York. Latin in "Artificia Nova."

Dr. *Dreams.* 1744. p. 84.
Swedish, Stockholm, 1859. Eng. in Doc.

Earth. *Earth's Decreasing Circuit.* 1717.
Swedish in Photolith. I. pp. 28-65.

Ec. *Economy of the Animal Kingdom.*
Latin, Amsterdam, 1740, 1741, 1742. Eng., London, 1845.

Ec. Ind. *Index to the Economy of the Animal Kingdom.* 1741.
Latin in Photolith. VI.

Echo. *Echo.* 1716.
Swedish in Photolith. I. pp. 205-206.

Elem. *Motion of the Elements.* 1733.
Latin in Photolith. III. pp. 79-82. Eng. in Fascicle II., part 1.
II. Index by J. E. Rosenqvist.

E. P. *Revolution of Earth and Planets.* 1719. p. 40.
Swedish in Academy Library. Eng., London, 1900

Ex. Cop. *Exportation of Copper.* 1760.
Swedish in Academy of Sciences. Eng. in Doc. I:507-508.

Exchange. *Course of Exchange.* 1760.
Swedish in Academy of Sciences. Eng. in Doc. I:505-506.

Exper. *Experiments.* 1716.
Swedish in Photolith. I. p. 92.

Face. *Muscles of the Face.* 1744.
Latin in Photolith. VI. pp. 13-15.

Fb. *The Fibre.* 1740. p. 256.
Latin, London, 1847. Eng. MS. tr. in A. L.

F. G. *Faith and Good Works.* 1739. p. 5.
Latin in "Opuscula." London, 1846. Eng. in "Post. Tracts." Index by C. Th. Odhner.

Finance. *Memorial on Finance.* 1723.
Swedish in National Archives, Stockholm. Eng. in Doc. I. pp. 471-474.

Fire. *Fire and Colors.* 1717.
Swedish in Photolith. I. pp. 80-85. Eng. in Fascicle I., part 1. Index by A. B. Wells.

Fly. Mach *Flying Machine.* 1716.
Latin in Photolith. I. p. 21.

Fossils. *Fossils.* 1716.
Swedish in Photolith. I. p. 19. Eng. in Fascicle I., part 1. Index by A. B. Wells.

Fred. I. *Poem to King Frederick I.* 1722.
Latin in Potholith. I. p. 203.

Freedom. *Preservation of Freedom.* 1761.
Swedish in Kahl II. pp. 49-52. Eng. in Doc. I:538-542.

Gen. *Generative Organs.* 1743. p. 231.
Latin, London, 1849. Eng., London, 1852. Index by W. H. Alden.

Geo. *Geometry and Algebra.* 1719.
Latin in Photolith. II. pp. 1-100.

Heat. *Conserving Heat.* 1722.
Latin, in Photolith. I. pp. 188-189. Eng. in Misc. Obs., London, 1847.

H. K. *Hieroglyphic Key.* 1742. p. 24.
Latin, London, 1784. Eng., Boston, 1847. Index by Walter Cranch.

H. S. *Heliconian Sports.* 1714.
Latin in A. L. (See Hyde, p. 11.) Eng. of some of the poems in "Intellectual Repository." 1841, p. 81; 95-99; p. 81-84. 1844: 195-196. Index by E. S. Price.

H. S. B. *Harmony of Soul and Body.* 1741. p. 27.
Latin in "Opuscula." Eng. in "Posthumous Tracts." Index by C. Th. Odhner.

H. W. *Height of Water.* 1719.
Swedish in A. L. (Comp. two Editions.) Eng. in Fascicle I., part 1.

Hydros. *Hydrostatics.* 1722.
Latin in "Acta Literaria," 1722, iv. 353-356. Eng. in "Misc. Observations," London, 1847.

I. B. *Index Biblicus.* 1746. Four vols.
Latin, Tubingen, 1859-1863.

I. F. *Infinite and Finite.* 1738.
Latin in Photolith. I. pp. 168-173. Eng. in Fascicle I., part 2. Index by H. Synnestvedt.

Inf. *On the Infinite.* 1734. p. 270.
Latin, 1734. English, London, 1902. Index by E. E. Iungerich.

Ir. *Iron.* 1734. p. 386.
Latin, 1734. Eng., (Pref.) in Principia, London, 1845.

Ir. Cop. *Memorial on Iron and Copper.* 1723.
Swedish in Commerce-Collegium, Stockholm. Eng. in Doc. I:475.

Ironworks. *Memorial on Ironworks.* 1723.
Swedish in Commerce-Collegium, Stockholm. Eng. in Doc. I:480.

Itin. *Journal of Travels.* 1733 and 1734. 1739.
Latin in Photolith. III and in "Itinerarium," 1840. Eng. in Doc. II.

K. *Animal Kingdom.* 1744.
Latin, 1744, 1745. Eng., London, 1843.

K. Ind. *Index of Animal Kingdom.* 1744.
Latin in Photolith. VI. pp. 11-37.

K. S. *Knowledge of the Soul.* 1739. p. 4.
Latin in "Opuscula Philosophica," London, 1846. Eng. in Fascicle I., part 2. Index by C. Th. Odhner.

Let. *Selected Letters.* 1709-1767.
Swedish and Latin in "Opera Quaedam," 1907. Eng. in Doc. I. Index by C. Th. Odhner.

Long. *Longitudes* (Latin).
Latin in A. L. Eng. in "Chemistry," London, 1848.

Liq. *Memorial on the Liquor Trade.* 1755.
Swedish in Academy of Sciences. Eng., Doc. I:494.

Lit. Soc. *Papers for Literary Society.* 1718.
Latin in Photolith. I. p. 1.

L. Pr. *Lesser Principia.* 1720.
Latin in "Opera Quaedam." Vol. II.

Mag. *Magnet.* 1722. p. 263.
Latin MS. in Academy of Sciences, Stockholm.

Mam. *The Mammæ.* 1743.
Latin, London, 1849. Eng. in "Gen. Organs," London, 1852. Index by W. H. Alden.

Mar. Ode. *Marriage Ode.* 1700.
Original Swedish in photo. copy in A. L. Eng. in "Mercury," 1905. A. L. Index by C. Th. Odhner .

Math. *Mathematics and Physics.* 1741.
Latin in Photolith. III. pp. 175-179.

Mem. Ir. *Memorial on the Production of Iron.* 1723.
Swedish in Commerce-Collegium, Stockholm. Eng. in Doc. I:47.

Messiah. *On Messiah.* 1745. p. 127.
Latin in Academy of Sciences, and in Photolith. VIII. See VI.

Met. *Metaphysics.* 1742
Latin in Photolith. VI. pp. 343-348.

Mines. *Discovering Mines.* 1719.
Swedish in Photolith. I. p. 106. Eng. in Fascicle X., part 1. Index by F. A. Boericke.

M. O. *Miscellaneous Observations.* 1722. p. 200.
Latin in Academy Library. Eng., London, 1847.

Money. *Money and Measures.* 1719. p. 7.
Swedish in Swedenborg Society's Library, London.

M. S. B. *Mechanism of Soul and Body.* 1733.
Latin in Photolith. III. p. 102. Eng. in Fascicle I., part 1. Index by E. E. Iungerich.

Muscles. *Muscles in General.* 1739. p. 21.
Latin in Academy of Sciences, Stockholm.

Nature. *Nature's Essence.* 1718. p. 32.
Swedish in Royal Library, Stockholm.

Nord. *Controversy with Nordencrantz.* 1761.
Swedish in Kahl, part 2. p. 53. Eng. in Doc. I:511.

O.	*Ontology.* 1742. Latin in Photolith. VI. Eng., Boston, 1901. Index by A. Acton.
Observ.	*Observatory.* 1717. Swedish in Photolith. I. pp. 3-6.
O. S.	*Origin of the Soul.* 1741. p. 4. Latin in "Opuscula." Eng. in "Posthumous Tracts." Index by C. Th. Odhner.
Per.	*The Periosteum.* 1743. Latin, London, 1849. Eng. in "Gen. Organs," London, 1852. Index by W. H. Alden.
Ph. Univ.	*Philosophy of Universals.* 1740. Latin in Photolith. VI. p. 265. Eng. in Fascicle I., part 1. Index by C. E. Doering.
Pr.	*Principia.* 1734. Latin, 1734. Eng., 1845.
Pr. Arg.	*Arguments for Principia.* 1733. Latin in Photolith. III. Eng. in Fascicle II., part 1.
Prosperity.	*Country's Prosperity.* 1718. Swedish in Photolith. I. pp. 7-18.
R. P.	*Rational Psychology.* (The work on the Soul.) 1742. Latin, London, 1849. Eng., New York, 1887. Index by A. Acton.
Quenzel.	*Letter to Quenzel.* 1722. Latin in Photolith. I. p. 203; and in "Acta Literaria," 1722, III. p. 315.
Pr. Sum.	*Summary of the Principia.* 1736. Latin in Photolith. III. pp. 146-167. Eng., Bryn Athyn, 1904.
R. B.	*Red Blood.* 1741. p. 15. Latin in "Opuscula." Eng. in "Posthumous Tracts." Index by C. Th. Odhner.
Rule of Youth.	*Rule of Youth.* 1709. Latin in "Int. Rep.," 1844. p. 296.
Sail.	*Sailing Up Stream.* 1716. Latin in Photolith. I. p. 90.
Salt.	*Salt.* 1725. p. 343. Latin copy in A. L. Index by A. Acton.
Salt Boil.	*Salt-Boileries.* 1717. Swedish in Photolith. I. pp. 74-77.

Sapphic Ode. *Sapphic Ode.* 1716.
Latin in A. L.. Eng. in "Int. Rep.," 1844, p. 147.

Screw Jack. *Description of a Screw-Jack.* 1716.
Swedish in Photolith. I. pp. 96-98.

Sel. *Selected Sentences.* 1709. p. 62.
Original Latin in A. L.

Sil. *Silver.* 1724. p. 364.
Latin in Academy of Sciences, Stockholm.

Siphon. *Siphon.* 1716.
Latin in Photolith. I. p. 20.

Skin. *The Skin and the Tongue.* 1740.
Latin in Photolith. VI. pp. 1-12.

Sn. *Sensation.* 1741. p. 7.
Latin in Opuscula. Eng. in "Posthumous Tracts." Index by C. Th. Odhner.

Soc. Sc. *Plan for Society of Sciences.* 1716.
Swedish in Photolith. I. p. 2.

Soils. *Soils and Muds.* 1716.
Swedish in Photolith. I. p. 94. Eng. in Fascicle II., part 1.

Ss. *The Senses.* 1744.
Latin, London, 1848, and Chapters on Taste and Touch. Index by E. S. Price.

Ster. *Stereometry.* 1716.
Swedish in Photolith. I. pp. 100-101.

Sulphur. *Sulphur and Pyrites.* 1724. p. 329.
Latin in Academy of Sciences.

Swam. *Notes on Swammerdam.* 1743.
Latin in Photolith. VI. pp. 184-264.

Swed. Mon. *Swedish Money.* 1722. p. 18.
Swedish in A. L.

Tables. *Inlaying Tables.* 1763.
Swedish in "Vetenskaps Akademiens Forhandlingar." 1763.

Theo. Frag. *Philosophical and Theological Fragments.* 1741.
Latin in Photolith. VI. p. 265.

Unge. *Poem to Unge.* 1710.
Original Latin in A. L., in "Dissertatio Theologica."

Tin. *Tinwork.* 1717. p. 3.
Swedish in A. L.

Tr. *Tremulation.* 1719.
Swedish in Photolith. I. pp. 132-181. Eng., Boston, 1899. Indexed by C. Th. Odhner.

Vit.	*Vitriol.* 1724. p. 446. Latin in Academy of Sciences, Stockholm.
War.	*Memorial on War Against Russia.* 1734. Swedish in Academy of Sciences. Eng. in Doc. I:486.
Wenner.	*Lake Wenner.* 1720. Latin in Photolith. I. pp. 120-126. Eng. in Fascicle I., part 1. Index by L. Gyllenhaal.
W. L.	*Worship and Love of God.* 1745. Latin. London, 1745, and in Photolith. VII. Eng., London, 1885.
Wolff.	*Wolff's Ontology.* 1733. Latin in Photolith. III. Eng. in New Philosophy, Vol. III.

NOTE.

The works already indexed according to the above plan are marked "indexed by;" those for which indexes have been promised are marked "index by."

A. L. stands for the Library of the Academy of the New Church.

ANNUAL MEETING.

The Tenth annual meeting of the Swedenborg Scientific Association will be held on May 27, 1908, in Philadelphia, Pa., at the Sunday Sshool Rooms of the First New Jerusalem Society, 22d and Chestnut Sts. The meeting will commemorate the decennial of the foundation of the Association.

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

10 A. M. Meeting of the Association.

12 noon. President's Address: *"Arrhenius on Swedenborg's Cosmology."*

2:30 P. M. Election of Officers. Papers.

THE NEW PHILOSOPHY.

VOL. XI. JULY, 1908. No. 3.

TRANSACTIONS

OF THE

ELEVENTH ANNUAL MEETING

OF THE

SWEDENBORG SCIENTIFIC ASSOCIATION

The Eleventh Annual Meeting of the Swedenborg Scientific Association was held in the rooms of the Philadelphia Society of the New Jerusalem Church, 2129 Chestnut Street, in the City of Philadelphia, on Wednesday, May 27, 1908.

FIRST SESSION.

1. The meeting was called to order by President Sewall at 10:00 A. M.

2. On motion the reading of the minutes of the annual meeting was dispensed with.

3. On motion the minutes were approved as printed in *The New Philosophy* for July, 1907.

4. Members and visitors in attendance:

Members: Dr. Frank Sewall, Dr. F. A. Boericke, Rev. R. W. Brown, Rev. C. E. Doering, Dr. Geo. M. Cooper, Rev. C. Th. Odhner, Rev. Alfred Acton, Dr. E. A. Farrington, Rev. J. F. Potts, Rev. Homer Synnestvedt, Mr. L. E. Gyllenhaal, Mr. K. Knudsen, Mr. C. E. Forsberg, Miss Alice Potts.

Visitors: Rev. J. E. Rosenqvist, Rev. Wm. Worcester, Mr. Julian K. Shoemaker, Miss Clara Boericke, Miss Helena Boericke, Mrs. K. Knudsen, Mrs. Elizabeth Beule, Miss Burt, Rev. Harold Conant, Mr. P. Ahlberg, Mr. Cross.

5. The Secretary's Report was read.

6. The Treasurer's Report was read. (See p. 86.)

7. The chair appointed Dr. Felix A. Boericke and Mr. K. Knudsen a committee to audit the Treasurer's Report.

8. The Board of Directors reported three meetings during the fiscal year.

9. The Report of the Editor of *The New Philosophy* was read. In his report the editor reviewed the work of the year, and also suggested a plan for indexing *The New Philosophy*. He thought it would be well in future to prepare an index for every two or three years' issue together with a title page for binding.

10. The Committee on a new edition of the *Animal Kingdom* reported no progress beyond the revision of Vol. I.

11. The Committee on the Translation of the *Lesser Principia* reported that a translation of Sections 1 to 24 had been put into the hands of Mr. Reginald W. Brown, in order that he might continue the work. The Committee also called attention to the fact, previously reported, that the ninety-nine figures used in the Stockholm edition are available for an English edition.

12. The Committee on the Translation of *De Sensibus* reported progress.

13. The Committee on the Translation of Swedenborg's Early Scientific Treatises in Swedish reported verbally that Mr. Cronlund had added several chapters to the translation of the *Dædalus* during the year.

14. The Committee on the Publication of Swedenborg's Scientific Manuscripts reported that considerable delay had been experienced in the printing of *De Sale* on account of the unsatisfactory work of the former printer; but that now the work had been put into new hands and was progressing very satisfactorily, the last thirty-five pages of the MS. now in the printer's hands being all that remained to be printed.

The Committee further reported that the MS. copy of *De Sale*, from which the printing is being done, consists of about 250 pages. Of these, 215 pages have been set up, making 128 printed pages, with 7 or 8 pages in type but not yet printed.

The whole work when completed will make a book of about 160 pages including Swedenborg's Index, or Table of Contents, and the editor's notes on the text. The work will probably be ready for the binder before autumn.

15. The Committee on the Support of Mr. Stroh in Sweden recommended that the Swedenborg Society of London be asked to aid in supporting Mr. Stroh, as he is devoting considerable time to editing the *Index Biblicus* for them.

16. The Committee on a Plan for Easy Reference to Swedenborg's Scientific and Philosophical Works reported that a plan had developed during the year to make a general index of Swedenborg's Scientific and Philosophical Works as reported in *The New Philosophy,* for April, 1908, and that the Committee had proposed a list of Swedenborg's Poetical, Scientific and Philosophical Works, and recommended abbreviated titles for easy reference in preparing the general index. This list, as published in the same issue of *The New Philosophy,* the Committee submitted as its report.

17. On motion the Association adopted the recommendations of the Committee on Easy Reference as published in the April, 1908, issue of *The New Philosophy.*

18. The Committee on Raising Funds for Making Plates of the works of Swedenborg now being published by the Royal Swedish Academy of Sciences, reported that the members had not been able to agree on any plan, Mr. Shaw's conclusion being that it would be cheaper to do the work over again than to make plates and store them. Mr. Doering disagreed, estimating that whereas it would cost $3.00 per page to reset the type, it would cost only 81 cents per page to make the plates now. It was further reported that the Academy of the New Church has authorized the payment of one-half the cost of the plates, provided that the Swedenborg Scientific Association raise the other half, and, moreover, that the Academy has offered to store such plates, free of charge, for the Swedenborg Scientific Association.

19. A Report from Mr. Alfred H. Stroh in relation to his work in Sweden was read. (See p. 88.)

20. On motion it was decided to put Mr. Stroh's Report

into the hands of the editor to have 150 copies struck off at once, the type to be held for the July issue of *The New Philosophy.*

21. The Auditing Committee reported that it had examined the Treasurer's Report, found it to be correct, and that its members had subscribed their names thereto.

22. On motion Mr. Reginald W. Brown was appointed a committee to translate the *Lesser Principia.*

23. On motion it was resolved that the Committee to Raise Funds for Making Plates be dissolved, and a new committee of three be appointed, with Mr. Doering as chairman.

24. President Sewall read his Annual Report and an Address on Prof. Svante Arrhenius's Introduction to Swedenborg's Cosmology. (See p. 69.)

25. On motion it was resolved that the President's Address be printed as a pamphlet in addition to its publication in *The New Philosophy.*

26. On motion the Association adjourned to meet at 2:30 P. M.

Second Session.

27. The meeting being called to order by the President at 2:30 P. M., proceeded to the election of officers.

28. The Rev. Frank Sewall, A. M., D. D., was nominated for President.

29. The Secretary being instructed to cast the ballot for the nominee, reported that the Rev. Frank Sewall was unanimously elected President.

30. The Directors of the past year and in addition Mr. Robert A. Shaw, were nominated as Directors.

31. Nominations being closed, the meeting proceeded to ballot for Directors, the following gentlemen being elected:

Rev. Charles E. Doering (10 votes); Mr. Horace P. Chandler (10); Rev. Reginald W. Brown (10); Dr. Geo. M. Cooper (9); Mr. Robert A. Shaw (9); Dr. Felix A. Boericke (8).

32. The Rev. C. Th. Odhner read a paper on the "Work of Republishing Swedenborg's Scientific Works."

33. Mr. Odhner concluded with the following motion:

Resolved, That the Treasurer be empowered to issue a call for subscriptions to a new edition of Swedenborg's *Posthumous Tracts,* and, when ready, proceed with the publication of said work.

34. As an amendment to the motion it was resolved to refer Mr. Odhner's proposition to the Board of Directors.

35. A paper on "A New Church School of Research," communicated by Dr. John R. Swanton, was read.

36. Mr. Odhner read a translation he had made of Hjalmar Sjogren's Remarks on Swedenborg's Manuscript, entitled "New Ways of Discovering Metallic Veins," etc. (Nagra Ord om Swedenborg's Manuskript: "Nya Anledningar til Grufwars Igenfinnande," etc.).

37. On motion the Secretary and the Editor of *The New Philosophy* were appointed to condense and edit the Reports submitted to the Association for publication in *The New Philosophy.*

38. On motion the Secretary was instructed to prepare a summary of the transactions of the meetings for publication in some of the New Church periodicals.

39. On motion the Association extended a vote of thanks to the Philadelphia Society of the New Jerusalem for the use of their rooms during the meetings.

40. On motion, duly seconded, the Association adjourned at 4:45 P. M.

REGINALD W. BROWN,
Secretary.

ANNUAL ADDRESS OF THE PRESIDENT.

SVANTE ARRHENIUS ON EMANUEL SWEDENBORG AS A COSMOLOGIST.

By a striking coincidence the tenth anniversary of the organization of our Association falls on the year of the restoration, with national and academic honor, of the mortal remains of Emanuel Swedenborg from England to Sweden, and of the

publication of the second volume of the Royal Swedish Academy's edition of Swedenborg's Scientific Works. Both in this issue in elegant form of Swedenborg's long buried manuscript works, under the auspices of the Royal Academy, of which he was once an honored member, in the scholarly and appreciative prefaces and introductions furnished in the two volumes thus far put forth by Professors Retzius, Nathorst and Arrhenius, in the action of the two governments of Great Britain and Sweden at the instance of the Royal Academy in bringing about this transfer of the remains of the great exile, and lastly, in the plaudits with which the public press of the two nations have manifested their high respect and admiration for his personality and achievements, Swedenborg may truly be said to have at last "come to his own." The outward ceremonial event is so figurative of the intellectual revival and recognition that has led to it that one is tempted to dwell on some of its peculiar features; on the one hand, the long-time burial under a church structure whose approaching demolition necessitates this bringing to the light again and returning to their native soil and sky these remains of the great pupil of the North; on the other, the obscurity in which the science and philosophy of Swedenborg have lain during the same century of waiting, owing to the prejudicial attitude which has been mutually entertained during this period by both science and theology, and the removal of these in the higher rational light of the present age in which it is permitted now to enter understandingly into the things of faith.

What part the Swedenborg Scientific Association has had in these events, which have occurred since its organization, it is probably impossible as it is certainly unimportant to determine in detail, and, least of all, would we wish to refer to it in any spirit of boasting. Nevertheless, it does become us at this time to avow our recognition of that divine presence which has enabled our organization to contribute directly in several ways to these significant results.

Our efforts ten years ago began with that of the restoration of the English out-of-print edition of the Principia and of the awakening by every means in our power of a new interest and

a truer appreciation of the philosophy and science of Swedenborg, which lay practically buried out of sight of the learned world, either in obsolete editions or in unpublished and, except to an expert, illegible manuscripts. Following our undertaking to revise and republish the *Principia,* the actual appearing of which, under the auspices of the London Swedenborg Society, only awaits now, we understand, the completion of an Introductory Essay, there appeared a second and revised edition of the work on *The Soul; or Rational Psychology,* and a reprint of the former American edition of the work on *The Economy of the Animal Kingdom* in two volumes. In its series of *Philosophical and Scientific Treatises* now being published in fascicles from time to time under the editing of Mr. Alfred H. Stroh, the Association has given to the public during these ten years more of these unpublished MSS. of Swedenborg Scientifics than had appeared during all the time since his death. In doing this it has caused to be transcribed 4,178 pages of these MSS. preserved in the Royal Academy at Stockholm; it is at present publishing serially in the *Quarterly Bulletin* the treatise *De Sensibus,* an hitherto untranslated part of the *Regnum Animale*—about one-third of this work having thus now first appeared in English, and it has in type nearly ready for publication the work on the *Worship and Love of God,* which will embrace the hitherto wanting, but most interesting Part III. of this profound psychological treatise, a unique and, up to this time, very imperfectly understood work. It was in pursuit of this necessary search for documents and the critical reading, translation and editing of manuscripts that Mr. Stroh, the agent and expert of our Association, was sent to Sweden through the combined support of the General Convention and of the Academy of the New Church, and there, six years ago, through Mr. Stroh's contact with Professor Gustaf Retzius, of the Royal Swedish Academy of Sciences, the co-operative work was begun, as described in Mr. Stroh's report to our Association last year, which has led to the happy and important events witnessed by this, the tenth year of our Association's existence. For a more complete account of the inception and progress of the work done in co-operation with

the Swedish Royal Academy, I refer to Mr. Stroh's report in the April number of *The New Philosophy* of last year, and for a general glance at the manner and degree in which our Association has served to stimulate the publication and study of Swedenborg's science, and at the simultaneous awakening of interest at important European centers of learning, my own address before the annual meeting of 1904, under the title of *Swedenborg's Contributions to Science* (*New Phil.*, July, 1904), may be availed of. For our present purpose I will avail myself of only a brief quotation from Mr. Stroh's report, showing how intimate and real has been the co-operation of our Association through Mr. Stroh and of the Royal Academy through its Swedenborg committee.

"* * * After the examinations of the MSS. and printed works of Swedenborg made by Professor Retzius and myself in the autumn of 1902, there was no plan to publish even as late as November 23d, when at a private meeting of a number of scientists Professor Retzius remarked that a statue of Swedenborg ought to be erected in Stockholm. At this meeting some of Swedenborg's works were on exhibition, and the *Principia* in the original edition with its remarkable plates of the solar chaos was the subject of special interest and discussion. After this meeting rapid progress was made, and on December 11th Professor Retzius made the proposal in the Academy of Sciences that the Swedenborg Committee be appointed. The Committee reported favorably on April 8th, 1903, and the printing was then begun, starting with the *Lesser Principia,* although the plan for the edition was completed subsequently and considerably modified and extended from time to time. When I returned to America in the autumn of 1903 the work of editing was continued by means of the mails, and a visit to Sweden in the summer of 1905. The plan for my return to Sweden and residence there until the work shall be completed was formed in America, not as the result of a direct request from Professor Retzius, but on the formal invitation of the Treasurer of the Swedenborg Scientific Association, the Rev. Charles E. Doering, although Professor Retzius has frequently welcomed me back to Sweden and sustained the printing and researches in the most hearty and liberal manner."

Having in view the declared objects of our Association, namely, to preserve, translate into any language, publish and distribute the scientific and philosophical works of Emanuel Swedenborg, and to present the principles taught in these works we may certainly feel that during the ten years that have elapsed our Association has made substantial progress in the attaining of its ends, and a progress that has culminated in the signal events of this decennial year, the publishing and distributing of the first two volumes of the Royal Academy edition of the scientific works under the titles, the *Geologica* and the *Cosmologica,* with the introduction furnished by the eminent physicists, Professor Nathorst and Professor Arrhenius, respectively, and the general introductory preface of Professor Retzius. There could hardly be a more fitting theme for our consideration in this our decennial anniversary, therefore, than these introductions, which will perform an important service both in "publishing" to the learned world the theories here set forth by our author, and in "promoting" them by inviting a rational consideration of their principles and their results so far in the scientific world.

The brief time at our disposal will hardly admit of our entering at length into the consideration of all these three important contributions, and as we have already noticed, although very inadequately, the Preface by Professor Retzius and the Introduction to the *Geologica* by Professor Nathorst (see *New Philosophy,* January, 1908, "The New Volumes of Swedenborg"), I will confine my remarks at present to some cursory observations on Professor Svante Arrhenius's Introduction to Vol. II., the *Cosmologica* of Swedenborg.

SVANTE ARRHENIUS ON EMANUEL SWEDENBORG AS A COSMOLOGIST.

In this Introduction Arrhenius's attention is naturally given to the *Principia,* which he regards as perhaps Swedenborg's most highly valued work. Whether this would be the verdict of the anatomist or the psychologist, with the great productions of the *Brain,* of the *Economy,* the *Animal Kingdom*

and the *Rational Psychology* before their view, may be a question, but it is no poor testimonial to a writer's ability that each work should seem greatest to the mind especially qualified to judge of it. The *Principia* as thus designated by Arrhenius includes, besides the several treatises under that title in the present volume (which are reckoned as Parts I. and III.), also Part II., or the printed *Principia,* or that part of the *Opera Philosophica et Mineralia,* known to us through the English translation published by the Swedenborg Society in the middle of the last century. The new portions of the *Principia,* therefore, contained in three voumes in the original Latin, are:

I. *Principia Rerum Naturalium ab experimentis et geometrica,* pp. 1-191.

II. *Argumenta quaedam in Principia Rerum Naturalium,* treating of the Natural Point, the Geometrical and also Metaphysical Point, etc., pp. 193-205.

III. *Summarium Principiorum Rerum Naturalium,* or the Summary of the Principia. This was translated into English and published by our Association in 1904.

IV. *Principiorum Rerum Naturalium sive Novorum Tentaminum phaenomena mundi philosophice explicandi Pars Tertia,* pp. 263-369, being what we know as the Third Part of the *Principia* and treating of the Universal Chaos and its separation into planets and satellites, and of the "finites," "actives" and "elements" in their succession. This also in Mr. Stroh's translation is added to the Summary of the Principia as published by our Association in 1904.

"In order," says Professor Arrhenius, "to obtain a general view of the contents of this extended work I have made a comparative investigation of the general conceptions in Swedenborg's time concerning matter, and especially concerning the cosmological problems, the results of which I here reproduce."

An important distinction which Arrhenius makes in his classification of the several parts of the *Principia,* is itself an indication of that feature of the Introduction which especially commands our attention and enlists our interests. He speaks of the Parts I. and III. as being clearly based exclusively upon

the author's philosophical thinking, whereas Part II. is of physical content embracing many experiments with the magnets, and has numerous references to the works of other investigators. The contrast is here presented between what the writer calls the *natural philosophical* and the purely physical contents of the *Principia,* and it is in this contrast and the deductions drawn from it that I think we shall find our greatest indebtedness to our distinguished critic lies. It is unnecessary for us to follow in detail the comparison drawn between the cosmological theories of Swedenborg and others of his time, especially those of Descartes, Kant, Wright, Buffon, Laplace and Lambert, inasmuch as this author has given the result of his comparison in the following statement:

"If we briefly summarize," says Arrhenius, "the ideas which were first given expression to by Swedenborg and afterwards, although usually in a much modified form, consciously or unconsciously, taken up by other authors in cosmology, we find them to be the following:

"The planets of our solar system originate from the solar matter—taken up by Buffon, Kant, Laplace and others.

"The earth and the other planets have gradually removed themselves from the sun, and received a gradually lengthened time of revolution—a view again expressed by G. H. Darwin.

"The earth's time of rotation, that is to say, the day's length, has been greatly increased—a view again expressed by G. H. Darwin.

"The suns are arranged around a milky way—taken up by Wright, Kant and Lambert.

"There are still greater systems in which the milky ways are arranged—taken up by Lambert."

In glancing at this historical and critical summary it is to be noticed that the author attributes Swedenborg's theory of the solar vortex to the Cartesian philosophy taught in the lectures at Upsala, and that Swedenborg differs from Descartes in holding that this vortical motion arose gradually and did not exist from the beginning. While it may be assumed that Swedenborg "was strongly influenced by the teachings of his great predecessor" (Descartes), and it is known that in his university

life at Upsala the Cartesian controversy was an exciting episode, yet we have supposed that Swedenborg's interest in Descartes was more in the metaphysical and philosophical than in the physical lines, and while Swedenborg makes no allusion to Descartes in his *Principia,* he refers to him in the later psychological treatise on *Influx* (*De Commercio*) in comparing the several theories of influx, namely, those of Physical Influx, Spiritual Influx and of Pre-established Harmony, as taught, respectively, by Aristotle, Descartes and Leibnitz. Descartes' account of the origin of various material particles out of particles originally of one shape, namely, the cube, by breaking of the corners and so reducing the particles to spherical forms and the broken corners to a fine star-dust, is sufficiently like Swedenborg's account of the primitive forms of particles in his Principles of Chemistry to suggest comparison; but that is all, as Swedenborg begins with the spherical form and out of these builds the cube, and finds his dust or smaller particles in the matter filling the interstices of the globules.[1] While there is a certain similarity of method of development in general, in particulars we find the principles to be quite opposite. May it not be that what Arrhenius here calls Swedenborg's denial of the "perpetual vortex" of Descartes is really only Swedenborg's gradual development out of the sun or whatever constitutes the "first elementary particle" projected from the infinite,[2]—of that inmost perfection of all forms of motion which belongs to the original and creative conatus of motion in the infinite, according to a series of forms, circular, spiral and vortical?[3] To some it may occur that among the systems nearly allied to Swedenborg's should have been mentioned, perhaps, first of all, that of Leibnitz, a name entirely omitted by Arrhenius, Swedenborg's mention of Leibnitz and his theory of pre-established harmony, and of his disciple Wolff, to whom he holds himself indebted in perfecting his *Principia,* would seem to bring him in closer re-

[1] *Corpuscular Philosophy in Brief* [1790].

[2] *Summary of the Principia,* Ch. II., 12, 21, 22.

[3] *Summary of the Principia,* Ch. V., 30; VI., 37, 38, 39.

See also *Principia Rerum Naturalium ab experimentis,* etc., No. 10, p. 20, "That this fluxion of the natural point is perennial," etc.

lation with this great religious philosopher, for such the author of the *Theodicee* must be called, than with any other since Aristotle. Leibnitz's doctrine of Monads and of their relation by pre-established harmony indeed seems at first glance to resemble strongly Swedenborg's doctrine of the first finites, and of the operation of particles under the law of correspondence. Leibnitz's Monads and Swedenborg's finites are alike ideas clothed with such forms as shall make them operative in a special world. Leibnitz's Monads, varying as to the clearness and comprehensiveness or adequacy of their ideas, range from the highest Monad which is the Divine down to the successive degrees of souls, of animals, of plants and minerals, these last being "sleeping monads with unconscious ideas"—while there is here a certain gradation of forms and forces their interaction comes about solely by a certain pre-established harmony. On the other hand, Swedenborg's doctrine is that of successive created forms constituting degrees, one of which is within the other, and operative there by a law of influx and correspondence. Here again the operation is from within outward—even from the Divine or Inmost down to the mineral or its Ultimate abode—where, as Swedenborg states, even the grain of sand on the beach has its own certain conatus or endeavor to fulfill its proper function in the order of nature. The theory is, therefore, distinctly that of a divine Monism rather than of a pluralism, the many having their relation to the One in an internal condition or action by influx, according to Swedenborg, and not solely by the independent but harmonious mechanical motions.[1] We might hold Arrhenius, therefore, as quite justified in not identifying Swedenborg's theory of finites with that of the Monads of Leibnitz, even supposing that this part of Swedenborg's system had come within the range of the professor's strictly scientific survey. His failure to find anywhere in the *Principia* "those parts of Swedenborg's presentation in which he has permitted himself

[1]For fuller comparison of Swedenborg with Descartes, Leibnitz and Wolff—see my Swedenborg and Modern Idealism: Ch. III. London: Speirs. 1902.

to be influenced by Wolff's views *excepting in the use of certain terms"*—is quite in keeping with this lack of internal agreement between Swedenborg and Leibnitz, as to the most vital point—Wolff's system being that of Leibnitz modified and systematized somewhat after Aristotlean methods. It is to Wolff's First Philosophy or *Ontology,* and to this General Cosmology that Swedenborg refers in concluding the *Principia,* but not as if these were the actual source of the principles here laid down—for the *Principia* was written two years before Swedenborg had seen the works of Wolff. [*Principia,* Part III. Appendix.] If we refer to Swedenborg's own Ontology[1]—which has been treated as a part of his *Metaphysics* and *Psychology* rather than as belonging to the *Principia* or cosmological series (see preface to Acton's translation), we shall find copious extracts from Wolff's *Cosmologia* —but exclusively such as relate to certain "metaphysical and general axioms of the illustrious author"—or, as Professor Arrhenius says, "to the use of certain terms" and not to what we may regard as the vital source—principles of the cosmological system.

The *Ontologia* deals exclusively with the definition of terms or names given by such fundamental concepts as Form, Figure, Organ, State, Changes of State, Substance, Matter, Extension, Continuous, Contiguous, Part, Body, Essence, Attributes, Accidents, Modes, etc. It is in these definitions that we shall find the close resemblance that Swedenborg refers to—between Wolff's maxims and his own principles and not in the subject matter itself.

Thus Wolff in his definition of *Matter* says: "All matter is in continual motion. . . . The active force in a body should be conceived to be quite as durable as the matter in it. . . . Matter and active force are not substances, etc. That which is determined in a compound ens is called matter," and Swedenborg follows with his definition: "That is called matter which is determined in order that form may exist—or it is

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[1]Ontology. Swedenborg. Translated by Philip B. Cabell; *idem:* tr. by Alfred Acton. Boston: 16 Arlington St.

that from which form exists. It may be attributed even to *spiritual forms,* for matter is that from which form is, whether you call it substance or element. . . . No form can exist without matter out of which: for matter is the subject itself which is *determined.*" (Acton's Tr. 45, 47.) This higher or "spiritual" matter is thus distinguished here by Swedenborg from that which he calls the "Material," as meaning in modern usage, that which is heavy, endowed with the force of inertia, and in space. It is applied to stones, wood, etc., or materials, but never to spiritual and other substances"—(Acton's tr. No. 46). We come here to the great point of agreement of "axiom," namely, that of the origin of matter or of substances as the *determined,* the defined—and, so far, as the ground out of which forms are made, and that while there may be spiritual substances and "spiritual matters" in the sense of spiritual things determined or in form, yet really the *material,* distinctly as such, belongs to the *spatial world.* These are broad and very fundamental definitions in which Swedenborg and Wolff seem to be in agreement. But when we come to the question of what is the essence itself and whence its conatus which drives it to assume forms then we shall find Swedenborg standing distinctly on his own ground, his doctrine of *Love* as the primal substance, will as the primal *force,* and here he parts company with Wolff and Leibnitz and all his predecessors.

Again, it is in the *Argumenta Quaedam in Principia* in the present volume, p. 193, that Swedenborg inserts a "Comparison of the Ontology and General Cosmology of Mr. Christian Wolff with our Principia of Nature," and then treats of the definition of the Natural Point, of its motion and figure, and also of the Geometrical Point and of the Metaphysical Point, etc., but nowhere contributing any comparison in particular or referring to similar definitions in Wolff's Cosmology, which would seem to confirm our conclusion that it was in certain definitions of philosophical terms and in the great principle of the freedom of philosophical thinking that Swedenborg found his resemblance to Wolff consisted.

There is another branch of physical science which, it is

true, Swedenborg carries far into the realm of *a priori* speculation and, we hope, therefore, away from the focus of scientific vision,—that of Chemistry, and we do not find in the Introduction any recognition by its writer of Swedenborg's contribution, in his *First Principles of Chemistry* to the modern Crystallography or Stereo-Chemistry—a field, in which the eminent specialists, Eiloart and Van 't Hoff, award to Swedenborg the distinction of discoverer.[1] The subject here treated of would seem to claim the attention of the scientific cosmologist even more than the monads of Leibnitz or the vortices of Descartes, which have at best a decidedly metaphysical kind of interest; but it is, perhaps, the very fact of the hypothetical and undemonstrable assumption by Swedenborg of these invisible and imponderable elements that excluded them from the survey of our cautious and self-restrained reviewer.

And here we are brought to the recognition of what I think we must regard as the most valuable contribution which Arrhenius had made to a just appreciation of Swedenborg's real merit.

It is no slight tribute which is awarded in the mention of the five items above given as belonging of right to Swedenborg as their author, and the value of this tribute is greatly enhanced by the cautious reserve of the reviewer who keeps his statements carefully within the limits of what a strictly scientific judgment would allow, and, therefore, gives assurance to the layman that the tribute came from a judgment unbiased by any personal or partisan enthusiasm.

But higher than this strictly scientific recognition do we value the significant concessions by Arrhenius of the point wherein Swedenborg's scientific works have their chief interest and value, namely, that of their "natural philosophical" part. He not only acknowledges that it was a "grand thought" of Swedenborg's, that of "furnishing an explanation of the world according to which a complete harmony reigns

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[1]Van 't Hoff's Introduction to *Arrangement of Atoms in Space* Translated by Eiloart. Longmans Green & Co.

between the greatest and the least—the stellar system and the atom—or even, according to Swedenborg's conception, with its least part, the material point," but he gives Swedenborg his share in the merit belonging to all natural philosophies as such, namely, that of suggesting principles, hypotheses, methods, whose value is that of conception simply—regardless of their "development in a mechanical direction," or their being demonstrable by human experiments.

A considerable space is devoted by Arrhenius to the somewhat unlooked for appreciation of what science owes to purely speculative and metaphysical origins. Thus he goes back to the ancient philosopher, Anaxagoras, to find a theory that "the sun is made of iron;" and while he remarks that most thinkers would regard such a statement as a "worthless curiosity," yet he himself "thinks quite otherwise—spectrum analysis having taught us that iron probably constitutes a most essential part of the sun's matter. Even the earth's chief mass is iron. Anaxagoras was, therefore, right, according to all that we know."

Among those to whom science owes a great debt for certain cosmological conceptions and speculations, in which "there are contained no mechanical considerations of any value;" which, on their philosophical side, "have as great a significance as on their mechanical side;" Arrhenius mentions especially Giordano Bruno and Kant. "The cosmological ideas of Bruno belong," he says, "to the most remarkable in the world's history. . . . It is hardly possible to express cosmological opinions of a more deeply reaching significance, and still no principles of mechanical learning enter into them. . . . He was in truth far ahead of his time."

Of Helmholz's high estimate of Kant's scientific merit, Arrhenius remarks that "Helmholz can hardly be supposed to have overlooked the mechanical errors that occur in practically every portion of the *Naturgeschichte und Theorie des Himmels*, and yet he considered Kant's cosmological speculations to have a very high value even though their execution on the mechanical plane is untenable."[1] A number of recent

[1] *Kant und die Naturwissenschaft.*

authors are cited as attaching scientific, if not a strictly mechanical value to Kant's speculations—among these are Konig, Zollner, Haeckel and C. Wolf.

"We, therefore, understand why the cosmological thoughts may be called grand and wonderful, as for example, Kant's thoughts in this field, although their execution does not agree with the laws of physics. Not even the great master in celestial mechanics, Laplace, has completely escaped this fate. It is now recognized by all that his so highly praised nebular theory in many points conflicts with the laws of mechanics, although it, indeed, is far better than Kant's attempt." . . . As regards the indebtedness of Swedenborg's successors to Swedenborg, Arrhenius thinks it is manifest that Kant derived ideas from Swedenborg's visions, which he clothed in more philosophical garments. Laplace, while he may not have known directly Kant's views, and still less Swedenborg's, yet he knew Buffon's theory and Buffon was well acquainted with Swedenborg's *Principia*—although his system diverges widely from that.

If, therefore, it is true, according to Arrhenius, that in common with nearly all "natural philosophers" prior to Laplace, Swedenborg "labored but little in working out in physics his widely comprehensive and most remarkable ideas;" and yet if these ideas are to be classed with those other great cosmological conceptions, which, without mechanical application, have, nevertheless, proved of great value in the advancement of science—it remains for us to name as concisely as possible what these fundamental principles of Swedenborg are, which, whether demonstrable in physical experiments or not, are, nevertheless, such as will be a real and important factor in scientific progress, and in the attainment of a satisfactory "universal philosophy—in which a complete harmony shall reign between the greatest and least." To me it seems that these fundamental principles can be reduced ultimately to two—namely, those of the CENTRE and of the NEXUS. These conceptions are strictly cosmological, although they embrace everything of ontology, of theology, of physiology and of psychology as well.

THE DOCTRINE OF THE CENTRE.

By the concept of the CENTRE we mean the derivation of the universe from a central source in the infinite, which centre is, of course, transcendental and yet conceivable and intelligible. This centre being the source of all life, of all mind and reason, and of all motion, every substance and every form originates in it, while yet itself being infinite and eternal is above space and time and, therefore, above the changes and modes which involve ideas of space and succession. The kind of origin which all changes and modes have in their Infinite Centre is that of thought originating in will, or that of ideas put forth by desire; and this moving force in the infinite is that of endeavor or of effort which is potential effort and ready to become actual energy whenever there is a field for its exercise in a spatial or *movable* world. I think it may be claimed that this concept, or the Centre, lies at the bottom of all truth in the modern doctrines of radio-activity, of vibration and of units of energy.

THE DOCTRINE OF THE NEXUS.

Necessarily accompanying this is the doctrine of the *nexus*, which also applies as well to the whole field of theology, of geometry, physics, biology and psychology, as it does to cosmology. It is according to its application to these several fields, respectively, that the nexus is given by Swedenborg, various names and definitions. In more general terms the nexus is that point or border of transition from the Infinite to the Finite, without a conception of which, under *some* form, no comprehensive world-view is possible, the purely material and causeless aspect of nature being as sterile and inadequate as the purely ideal one. Cosmologically, then, this nexus between the Infinite and the Finite spheres or planes of Being, Swedenborg calls the *Point*. It is where all modification and where all definition begins—and where, therefore, a cosmos intelligible to the finite mind arises into existence.

Leibnitz comes very near to a definition of the point where he so happily calls his monads simply "points-de-vue." Swedenborg's first natural point is likewise simply a point of view in that here first the concepts of space and of time become possible, and here first, through the point, is possible the development of a spatial world. Thus the metaphysical and the physical world equally begin with this point, the first production from the Infinite—the bridge to the existence of nature—the first element in human thinking and knowledge. Psychologically it is the point of the consciousness of the other, as distinguished from the self—or of the object from the subject.

Mathematically and geometrically it is the first mathematical point whose motion generates the first simple or first finite. In Physics this first finite is that uniform unit of all compositions which brings with it an energy and a pure form or endeavor of motion from the infinite, and by combination produces other forms in their succession, and so constructs a world. In pure philosophy and ethics the point is where begins that concept of the "other," on which rests all reciprocation, all society, all mutual obligation and regard, all ethical motive. In theology this point of union between the Infinite and the Finite becomes the concept of the Divine Human or the Only Begotten.

But behind all these conceptions which are, after all, methodical rather than substantial in their nature, and which some may claim to find indicated if not clearly defined in other systems, there lies still Swedenborg's substantial doctrine of the End which centralizes in itself all other solutions and explanations, and which differentiates Swedenborg absolutely from all other producers of cosmological conceptions. It is mainly in the doctrine of Love as the primal and central substance and force of the Universe, that the end, the reason why, of *Nature* is found. For Love by its very nature demands the other than itself and, therefore, the infinite creates the *other* than itself, namely, a finite as the *other* to the infinite Being. Here is that answer to the question which Leibnitz asks in his *Theodicee,* but fails to answer—why, *if* a finite world neces-

sarily, by virtue of its finiteness and consequent imperfection, brings evil into existence—did God, who is perfect Goodness, create a finite world? Leibnitz answers merely that among all possible worlds this is the best world there is, without showing wherein it is best, or why it was necessarily created at all. Swedenborg finds this solution in the altruism of Divine Love, or Love as the *Source,* and the Other as the necessary object without which Love itself cannot exist and in creating and fostering which, Love realizes the End of its own Being which is that of Benefaction or the mutual imparting of Good. For this Love, according to Swedenborg, is neither the pure intellectual Love ascribed to God by Spinoza—which is the Love with which Deity contemplates its own divine perfections; nor is it to be identified with the more modern doctrine of the Will to live which Schopenhauer has made the basis of all modern pessimism—for both of these Loves being in their nature, self-centred, are essentially selfish, whereas the Love which is the Essence of the Divine Nature and the Source of all things, according to Swedenborg, is the Love centreing not in self—but in the object, the Other, whom it blesses by communicating to it its own good with its delight. Here, then, in this Divine Altruism is the centre of all radial motion and force and of all reaction or vibratory motion—even the great laws of the two universal forces of the solar system, the centrifugal and centripetal forces—find their source and their explanation here. If Copernicus rendered science an actual service in making the sun the central force and governor of the terrestrial universe and if Giordano Bruno added a valued contribution in the assertion that our visible sun is only one of uncounted such suns and solar systems, every fixed star being one, shall we not find another contribution of still higher value in the doctrine of Swedenborg which explains why systems have their central suns and why solar systems exist at all?

FRANK SEWALL.

Washington, D. C., May 14, 1908.

REPORTS.

REPORT OF THE TREASURER.

To the Swedenborg Scientific Association:—

A comparison of the statement presented herewith with that of the preceding year shows that the Association has made some gain in creating a wider interest in its uses. This has been largely due to the sending out of 3,400 circulars prepared by the President and Secretary. The net gain in membership has been thirty-three, and an increase of $65.00 in membership dues. The net gain in new subscribers has been forty-one, with an increase of $13.98 in subscription fees.

In 1904 the Association presented its first publication, viz., the Summary of the Principia; since that time Fascicles 1 and 2 of Part I. and Fascicle 1 of Part II. of Swedenborg's scientific treatises—altogether 251 pages—have been placed before the public.

The cost of these publications has been $192.47, and the receipts and contributions have amounted to $87.13, so that nearly one-half the cost has been returned to the Association. Some copies of Part I. have been bound in cloth, and it is to be hoped that the sale of it will be sufficient to reimburse the Association for the outlay.

Respectfully submitted,

C. E. DOERING,
Treasurer.

FINANCIAL STATEMENT.

RECEIPTS.

Balance on hand as per last report, ...			$288.65
Membership dues, ...	$216.00		
Subscriptions to *New Philosophy*, ...	144.39		
Contributions, ...	9.54		
Advertisement in *New Philosophy* (American Swedenborg P. and P. Soc.), ...	12.00		
		$381.93	
Sale of S. S. A. Publications:—			
16 Summary of Principia, 4 Fascicle I., Pt. 1, 3 Pt. 2, 3 II. Pt. 1, 16 Catalogus,		8.78	
			390.71
			$679.36

Forward receipts			$679.36
EXPENDITURES.			
Printing *New Philosophy,* April-January,	$159.51		
Paper for *New Philosophy,*	13.50		
Cover paper for *New Philosophy,*	9.00		
Envelopes for *New Philosophy,*	3.00		
Addressing envelopes, 4 issues,	4.00		
		$189.01	
Printing Fascicle I., 2,	24.30		
Paper for Fascicle I., 2,	6.75		
		31.05	
Printing Catalogus,	$33.75		
Expressage,	.30		
		34.05	
Special Circular, printing,	$30.25		
" " envelopes,	13.00		
" " postage,	32.04		
" " cartage,	.35		
		75.64	
Stationery, bills, letter heads, etc.,	$14.40		
Subscription cards	8.70		
Postage,	23.54		
Sundries,	2.00		
		48.64	
Reprint President's Annual Address,		5.63	
			384.02
Balance			$295.34
Swedenborg MSS. account:			
Balance as per last report	$27.81		
Contribution,	.50		
		$28.31	
Printing *De Sale,*		24.00	
Balance,			4.31
Plates for Royal Academy Publications:—			
Contributions towards same,			2.00
Royal Swedish Academy Publications:—			
Total subscriptions received,		$566.00	
Amount forwarded to R. S. Academy,		566.00	
Balance,			0.00
"Worship and Love of God" Account:—			
Balance as per last report,			11.60
Balance as per cash book, May 27, 1908,			$313.25

RECAPITULATION.

RECEIPTS.

Total balance as per last report,	$328.06	
Dues, subscriptions to *New Philosophy*, etc.,	390.71	
Swedenborg MSS. account,	.50	
Plates for Royal Swedish Academy Pub.,	2.00	
Subscriptions to R. S. A. publications,	566.00	
		$1,287.27

EXPENDITURES.

New Philosophy, etc.,	$384.02	
Swedenborg MSS. account,	24.00	
Royal Swedish Academy subscriptions	566.00	
		974.02
Total balance,		$313.25

SUBSCRIBERS TO "THE NEW PHILOSOPHY."

Total, May 23, 1907,	206	
New subscribers,	61	
		267
Dropped by request,	10	
Dropped; no attention paid to notices,	6	
Deceased,	4	
		20
Present list of paying subscribers,		247

Free, 57; exchanges, 15.

ACCOUNTS DUE.

45 members owe for dues,	$56.00
57 subscribers in arrears, owe,	47.00
Total outstanding for dues and subscriptions,	$103.00

MR. ALFRED H. STROH'S REPORT OF PROGRESS IN THE INVESTIGATION AND PUBLICATION OF SWEDENBORGIANA.

To the Swedenborg Scientific Association, and Bodies Associating in This Work:

Since reporting to the Association a year ago I have sent to the president two reports concerning the progress of the work, and shall now recapitulate and bring up to date the account of events here.

THE NEW EDITION OF THE SCIENTIFIC WORKS.

Since the last annual meeting a number of Swedenborgiana have been published at Stockholm. Two volumes of the new edition of the scientific works have appeared. Vol. I., *Geologica et Epistolæ,* with a preface by Professor Gustaf Retzius concerning the history of the edition and an introduction by Professor A. G. Nathorst, on *Emanuel Swedenborg as a Geologist,* was laid before the ordinary meeting of the Royal Swedish Academy of Sciences on Sept. 11th; Vol. II., *Cosmologica,* with an introduction by Professor Svante Arrhenius, on *Emanuel Swedenborg as a Cosmologist,* at the meeting on Feb. 12th. A prospectus was issued in September, announcing Vols. I. to III. Many subscribers have sent in orders, so that, together with the large number of subscriptions collected by the Treasurer of the Association and others and including presentation copies to learned bodies, and to individuals, about one-half of the edition of 500 is already exhausted. This shows clearly that plates of the texts going through the press should be made so as to facilitate a future edition. It will be forever easy for future editors to re-issue texts, now that the first edition is published, but even the setting up and proof reading of the Swedish and Latin contents, if it were to be done all over again in an entirely new edition, would involve a great expenditure of time and money. The president and treasurer of the Association were informed of these facts and furnished with an exact knowledge of the conditions when I had the pleasure of meeting them here last summer.

PROPOSED VOLS. IV., V., VI.

If a sufficient number of subscribers can be secured for a facsimile reproduction of the *Opera Philosophica et Mineralia,* they will be issued as Vols. IV. to VI. of the edition, which certainly is very desirable. According to this plan Vols. I. to VI. would represent Swedenborg's physical philosophy, and the subsequent volumes would contain his contributions to anatomy, physiology and psychology. Anyone who has followed the reports of the work here since 1903 will have observed that the proposed edition has been gradually expanded. This also applies to the contents of Vols. I. to III. It was finally decided to include in Vol. I. all letters written before Swedenborg's death, which in any way refer to his scientific works. This involved more work than all the rest of the contents hitherto in hand, for hardly any attempt had ever been made to edit the originals of these difficult manuscripts. Thus Vol. I. did not appear until September. In November I received the Introduction for the *Cosmologica,* which were then issued as Vol. II., exchanging places with the present Vol. III. The latter has also been much expanded and is to include, besides the *Prodromus Principiorum* and other works of 1721, the *Dædalus Hyperboreus* and a miscellaneous collection of treatises and documents. The student and biographer will thus have accessible a

tolerably complete collection of the numerous sources which have for the most part lain hidden in obscurity, at least in so far as the originals are concerned. When all these sources are accessible it will be possible to understand how Swedenborg developed his system of science and philosophy.

NEW WORKS PUBLISHED.

Besides Vols. I. to III. of the edition the following publications have appeared:

Catalogus Bibliothecæ Emanuelis Swedenborgii, published at Stockholm, November, 1907.

Emanuel Swedenborg as a Geologist, being the first section of *Emanuel Swedenborg as a Scientist,* published at Stockholm, March, 1908.

Emanuelis Swedenborgii Festivus Applausus in Caroli XII. in Pomeraniam suam adventum, published at Stockholm, April, 1908.

Scientific and Philosophical Treatises by Emanuel Swedenborg, Part I., Fascicle 2, published by the Association at Bryn Athyn, April, 1908. With the publication of this fascicle all of Swedenborg's shorter geological treatises have made their appearance in English.

The interesting Catalogue of Swedenborg's library has been so fully referred to in previous reports that little need be said here. The zinc plates from which the edition was printed were loaned for the purpose by the Royal Swedish Academy of Sciences.

The reprint of Professor Nathorst's *Emanuel Swedenborg as a Geologist* forms the first section of a series of papers on *Emanuel Swedenborg as a Scientist,* to contain contributions by specialists on Swedenborg's observations and theories. This publication may be regarded as the realization of the "Memoir respecting Emanuel Swedenborg as a Scientist and Natural Philosopher," the publication of which was postponed in 1906 (*New Philosophy,* 1906, p. 95.)

The *Festivus Applausus* has appeared in an advance edition of thirty copies. The remainder of the edition will be published after a possible addition to the title pages shall have been decided on.

WORKS IN PROGRESS.

The new edition of the *Worship and Love of God,* in press at Boston, has not been finished during the past year, although I expected to have it published by this time. My hands have been so full of most urgent work here that I have not had the time to devote the careful and uninterrupted study to the revision of this important work which I feel is necessary. I have, however, practically completed it up to end of Part II., that is the longer portion of the text, and shall make every effort to finish the remainder this year.

There are now in press sections 2 and 3 of *Emanuel Swedenborg as a Scientist,* by Professor Hjalmar Sjogren and Professor Svante Arrhenius.

In the separately published Appendix to Vol. I. of the scientific works will be included Swedenborg's papers on *Soils and Muds* and *New Ways of Discovering Mines,* together with a review of the latter by Professor Hjalmar Sjogren. There will also be included a *Chronological List* of Swedenborg's manuscripts and printed works, in which will be reported the results of much investigation since 1902 and the titles of compositions by Swedenborg in manuscript and print which have been discovered since 1903. It is very desirable that copies of all the texts of Swedenborg be placed in the main Swedish libraries in the near future, for the *List,* according to the custom here, will refer to the location of copies in the main libraries. Since the presentation some months ago to the Library of the Royal Swedish Academy of Sciences by the Greifswald University Library of one of the two known copies of Swedenborg's *Festivus Applausus in Caroli XII. adventum in Pomeraniam suam,* copies of all the published works of Swedenborg, printed during his lifetime, are accessible in the great Swedish libraries. The same cannot be said of any other country. This is one strong reason for the publication of the proposed *Swedenborg Archives,* preparations for which have been made. Generous contributions have been received from the late Commodore Captain O. W. Nordenskjold and his wife for the purpose of preparing and publishing these *Archives.* It is proposed to publish reproductions of Swedenborgiana together with historical and bibliographical information. Strangely enough many rare letters and documents have been published in German and English, while the original Swedish and Latin sources have been suffered to lie neglected and inaccessible decade after decade, some of them having even been lost or destroyed by fire. It is high time that a new policy be inaugurated.

From the above it will be seen that substantial progress has been made during the past year in publishing Swedenborgiana and in making preparations for future work. Vol. III. of the edition is so far advanced that it should be in the hands of the subscribers this year. The succeeding volume on the *Brain* is also in hand and its publication will be carried on as rapidly as possible, while if the proposed reproduction of the *Opera Philosophica et Mineralia* can be included in the edition as Vols. IV. to VI. three additional volumes should see the light in the not distant future, as such reproducing can be done very rapidly.

WORK OF THE LONDON SWEDENBORG SOCIETY.

I hope to arouse some interest in this project in England when I meet the members of the Swedenborg Society's Committee next month, they having invited me to address the annual meeting of the Society on June 9th. The Committee last autumn placed in my charge the supervision of the *Index Biblicus,* which is being phototyped here. Much attention has been required by this work, but I did not hesitate to undertake it, know-

ing that the Association would not object to my taking this work in hand and bringing it to a successful conclusion, as in the case of *Diarium Spirituale,* completed last year.

All of the publication matters referred to above, as well as two other projects to which I shall now refer, have made it advisable that my proposed journey to Russia, Poland and North Germany be postponed, but I hope to make the journey in due course to examine the Swedenborgiana in St. Petersburg and to secure information concerning Kant and Swedenborg at Konigsberg.

NATIONAL HONOR TO SWEDENBORG.

On April 17th I accompanied Professor K. Hasselberg, President of the Royal Swedish Academy of Sciences, and Captain G. W. E. Svedenborg, the present head of the Swedenborg family, to Carlskrona in South Sweden, to be present at the landing and reception of Swedenborg's remains. The Swedish cruiser "Fylgia" had taken the remains of Swedenborg on board at Dartmouth on April 8th; they were landed at Carlskrona on the 18th. As the representative of the Association I was present when the casket was removed from the "Fylgia" and escorted by a procession to the adjacent Admiralty Church, where it is deposited. On the 19th of this month it is to arrive at Upsala and be deposited with due ceremony in the cathedral. Sweden is paying honor to her great son.

In January, 1907, the Royal Swedish Academy of Sciences approached the Government with a proposal that Swedenborg's remains be removed from London to Stockholm. Since then there has been a great deal of newspaper discussion concerning Swedenborg and the place where his remains should be deposited. The Government finally accepted the offer from Upsala. In the course of the discussion so many unreliable articles concerning Swedenborg and his works appeared that Professor Retzius proposed that I should write some articles on Swedenborg's biography. Accordingly I published three illustrated articles in the chief Swedish daily, *Aftonbladet.* The articles have been received with much satisfaction, and it has been proposed that they be published as a pamphlet.

THE SWEDENBORG MUSEUM OPENED.

During the summer of 1907 the authorities at the Northern Museum became interested in a proposal to form a Swedenborg Museum, a special collection of Swedenborgiana to illustrate Swedenborg's biography. During the winter the subject has been thoroughly investigated and the Museum will be opened by a special Swedenborg Exposition. Portraits of Swedenborg, of his parents, relations and contemporaries have been collected from various parts of Sweden and arranged in a room together with a number of objects once owned by Swedenborg, including also many manuscripts, printed works, etc. A detailed cata-

logue has also been prepared and the Exposition will be opened to the public in a few days. As a result of the preparations for this Exposition and the widespread publicity given to it several new Swedenborgiana have turned up. I shall, however, not refer to them in detail, as they are all noticed in the Catalogue.

May the Association have a useful meeting in this its decennial year, is the wish of one who would gladly be present in person as he will be in spirit.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, May 11, 1908.

THE SENSES.

PART FOUR OF THE ANIMAL KINGDOM, BY EMANUEL SWEDENBORG.

CHAPTER VI. (*Continued from p.* 50.)

(*Colors.*)

373. *From these things can be known the state of the forms of smaller parts, then the state of the composition respectively to its pores.* 1. But the state of the pores in particular cannot be thence known. 2. For the state results not only from the quantity, but also from the quality of the pores. 3. There is only general effect, coming forward by reason of shade and light, etc. 4. This doctrine is most ample and cannot be given in a few words. 5. Thus there is nothing real in colors, wherefore we must not judge of a material from its color; nothing of color can be abstracted, unless it may be the colored parts in a pellucid body, which parts communicate their color to the pellucid volume or mass. 6. But these parts, if they are broken down, also change their colors.

374. 3. *These colors of double origin are so distinct, that the one may represent itself above the other:* 1. so that if the reflection of a rainbow from cut crystals and diamonds falls upon a colored plane, whether white or black, 2. then the same color nevertheless perishes, 3. with some variation but not much. 4. In the white it constantly perishes, 5. in the black it perishes. 6. In other things the colors are varied and dulled according to the shades and whitenesses, which are general bases.

375. *Wherefore colors of the second origin, respectively, to the former, are to be called constant;* 1. for they remain spread on, 2. as on walls, 3. so also in tinctures, 4. on houses, 5. in the blood, 6. in syrups.

376. *This color is attenuated in a smaller quantity of such parts;* 1. as is known in regard to the blood; 2. more parts being collated it increases. 3. Every part confers its own

symbol. 4. But a greater or less quantity can be in every single part. 5. Thence the principle of ratio is to be assumed.

377. *When such diverse colors are mixed they produce a certain other color;* 1. according to the mixture. 2. This is known to painters. 3. White and black are the bases. 4. The color can be diluted by transparent things; 5. and can increase or be condensed by things opaque. 6. One color obliterates another less than another will. 7. Hence an apposition of colors is required in order that successive things may agree. 8. This also is known to artifice.

See further pp. (The pages to be supplied when printed in book form.)

The external parts of the Eye.

378. 1. *Experience.* 1. *The eyebrows* are two hairy arches, the skins thereon, fat, muscles. 2. *The eyelids* are coverings. 3. As to the canthi or angles of the eyes, the interior is the larger from the epidermis, tender skin, the arciform cartilage, which is called the *tarsus.* Within the lids are inverted with the *membrana conjunctiva,* lubrical, sensitive, with the periosteum; there is a continuation of the *white* of the eye; *the lashes* are hairs singularly bent. The *sebaceous glands* are in the interior surface of the eyelids. *The caruncula lachrymalis* in the greater angle is ruddy, in it there are frequently glands and hairs. *The semilunar membrane* is for directing the tears in that very place into the lachrymal points. *The lachrymal points* are two, in the greater angle, at the ends of the tarsi, ending in ducts called horns (*cornua*), thus in the *lachrymal sac,* the nasal canal, and the nose itself. *The lachrymal gland* is in the orbit above the smaller angle, with excretory ducts under the upper lid.

379. *Analysis.* All this external apparatus serves these uses: 1. They serve to change external states according to the state of light in general; 2. according to the state of objects; 3. according to the state of the brain, as, to the state of the affections of its animus; 4. then also according to the state of the affections and operations of its mind; 5. according to the state of the motion of the eye itself, actuated by means of its

muscles; 6. being so actuated, to avert all dangerous and hurtful accidents from the eye; 7. to preserve the bulb itself of the eye by a perpetual dampening or instillation of humor or suitable ointment; 8. to pour this humor about the eye in suitable quantity; 9. finally also to produce the same, so that there may always be a sufficient supply present. 10. There are the external mutations of state which correspond to the internal ones, which therefore concern and rule not only quantities but also qualities of the sight; 11. besides states still more general. 12. These mutations are determined by the muscles, arteries, veins and nerves.

380. 1. *This apparatus serves to change external states according to the state of light in general.* 1. When the quantity of light is absent from the eyes, they become dry, they become hot, they grow dull, they dispose the properly arranged parts into another order. 2. Therefore the upper lid can be raised and lowered more and less; 3. it can be held in that state for some time so as to admit less light. 4. The upper lid is therefore capable of elevation which effects that the light falling from the sky thus very strongly does not fall upon the eyes; 5, but by means of the hairy eyebrows a shadow, like that of a cliff, is superinduced. 6. The upper lid has reference especially to the pupil; 7. This is effected by more particular, more general and most general muscles, altogether according to the degree of the light and of its quantity; 8. thus the bulb of the eye can be uncovered according to every form and aperture; the muscles so effect it. 9. All the muscles from the forehead to the septum of the nostrils or the interior canthus of the eyelids have respect to the upper lid of the eye; they are primarily for the sake of the eye. 10. The inferior muscles of the face have respect primarily to the mouth and lips (*os labiale*) and their various motion in speech, song, and chewing; but secondarily also to the lower lid. 11. Thus there is a harmony of the muscles of the superior region with the muscles of the inferior region. This harmony or correspondence is actually established by the pyramid of the nose.

381. 2. *According to the state of objects.* 1. The aperture of the eye is varied by means of the lids and muscles accord-

ing to the distance of the object; 2. according to the size of the object; 3. according to the lustre or brightness, as when one looks at snow, or anything that sparkles; 4. or in any way affects the eye externally. 5. This happens naturally or without our consciousness. 6. Thus the external state of the eye agrees with the state of the pupil, and with the interior state; 7. for if we expand the eye for an object at a distance, on the other hand we contract it if we look at anything sharp. 8. Thus we dispense the general light altogether according to the state of the light which is to seize the pupil; at one time the light is required in greater abundance so that nothing may stand in the way, but the sight expatiates freely—now the eye is contracted and but little light is admitted. 9. For the bulb shaded about perceives rays and images more keenly,—on the contrary if much light is poured about it. 10. The shade makes that light which enters more distinct.

382. 3. *According to the state of the brain, as, to the state of the affections of its animus.* 1. Every affection of the brain or animus redounds into the nervous fibers, and from these into the motor fibres, thus into the muscles. 2. Wherefore muscles not commanded are disposed according to the state of the animus. 3. They are expanded in gladness. 4. They are contracted in sadness. 5. They grow flaccid (*cadunt*) in shame, in fear and so forth. 6. This effect redounds from the general muscles to particular ones, or to those of the eyelids. 7. It redounds also into the membranes, glandules and vessels. 8. Hence in sadness, there is weeping: the opposite in gladness; 9. for, because there is a compression of the brain, there is a compression in the extremes of the fibers, wherefore especially in those of the lachrymal gland, which is approached by many nerves, according to Boerhaave. 10. Hence such as is the look induced upon the face such especially is the state induced upon the external apparatus of the eye which is visibly perceived and distinguished. 11. To enumerate particular modes would be very prolix. 12. In the presence of shame the upper lid falls and is not raised; 13. in impudence it is opened more fully round; 14. in fear it is sometimes closed; 15. in wrath and courage it is fully opened. 16. In wrath the features are held fixed and inflamed.

383. 4. *According to the state of the affections and operations of the mind.* 1. This is altogether by correspondence. 2. It is very quietly held in deep meditation. 4. It is fixedly and intently held at a tension when one listens, reads or looks at an object. 5. In some desire it is otherwise modified. 6. These affections are principals of the affections of the animus and are deeply within in these latter affections. 7. The light of sight to be obscured and overshadowed in the degree in which the light of internal sight or that of the understanding is to be illuminated. 8. It is not possible for the one and the other to be active at the same time. 9. While the sight is most active, as in imagination, then the understanding corresponds only as a passive. 10. When the understanding is active and takes ideas profoundly from itself and its memory, and elevates them to its own sphere, then the sight of the body will not even be passive. 11. Internal sight does not inflow into the external, but external sight into the internal. 12. Although the eye does not see still it is the organ by which the mind sees. 13. Wherefore we can think with closed eyes, or even if we are blind; 14. and even much more keenly when nothing interferes and extinguishes [our mental images]. 15. Thus external things extinguish interior things—one light, the other, wherefore the external must be passive in order that internal light may reign, 16. thus the passions of the animus, in order that spiritual affections may reign. 17. Reason is similar.

384. 5. *According to the motions of the eye itself, actuated and moved by means of the muscles.* 1. By means of the common muscles of the eye and forehead, then the muscles of the eyebrows and lids, the eye can be so compressed that it may be held back towards the posteriors. 2. Thus it acts against the muscle which brings the eye forward. 3. For it can be compressed very narrowly, 4. because against the cartilage of the lower lid; 5. and the contrary of this, by means of the muscles of the lower region of the face; 6. because the tunica conjunctiva (*adjunctiva*) of the eyelids coheres to the sclerotic membrane (*albuginea*) of the eye; 7. The caruncula lachrymalis as a hinge assists this compression.

385. 6. *This external apparatus serves to avert all danger-*

ous accidents; 1. such as things which may slip into the eye, 2. such as coarse (*narius*), flying dust, 3. and other thin things. 4. The face can be turned aside for larger offending things, 5. and the head can be bowed; 6. for this reason also the eyebrows stand forth above and are hairy; 7. for the same reason also the hairs of the lashes tend downward in order that such things as dust, water, sweat and many others may be held back from slipping into the eyes. 8. Thus all things are provided for.

386. 7. *To preserve the internal state of the bulb by a perpetual moistening;* 1. that is to say by means of the sebaceous glands of the tarsus and of the tunica conjunctiva (*adjunctiva*); 2. then also by means of the lachrymal gland. 3. These humors conjoined produce the whole desired quantity, 4. by which the eyes are anointed and cleansed. 5. Then also the quantities [are increased] by the more narrow compression of the lids by means of the muscles. 6. Therefore such humor is attracted by the arteries; see *the arteries.* 7. For the sake of this end the lachrymal gland is in the smaller canthus, where there is the greatest motion and pressure toward the orbit.

387. 8. *To pour this around the bulb of the eye,* 1. in order that it may come equally to every point; 2. wherefore the conjunctiva and the sclerotic (*albuginea*) are continuous. 3. There are no continuations of the pericranium, lest another humor should break in. 4. The humor is poured about equally through the openings of the eyes, for the membranes are slippery and polished, indeed sensibly so according to Heister. 5. Therefore such a compression can be formed by means of the muscles, that the humor can be carried to every point, thus can disseminate itself equally. 6. The circumvolution of the eye effects that that humor is equally distributed.

388. 9. *To draw off that humor, so that there may always be a right amount on hand.* 2. It is variously drawn off to the major canthus, 3. and thence by the lachrymal points towards the nose; 3. especially from the lachrymal gland by the semilunar tunic. 4. Thus no more is admitted from the lachrymal gland than can be mixed with the unctuous humor of the sebaceous glands. 5. This latter humor is also drawn off

thither. 6. For this end the greater left [?] canthus exists. 7. There the caruncula lachrymalis is situated. 8. There is the most quiet station of the eye as every one can see in himself when the eye is compressed, for the humor is driven to the more quiet state. 9. The most quiet is through the lachrymal sac into the nose, where is the axis, and besides the peripheries. 10. For this end the lachrymal points are always open. 11. According to Boerhaave they are bound with cartilage in order that they may remain open. 12. When the glands are pressed they pour out the most, especially the lachrymal gland, which therefore is by the lesser canthus, and adjoined to the orbit, where there is the greatest pressure because the greatest motion.

389. 10. *There are states still more general;* 1. as for instance to lower the face, 2. to lower the whole head; 3, a state arising from averting the sight.

390. 11. Besides as to the manner in which the muscles act, see *thoughts concerning the muscles of the face.*

391. And how the humors are drawn off, that the purest blood is carried to the venter,* see above, *thoughts concerning the arteries.*

(*To be continued.*)

*I suppose this to mean the *venter supremus* or *cavum cranii.*—TR.

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Keith, Dr. F. S., Newton Highlands, Mass.
Vrooman, Rev. H., Providence, R. I.
Westberg, Nils, Skipparegatan 5, Stockholm, Sweden.

MEMBERS DECEASED.

Cornell, Mrs. A. F., 1347 4th St., San Diego, Cal.
Paine, Albert W., Bangor, Me.
Warren, Rev. Samuel M., 4 Milton Rd., Brookline, Mass.

SUMMARY.

Total membership reported May 23, 1907,	169	
New members,	48	
		217
Members resigned	8	
Membership lapsed,	4	
Members deceased,	3	
		15
Present membership,		202

THE NEW PHILOSOPHY.

VOL. XI. OCTOBER, 1908. No. 4.

THE WORK OF RE-PUBLISHING SWEDENBORG'S SCIENTIFIC WORKS.*

BY C. TH. ODHNER.

The chief and primary object of the Swedenborg Scientific Association is the publication of the Scientific and Philosophical Works of Emanuel Swedenborg. At our present decennial anniversary it seems useful to review the results of our activity in this direction; what we have been able to accomplish, and what still lies unaccomplished before us.

While the Association has not been without usefulness and influence in many other directions, it must be admitted that in the accomplishment of our chief and primary use the past decade has shown surprisingly small results. All that has been published of Swedenborg's Scientific works is comprised within the three small fascicles edited by Mr. Stroh. The translation of *De Sensibus,* now appearing in *The New Philosophy,* has not yet been finished and cannot, therefore, properly, be regarded as published. At the present rate of progress—from 12 to 16 pages every three months—it will take several years before the work *On the Senses* can be issued in book form.

When we review this very insignificant amount of work, and compare with it the work accomplished by our predecessor, the old Swedenborg Association, of England, during the decade of its existence, (1843-1853), we certainly do not feel

*Read at the Eleventh Annual Meeting of the Swedenborg Scientific Association, May 27, 1908.

entitled to any great degree of self-congratulation. The following volumes were published by that body or by its constituent members: (1) The Animal Kingdom, 1843; (2) The Economy of the Animal Kingdom, 1845; (3) The Principia, 1846; (4) The Opuscula Philosophica, 1846; (5) The Posthumous Tracts, 1847; (6) The Principles of Chemistry, 1847; (7) The Miscellaneous Observations, 1847; (8) De Fibra, 1847; (9) The Hieroglyphic Key, 1847; (10) Outlines on the Infinite, 1847; (11) De Sensibus, 1848; (12) De Anima, 1849; (13) De Generatione, 1849; (14) On Generation, 1852.

The old Association, it is true, had the advantage of having at its head men such as Wilkinson, Clissold, Spurgin, Strutt, and Wornum,—men who were able to concentrate all their energies and means upon the use of translating and publishing these works, whereas the members of our own Association have their chief energies absorbed in other uses.

Nevertheless, our predecessors in other respects labored under far greater difficulties than do we. In their time, Swedenborg's scientific works were virtually unknown, and Swedenborg himself almost universally despised, ridiculed, and calumniated. Now, some sixty years later, the scientific works are read and treasured by hundreds of people, and Swedenborg himself, as a man of science, honored the world over. The Royal Academy of Sciences in Sweden is republishing his treatises in the original tongues, and the Pantheon of Sweden is considered the only fit mausoleum for his bones.

In other words, there is now a *field* for our operations, a *sphere* for our activities, a *public* for our uses, such as did not exist in the time of the London pioneers. There is now an ever increasing *demand* for the works,—a demand which every day finds more and more difficult to supply.

The following works can still be obtained in English from the Book Rooms:

(1) The Economy of the Animal Kingdom; (2) The unfinished edition of the work on the Brain; (3) Outlines on the Infinite; (4) The Rational Psychology; (5) The Treatise on

Tremulation; (6) The Ontology; (7) The little pamphlet on the Revolution of the Earth; (8) The Summary of the Principia; (9) The Three Fascicles.

And here is what the public wants, and cannot obtain for love or money:

(1) The Adversaria, in English; (2) The Animal Kingdom; (3) The Principles of Chemistry; (4) The Book of Dreams; (5) The work on Generation; (6) The Hieroglyphic Key; (7) The work on the Fibre; (8) The Miscellaneous Observations; (9) The Posthumous Tracts; (10) The work on the Senses; (11) The Principia; (12) The Worship and Love of God—not to mention all the poetical, mechanical, mineralogical, metallurgical, cosmological, economical, political, and philosophical papers, treatises and works by Swedenborg which have never yet been translated into English, and the existence of which is scarcely known to the public.

What is our Association to do in the face of this vacuity, this impossibility of supplying a crying demand, this difficulty of access to most important works? Are we to remain satisfied with crawling along in our usual feeble way, appointing committees to revise and translate, without getting anything revised or translated? Are we to keep on waiting, year after year for the possible action of other bodies, which in the course of a life-time may or may not publish some of the books needed—bodies over whose translators and revisers we have no control, and in whose productions we may or may not have an undivided confidence?

What we want, what New Church people want, what a growing outside public wants is—*the books*. And to my mind there is only one way of getting them, and that is by publishing them ourselves!

What is the use of waiting forever for revised editions and new translations, when the old versions, faulty as they may be here and there, *will nevertheless do at a pinch*, as they *have* done for half a century and more? The old editions we know. We know their faults, but also their good points which are great and many. Why not, then, solve the present prob-

lem by setting our own faces toward the simple work of getting out new editions of the old versions?

This work can be done without a great deal of capital or delay, if we concentrate our efforts upon the publication *of one work at a time*, in the old version, by soliciting *subscriptions* for one work at a time. All we need to do is to interest the New Church public in the one work in hand. The New Church papers are all of them open for our appeals, and for our reviews of the books. Describe in our reviews and circulars the important principles, and the beauties and marvels of that one work. Ask all the New Church Book Rooms and Institutions to assist us by subscribing for a number of copies, and keep up the agitation until a sufficient number of subscriptions has been secured. Then print it and publish it, and begin to work for the publication of the next volume.

Care must be taken not to divide the attention of the public by asking for subscriptions to more than one work at a time, and we must be prompt in fulfilling our promises as to time of publication. Much harm has been done by the continued delay in the publication of the new edition of *Worship and Love of God*, which was to be published by subscription. But is this to prevent us forever from getting any other work published by subscription?

It would be well to begin this undertaking by re-publishing some small and inexpensive volumes of great importance, and for this purpose I would recommend the little volume entitled *Posthumous Tracts* as most suitable. It has long been out of print, and it is almost impossible even to secure second-hand copies. It is a collection of most important little tracts, presenting together a very concise and interesting statement of Swedenborg's physiological and psychological principles, easily digested and particularly suitable as an introduction to his general philosophical system. The tract on "Faith and Good Works" is especially interesting as proving logically the inadequacy of faith alone. It shows the ultimate connection between Swedenborg's philosophy and his subsequent theology, and will forcibly appeal to the sympathy of the New-

churchman. The tracts on the *Red Blood* and on the *Animal Spirit* present the principles of the *Economy* in a nut-shell, and lead right up to the inmost secrets of the cortical glands and the simple cortex. The "Fragment on the Soul" is the most complete refutation of "Pre-established Harmony" that Swedenborg ever wrote, and he here shows himself as a most keen humorist and satirist. All these things should be brought out in our reviews and appeals, and will not fail to whet the appetite of the New Church public.

An Index to the whole could be added, if desired. It has already been compiled.

I think that each volume could thus be published with something of a profit to the Association, and a small capital would gradually accumulate in this way. We ought to be able to publish, at least, one volume each year, and the end of the next decade would then show more encouraging results than the one we have just concluded.

A NEW CHURCH SCHOOL OF RESEARCH.*

BY JOHN R. SWANTON.

However skeptical a student's attitude toward the claims of Swedenborg and his followers, this much must be and is admitted on all hands, that his was a phenomenal case. At the same time there exists, as yet, outside of simple biographical works, no thorough investigation of it. It is known in a general way that a man named Emanuel Swedenborg was born in Sweden in 1688 and died in London, England, in 1772, that his family and himself were eminent in the Swedish nation, that he was active for some time in public affairs, that he was an enthusiastic scientist investigating many different branches, that he attempted various inventions, that he was engaged in certain engineering undertakings and that he made a very thorough study of the methods then in vogue of extracting metals from the ore. We know also that he originated certain peculiar theories regarding the constitution of matter and the origin of the present order of nature, that, later, he took up the science of anatomy and physiology and wrote a number of works regarding them, not so much for the interest they contained in themselves, as with the idea of finding the nature of the soul and the manner in which it was connected with the body. Finally, it is known that between the years 1743 and 1745, a rapid change took place in his work and the character of his writings, that he then claimed to have had his spiritual senses opened, while his soul still maintained a connection with his material body, and that he spent the remainder of his life writing of the things he saw and heard in the world of spirits, and of the religious principles which he then believed himself commissioned to reveal.

These are the simple facts of Emanuel Swedenborg's life just as a person either well or ill disposed toward him and his

*Read at the Eleventh Annual Meeting of the Swedenborg Scientific Association, May 27, 1908.

philosophy might sum them up. They are matters that cannot be contradicted and that furnish the plane of meeting of all attempting to discuss his career and teachings.

With these facts before them possibly 20,000 people in the entire globe accept Swedenborg's mission in a measure, at the valuation he himself placed upon it, while the remainder of those who know anything about him reject his interpretation and attribute the later experiences of his life to some mental aberration or an unusual telepathic power on his part. In cases of this kind the writer is perfectly aware that prejudice and personal experience carry more weight than real evidence, yet this fact ought not to deter Swedenborg's well-wishers from doing all that lies in their power to place him and his philosophy in as favorable a light as possible. To do this it will be necessary for them to make a fair, broad-minded study of his entire life and of all his writings,—one that will carry the confidence of scholars in the world at large along with it. As a result of such an investigation we should then be able to say *just what* Swedenborg's ability was as a mathematician, physicist, chemist, metallurgist, anatomist, physiologist, psychologist, and philosopher; just what he borrowed from other persons or other systems and what discoveries or inventions may truly be attributed to him. Up to and including the present time New Church lecturers and writers are rather laudatory and eulogistic than discriminating or critical. They speak as special pleaders rather than as judges. The pleader may interest and stimulate, but in the present age he is not the one who carries conviction to the majority of people. This is earned only by him who is known to have studied thoroughly all aspects of the case before him and is, therefore, in a position to weigh every argument and fact at its true value—who is, therefore, "an authority on the subject."

Now supposing that in connection with one of our educational institutions a special school were established to study Swedenborg in this manner, as a problem or a phenomenon. Within a reasonable time—if it were conducted along proper lines—New Churchmen would be in possession of accurate

facts regarding all points of Swedenborg's career and his relation to the scientists and philosophers of all time. Our ministers and lecturers would then be able to say authoritatively that he accomplished such and such investigations, made such and such discoveries, and anticipated such and such theories or inventions. Most important of all would be the researches of this school relative to the great change in Swedenborg's life between 1743 and 1745. All the circumstances connected with this period would have to be gone over and in particular a rigid comparison made of his writings before and after that date. If, as a result of this study, it can then be said that except in the matter of his supernatural visions, Swedenborg's mind shows no sign of weakening, the strength of the position taken by New Churchmen will be vastly improved; and if it can be said furthermore that his mind becomes clearer after that time and that his philosophical and theological views are nearer those of the present day than before, the strength of the New Church case becomes still greater. We may *think* we know these matters already, but we do not in the accurate, "figured-out" way in which we ought to know them. The writer has had enough experience with research work to be able to state that it is impossible to foresee what new discoveries any particular line of investigation will disclose.

In taking this position and undertaking this work we must be prepared for adverse as well as for favorable conclusions and this is a condition cheerfully complied with by those who really believe in the doctrines of what we fondly term the "New Church." We know that in all ages of the world people have religiously believed doctrines which have since proved false and there is no absolute guarantee that the same is not true of us. But whatever the result we shall have the satisfaction of knowing that we have done our full duty by one great fact of history and have in so far assisted the forward movement of truth among mankind. Yet in the light of all the information at our disposal—entirely outside of what we merely believe—it is fair to say that there is no pessimism in the outlook.

A school of the kind I refer to need not consist, at first, of more than one endowed chair, and it should be established preferably in the neighborhood of one of our larger universities in order to place the incumbent in touch with the world of thought and also relieve the department as far as possible of the necessity of spending money on an expensive library and equipment. Next to the wide dissemination of New Church writings, I cannot imagine any more important missionary enterprise to enlist the support of our men of wealth. Whereas the former spreads New Church ideas broadly, the latter proposes to dig deeply and place the whole question regarding Swedenborg in as true a light as may be, by earnest, sympathetic, and, at the same time, broad human scholarship.

REMARKS ON SWEDENBORG'S MANUSCRIPT ENTITLED "NEW WAYS OF DISCOVERING METALLIC VEINS," ETC.*

BY HJALMAR SJOGREN.

In A. G. Nathorst's very interesting presentation of Swedenborg as a Geologist, this treatise by Swedenborg is mentioned only casually. It is one of those very few MSS. by Swedenborg, which neither were printed in his lifetime, nor afterward published by the diligent Swedenborg propaganda.

Besides many other ways of determining the presence of metallic veins in the interior of the earth, Swedenborg mentions also the so-called "bergvittringen," under which name there are brought together many different phenomena.

Swedenborg states that "above all the places where metals, metallic veins and other treasures are hidden, there stands an exhalation like a stream, so that at night-time a strong light shines thence, spreading far and wide." This is an assertion which may be found repeated in most of the contemporary works on mining. When at the same time he assures us that the "magic wand" is nothing but *superstition,* it is hardly probable that in other respects he would without critical judgment have repeated mere current opinions.

It was not only in the Swedish mining regions that it was asserted that it was common "to see, above mountains in the forests and other places, fiery lights shining in the darkness like real fires, now here, now there, but vanishing as soon as anyone approached." The same kind of statements we find repeated by mountaineers in many other countries, such as Germany, France, and Cornwall.

Agricola mentions this phenomenon in 1557. It is adduced also by Montanus, 1600; Basil Valentinus, 1651; Kellner, 1702; von Trebra, 1741; Beyer, 1758; Jugel, 1772. Similar

*Translated from the Swedish by C. Th. Odhner and read at the Eleventh Annual Meeting of the Swedenborg Scientific Association, May 27, 1908.

accounts are given from Cornwall, as by Borease, 1758, and by Pryce, 1778.

From the mining regions of France, also, such statements are found, as noted by Gesemine, 1777, and even the natives of Chili and Peru have related such phenomena, in connection with the silver-deposits there.

In Saxony, and generally in the German mining districts, this phenomenon was formerly so universally acknowledged that it had its own special designations as *"Witterung"* or *"Bergsfeuer."* Very often the accounts amount to this, that a deposit had been discovered through the observation of a light, or even a flame above it. Thus a Saxon author, (Lehman, 1747), relates that in the year 1491, at Polberg near Annaberg in Saxony, "a flaming light was seen, by which the mountaineers discovered noble veins. The same took place in 1575 in Scheibenberg, in consequence of which Casper Klinger found the first of the mines." The auriferous ores at Nagyag in Transylvania are also said to have been discovered in this manner. Such "Bergwitterung" has given rise to whole mining districts: "On the places where mining towns have been built, there had previously been traced much and strong Bergwitterung."

Even Urban Hjarne mentions this phenomenon in his well-known book. In the 10th question of his second series, which deals with the question "whether there are mountains which at certain times have been known to breathe forth a kind of heat, witterung, or exhalation," (in which chapter volcanoes are also treated of), he says among other things that "Such things occur from various causes; it is commonly seen on such mountains as possess a strong metallic reproductive power . . . concerning which more will be said in the 10th series, where the origin of metals is treated."

On a closer view of the accounts of those phenomena which are included under the name of "Bergwitterung," it is found that they are of many different kinds. Besides the phenomena of light, mentioned above, there are included also certain kinds of misty clouds, which are said to stand above metalliferous

deposits; further, that the ground above them is never covered by dew or hoarfrost, and that the snow there melts quicker than elsewhere. These last-mentioned phenomena are connected most closely with the greater heat-conducting power of mineral deposits, causing snow, hoarfrosts and dew to dissolve more quickly and, in evaporating, to give rise to cloudy mists.

It has been stated that such Bergwitterung occurs especially at the equinoxes of autumn and spring, and in summertime, especially after thunderstorms, and this also confirms the hypothesis, (which is probable also for other reasons), that the phenomenon depends upon an electric eradiation from the earth-surface, which, under certain conditions, can become visible to the eye.

In more modern times there has been but little faith in these accounts, and the subject has not been deemed worthy of much notice. It is evident, however, that the more a district becomes inhabited, and the more numerous and powerful the artificial sources of light become, the less likely it is that such faint phenomena of light can become visible to the eye. In the dark the human eye is more sensitive to faint phenomena of light, and it is therefore reasonable to suppose that in more ancient times it was easier to observe the phenomena connected with "Bergwitterung." To the same purpose, also, is the fact that most of the metallic deposits, which formerly would have given rise to Bergwitterung, have already been opened.

It is an established fact that there exists electric eradiation from the upper parts of the earth-crust, and as early as 1875 Karl von Zenger succeeded in photographing it, although it is not visible to the naked eye, nor observable even to the eye armed with an instrument. Zenger, however, by means of photography exhibited the otherwise invisible electric eradiation existing between the Ortler-point in Tyrol and a cloud hovering above it. For the photographing of faint electric phenomena he found a lens of crystalline quartz more servicable than a lens of glass. Zenger made use of plates prepared with fluorescent substances, such as chlorophyll dissolved

in ether, preparations of uranium, etc., and the photographic exposure took place in the dark.

More recently Professor Heinrich Barvir, of Prague, has called attention to the possibility of using this method for the discovery of mineral deposits by photographing their electric eradiation from the earth-crust. His reasoning is based on the expectation that the electric eradiation from the earth-crust must occur especially in places where good electric conductors enter as elements of the earth-crust. He believes also that the difference of intensity in the eradiation will be sufficiently great to make itself felt on the photographic plate, and this the more in case such eradiations have been observable by the naked eye—and Barvir does not seem to entertain any doubt of this.

The great majority of mineral ores, as well oxides as metals compounded with sulphur, are very good electric conductors; this is especially the case with the majority of our most important ores, such as carbonate of iron, iron pyrites, chalcopyrites, cerussite, magnetite, etc.; the one single mineral ore which is not a good conductor of electricity being zinc-blend, which alone is almost absolutely a non-conductor.

Among the minerals which compose the mountains containing ores, quartz is a poor electric conductor, and the feldspars can at the most be considered as half-conductors. In connection with Zenger's photographing of the invisible electric eradiation from the earth-surface, and Barvir's suggestion to utilize this for the discovery of ore-deposits, the following statement by Swedenborg is quite remarkable:

"If the supreme Deity had endowed us with such powers of sensation as were 100,000 times more keen than those we possess, we should be able, without any effort, by means of (the smell or) the sight, to discover how the 'effluvia' pour forth like streams out of the rich metallic veins." If by "effluvia" we understand the electrical eradiation or the electric fluid, then the statement quoted above may be considered literally correct. The effluvia are generally invisible to the eye, but can be observed by means of photographic plates suitably prepared.

The quality of ores, as good electric conductors, makes itself known in various ways.

In regions with dry air, such as California and other parts of the United States, it is said that the electric currents in the atmosphere are stronger in the immediate neighborhood of a mineral deposit, and it is said that trees growing on such spots are more often struck by lightning. In July, 1906, it happened that during a thunderstorm in Pennsylvania the lightning struck a mine in Centralia, and, following a metallic vein for a distance of a whole kilometer, it set fire to a subterranean magazine of dynamite, and caused an explosion.

The great power of ores as electric conductors, has given rise to several methods for the discovery and exploration of mineral deposits. Of these the method of Daft and Williams is the one most developed. This method is founded on the great faculty of conductive power which distinguishes the majority of ores, in comparison with the surrounding matrices. An electric current is sent from a portable accumulative battery, through one electrode to another, both placed in touch with the earth-surface, and the power of the ground as a conductor in various places is then observed through a common telephone receiver.

Investigations by means of this method have been made in Sweden, also, at the expense of the "Iron Office," by Prof. W. Peterson and Prof. K. Wallin, who summarize their conclusions in the statement that the method is worthy of attention and interest, inasmuch as it makes possible the discovery of deposits not visible on the surface, and that it is preferable to the magnetic methods in this that even the non-magnetic ores can thereby be discovered. They call attention, also, to the fact that the confidence to be placed in this method depends in a high degree upon the subjective point of view and the conscientiousness of the person who is conducting the investigation, and it demands from the observer an ear highly trained for the perception of faint differences of sound, and that herein lies the greatest weakness of the method.

Swedenborg also says: "If our senses were keen enough,

they would give us knowledge of what might be found below us."

The treatise by Swedenborg here noticed is of interest as an instance of his tendency to generalize, and to bring together widely differing phenomena under one common point of view, and to explain them as results of one common cause. This, to a certain extent, is characteristic of the whole age in which he lived. He believes that the "effluvia" impregnate and make a change in not only the layers of earth which cover the metallic veins, but also in the plants which grow above them, so that these, thereby, have "derived a slight modification of color or some other change," so that an observer might hence be able to conclude as to the presence of a metallic deposit. "As, therefore, there is on the earth-surface a continual play of vapors and particles emanating from what lies below it; and as the ground everywhere is filled with plants, together with soil, clay, and stones, all colored in various ways, nothing else can result than that they become filled with such particles as have been furnished to them by that which is beneath them in the earth." He even believes that the "magic wand," (which before he had characterized as "superstition"), might be explained in this manner. "It may also be that the magic wand is the effect of this (*i. e.*, of the vapor emanating from the subterranean ores), viz., that when the person carrying the wand comes to a place where this vapor exists, the joints of the fingers become lame and weak, and the spiritus in the blood becomes sluggish, so that the wand necessarily falls forward and shows that the bearer is now above the vein itself."

When interpreting Swedenborg's expressions in this work it is necessary, in this as in many other cases, to remember that he expresses himself so vaguely, or gives such a general formula to his statements, that phenomena of widely differing nature may be included.

THE SENSES.

PART FOUR OF THE ANIMAL KINGDOM, BY EMANUEL SWEDENBORG.

CHAPTER VI. (*Continued from p.* 50.)

(*Colors.*)

The Muscles of the Eye.

392. 1. *Experience.* 1. There are four straight and two oblique muscles: 2. the straight superior or great elevator; 3. the straight inferior or small depressor; 4. the straight internal adductor towards the nose; 5. the straight external abductor towards the temple; 6, the oblique inferior or small muscle; 7. the oblique great or trochlear so called because it passes through the cartilaginous ring. 8. These two oblique muscles turn the eye. 9. All the motions take place around the centre of the eye. 10. The muscles are bound at their extremity to the fundus of the orbit near to the optic foramen by short and narrow tendons; 11. thence the fleshy parts go forth to the greatest circumference of the convexity between the optic nerve and the fleshy tunic, where they are enlarged. 12. Tendons are implanted in the circumference and by adherence continued even to the cornea, and they form the albugineous tunic or white of the eye. 13. The optic nerve follows every rotation of the eye, wherefore it is surrounded with fat; it also has a curvature towards the insertion of the globe, whence it can be extended. 14. The pupil in natural site is directly in front. 15. Seven bones come together at the orbit. 16. The optic foramen is in the sphenoid bone. 17. The orbits are but little distance apart. 18. The orbit is invested by a production of the dura mater, it communicates with the periosteum of the base of the cranium. 19. The albugineous tunic is thin towards the cornea where it commingles itself with the cornea. 20. The pupil in a natural state looks forward. 21. And the internal margin of the orbit is plainly opposed to the middle lip of the internal globe.

393. 2. *Use.* 1. The eyes by means of the muscles can naturally execute every circle, greater and less, according to will and determination of sight. 2. Nor can it only make simple circles, but also continual circles and spirals; 3. so that in a greater effigy it may represent the potencies and activities of a state of motion to be changed in whatever possible manner; 4. but still within its own boundaries. 5. The lids themselves accommodate themselves entirely and naturally to the state of the motion or gyration of the bulb, so that the tarsus of the upper lid may always hold the pupil under itself.

394. 3. *The eye is permitted to execute naturally every circle, greater and less, according to the will and determination of sight.* 1. We cannot easily detect the motions of the eye, except in two modes: 2. first, if we hold the head fixed and turn the sight to every quarter, from the objects which are successively submitted to sight, the quality of the circumgyration of the bulb becomes apparent, but in this manner we are entirely unable to see except in another thing [than the eye] how the eye is turned; 3. by the second manner, in a mirror, which is the most beautiful and curious, if we hold the eye fixed upon its own eye in the mirror, and turn the head in every direction to every circle, to every gyre or to every angle, then we clearly see that the pupil is held in the same place and in the same right line to the pupil of the mirror, and that the eye makes gyres and circles similar to those of the head; indeed even if we turn the head in diverse spirals, the eye follows so naturally that the voluntary confuses itself in no respect. 4. Besides, this mode detects that the upper lid is likewise so held that it holds the pupil placed under the border of the tarsus and of the semilunar membrane. 5. Thence the harmony of the eyelids and the eye is apparent. 6. The major circle is when the pupil is elevated entirely under the tarsus of the upper lid, when that lid is elevated to the highest point; then that it is depressed to the limb border of the lower lid, so that it looks back almost in a right line towards the plane (*libra*) of the face, then it can be transferred even to the major and minor canthus. 7. This is the greatest circle, which is its limit. 8.

It is not a circle, however, which it executes but an oval circuit. 9. Smaller orbits are made likewise, if we turn, bend and throw back the head through small orbits. 10. The muscles make these orbits, for it has been so ordained that they can make every circle, and every figure of rotation; for the superior rectus elevates, the inferior depresses, the internal draws towards the nose, the external towards the temple. 11. Besides this the oblique muscles [have their motion]. 12. That the eyelids and tarsi follow so exactly, arises from a muscle of the lid which is likewise inserted into the eye by a tendon; see *Winslow.*

395. *The eye can make not only simple circles but also continual circles and spirals.* 1. This appears from the same ocular observation in a mirror. 2. Motion everywhere in nature approaches to the continual and wills to take on a perpetual form which a spiral represents. 3. By means of the four straight muscles such an elliptical spiral cannot be described but it can by the oblique muscles acting at the same time. 4. It is necessary that the eye be drawn obliquely into a spiral and outside the determination which the four recti can form; 5. thus first a continual spiral is described. 6. In order that there may be a more perfect, and as it were small solid spiral, the eye can at the same time be brought forward and drawn back by all the muscles; 7. and thus can form a like spiral in every extension and retraction; 8. wherefore there is some curvature of the optic nerve near the foramen, according to Winslow, on account of the same use. 9. There is a compressible fat. 10. There is an appendix at the posterior part. 11. Thus the eye while it describes its own spiral determines that solid spiral, and that in a double mode. 12. Exactly according to the spiral form of superior particles, as in the air and ether. 13. Picture to yourselves a scarab and the rolling [of his ball] and you will see a not simple rotation executed. 14. Therefore the major oblique trochlear exists, and is inserted by a wonderful device so that it may adapt itself to the nerves.

396. *So that the eye in a greater effigy represents the powers and determinations and activities of the state to be changed*

in whatever possible ratio. 1. Such also is the state of the particles of the air and the ether. 2. Such is the state of their modifications. 3. Such is the most perfect state. 4. It is a state of motion which is changed. 5. States to be changed coincide with forms and places. 6. Sight demands this, in order that it may be determinable to all objects in an instant. 7. Thus to infinity and perpetuity whatever nature everywhere directs in its organisms. 8. But this state of motion has its limits within which it is held.

397. *The eyelids themselves are perfectly accommodated;* 1. As you may see in a mirror. 2. They continually hold the pupil under the tarsus. 3. This appears especially from the white of the eye or the albugineous tunic emerging. 4. This comes from the muscles of the eyebrows and lids which are also inserted in a certain way in the eye: See Winslow on those muscles, *Traite le la Tete,* 284, et seq.

398. *In order that these things may be so, they are arranged according to every inmost mechanical art.* 1. The muscles are so placed and fixed that they actuate all this motion most conveniently. 2. They are attached to the middle of the circumference where there is no resistance. 3. Aponeuroses thence stretch to the cornea, so that every tendon and every tendinous fibre determines itself exactly according to the centre and concentrations of its powers. 4. So that thus the muscles have the whole external surface of the eye under them bound to them. 5. Wherefore the albugineous tunic performs a triple use. 6. *First,* in order that the muscles by means of it may correctly direct the whole eyeball. 7. *Second,* that the eye may be protected from injury. 8. *Third,* that it may reflect the rays of light so that they may not penetrate by this way into the eye, for the white repels the rays; thus that they may centre only by the pupil. 9. Besides this the muscles lie very near to the common axis or radius of the nose, where the orbits almost converge, 10 and are supported by the seven bones of the orbit. 11. The foramen itself passes through the sphenoid bone. 12. By the favor of the optic peduncle the slightest motion returns into that part, as when a globe is moved from a

certain point upon which it stands. 13. Wherefore the slightest motion of circumgyration returns into the optic nerve. 14. There is almost no local motion, but only a rather small gyratory motion. 15. The nerve has the power of gyrating like the eyeball but in a smaller gyre.

399. *The optic foramen does not correspond to the pupil, that is it is not in the diameter of the eyeball; the causes are as follows:* 1. The optic foramen, or place where the nerve enters, is nearer to the nose. 2. For according to Winslow the circumference of the eyeball towards the temple is wider than towards the nose. 3. It is similar in respect to the ciliary process, so also of the ciliary corona, in respect to the pupil and the uvea. The causes are as follows: 4. *First,* because in their first formation, while all things were fluid, and determinations were being formed, they presented themselves for a more perfect form of fluxion, (as arose the very form of the fluxion of the eye itself), that is to say, for a spiral form; this never acknowledges the centre of a circle, but it is outside a circle; for the form of the general fluxion, as was shown above is referred to every part, which, agreeing with the gyre of its form, it bears away from the central part; and at the same time when it drives it into the central part it drives it into a new gyratory motion, which could not be done at all if the centre should be in the middle as in a circle, for then a new ascent could not arise. 5. In the formed eye, although such a motion of parts does not actually exist, in the proper parts of the eye, as in its vitreous substances, yet there remains the endeavor towards that motion, and thus the parts are held in a more perfect form. 6. A like motion persists every moment in the ether which surrounds the parts, and thus actuates every part or concentrates itself upon every part of the crystalline humor, in order that it may rightly impart its own image to every one of them according to the modification of the ether itself; indeed while the rays, thrown through the pupil and the crystalline lens, make a similar circle, which thus easily tends to a spiral, (for that circle, from the rays of light, and infused by the refraction of the retina, does not have the optic foramen for a centre, but

that holds an excentric place), thence the retina acted upon modifies the ether according to the same form, thence every part of the vitreous humor, by means of the ether, becomes a participant of the same modification, and finally circulates around the whole surface. 7. The *second* cause is, that rays transmitted directly through the crystalline lens shall not thus by a certain concentration break in immediately upon the fibres of the optic nerve, which would destroy the functions of those fibres which receive their modes from the sensory fibres of the retina thus mediately: otherwise there would be no sense of sight. 8. This is the reason why other things in the eye are similarly arranged (according to Winslow), and furthermore also the crystalline humor. See what has been said in P. II. concerning the diaphragm and concerning the inequalities of the viscera.

The Tunics of the Eye.

400. 1. *The Albugineous tunic,* adnata or conjunctiva, that is, the white of the eye, seems to perform these uses: 1. The tendons of the muscles, especially those of the four rectus muscles are there expanded in an aponeurosis, and indeed from the greatest circle to the anterior peripheries in becoming order, so that every tendinous fibre has respect to its own motor fibre in the aponeurosis, or many at the same time in the muscles, and at the same time they respect from the fulcrum or greatest circle all those remaining points of the surface, so that they altogether agree, so that the smallest motor fibre can pursue its own way most distinctly into the eyeball, and actuate it with the most facile power; for in the determination of those fibres a whole mystic geometry lies hidden, and they regard one another according to all the determinations of motion which the eye presents in its turning, (it would be too prolix to describe these things), wherefore it (the albuginea) terminates at the beginning of the cornea where it grows thin. 2. And the agreement is such that this motion acts, not with violence, but with a most facile power, and thus almost more by elasticity than by tractive force and gravity; a cellular tissue

lies under them, so that each fibre can yield and act by its own elasticity, whence it returns with the greatest power. 3. So that the rays do not enter elsewhere through the sclerotic into the anterior or posterior chamber and into the vitreous humor; wherefore the fibres are so arranged and interwoven that they repel the rays; for whiteness repels rays of light, every other color absorbs some part; this the sclerotic would not do at all without this circumfused white of the eye; wherefore it begins where the cornea ends, and repels all the rays; and this white of the eye is only at the anterior part, where the rays inflow when the lids are opened. The underlying cellular tissue also itself contributes somewhat that the rays may be more fully extinguished. 4. Thus also the integument serves the sclerotic and the eye, for it not only sustains the light rays but also other attacking fluids and solids, and many things, and takes care that the sclerotic tunic shall not be immediately impinged. The underlying cellular tissue also contributes towards extinguishing the same impingement. The tunica albuginea especially takes care that the serosity, sometimes acrid, breaking forth from the lachrymal and other glands shall not hurt the corneal part of the sclerotic, 5, so that the slightest touch may advert not only to the brain, but also to the muscular fibres, so that they may concur immediately of themselves from that cause in the body by contractions and similar modes of averting dangers, as has been observed in other organs. Wherefore the nerves are inserted, each tendinous fibre communicates with a motor fibre, for the latter is a continuation of the former, and a very thin sensitive membrane is superinduced which is continued to the conjunctiva of the lids; thus the sensitive [fibre] in the conjunctiva of the lids performs the same use. 6. This tunic exists that it may transmit a very thin dew between the layers of the corneal tunic and thus keep this whole in its own state, that it may always be transparent [dividua] and pellucid; for the aponeurotic fibres terminate in the cornea; the cellular tissue penetrates thither; the corneal tunic transudes this dew after circulation through the pores,—according to the observation of Winslow; wherefore this tunic

is lost in the cellular tissue which goes off between the layers of the cornea and perhaps becomes still more continuous; an opening thus leads from every muscle into the tissue. The albuginea is interspersed throughout with arteries which also exude a dew. There it may be conceived of what quality is the circulation and use of the humor under the albugineous tunic. 7. Perhaps also it confers to the formation of the corneal tunic; as the roots confer to the formation of the nails, for it is continued from its fibres; the aponeurotic membrane easily goes off into the cornea by the degrees of hardness alone, which indeed principally causes that it subsists, it also causes that it exists; for existence is perpetual subsistence. The same regularly flowing humor brings it about, that the cornea shall be thus pellucid, lamellated, hard, etc., perhaps together with the nerves and vessels which here creep in, according to Winslow.

401. 2. *The sclerotic tunic.* 1. It is as it were the last plate of the cranium of the eye, for the eye like the brain is covered with a kind of horny cranium, for the eye is an appendix of the brain, or as it were a succenturiate brain, especially in regard to volatile things; for this sense of sight approaches proximately the supreme or inmost sense of the brain, and still more nearly or in almost the same degree, if the mass of the eye is as great as that of the brain. It is otherwise therefore in the human kind where the brain is the greatest, for there is a degree of sensation superior to that of the understanding which is wanting in brutes. 2. The sclerotic furnishes a passage for the vessels and fibres; for the vessels and fibres run through the plates; they are able to run out almost according to the whole nature of their own fluxion; and they are there very safe, and in the highest rest nature and thus form of their own fluxion; if they are in their form they are in their natural rest although in motion; for the nature of rest consists in fluxion according the form of motion; in these things motion and rest concur. 3. The vessels and fibres flow through the sclerotic from one centre to another, or from the circle or appendix about the optic nerve to the conjunction

of the sclerotic with the cornea, or of the choroid with the uvea, where there is a white circle: elsewhere they are in their own peripheries, between the layers of the sclerotic; thus in their own equilibrium, for their own equilibrium; thus they cannot be otherwise arranged for every manner of giving off in the interior fabric as around about the pupil where they produce most diverse effects, modes and forms. 4. The sclerotic is the strongest tunic and operates by force rather than by gravity, or by a mode of motion and action rather than by a mode of rest and incumbence or pressure. There is nothing in it which is not elastic. Wherefore it is divided into a great many layers, everyone of which is elastic. Many elastic layers produce a general elasticity, which appears as if it were not elastic; this results from the composition; for which reason all the vessels and all the fibres flow through it as if they flowed in the highest natural state. 5. In order that the layers may preserve the elasticity separately and particularly, so that it may exist whole, a flux will go through between them not purely aqueous, but which is also of an elastic nature such as results from shed blood [blood-serum] and is similar to the lymph of the thoracic duct, and is a purer blood: this seems to be distilled from the smallest arteries, which flow between the layers, which arteries now carry a purer blood, from causes recounted above; thence a fountain of lymph seems to be led into the chambers of the eye. There is also an efflux everywhere through the pores, according to Winslow. 6. Thus the sclerotic and the cornea are also the ultimate emunctory of the serous blood, in order that no other blood shall enter into the eye itself than the purest and most suitable; this serous blood also performs uses on the way, that is to say it separates the layers, moistens them and keeps them in a state of integrity; it fills the chambers of the eye; thus it makes a circle in such a way that new blood may always be present. 7. In order that the elasticity may be particular the layers of the sclerotic and the uvea seem to arise partly from the aponeurosis of the muscles, or the albugineous tunic; within indeed they arise from the nerve-tunics, which are there attached to them and which

are there expanded; by these means communication is effected with the dura and pia mater, but through the nerves, not immediately by the optic nerve. 8. Thus all the greater and lesser impulses, then also pressures and modifications here find a covering most conformable to them, for they press every layer and circulate through every distance. 9. From this it can be deduced, then from the elasticity of the particular layers, that they have respect to some distinct pulsation of the arteries and a distinct animation of the brain, through the fibres; and that this animation as it were vanishes and does not sensibly go forth in the common membrane. Such an animation also requires in the surface a double modification, in order that all things may be held in a conserved state of integrity. The modification itself runs forth according to the fibres of the layers, wherefore its determinations cannot be otherwise than in a more perfect circle or spiral. 10. Thus the sclerotic is the common integument of the interior of the eye, the common modificatory, common emunctory of the blood, and the common evaporatory of the exhalations, as has been shown.

402. 3. *The Cornea.* 1. The uses of the cornea are the same as the uses of the sclerotic in general, wherefore those uses must be passed over, and those which it especially performs must be reviewed. 2. By its parabolic, elliptic or other convexity it serves for a common reunion of the sclerotic, for such a figure anteposited, if it receives any impulse, does not distribute it against the interiors, as a circle does its radii, but against the sclerotic and thus into a circle, thus it serves for a support, for its lines proceed obliquely and insert themselves into the sclerotic; such a figure is much stronger in its apex than a circle; for it is concentered towards many foci; wherefore such a figure can better preserve its elasticity, for it does not go to one fixed centre but to many so that it may be yielding with every relapse into its own form, which renders it very safe. 2. It takes in a greater expanse of sky at the same time, and thus more rays at the same time, thus widens and extends simultaneous sight; for it protrudes from the eyeball,

and receives what a globe could not receive; thence it is apparent why there are differences in its muscular system and many other things. 3. But still the more it is protruded from the eyeball, the more indistinct is the vision, as may appear from a superimposed hollow hand and the impeding of the influx of light from above, whence distinctness returns; for general light obscures the particular, takes away part of the rays and implicates them; this is done naturally by the lashes and the tarsus, which are placed and held closely above the pupil, as also by means of the eyelids, their overhanging parts and by means of their hairs as it were a shady grove, which every one can examine for himself. 4. The cornea also directs the rays justly to the pupil and the crystalline lens, which could not be done without such an appendix; wherefore the pupil and the whole distance, likewise the forms of the iris and of the rest of the circles respond exactly to the figure of the cornea and to the determination of its radii. 5. Sight acknowledges this first gate, wherefore according to its figure, extension, pellucidity and thickness the first causes of sight depend. In the dying, says Winslow, it is obfuscated. To enter into particulars in respect to the cornea would be to enter into infinities.

(To be continued.)

BEING AND EXISTENCE.

A PHILOSOPHICAL DISCUSSION.

BY FRANK SEWALL.

V. The First Evolution.

We have in our study of Pure Being or the Esse seen that there are but two attributes which can be assigned to it and these in their negative sense only, namely, infinity and eternity; in naming which we merely confess our inability to assign any bound to Being either in time or in space. In other words we confess our inability to define it. And this is also the claim of the Agnostics. But the new philosophy says what the Agnostics must also admit on candid reflection, that pure Being or Esse must have its existence; that all being must exist; and that when being becomes existence then it assumes a *how* or *manner of being;* it becomes a something; it has qualities; form: knowable properties. Through this *existence* of Being only do we know that there is Being. The attributes eternal and infinite as applied to Esse are empty negatives. If we try to think of them the brain swoons. To think the eternal or the endless merely as negatives is like trying to breathe in a vacuum. It strangles thought. Whereas these very attributes when transferred into reasonable degree of the Existere become no longer negations but thinkable attributes. The eternal now means the embracing of all times without being, and self, *of* time, or qualified by time: and the infinite means, containing infinite that is all things in itself.

"Deus infinitus est"—says Swedenborg, "*quia* infinita in se habet.—" So in proceeding from the Esse to the Existere of Being in process from the unthinkable to the thinkable. The Being as Esse is the fundamental of sense, of our *feeling* of a thing: the existence is fundamental of our *thought about* the thing. We *feel* a thing to be; we *think* of a thing's existence in thinking of its qualities. We *feel* that whatever is, is: but we do not know *what* the thing is until it exists. We know the quality of Being only when it becomes the Being of something.

The first evolution is therefore from a *feeling* to a thought:

from our *feeling* of that which is, to a thought of *what* that is, which is.

In this we step therefore not from the definite to the indefinite but the reverse. It is from the unknowable *to* the knowable or the thinkable that we step in coming to our conception of God. For God in human conception is not an absolute, but rather, is Being which exists under certain definite knowable qualities. It is also God alone who makes Being from being no thing to being something, to *have* form, to *be* visible to our thought, and thus intelligible. Instead of being the Unknowable, God is therefore *essentially* the first Knowable evolution and manifestations of Being. For God is not only the first substance, but also the first Form. In God the first *Esse* becomes the first *Existere,* the first End becomes the First Cause: the first motive becomes the first Law. God from unknowable Esse becomes knowable intelligible Existence.

VI. God.

From the doctrine of the Esse we proceed therefore to that of the Existere. From Being to the being a somewhat,—to having qualities. The Being with qualities—or Being as a conceivable and knowable somewhat is God. From the consideration of pure or abstract Being we come to the study of God.

We are not to conceive of God as therefore secondary to Being or derivable from Being; but rather that the underived, the self-existent Being becomes of necessity itself the knowable God, or, that the Esse necessarily exists. It is the same as with substance and form, or as end with cause, while substance may be conceived of and named, in the abstract, without form, that is under the only two, and these negative attributes, of infinity and eternity. The substance in becoming anything makes the concept of its form just as necessary to us as the concept of the substance itself. The thing conceived of is substance, and cannot be otherwise.

So is God *at once* Esse and Existere; we are compelled by the very necessity of our thinking or as preliminary to any thought to admit the infinite and eternal Being or *Esse;* but the moment

we form that esse with qualities it exists, and that existence of the esse is God. God is therefore not existence derived from prior Being but God is the EXISTING ESSE.

So in the discrete degrees End, cause and effect, end may be conceived of as an abstraction but it does not exist as such; for an end, to *be* an end, must be the "End in View," must look to some effect and this through some means or cause. Thus, when existing or when actual, it is end causing effect. The cause is not derived from the end as something remote but it is the end causing. In the same manner God is the ESSE existing.

But why must Esse exist, or why must Being thus be something; or what is the same thing, why must there be a God?

We have seen that we know that being is, or that the concept of infinite eternal Being is fundamental to our thinking or knowing any thing. But besides this universal, fundamental concept we also know *things* as being,—the finite, visible and tangible objects of our senses. For instance: We not only know by consciousness or inmost perception that there is and always was and will be Being to which we can set no bounds, but we also know through our senses the particular, the bounded things that are. Now these particular things that are, are or exist because of their possessing some thing of that original and boundless being: For they either I. derive thence their being; or II., they have sprung out of nothing; or III., finally they are themselves eternal and self originating.

Now we cannot admit either of the two latter assertions, and we are thus compelled by our very knowledge of particular things to admit some universal Being which is Being in itself, and self existent. The admission of universal Being is as necessary as the admission of particular things. Our knowledge or our power. to know, demands them both.

We have thus before us the universal Being, the all that is, in two discrete degrees which are undeniable. We have found ourselves compelled to admit on the one hand universal, uncreated, primal Being, or the Being conceived of in the relation of origin and end of all else; and we have on the other hand

this "all else" or this Being on the plane of effects of particular finite things.

Now if there were no finite things, no particular beings, then the original Being or Esse might be regarded as abiding in itself, without conceivable form, as neither moving nor giving motion, and so as neither desiring, causing, creating nor proceeding. But we know that particular finite and created things do exist; we know that Being is not merely end, if that were now that the Esse assumes the relation of cause to an effect. Our knowledge, too, of Being as effect, or of Being as created, necessitates an admission of Being as CREATOR.

It is now that pure Being or the ESSE assumes a relation to that which is outside of itself, or to the being as finite. It is now that the Esse assumes the relation of cause to an effect of creator to a created. As such it of necessity—*ex-ists, i. e.,* stands forth or out of itself. The *existence* of the Esse; or the *standing forth* of pure Being into a Being with qualities, is thus necessarily implied in our knowledge of particular things. Unless we deny that particular things exist we must admit that the pure esse EX*ists,* as it is alone in the EX*istence* of the pure ESSE that particular things could come to have any being at all. The origin of all finite things is therefore in the *existence* of the infinite and eternal esse.

But in this existing or standing forth, the *esse,* as I have said, becomes *qualified;* from Being universal or pure *Esse* it becomes a somewhat, a Being with qualities. Now what are these qualities? What are the necessary attributes of necessary existence—those qualities without which ESSE could never stand forth and assume the relation of end to cause and effect, or of creator to created?

These must be some self-prompting or self-moving force in the pure *esse* itself: something by virtue of which an other than self is created for the very purpose that the pure *Esse* may assume relation to that which is not self, may therefore EXIST.

This impelling force in the esse or this all moving and all begetting substance is, regarded in itself Life, or regarded in its relation to others Love.

(*To be continued.*)