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A COURSE IN "NATURAL PHILOSOPHY"

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I. Introduction

It will be the purpose of this paper to give in a few pages the outline of the first semester of a course offered in the College of The Academy of the New Church entitled Natural Philosophy. The studies of this course are aimed at relating man-made contributions to knowledge through reason and experience to philosophical questions. It is because of the origin of such knowledge, as contrasted with Revelation as a source, that the course is called Natural Philosophy.

After a treatment of certain generals under the headings "General Orientation," "Introduction," and "Natural Science in the New Church," the course, during the first semester, devotes itself entirely to detailed illustrations. The subjects treated during the second semester, which are experience and epistemology, will be considered in a later installment.

We could not hope to develop all the material of the first-semester in these pages. Consequently, in the space allotted we will begin with a brief survey of the meaning of "philosophy"; next we will proceed to particularizations leading to "natural philosophy"; then to "reason alone"; and we will conclude with a single illustration. This last, it is hoped, will serve as a sample of the sort of thing considered in the first part in the classes.

While a large portion of our course of study is devoted to examples of so-called "reason alone" taken from mathematics, science, and philosophy, it is not to gain more knowledge, but rather to emphasize how reason contributes such knowledge, that

these examples are considered. Those who have tried to think their way through serious examples of the results of experience and reason, or of reason alone, will realize it is not easy to introduce others who have not done so to this task. It is a fact arising from teaching experience that those who have not will often avoid the intellectual task by asking: "Is it not obvious that all natural knowledge arises from experience and reason?" However, even if the affirmative answer seems obvious to some, the task of answering "How?" still remains. To emphasize that our problem is a significant one, and perhaps a difficult one, we quote the following by one who is very competent in logic at least, as it illustrates a view different from ours.

"It should be added that, in striking opposition to the high development of the empirical sciences themselves, the methodology of these sciences can hardly boast of comparably definite achievements—despite the great efforts that have been made. Even the preliminary task of clarifying the concepts involved in this domain has not yet been carried out in a satisfactory way. Consequently, a course in the methodology of empirical sciences must have a quite different character from one in logic and must be largely confined to evaluations and criticisms of tentative gropings and unsuccessful efforts. For these and other reasons, I see little rational justification for combining the discussion of logic and the methodology of empirical sciences in the same college course" (Tarski, *Int. to Logic* XIV).

In spite of this view, we maintain that if one asks himself the question, "How do I know what I know?" he must go to the foundations of the methods of science which are experimental as well as to those scientific methods which appeal solely to reason. This seems to require the joint consideration of logical and experimental bases of knowledge.

II. *Philosophy*

Before consideration of "natural philosophy" it is helpful to have some idea of the more general term "philosophy." In our complete course, a large amount of time is devoted to a consideration of a number of definitions of philosophy together with several different ways in which philosophy can be divided [see e.g. *A History of Philosophy*, Windelband; *An Introduction to Living Philosophy*, Robinson]. None of the formal definitions considered seems sufficient by itself. And yet if one is to study an intellectual discipline, he must have some idea of its nature, even

at the outset. It is well known to all who have gone beyond the portals of any intellectual discipline that the understanding of its nature can come about only through entering those portals and progressing to a considerable depth within. And yet one is impressed with the fact that those who have done so in philosophy do not agree in their definitions of philosophy. And so it is not surprising that one who has not done so—who, for want of a better name, we shall call the common man—calls into question the validity and use of philosophy because of his inability to find common agreement among the professionals. Nevertheless both the common man and the scholar persist in asking certain philosophical questions of themselves. And this is, and has been so, for all periods in recorded time and in all races. However, these questions are not always consciously put [see "The Use of Philosophy," Edward F. Allen, *NEW PHILOSOPHY*, July 1953]. Within the limits of the narrow perspective of a single lifetime or a single school of thought, or even an age of a nation or a church, all philosophical questions consciously asked may be committed to the slavery of the conclusion that philosophy cannot answer questions and is futile.

Yet the mere persistence of the questions under all the many varying conditions that are known as recorded history, constitutes the reason for the existence of philosophy. These questions are persistently put both consciously and unconsciously. It is perfectly natural and to be expected that those questions which are put consciously are the ones that are subject to explicit criticism. This is so for the simple reason that they stand forth in boldly printed pages. They stand forth to be accepted or to be attacked. And this acceptance or this attack can be sensed by all. But there is also a vast array of persistent questions that are not so consciously treated—and yet are nevertheless answered, although not consciously. The place to look for these is in the thought of the common man who repudiates philosophy because it is not practical, yet who daily commits acts which are based upon judgments that imply philosophical arguments. The place to look is in the thoughts of the scholar who demonstrates by critical methods that philosophical questions of long standing are meaningless. The place to look is in the thoughts of the scientist who believes that his systematic experimental methods have done away with metaphysics and so-called superstitions. The place to look is in the

thoughts of the theologian whose dogmatism demands faith alone; or, in the more subtle cases, in the thoughts of those whose aspiration toward spiritual ideals is so all inclusive as to shrug off the painful efforts of the as-of-itself. In this last case, it must be realized that not all efforts of man to know and to understand by introspective means represent an appeal to authority of man himself.

The persistence of these questions, therefore, demands recognition by the thinking man of two things: first, that these questions must be answered; second, of the historical fact that they are never answered for all people in any one age, let alone for all ages! Philosophy thus continues as a study because of a persistent and timeless demand and an equally persistent and timeless failure to meet that demand once and for all.

While it is difficult to define philosophy, it will be both interesting and helpful to note that almost every thinking person recognizes the type of question that should be referred to philosophy, and that he also recognizes a philosopher as a philosopher. To illustrate: if the mind-body relation is acknowledged as a problem, it will be recognized as a problem of philosophy. Of course, if thought itself is regarded as a mechanico-physical process, then no problem exists. But at least a trivial philosophy (i.e. in content) exists, and consists of this pronouncement; and thoughtful people may well ask, because of the importance of its implications, whether such a trivial philosophy is either necessary or sufficient. But this question also is philosophy. As for recognizing the philosopher as a philosopher, this hardly needs illustration. For who will deny that Aristotle, Plato, Descartes, Kant, etc. are philosophers? A long list of others may be given whose claims may be shaky, but not theirs.

The significance of the study of philosophy to the New Church is twofold: *First*: That the servant through whom revelation to our times became known was himself a philosopher and manifested his philosophical speculations in written form so extensive that it would be difficult to find in history examples that compare. *Second*: That in consequence of the demands upon the thought of man by that revelation, man as to his own responsible, individual thoughts must constantly face the discipline of philosophical thought.

It is no wonder that such a discipline as philosophy, which is so demanding in all times, which is so universal in its content, which lies at the foundations of all other intellectual disciplines so that no man can claim immunity to its effects in his thoughts; it is no wonder that such a discipline cannot claim a definition in a few well chosen words. The wonder is that such a definition can be expected by us. Yet even after having said all this, each of us still clings to a faint hope that some day he will succeed in finding a definition of philosophy, and no doubt he will—but for each for himself alone.

Our study of philosophy is a very serious business. Others may gain pleasure in making fun of the philosophers. We try to take them as seriously as they took themselves—and oftentimes that was very seriously. For philosophy is a very intimate thing with men. (See "*The Use of Philosophy*," Edward F. Allen, *NEW PHILOSOPHY*, July 1953—pp. 74–88, also, *The Principles of the New Philosophy*, Hugo Lj. Odhner, *NEW PHILOSOPHY* Reprint, July 1941.)

In the New Church we have come to regard as axiomatic that the Word and nature constitute two foundations of truth. There is little that we as human beings can do about these as foundations. As foundations they become authority. We cannot question the authority of the Writings. We are quite helpless before the cold scientific fact. Yet when we regard ourselves as men, when we acknowledge our individuality through the development of the as-of-itself, we see that within ourselves is the only sporting field on which the contest between revelation and the experience of this world can take place. The seat of this contest is our thought.

It is the serious and systematic introspective study of man in his thoughts that commands the field of philosophy. His thoughts may become known in part in caricature, grotesquely or otherwise, or symbolically in art, music, and poetry. But the philosopher would know man completely if he could. The complete answer seems to be impossible to attain and he must be satisfied with something less. But if his goal were less than all, what would it be? Which one of us can decide what another man can know and what he cannot. If philosophy is so personal a thing and its experiences so unique (cf. H.L.O. *ibid.*), and if it cannot be transferred from man to man, who is he that would dare to limit

the thought experiences of another? Surely if anyone dared he would not be a philosopher. He would be contemptuous of philosophy.

Therefore in our course in philosophy we regard the great philosophers as serious scholars. If we are to know the bases of their conclusions, we must be serious with them. Only by this method can we come to an understanding of the nature of their problems in philosophy. To do otherwise is to call upon faith alone in an area that becomes a wilderness utterly barren under such an influence. And so, though lacking a unique and sufficient definition, we believe that we do recognize problems that are philosophical, and also that we recognize philosophers as philosophers—at least the great ones.

If the New Church is to grow philosophically it will do so because men have been able to meet men in the arena of systematic intellectual thought. To talk this way is not to presume possession of all that it takes to make a philosopher—any more than that the philosopher who is worthy of the name would presume to know *all*. But even as the philosopher must set all as his goal, for to strive for less is to destroy philosophy itself, so also must we face the problems of philosophy long before we possess the qualifications we know we do not have. To be a scholar requires a very special mixture of humility and hope. The humility saves us from our own tyranny and conceits, the hope keeps us going.

III. Natural Philosophy

The term “natural philosophy” has been invented as a title for this particular course of study. It is realized that through the history of thought the term has been used to mean many different things.

The earliest use of the term natural philosopher was its application to the Ionian philosophers. Of this school we read :

“The first European school of thought to break away definitely from mythological traditions was that of the Ionian nature philosophers of Asia Minor, of whom Thales of Miletus (c. 580 B.C.), merchant, statesman, engineer, mathematician and astronomer, is the earliest known to us. The importance of this Milesian School of philosophy lies in the fact that for the first time it assumes that the whole universe is natural, and potentially explicable by ordinary knowledge and rational inquiry. The supernatural, as fashioned by mythology, simply disappears.” Quoted from *A History of Science*, Dampier (Third

Edition). Original reference, *Before and After Socrates*, F. M. Cornford, Cambridge 1932.

A more recent use of the term is the German *Naturphilosophie* of the first quarter of the Nineteenth Century.

" . . . long after the methods of exact science were being used in Paris, the German Universities, while eminent in classical and philosophic studies, were teaching a hybrid *Naturphilosophie*, which deduced its conclusions from doubtful philosophic theories, instead of obtaining them by the patient study of natural phenomena" (Dampier, *ibid.*, p. 310).

With the development of the more systematic natural sciences as we know them today the term *Natural Philosophy* became attached to that branch of science which today is known as *Mathematical Physics*. This was especially true in England. To illustrate, we mention that a famous reference treatise on mathematical physics by Thompson and Tait (late 1800's) is entitled *Natural Philosophy*.

The word "natural," as used in this course, is the New Church "natural" as distinguished from "spiritual." Thus natural philosophy consists in a study of the techniques of that search for wisdom which man seemingly conducts for himself. The things studied are "man-made." These are to be contrasted with those things man receives from Revelation.

Man has presumed by the use of his reason alone to arrive at what he calls *necessary* truths. Also man has presumed to learn things about the physical world by the use of his own physical powers, that is, by his senses. Man has presumed to apply the results obtained in these two ways to persistent problems of philosophy. These are the things which are meant by the title "Natural Philosophy." If man is to be a natural philosopher then he must depend solely upon these two, or just one of them. Rationalism, of course, depends on reason alone, whereas empiricism depends mostly upon experience. It is impossible to think of the search for truth as depending upon experience alone, that is, experience divorced from reason of any kind whatsoever. However, philosophers have sometimes admitted the possibility of the converse.

The question is now put in our studies: "How can the New Church man study natural philosophy?" How can the New Church man study any discipline without making use of source material in the Writings and the philosophical works of Emanuel

Swedenborg, and also in collateral literature? The answer is that he cannot. If, however, he wants to *be* a natural philosopher, he cannot use the Writings and admit them as revelation. He cannot use the philosophical works without comparing them with all the critical works on philosophy of which they are not an example. He cannot use the collateral works because they are for the most part impertinent. The simple fact is that the New Church man cannot be a natural philosopher. And to imply in any manner that he can, is to misapply the intent of our study, which is the study of natural philosophy. To assume that the New Church man is a natural philosopher because he studies that subject is as incongruous as to suggest that all who study ichthiology are fish. On the other hand, to deny the New Church man the right to study natural philosophy although he cannot be a natural philosopher, is likewise as incongruous as to say that the ichthiologist cannot study fish because he is not a fish. And yet it is more important for the New Church scholar to study natural philosophy than it is for the ichthiologist to study fish. The ichthiologist does not need to study fish that he may better understand how to be human and not fish. But it is certainly true that if the New Churchman is to be able to identify his own philosophy and to contrast it with other philosophies, he most certainly must obtain understanding of the bases upon which man has been led to such things as rationalism, idealism, and other forms of philosophy. These bases have all been the result of an appeal to reason and experience alone.

If we limit our considerations to the products of sensation and thought, then the question might very well be asked: "If this is your definition of natural philosophy, does it not include most of what passes for philosophy in general?" It can well be pointed out that among humble men philosophy in general has often had no higher pretensions. It can equally well be pointed out that among others, philosophy in general was so regarded as to deny all sources other than sensation and thought. There is a difference between the philosophy that recognizes the limitations of experience and reason as a source of knowledge, and the philosophy that limits the source of knowledge to experience and reason. Our course of study considers such questions and, furthermore, concludes that natural philosophy is but one part of philosophy in general and that it serves as a basis for a wider study of the more complete series of degrees of the mind given in other places in our college curriculum.

IV. Reason Alone

An objective of these studies is to isolate what is peculiar to thought and also to study illustrations of this same thought. That the thought can be separated from the other activities of the mind is clearly shown in the *Rational Psychology*.

This work, unpublished during Swedenborg's lifetime, was written by him about ten years before his spiritual eyes were opened. In the preface he indicates the method by which he proposes to arrive at a knowledge of the soul. This is to be founded upon a study of the anatomy of the body, that is, on experience, or as he puts it, from things posterior. A reference to a chronological list of his writings will show that Swedenborg during this period indeed was offering no idle promise in this respect. In addition to numerous small works, he had finished the *Economy of the Animal Kingdom* (920 pages) and the *Cerebrum* and other large portions of his work on the brain; and the *Animal Kingdom* was to appear in a matter of months. Thus it is seen that the *Rational Psychology* was written at a time when it might be assumed that Swedenborg's search for the soul was nearing completion.

Now it is evident to his readers that Swedenborg's arrangement of the degrees of the mind as to the seats of the several activities of the mind is somewhat different in this work from that given in the Writings. Nevertheless, the series here contains what is essential for the understanding of the mind on the natural plane. That is, man is described as possessing the seat of activities which permit his contact with the external world; this seat is sensation. Man is also in possession of the seat of activity which is controlled by the soul; this is the pure intellect. Thought lies between sensation and the pure intellect. Even as sensation is dependent in large measure upon what is fixed in the world outside man, so also a like relation exists between the thought and the pure intellect. While he is on this earth, the pure intellect and sensation supply activity to his thought from above and from below, respectively. And in a sense they also protect man from what is above and below. What this protection means can be understood better from "below" than from "above." Any one of our senses is somewhat under our control. One can close his eyes to things or plug his ears, or even remove his entire sensory apparatus from the scene of stimulation by walking off. But the senses themselves also limit what must be put up with, as is indicated by such terms

as "infra-red," "ultra-violet," and "super-sonic." These all refer to activities in nature that are beyond sensation. It is interesting, or rather, it is horrible to contemplate what it would be like if we had the sensation of these activities to contend with in our daily lives.

It is the same with respect to the protection by the pure intellect. As evidence of the nature of its activities Swedenborg says: "For we instantly reduce the ideas of our memory, which are not unlike visual ideas, into such order, form, and harmony that a rational analysis results therefrom, and this is recognized as to whether it is true or false by an intellect purer than our thought" (*Rat. Psych.* 129). It is clear that such activities do take place, and it must follow that there must be an agency for such activities. And yet the conscious thought is spared the burden of being aware of all the countless activities that must take place in the pure intellect in order that it may bring about order and harmony in the thought.

The thought therefore exists in equilibrium, both from without with respect to the natural world and from within with respect to the spiritual world. It receives sensations, imaginations, and ordering from below; and what is most wonderful, a sort of internal dictate to seek out the truth and recognize it when found, from above.

We leave for other courses of study the wealthy fields of investigation peculiar to the philosophy of Swedenborg that might arise from those several degrees of the mind which distinguish man as to his natural and as to his spiritual. We pass up those possibilities that would result from the studies of the animus as distinct from the mens. It is questionable whether the scholars of the New Church have even scratched the surface of another subject we pass by, namely the science of cognitions; we hardly have time to make reference to the doctrine of correspondences, of degrees, of form, etc. To make use of all that is possible as suggested in the above is tempting, but it would be to dilute the objective into generalities. The previous generations in the New Church have done a very good job of surveying the generals of its philosophy. On the other hand, at times it has made the most of the mere repetition or exposition of Swedenborg's own philosophical works—based as they were upon eighteenth century science.

Our course of study, therefore, is limited in its scope in order that we may put more time into the study of what is peculiar to the thought itself. This limitation was referred to in the previous section when it was pointed out that, of all philosophy in general, we regarded only natural philosophy as our own chosen subject. This limitation becomes even more clear now by designating a particular object of study as the "reason alone."

No matter by what series in the theological and philosophical works of Swedenborg one considers the mind, one can fit all the degrees of the mind into the simple framework given in the ascending order as sensation, thought, and the higher degrees of the mind. In the *Rational Psychology* it is said :

"(1) The pure intellect must first be treated of before treating of the mixed intellect, that is, of thought and our rational mind; for thought is mediate, as it were, between the pure intellect and the imagination, drawing its essence in a way from both; and to learn the nature of what is mediate or mixed, the prior and posterior things, that is to say, the extremes which enter in from both sides, must be investigated" (no. 123).

In these studies the subject is what is referred to above as the "mixed intellect, that is, thought and our rational mind." And because in a large part of this study the effort is to isolate the activities of this plane of the mind, it is referred to as "reason alone." This avoids all possibility of confusion in our studies between what in the history of philosophy is called "pure reason," which is our proper object of study, and such uses as the adjective "pure" is put to in Swedenborg's philosophy. See for example "pure intellect" in the above quotation, which usage in Swedenborg most often has reference to a plane of the mind that is above the sensation and thought.

V. Illustration

This treatment of thought by Swedenborg is itself an example of thought alone because it satisfies the conditions defining thought laid down by Swedenborg. That is, the discussion by Swedenborg of thought cannot be understood by use of sensation, imagination and memory only. For as he says :

"Thought, . . . does not rest in the mere reproduction of ideas of the memory or imagination, or in viewing simultaneously of objects which

were presented to the external sight successively. It goes further" (*Rat. Psych.* 142).

We think the sentence "It goes further" merits considerable attention. He goes on with respect to it:

"For, from these and other like ideas, run through and represented successively, it procures for itself and brings forth a new idea never before presented to the sight; and this by an analysis not unlike infinitesimal calculus, . . ."

How can this be understood? To go through the study of calculus to develop this understanding seems to be too great a burden for some. Even many who "had it in school" might not be particularly impressed by the importance of the example. Consider a simple case. Consider the equation which says that the product of two numbers is zero. We write it thus

$$A \cdot B = 0$$

What can be concluded from this elementary statement? It is this: either that A is zero or that B is zero or that both are zero. What contribution of sensation or imagination or of memory can dictate this? If it is merely seen through the eyes, very well, then it is sensation. If it is remembered from some class in school then, very well, it is the memory or its recollection in the imagination. Other suggestions which are just as trivial might come to mind. But if it is understood that it must *necessarily* follow from $A \cdot B = 0$ that either A or B or both are zero, then indeed the thought has contributed something, and it is something that "goes further" than the memory or the imagination. And this is not at all trivial because the use of this important conclusion as a *necessary* conclusion, that is, as an understood conclusion, is used many times throughout mathematics to give still further results "not previously presented to the sight."

An example of this can be given from physics. Suppose we ask, "At what time will a ball be at an altitude of 48 feet above the ground if the ball is thrown vertically with a velocity of 64 feet per second?" Now it can be presumed for the purpose of this example that the people who study kinematics know what they are talking about when they say that the distance travelled by an object under uniform acceleration is given by the equation

$$s = vt + \frac{1}{2}at^2$$

where s is the distance travelled, t is the time, v is the initial velocity, and a is the acceleration. A knowledge of elementary algebra is all that is required to apply this equation to our question. The knowledge of kinematics and the technical skill of high school mathematics can well be disposed of for the purpose of our illustration. Suffice it to say that the above equation will eventually assume the form

$$t^2 - 4t + 3 = 0$$

and still further application of elementary algebra gives us

$$(t - 1)(t - 3) = 0$$

Now let us reassure the reader who feels somewhat frail when confronted with the above argument that for the purpose of our example he has up to now missed nothing except the manner by which our example comes about. And if he will but grant this, he will see that here is an expression whose "form" is the same as

$$A \cdot B = 0$$

Now the thought has considered this equation, and has concluded that either A or B or both must necessarily be zero. In our example from physics, $(t - 1)$ takes the place of A and $(t - 3)$ takes the place of B . And so if the conclusion from mathematics is applied to the equation resulting from physics, it is seen that either $(t - 1)$ is zero, or $(t - 3)$ is zero or both are zero. Now if $(t - 1)$ is considered to be zero, we see that t must equal one. That is, our conclusion is that the ball will arrive at an altitude of 48 feet one second after it is thrown. This example has been worked out entirely by thought alone, albeit it was applied to a physical example and consequently the initial equation rested upon experience. The answer itself of course could be obtained by experiment. But that does not invalidate the contribution of thought. In this case it substantiates it. It can be seen that the use of such thought is considerable when it leads to a conclusion which, as Swedenborg says, "it procures for itself and brings forth a new idea never before presented to the sight." When this happens, mathematical physics has made a discovery, if subsequently an experiment can be designed to verify the answer.

But this is not all. Let us stay with our example. What is to

be done with the other possibility, namely "or $(t - 3)$ is zero." If this is considered, then $t = 3$ is another answer. But what does it mean to say that the ball was 48 feet above the ground one second after it was thrown and again three seconds after it was thrown. By now of course our reader will be able to substitute the physical meaning himself; and "what goes up must come down" is all the experimental science he needs to interpret this new answer.

Perhaps our example is marred because its answers can be determined beforehand and without the use of $A \cdot B = 0$. But that does not invalidate the main idea. An example not subject to this limitation could easily be found in science, but it might presume even more background than the one given.

Other illustrations are studied in the course according to the abilities of the teacher and the students. And by making use of a variety of incidents which challenge the thought, one comes to see from many points of view the truth in the statement

"Thus, an idea of the imagination is an idea insinuated through the gates of the senses; while an idea of thought is one that is formed from the ideas of the imagination, which are like the numbers in a calculus, by a force proper to the mind itself."

We could go on and expand further on *Rational Psychology* no. 142 if space permitted.

The equation $s = vt + \frac{1}{2}at^2$ is an idea of the imagination insinuated through the gates of the senses for us, although for Galileo it arose through thought. To have arrived at the result $(t - 1)(t - 3) = 0$ requires the application of an art, which comes about from imagination and practice. But the rest, wherein we say that $t = 1$, and that $t = 3$ and what these conclusions mean, all this when seen for the first time arises in the thought.

The emphasis of our illustrative material is upon what is peculiar to the thought itself as abstracted from sensation and as distinct from the pure intellect. It is even distinguished from the imagination, for as it is said with respect to the imagination:

" . . . it is clear what the difference is between thought and imagination; to wit, that ideas of thought are acquired by the mind itself, while ideas of the imagination are acquired solely by the external senses" (*Rat. Psych.* 143).

And with respect to the pure intellect it says :

" . . . that the pure intellect does not flow into the sphere of thoughts, that is, with the changes of state . . ." (*ibid.*, 153).

While these distinctions are made between the thought and imagination from without and the thought and the pure intellect from within, nevertheless their interdependence is also clearly evident.

" . . . thought can be so perfected and exalted as to approach nearer to the pure intellect, while imagination is perfected only by the experience of the senses—both its own experience and that of others. All things whatsoever that are the symbols of the memory, whether through one's own senses or through teachers, or through writings or through pictures, are then ideas of the imagination, for they belong merely to the memory acquired by means of the senses. But they are so many parts and instrumental causes, the use of which the rational mind can enjoy, for the forming therefrom of its own intellectual ideas and analysis. From this it follows that we are able to understand, not that we do understand, just so far as we hold things in the memory, the potency of understanding being latent in the memory. But no action follows from potency alone; consequently, there must be an accession of something else if we are to understand, and of much more if we are to be wise" (*ibid.*, 143).

As was said before, our illustrations are drawn from classical cases in logic, mathematics, philosophy and science. It is not for the purpose of training the mind in these fields that these examples are chosen. That can be better done in courses directed to that end in those fields. But the purpose of their use is to emphasize the part thought served in their development. By choosing examples from different fields the variety of applications of thought itself can be seen.

It is an interesting commentary that because of the intimate demands and the personal responsibility that is placed upon the student himself in the study of these various illustrations, and because of the very fact that *his* thought is isolated from the thought of others, as indicated above, this illustrative material is not generally popular. Also, whenever such material occurs in a formal course of study, it brings upon that course of study the descriptive title of "being hard" or "difficult" somewhat in direct proportion to the demands upon this thought of the individual himself. There is nothing distinctly New Church in this ob-

ervation. There is something of a similar condition in music and art and literature. It would be as if one demanded of all who pretended an interest in these that they themselves be musicians, or artists or writers. The audience, to put it mildly, would diminish in size. These subjects do have something which appeals to the popular mind, because they have rhythm, or rhyme or some form that can be sensed. Nevertheless, the artist in any of these fields knows full well that, however necessary the sensual manifestation of his ideas in these external forms are to preserve popularity—which is another way of saying that many people are willing, and gain delight in trying to think with him—yet there is much in his art that the popular mind will never come to understand. Only those who enter into the thought about these things can approach this understanding.

Now in the case of the illustrations drawn from logic, mathematics, philosophy, etc., the situation is somewhat different. This is because the development of these illustrations was in the thought itself, and this was without any idea that the popular mind would ever be entertained. This is not intellectual snobbishness. It is rather attention to one's task, which is directed to thought alone and not to the stage. Beautiful results in these things cannot pass over to the popular mind unless the popular mind will itself enter into the business of thinking. And this, of course, has its obstacles. Unfortunately, even when these thoughts are applied to something practical, for example when mathematics is applied to the field of science, the popular mind is further at a disadvantage because it must also advance through this field to the front lines of intellectual activity in that field. All this is too much for most people.

And so we read in what was just quoted (*Rat. Psych.* 143), "no action follows from potency alone." That is, nothing results from the pure intellect and a memory crammed full of knowledges only. Swedenborg says: "There must be an accession of something else if we are to understand." It is the study of this "something else" which is the subject of our course of study. And what this "something else" is can be illustrated by the classical examples referred to. Everybody, teacher and student alike, can be given some idea of what is involved from these illustrations. We refer, of course, to the geometry of Euclid, Aristotelian logic, Descartes' epistemology, Spinoza's ethics, etc. And full advantage can be

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

(*To be Concluded*)

THE HUMAN MIND

A STUDY BY HUGO L.J. ODHNER

IV. THE FORMATION OF THE MEMORY

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

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

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

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