

# THE NEW PHILOSOPHY

VOL. LIX

APRIL, 1956

No. 2

## AN INTRODUCTORY COURSE IN PHILOSOPHY

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### OUTLINE OF SECTION C: THE NATURE OF THE UNIVERSE

1. The Infinite
2. The First Natural Point
3. Swedenborgian and Modern Cosmology
4. Modern Cosmology

1. *The Infinite*. In order to explain the creation and maintenance of the universe, Swedenborg developed, in his *Principia*, an elaborate cosmological system involving a series of "finites" and "atmospheres" produced successively from the Infinite by means of motion. In this work it was clearly Swedenborg's hope to lead men to acknowledge God, for there he says, "veneration for the Infinite Being can never be separated from philosophy"; and, "he who thinks he can possess any wisdom without a knowledge of the Deity has not even a particle of wisdom."

Apparently this object needed further emphasis, for in 1734, a year after the publication of the *Principia*, Swedenborg brought out *The Infinite and Final Cause of Creation*, in which he argues in favor of the Infinite or God, noting in the preface to the work that ". . . truly rational philosophy can never be contrary to revelation"; and, further, that "the end of reason can be no other than that man may perceive what things are revealed, and what are created; thus the rational cannot be contrary to the Divine; since the end why reason is given us is that we may be empowered to perceive that there is a God, and to know that He is to be worshipped."

\* Continued from the January issue.

Swedenborg was arguing to defend Christian dualism against materialistic concepts carried over from the Greeks into his day. Although, in one sense, Swedenborg was a dualist, recognizing the reality of both mind and matter, from other viewpoints he can be classed as a monist, believing God to be the only Infinite Essence; or as a trinalist, seeing three discrete realities in God, spirit and matter.

In any case, the essential point which concerned Swedenborg in developing his theory of creation was to show that matter and the universe did not arise through a purposeless, cosmic accident, but rather from the finiting of God's infinity, the only true "ultimate reality."

The work *The Infinite and Final Cause of Creation* argues in favor of the Infinite essentially as follows: If the existence be assumed of a first, primitive entity or "simple" or "first natural point," this primitive entity could not exist from itself nor by accident. It must have a cause and, behind that, a purpose. The Infinite is the final cause of the primitive entity. The primitive entity, as a secondary cause, gave rise to all of nature. Thus, in brief: creation implies a Creator; the finite implies the Infinite; the limited implies the unlimited.

Further, we are led to admiration of the Infinite as cause by the following reasoning: The whole world (universe) originated from the least and primary entity. The quality of producing all things lay in the least primitive as in a seed. "When we say that in this least lies the cause of the whole, we are struck with admiration of the cause." The deeper we probe into nature, the more we admire her primitives, in which lie the causes of her various creations. Thus, "the greater worshipers of nature we are, the greater worshipers of the Deity may we become."

Incidental to this argument is a discussion by Swedenborg concerning causes and accident. "If [the first natural entity] did exist from itself," he says, "it could not do this by accident; because . . . where no cause is present, neither is any casualty or accident. Casualty itself demands not a simple or single but a multiple causation."

This cannot be properly understood without reference to Aristotle's classification of causes—which Swedenborg evidently took for granted as common knowledge among scholars of his day: viz.,

material, formal, efficient and final causes; and in particular also Aquinas' principal vs. instrumental and essential vs. accidental or coincidental causes.

Thus, Aristotle distinguished between what happens by *nature* and what happens by *chance*, the former being naturally occurring events which take place through causal necessity from essential causes which are in the very nature of the moving things; contrariwise, what happens by chance, i.e., contingently, being due to an accidental (or incidental) cause (opposed to essential), which produces an effect, not by itself, but only through conjunction with other causes. The effect in this latter case is contingent upon the combined activity of several incidental causes working coincidentally.

READING REFERENCE: Swedenborg, *The Infinite and Final Cause of Creation*: Preface; Chapters III, IV.

2. *The First Natural Point*. Beginning the second chapter of his *Principia*, Swedenborg reiterates the primary assumption of his philosophical system thus:

"No rational and intelligent philosopher can deny that the first *ens* was produced from the Infinite, as well as the rest in succession, or all the parts of which the world (universe) is composed." He argues further that the finite came forth from the Infinite, not directly, but by way of an intermediate, the first natural point: "Nothing can be at once such as it is capable of becoming, except the Infinite. . . . Thus does rational philosophy acknowledge some first *ens* produced from the Infinite, and some simple as the origin of entities not simple. This first *ens*, or this simple, we here call the Natural Point" (*Princ.* II, 1).

Swedenborg visualized the natural point as a kind of medium between the Infinite and the finite, produced immediately from the Infinite by means of motion: "a simple *ens*" which is compounded and finited only to the extent of having one termination or limit. "Nothing can exist," he says, "without motion. . . . It follows, therefore, that this first simple *ens* or point was produced by motion; and since everything is derived from the Infinite, it follows also that this natural point . . . was produced by motion from the Infinite."

The first natural point, as the origin of the universe, is said in

the *Principia* to be the same as the "mathematical point" from which geometry originates, "since . . . both geometry and the world are derived from the same origin." However, it is emphasized that the natural point is "pure and total motion" in the universal Infinite; "a motion which cannot be conceived of according to any laws of geometry," but can be comprehended only by analogy, and even then only vaguely and abstractly. Thus, the first natural point can be rationally acknowledged to consist of an internal state or effort (*conatus*) to motion, these being one and the same thing in the "simple," although distinct in geometrical things, one being the cause of the other. Further, this point has no extension, has no parts, and is indivisible. It cannot be thought of as filling space or as having figure, except by way of analogy with things geometrical: that is, as Swedenborg puts it, unless space and figure be "simply understood."

The concept of the first natural point developed progressively in Swedenborg's mind and he gradually abandoned the idea of a "mathematical point," emphasizing more the idea of *conatus* or internal effort. In later philosophical works, notably the *Economy of the Animal Kingdom*, his doctrine of forms was perfected, according to which finition resulted from spiritual forces inflowing from within as *conatus* to motion. Finally, in the theological works, a *conatus* to motion was seen as creative of matter, and a living *conatus*—such as the soul's formative forces—as that which forms, flows into and vivifies living organisms.

Speculating upon the relation between God and nature, theologians have recognized three possible theories of creation: creation from within God; creation from something outside of God; and creation from nothing. Catholicism takes the last position, accepting creation from nothing in spite of its inherent unreasonableness. Most other Christian philosophers have rejected this concept, and also the second-named, which postulates an eternal substance outside of God. They have thus come up against another dilemma: if all things have come from God, how may we escape the conclusion that they are continuous with Him?

Because of his teaching that creation came from God, Swedenborg has been called a pantheist. If this means that God *is* the created universe, the accusation is incorrect, for Swedenborg's philosophical and theological writings repeatedly and consistently teach that, although creation came *from* God, and He is immediately

present in it, nevertheless nothing of creation *is* God, because it is not continuous with Him.

Swedenborg showed that the break between God and creation occurred at the first creative impulse, where God finited His Infinity by separating from Himself finite entities which are discontinuous with Him. By this finition, these entities were deprived of infinite life and became relatively "dead" vessels capable of being vivified only by influx of life from God. Bishop N. D. Pendleton says: "As to origin of substances, they were one with God; but as finite vessels they were utterly discontinuous. Thus, the difference between them and the Divine is not one of substance, but of form and finition." Indeed, further down the scale, Swedenborg's doctrine of forms teaches that "the difference between so-called substances, as we know them, has reference to the form and structure of their least component units."

Significantly, what physics discloses in our day concerning the structure of matter leads to the same sort of conclusion. Thus, Schrödinger says: ". . . in palpable bodies, composed of many atoms, individuality arises out of . . . shape or form, or organization. The identity of the *material*, if there is any, plays a subordinate role" (*Science and Humanism*, Cambridge University Press, 1951, p. 20).

In the last analysis, or, perhaps the first, the mind of finite man cannot comprehend the Infinite, or the manner in which the Infinite finited itself, except to a limited extent by way of analogy. Swedenborg recognized this, and in struggling to expound the attributes of the first natural point by comparison with things geometrical, he wishes at one stage early in the *Principia* "that some other person, capable of the task, would favor us with a better or more just view of the subject. For my own part," he says, "I could willingly give up the further consideration of this first *ens*, to which something of Infinity adheres, and proceed to the finites treated of in the following sections, from which the point will be more clearly elucidated" (*Principia*, I, Chap. II, no. 19). Even so, Swedenborg believed it important to carry reason to the limits of human capacity. Thus he demonstrated that the Infinite is life and purely continuous, the only reality; which produced out of itself discontinuous, finite entities deprived of life and capable only of responding to influx of life, received according

to the form of the receiving vessel. He showed that the remoteness of finite creation from the Infinite Creator, and thus the very existence of the natural universe from instant to instant, is maintained by the conatus perpetually present within the first natural point. This conatus produces continually the successively grosser series of discrete finites, the ultimate effort of which is to form substances organized into vessels receptive of inflowing life.

That this process of finition "unties the Gordian Knot" of philosophy by avoiding pantheism on the one hand, or creation from nothing on the other, is the unique triumph of Swedenborg's philosophy of creation.

READING REFERENCES: Swedenborg, *Principia*, Chap. II, nos. 4-20, concerning the first natural point; *True Christian Religion*, no. 472; *Divine Providence*, no. 6; *Divine Love and Wisdom*, nos. 283, 82; concerning creation; H. L. Odhner, *NEW PHILOSOPHY*, April, 1947, pp. 63-4, concerning Swedenborg's changing concept of first natural point; N. D. Pendleton, *NEW CHURCH LIFE*, 1922, pp. 417-23, concerning the "Gordian Knot" of philosophy.

3. *Swedenborg's Cosmology.* Having postulated the first step in creation as the production of first natural points by pure and total motion in the Infinite, Swedenborg proceeded to theorize concerning the manner in which the universe might subsequently have come forth therefrom. From the conatus or effort to finition inherent in the points, he visualized the successive production of a series of five "finites" and four "elementaries" or "auras" terminating in the chemical substances which make up the matter of planets and their atmospheres, the stars, and other less well-defined aggregations of matter existing throughout the entire universe. This theory is complicated in details, but its general concepts are quite simple. It involves three types of "particles": "finites," "actives" and "elementaries." An "active" is simply a finite which is free to move in response to its inherent conatus. When such motion is prevented or restricted, as by compression, the finite is said to be "passive." An "elementary" is a complex particle formed by an envelope of passive finites enclosing a center of discretely higher "actives."

The first step in the *Principia* scheme is the spontaneous aggregation of first natural points into first finite particles. These, by

virtue of the conatus of their component points, subsequently and in a similar manner aggregate together and compound themselves into grosser second finite particles.

Thus comes into being a limitless expanse of these two finites in intense activity. From the conatus to motion inherent within each particle, myriads of these first and second actives group themselves together into an indefinite number of tremendous "solar spaces." Around the outer limits of these solar spaces are progressively formed particles of the first element or universal aura (atmosphere), each consisting of active volumes of first finites enclosed by passive second finites. This universal aura or atmosphere, in Swedenborg's system, extends throughout all space, connecting the entire universe.

A vast, circulating vortex of first aura thus forms around each solar space, enclosing a center filled with intensely active first and second actives. This center is the forerunner of a natural sun, or star. At the surface of each sun, first elementary particles are collapsed by compression, their active centers of first finites being released and absorbed into the sun, and their residual second finite shells aggregating to form third finites. Particles of second element or magnetic aura are then formed at the surface of the sun by enclosing active centers of first and second actives within passive shells of third finites. The magnetic aura forms a wide local vortex about each sun.

And so, progressively through a similar series of compoundings and compressions, there is finally formed at the surface of the primitive sun a "crust" of fourth finites which is flung off by the rotating sun in fragments to form planets. A third element, the ether, develops around planets; at their surfaces are formed fifth finites, and at last the chemical substances of the planets and their local atmospheres.

Thus, in a hasty, overall view of Swedenborg's scheme, it is seen that the finiting of passive matter is accomplished at each stage by means of motion from within. Matter as we know it is thus a passive manifestation of energy or activity, whether in the vast galaxies and nebulae of the universe; in our sun and planetary system; in the atoms composing natural substances; or in the subatomic "finites" postulated by Swedenborg as originating in the pure and total motion of the first natural points; and this from the Infinite itself.

Probably the chief impetus leading Swedenborg's mind to the concept of finites formed through spiral motion was the phenomenon of magnetism, with which a great part of his *Principia* is concerned. He saw in the pattern and behavior of the magnetic field a prototype for his finites, for the solar system, and for the Milky Way, our galaxy; which, incidentally, Swedenborg believed to be a vast rotating vortex of myriads of stars, thus anticipating similar modern theories by 200 years. In this connection, it should also be noted that Swedenborg's theory of the formation of planets from the sun anticipated the so-called "nebular hypotheses" of Kant and, later, Laplace, to whom prior credit has often been mistakenly given.

READING REFERENCES: Swedenborg, *Summary of Principia*, Chapt. III, concerning first finite; Pendleton, W. F., "The Principia Doctrine of Creation," *NEW PHILOSOPHY*, April, 1948, pp. 185-91 (originally published in 1916); Odhner, H. L., diagram of *Principia* cosmogony in Sigstedt's *Swedenborg Epic*, Bookman, N. Y., 1952, p. 490; Swedenborg's own summary of the *Principia* cosmology in the appendix or conclusion to Vol. II of the work; Acton, A., "Summary of Principia Doctrine of Creation," *NEW PHILOSOPHY*, pp. 253-4, April, 1919; Tansley, I., "Swedenborg as Cosmologist," *Transactions International Swedenborg Congress*, 1910, Swedenborg Society, London, 1912, pp. 70-85.

4. *Modern Cosmology.* Most accounts of the development of cosmological theory begin the "modern" or scientific period with reference to two basically different hypotheses concerning the origin of our sun and planetary system. The "nebular hypothesis" of Swedenborg (1733), Kant (1755) and Laplace (1794) assumed the planets to have arisen out of fragments thrown off from the primitive sun or left behind as it cooled and contracted. The "tidal theory" of Buffon (1749), on the other hand, considered the planets to have formed out of fragments resulting from the chance collision of a great "comet" with our primitive sun. Right up to the present time, these two theories have competed for favor, and, with some modifications, are still in vogue among rival cosmologists; a refinement of the nebular hypothesis perhaps being at present more popular.

Until the beginning of this century, cosmology was concerned

mostly with the origin and evolution of our solar system, because so little was known about the universe beyond. In recent decades, however, with the aid of marvellous instruments, man has pushed back the limits of the visible universe to show our sun as merely one among hundreds of billions of stars composing the Milky Way, a vast, lens-shaped spiral galaxy 100,000 light years in diameter; and the Milky Way, in turn, as merely one among trillions of galaxies—"island universes"—isolated in space millions of light years apart, the most distant of which show up on telescopic photographs as tiny blurs whose light started toward us more than a billion years ago! There is some evidence also for the existence of gigantic "supergalaxies," flattened spirals millions of light years in diameter, each containing tens of thousands of galaxies.

Thus, the known universe contains so many billions of billions of stars or suns as to be entirely beyond human comprehension. And yet there is no overcrowding, and no collisions; for the stars are separated by spaces so vast that the chance of two suns ever colliding is negligibly small—once in 500 trillion years!

Perhaps even more fantastic than the number of stars and the endless distances separating them are some of the unexpected characteristics of the universe which modern researches have disclosed. Most fundamental and startling are the cosmological implications of Einstein's relativity theories, published early in this century; concepts involving "curved" space, interdependence of mass and energy, space, time and gravitation; the idea that nothing in the universe can travel faster than the speed of light. No less dramatic was the discovery by Hubble in 1930 that spectrographs of stars are "redder" the greater their distance from us. This has led many cosmologists to assume that the entire universe is expanding at velocities which increase with distance; although the possibility is being considered that light may somehow grow "tired" in travelling for millions of years through "dusty" space, and that the "red shift" may not result from expansion.

Typical of the many cosmological theories advanced in our day by able exponents, two are perhaps most outstanding: on the one hand, the hypothesis of the exploding universe (Le Maitre; Gamow), according to which the universe exploded in an instant

from a single point some six billion years ago and has been expanding ever since; and, on the other hand, the continuous creation theory (Hoyle; Bondi; Gold; Lyttleton), according to which hydrogen is being steadily created (out of nothing!) in space at a rate just equal to that at which distant galaxies, having finally attained the velocity of light, disappear forever from view over the "edge" of the universe.

Although modern physical theories are sophisticated and in many aspects far beyond the reach of "common sense," there is a great deal of solid experimental evidence to support them. Not only is this true on the scale of astronomy, but also in the realm of atomic structure. What is remarkable, and convincing, is that the same basic laws seem to explain both the very large and the very small—the universe and the atom.

And what is more remarkable, there is an increasing degree of similarity between modern physical theory and many concepts first outlined over 200 years ago in Swedenborg's *Principia*. This is true as well for cosmology as for atomic theory. Thus in 1734, far ahead of his contemporaries, and even of some cosmologists of our own century, Swedenborg correctly recognized the nature of the Milky Way: "The common (circular) axis of the sphere or starry heaven seems to be the galaxy, where we perceive the greatest number of stars. . . . There may be innumerable spheres of this kind of starry heavens in the finite universe . . . without number, similar to those we behold; so many indeed and so mighty, perhaps, that our own may be respectively only a point; for all the heavens, however many, however vast, yet being but finite . . . do not amount even to a point in comparison with the infinite" (Parts of the *Principia*, Part III, Chapter 1, nos. 5, 6, 8, 11). This could almost be a modern description.

And on the small end of the universe there is equally close agreement between Swedenborg's *Principia* concepts and modern atomic theory. A dramatic illustration of this is the striking resemblance between Swedenborg's sketch in the *Principia* of a typical "finite" and a photograph of a dynamic model of the oxygen atom (in motion), marketed commercially in 1953 by a California laboratory supply house for demonstration to chemistry and physics classes.

Swedenborg would probably not be greatly surprised at this agreement, for he would certainly see in it a vindication of his *Principia* doctrine that nature is similar in greatest and in least.

He would doubtless also see in modern atomic theory an illustration of his concept of finition by means of motion or conatus from within; and, further, that creation is perpetual sustentation.

READING REFERENCES: "The Universe," *Life*, 12-20-54, pp. 44-70.

(To be concluded)

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[EDITORIAL NOTE: As the concluding installment of this article will not appear until October, the Index to the course is published here to give our readers a comprehensive view.]