

**COMPARATIVE EPISTEMOLOGY****Introduction**

At the beginning of this treatise epistemology is presented as the investigation of the origin and nature of knowledge, out of which a theory of knowledge may be developed. Following the statement of certain "basic axioms and first principles" it was stated that "Knowing implies a knower and an object about which something is known. Accepting this, certain questions inevitably arise, and it is the answers to these that will constitute our epistemology." The questions are: "Who is the knower?" "What is man as a knower?" "What are the objects of man's knowledge?" "What are the mental processes involved in knowing? And how do we arrive at knowledge?" and "In what respects, if at all, do the various classes of knowledge differ from one another?"

These questions define the nature and scope of epistemology for the purposes of this discourse. But in order to gain a perspective on it, it is necessary to see it in relation to at least some aspects of other epistemological systems. In the chronological sketch that follows, I have chosen some leading figures in the history of philosophy: Plato, Aristotle, St. Augustine, and Thomas Aquinas; and from the fifteenth through eighteenth centuries (the period par excellence of epistemological enquiry), some thoughts of Descartes, Locke, Berkeley, Hume, and Kant.<sup>1</sup>

**GREEK THOUGHT****Plato (c.427-347 BC)**

At the core of Plato's epistemology is the theory of forms, that everything in the sensible world is but an imperfect image of the timeless, immutable forms that have transcendental existence beyond the realm of sense impressions. The ideas of straightness, heaviness and levity, hardness and softness, honesty, beauty, justice and so on, are things that have existence apart from our experience of them. But without them, we could make no sense of the reality experienced through the senses, for they constitute the prior world of causation, and give meaning to sensation.

The doctrine of anamnesis or recollection involves the notion that if one is able to arrive at, say, a geometric proof through a series of questions in the Socratic style, then the truth elicited by the series of questions must already have existed with the person. All the questioning did was to bring about the recollection of what was already there. And if it did so exist, then it must have been implanted in a previous existence. Clearly a problem of infinite regress is involved here, for how was the truth implanted in the first place?<sup>2</sup>

For Plato, the world of sense was an illusion, represented by the famous analogy of the cave, in which prisoners, chained in a cave, able to look in one direction only so that all they can see are the dancing shadows of images of artificial objects of men and animals in wood or stone, cast by a fire that is deeper in the cave. For them, the shadows are the only reality, just as for us sense impressions are but shadows of an unknowable reality. And if one of the prisoners were to be led to the world outside the cave, lit by the sun (of which the fire in the cave is but a poor imitation) and were at last to realize what true reality is like, then were to return to the cave and his fellow prisoners, would they not ridicule him?

A paragraph from the myth itself<sup>3</sup> is of particular interest in regard to the origin of truth.

... The prison dwelling corresponds to the region revealed to us through the sense of sight, and the fire-light within it to the power of the Sun. The ascent to the things in the upper world you may take as standing for the upward journey of the soul into the region of the intelligible . . . . In the world of knowledge, the last thing to be perceived and only with great difficulty is the essential Form of Goodness. Once it is perceived, the conclusion must follow that, for all things, this is the cause of whatever is right and good; in the visible world it gives birth to light and to the lord of light, while it is itself sovereign in the intelligible world and the parent of intelligence and truth. Without having had a vision of this Form no one can act with wisdom, either in his own life or in matters of state.

Several things are of interest here. That the "Form of Goodness" is the "cause of whatever is right and good," resembles the idea of the Divine Love (or Good) as the Divine Esse, which proceeds by means of the Divine Existere, and is the Final Cause of creation—the doctrine expounded in Swedenborg's *Divine Love and Wisdom* and in other works; the "region of the intelligible," the world in which the

essential Form of Goodness is sovereign, is reminiscent of the spiritual world; and that this essential Form of Goodness is "the parent of intelligence and truth" reminds us of the birth of the first rational from the Divine Good, represented by Abram. These observations are not made with the intention of implying that what is offered in the Writings is an elaboration of Platonic thought. However, since truth is eternal, and since the wisdom of the men of the Most Ancient Church was preserved in ancient writings as represented by the creation story of Genesis, for example, and since the Greeks had access to this wisdom through Alexandria and other centers of learning in the Middle East, it is not surprising to find resemblances between the ideas in the new Revelation and those of earlier times.<sup>4</sup> Returning to Plato, for him, the ideal of knowledge was "a kind of apprehension of a system of Forms."<sup>5</sup> These forms are the transcendental images referred to above. And while there may appear some resemblance between the Platonic idea of form and the Swedenborgian idea of the existence of spiritual realities that find their embodiment in material existence in a cause and effect relationship, this notion of form is not to be confused with Swedenborg's doctrine of forms as expounded in *The Fibre*, a doctrine that is not relevant to the present considerations.

### **Aristotle** (384-322 BC)

Central to Aristotle's theory of knowledge is his concept of causation, and his logic. As to the former, because his philosophy is suffused with the idea that everything exists for a purpose, then in living things and men, changes occur in sequences always looking to the "end" or purpose. This purpose is the "final cause" of a thing; but the realization of it requires the presence of the "material cause" (the material of which anything is made; wood, steel, protein and the like), the "formal cause" (the sculptor's idea of the form he is creating; the engineer's concept of the cantilever bridge he is building), and the "efficient cause" (the sculptor or engineer who is executing the project). To "know" meant, therefore, to have knowledge of the four causative factors which brought the object into being.

As to man himself, he consists of several faculties expressive of different levels of his "psyche": the nutritive, sentient, and thinking faculties related to the "nutritive," "sensitive" and "rational" souls, answering to bodily nourishment, sensation, and thought. It is in regard to the last of these that we are mostly concerned, for the

rational faculty involves first, intuitive truths which form the basis or starting point for the second, logic—at the heart of which is the syllogism, in which a conclusion follows two premises. For example, "No mortals are angels; all men are mortal; therefore no men are angels."<sup>6</sup> Each premise can be the conclusion of another syllogism, and thereby the verisimilitude of knowledge can be established. But to get the whole thing started, there must be intuitive truths derived from intuitive reason, otherwise we have a problem of infinite regress. These "self evident" truths, illustrated by the axioms of, say, Euclidean geometry, are present in any science and serve as the basis for the development of that science. Aristotle's logic (historically the first formal logic) does not, however, apply to all reasoning, as he thought it did. Its importance to our survey is that it represents Aristotle's attempt to establish a means whereby true and false thinking could be distinguished.

In conclusion, we quote W. T. Jones to point up the differences between Plato and Aristotle in reference to knowledge.

Plato and Aristotle agreed that knowledge of the isolated particular is not knowledge at all. They agreed that complete knowledge is impossible. Yet there was a radical difference between them. The knowledge Plato thirsted for is abstract, general, static—knowledge from which all particularity has been purged. For Aristotle complete knowledge would have been the same *sort* of knowledge we now have, that is, knowledge of the multiple interrelatedness of particulars ... (*op. cit.* pp. 226-227).

## MEDIEVAL THOUGHT

### **Augustine** (354-430)

Augustine's contribution to the theory of knowledge, like that of others, developed in response to the challenge of Greek skepticism. He, like others before and after him, sought a basis for certainty in knowledge.

Though born in North Africa and receiving his early education there, he went to Rome to further his studies. Converted to Christianity in 386 when in Milan, he returned to Africa. His great abilities caught the attention of the church, and he became Bishop of Hippo (Algeria) and established himself, among other things, as the first great Christian philosopher.

Of interest to us are some aspects of his theory of knowledge. For him there were two worlds, the sensible one and the "intelligible" one where truth itself dwells. The mind can sense the outer world through the material body, while the inner illumination from the intellectual world the mind perceives through itself.

Man was defined as "a rational soul using a mortal and material body,"<sup>7</sup> and while the soul can act on the body, the body cannot act on the soul; thus sense perception was a function of the soul; the soul and body were in a user and tool relationship. Indeed, "spiritual sight" as a mental process accompanies corporeal sight, and the latter cannot in fact operate as such without the accompanying, spiritual process. Swedenborg's insistence that the bodily eye does not see, but the mind through the medium of the physical organ bears strong resemblance to the Augustinian view.

As to reason, Augustine's dualism included the idea that the mind has knowledge independent of sense experience. An inner illumination gave man an inner sight; and just as objects of external sight had independent existence apart from the beholder, likewise basic truths are existent, public, entities. These entities had the hallmarks of certain truth such as universality, necessity, and immutability. While knowledge of sense did not have these characteristics, there were, nonetheless, truths of mathematics and logic that applied to the material world which did have them. These, like moral truth, however, were obtained through inner illumination, not from sense perception.

Augustine departed from Plato in respect to the doctrine of recollection—remembrance of things from a pre-mundane existence. This he could not reconcile with his Christianity. But the mind had latent potentialities for discovery because of the presence of the Divine light, leading to what appeared as inborn or innate knowledge. And because of the constant immediate presence of God in the mind, the power to see truth was always present; although man could turn his back on the light, disregarding it—and herein lay man's freedom.

Augustine's philosophy included also one feature of great importance to the development of modern science in W. T. Jones' view. For Augustine, miracles were not oddities, but only appeared so to men. All things were miraculous in the sense of being God-ordained; but this ordination was not one in which a capricious God did what He liked, but consisted of regularity. Of this, W.T. Jones said:

The perpetuation of this Augustinian belief through the Middle Ages made possible the scientific achievement that came when men's minds finally turned from the other world to this one. Without this deep conviction—this faith that all oddities are only apparent—modern science could never have taken even its first step.<sup>8</sup>

We noted above the resemblance between the Swedenborgian concept of vision and that of Augustine; and other resemblances must also be apparent: the dualism of the mind and body and of the material and intellectual worlds; the influence of the soul on the body, but not the reverse; the presence of a constant, immediate presence of God with men, whether he acknowledges it or not; the concept of freedom. These concurrences of philosophic position in very general terms are evident enough. The differences are not so much of general philosophic stance, but in the fact that in the Writings there is an elaboration of detail made possible through Swedenborg's conscious experience of the spiritual world. And we reiterate that truth is eternal, and has no geographic or historic limits, even though the form it has taken in revelation represents a progression, in general outline, from being in a very heavily veiled state in the Old Testament, to one not so veiled in the New, and brought to the intellectual sight in the Writings.

### **Thomas (12257-1274)**

The importance of the role played by Saint Thomas Aquinas in the history of western civilization cannot be overestimated. He established for the ruling power of the day, the church, a worldview that embraced all matters of faith (the province of theology), of philosophy (the province of reason), and of corporeal existence in the material world of sensation; and for this last, Thomas accepted the Aristotelian view of the world as that to which the church could subscribe.

For him, the means to establishing knowledge (the "truth") were twofold. First, the Scriptures were the main source of the truths of faith which provided the first principles from which men could

go on to prove other truths by rational argument. The fact that these first principles cannot be proved is not a valid objection to their use as a starting point, for no science proves its first principles. Here, of course, Thomas was following

Aristotle's contention that each science is simply the logical demonstration of the conclusions that follow from first principles that *that* science accepts as its starting point.<sup>9</sup>

Second, then, as a means to establishing the truth was the use of reason, whereby truths of faith from the Scriptures could be proved or demonstrated. Thus while things of theology belonged to faith and required acceptance without proof, philosophy devoted itself to the proof and demonstration of things of faith that were susceptible to its enquiry; an enquiry which nonetheless began with the first principles of faith.

This is illustrated by the method of exposition Thomas employed in his work, as in *Summa Theologica*, in which he expounded his theological doctrine. Thomas begins by posing a general question or topic, then raises specific questions related to it, with arguments from other sources, then proceeds to "Objections" and responses introduced with "On the contrary," finally arriving at his position, all the while using Scriptural sources in his arguments. He employs no formal logic, but relies on reasoned argument alone; and this to him is philosophy.

On the question of universals (the Platonic "ideas" that exist prior to and apart from particular things, and the Aristotelian "form" that is present within particulars) Thomas stood apart from Augustine in that for him universals were not transcendental entities having existence apart from material objects. However, species of things do exist, the particulars of that species having some universal form in common—a form that resides in the particular itself.

The way men acquired knowledge of this form involved the operation of the soul; initially, sense impressions of material objects produced "*phantasmata*" (sense images) corresponding to objects sensed—the production of which being made possible by the soul "actualizing" its potentiality. But the mind cannot consciously be aware of these lower sense images; the "active intellect" must illuminate these so that the universal becomes apparent as a concept. Thus cars, trees, people and so on, as universals, constitute concepts that give meaning to experience; and a particular experience has no meaning unless it can be placed by us in the context of the species of which it is a particular case.<sup>10</sup>

D. W. Hamlyn" says of this:

Concepts thus exist only as the result of an abstraction of the universal aspects of things, and the essence of Thomas' empiri-

cism is that all knowledge depends on sense experience— Even knowledge of self-evident truths, which Aquinas admits, as well as knowledge of the essential nature of things, is in the last resort dependent on the sense experience, and all our thoughts must be based on experience. Aquinas can be looked upon as the founder of empiricism in the sense that he held that all materials for knowledge come ultimately from experience and nowhere else.

This dependence on sense experience as a basis for all thought is in harmony with what the Writings have to offer as shown above, and finds fullest expression in the need for men in the material plane of existence to provide sense experience as a basis for the existence of the spiritual world itself.

### **Francis Bacon** (1561-1626)

To Francis Bacon is commonly attributed the role of enunciating the method of modern science, of freeing man from the fruitless exploits of a those who attempted to manipulate nature on the premises of ancient pseudo-science (such as the alchemists), and of ridding natural philosophy of the ways of medieval scholastics whose metaphysics produced nothing of utility for the betterment of mankind. Whilst he had a strong and acknowledged influence in the development of experimental method in the acquisition of knowledge about the world, he remained in many respects a man of the medieval world, and advocated a method that is impossible in execution. The "great instauration" was his description of the scheme he proposed for the reconstruction of knowledge that would come about by the application of his method. Early in *Novum Organum* he contrasts his new method with what he thought was contemporary practice. So we read of the two ways of "investigating and discovering truths— There are and can exist but two ways of investigating and discovering truth. The one hurries rapidly on from the senses and particulars to the most general axioms, and from them, as principles and their supposed indisputable truth, derives and discovers the intermediate axioms. This is the way now in use. The other constructs its axioms from the senses and particulars, by ascending continually and gradually, till it finally arrives at the most general axioms, which is the true but unattempted way.<sup>12</sup>

Bacon wrote this ignorant of the fact that his own doctor William Harvey had made very significant discoveries in regard to circulation of the blood, and his contemporary Gilbert, on the basis of his studies of loadstone (magnetic iron oxide), had shown that the earth behaved as a giant magnet, with its poles close to the geographic poles. Be that as it may, we continue with extracts from his work.

In the same work, and shortly after the above statement, Bacon goes on to draw a distinction between what he calls "anticipations" of natural things based on established dogma, and "interpretations" obtainable by his new method.

We are wont... to call that human reasoning which we apply to nature the anticipation of nature (as being rash and premature), and that which is properly deduced from things the interpretation of nature.

Anticipations are sufficiently powerful in producing unanimity, for if all men were to become uniformly mad, they might agree tolerably well with each other.

Anticipations, again, will be assented to much more rapidly than interpretations, because being deduced from a few instances, and these principally of familiar occurrences, they immediately hit the understanding and satisfy the imagination; whilst on the contrary interpretations, being deduced from various subjects, and these widely dispersed, cannot suddenly strike the understanding, so that in common estimation they must appear difficult and discordant, and almost like mysteries of faith.

In sciences founded on opinions and dogmas, it is right to make use of anticipations and logic if you wish to force assent rather than things.

If all the capacities of all ages should unite and combine and transmit their labors, no great progress will be made in learning by anticipations, because the radical errors, and those which occur in the first process of the mind, are not cured by the excellence of subsequent means and remedies.

It is vain to expect any great progress in the sciences by the superinducing or engrafting new matters upon old. An instauration must be made from the very foundations, if we do not wish to revolve forever in a circle, making only some slight and contemptible progress.<sup>13</sup>

It is clear from these passages that Bacon wanted to do away with the old method based on Aristotelianism, and establish an "instauration" whereby progress could be made. The work goes on to describe the means whereby the hindrances of the old ways of thought could be put aside.

The method he proposed involved first, the removal of false notions which he called "idols." These had to be removed so that our minds, like a clear mirror, could faithfully reflect nature as it is. There are four classes of idols: those of (1) the "Tribe," common to all men, that result from the fact that what we sense is influenced by our minds, and hence sense knowledge is relative; (2) the "Den" (alluding to the Platonic analogy), as each of us interprets experience from our own pet theories, and in a manner influenced by our own dispositions; (3) the "Market Place" that result from the words we use. These can be used to stand for objects that are in fact fictional things, and at other times, while standing for objects, are poorly defined or ambiguous; (4) the "Theater," ideas of philosophic systems which lead men about captive to their dogmas. They are actually inventions like stage plays.

With these errors minimized, one can proceed using what Bacon called "Tables of Investigation" whereby, coupled with induction from sense experience, one could arrive at "interpretations" that are faithful to reality.

He illustrated his method by a consideration of heat; but beyond this he did not go. He made no contributions to science, and his method was not practiced. In his vision of the "Great Instauration" he advocated state-supported research whereby man could gain power over nature, and thereby improve his lot in this world. This part of his dream has been fulfilled in modern scientific-industrial societies. In order to gain an insight into the nature of his method, we turn to a critique of it by W. T. Jones.<sup>14</sup>

Firstly, as to the matter of freeing the mind of false notion to arrive at a state of mind free of obstruction. Bacon used two analogies to describe this state of mind: it would be "like a fair sheet of paper with no writing on it," or "like a mirror with true and even surface fit it to reflect the genuine way of things." For men's minds had become "strangely possessed and beset so that there is no true even surface left to reflect the genuine rays of things."<sup>15</sup> But as Jones points out, a mind bereft of all preconceptions would be incapable of operating at all.<sup>16</sup> And what Bacon failed to realize was that he had retained one medieval philosophic viewpoint that prevented him

from seeing the implication of his proposal, which, as practiced by some of his contemporaries (although unwittingly perhaps) and as fully realized by Galileo and Newton, led to the extraordinary growth of science and the fulfillment of Bacon's dream for mankind. The idea he retained was that of universals, that something in a man that *made* him a man as distinct from a donkey or a chair. And quoting Jones:

Since all these philosophers had also held that universals are the true object of scientific knowledge, it is not surprising that Bacon did not ask himself whether there are universals, but merely whether the Scholastics had gone about finding them in the right way. It was clear to him... that the Scholastic way was not correct and that as long as science clung to this method it would stagnate. For Scholastic science proceeded by way of a "scanty experience" first to generalize and define the essential properties of man—to say that he "is a rational being" to that he "has an immortal soul"—and then to deduce the corollaries of these definitions.<sup>17</sup>

Jones then goes on in his analysis to make the important point that "the way people believe they know things has a bearing on what they think they can know."<sup>18</sup> Because of the impact of this idea on New Church epistemology, we quote Jones in full on this point.

To put this [Bacon's search for universals]... somewhat differently, Bacon proposed to use the new method to discover the natures whose reality the old metaphysics had assumed, but the new method actually implied an altogether different conception of reality—it implied that the real constituent entities of the universe are not natures [universals; forms] at all, but events. This is an instance of the general truth that the way people believe they know things has a bearing on what they think they can know. For instance, anyone who holds (as did Plato) that knowledge is dialectical will probably conceive that reality is not sensuous and that universals are the most real things of all. On the other hand, anyone who holds that all real knowledge is obtained through perception [sensation] will probably conclude that reality consists of concrete particulars and that universals are mere names. In other words, *theory of knowledge and theory of reality are always correlative*. Yet Bacon was attempting to retain the old conception of reality while adopting a very different conception of knowledge.<sup>19</sup>

The implications of this relationship between the method of the acquisition of knowledge and our conception of reality perhaps provides one of the grounds for the conflict of religion and science that surfaces from time to time, presently in the debate about science and creationism. A publication of the National Academy of Sciences provides an updated case in point. A monograph entitled "Science and Creationism" was published in 1984,<sup>20</sup> arguing that Creationism should not be given equal time with secular science in education. We are not interested here in debating that issue, but we wish to quote from the Conclusion, as follows:

Scientists, like many others, are touched with awe at the order and complexity of nature. Religion provides one way for human beings to be comfortable with these marvels. However, the goal of science is to seek naturalistic explanations for phenomena—and the origins of life, the earth, and the universe, are, to scientists, such phenomena—within the framework of natural laws and principles and the operational rule of testability.

It is, therefore, our unequivocal conclusion that creationism, with its account of life by supernatural means, is not science. It subordinates evidence to statements based on authority and revelation . . . .

No body of beliefs that has its origin in doctrinal material rather than scientific observation should be admissible as science in any science course . . . .

If we apply Jones' general principle here, then, since only what is observable by the senses is "admissible" to science, then the only reality is what is perceptible by the senses. Revelation-based religion may help man to feel "comfortable" when faced with nature's wonders, but it can provide nothing that can be dignified by the term "knowledge" respecting them.

The theory of knowledge we have offered runs counter to this view in several respects. Supernatural means are all-important, both in the creation and sustenance of the universe and its parts. Thus the acceptance of *only* what the senses apparently have to offer is tantamount to the denial of anything beyond the natural: the denial of God, of the holiness of the Word, and of the immortality of man. And this state of mind is what dehumanizes man, reducing the explanation of all aspects of his humanity to the mechanisms of material substance.

Returning to Bacon, we do not wish to imply here that he was an advocate of an atheistic, secular science. But the empirical method that he advocated could lead, by Jones' argument, to such a state of affairs; and this may help account for the fact that the modern atheistic, secular state, the Soviet Union, has espoused secular empiricism as the foundation of its theory of knowledge.

## DESCARTES TO KANT

### **René Descartes** (1596-1650)

As a devout Catholic, Descartes was concerned about the skeptical attacks on the foundations of knowledge, and like Bacon before him, sought a method for obtaining certainty in knowledge. And while the old Scholasticism put emphasis on the realm of the human mind to the neglect of the material, and extreme skepticism had attempted to shatter the foundations of belief in the reality of both the spiritual and material realms of existence, philosophers like Hobbes (1588-1679) reduced all to the material, including mind (based on the new mechanistic, deterministic experimental science, couched within his theory of motion).<sup>21</sup> Descartes, therefore, was as concerned to preserve the certainty of religious truth and the existence of mind, as he was to assure the reality of the objective world and of our capacity to know it and the laws that governed its behavior. We can but touch on some aspects of his philosophy that relate to our own considerations.

In his *Discourse on the Method of Rightly Conducting the Reason and Seeking for Truth in the Sciences* published in 1637 Descartes established the cornerstones of his philosophy of man and nature, and the means whereby a man can arrive at certainty in knowledge. He presents this work as an account of his own way to truth which he acknowledges may not be the way for all men, although the "power of judging rightly and of separating what is true from what is false (which is generally called good sense or reason)"<sup>22</sup> he believed was equal in all men. His sense of the need to construct a method grew out of his dissatisfaction with the philosophy of the day: "... in view of the fact that it has been cultivated by the most excellent minds that have appeared in this world for many centuries past, and that, nevertheless, every one of its propositions is still subject to dispute and consequently to doubt,... I can regard... as false whatever... looked like the truth."<sup>23</sup>

His method involved a number of elements: (1) he established four rules whereby he could proceed in such a manner as to avoid error. The first "was to accept nothing as true which I did not clearly recognize to be so;" the second, "to divide each of the difficulties which I examine into as many parts as possible, and as seemed requisite in order that it might be resolved in the best manner possible;" the third, "to carry on my reflections in due order, commencing with objects that were the most simple to understand, in order to rise little by little... to knowledge of the most complex;" and fourth, "to make enumerations so complete and reviews so general that I should be certain of having omitted nothing."<sup>24</sup>

From this it is evident that Descartes depended on an inner capacity with men to recognize the truth when they saw it. He had this because God implanted in man innate ideas of "simple essences," such as of mathematical entities, from which by careful application of reason, one could arrive at the truth. As Jones notes,<sup>25</sup> this bears resemblance to Plato's doctrine of reminiscences, although there is a clear difference as to the origin of the ideas. At all events, it was necessary for Descartes to invoke the presence of some kind of divine light for man to be able to have a sense of certainty about knowledge.

The starting point for certainty was the establishment of the certainty of his own existence, and of the existence of God. The former is founded on the fact of his capacity to doubt; this itself establishes the fact of his existence, embodied in the famous statement "Cogito, ergo sum." Following the recognition of this, "and reflecting on the fact that I doubted, and that consequently my existence was not quite perfect (for I saw clearly that it was a greater perfection to know than to doubt), I resolved to enquire whence I had learnt to think of anything more perfect than I myself was; and I recognised very clearly that this conception must proceed from some nature which was really more perfect."<sup>26</sup> This nature was God, and thereby, together with other arguments, Descartes established the certainty of the other necessary existence besides himself, that of God.

What of sense perception in Descartes' system? He had established that mind with its true, innate ideas, exists as a "thinking substance" and that there is an outside, real world of extension governed by physical laws, laws which were not abstractions of the mind, but impressed on objective reality apart from man's contemplation of it. These could be discerned by the experimental method

because of the true innate ideas present with men. But they should not be confused with "natural impulses" common sense perception, "that often enough led me. . . to error."<sup>27</sup>

But having established the existence of mind and matter as distinct entities, Descartes, as were other men, was faced with the problem of the nature of their interaction. Desirous of avoiding the Hobbesian reductionism of mind to material motion, as well as the Platonic denial of the reality of the physical world, Descartes compromised by his belief in the existence of both as distinctly different entities. But if man can have sense perception and bodily emotion involving mental state, then how can the two distinctly different entities interact?

For this Descartes invoked the pineal gland situated between the two hemispheres of the brain. The selection of this seems rather arbitrary, although Descartes gives justification of it in terms of its location in relation to the site of movement of the "animal spirits" as affected by movements in the gland itself. But how can any part of the body, characterized by extension, interact with a mind that has nothing in common with the material? And to arrive at the conclusion that it does serve the function required of it seems to deny one part of his method, that of not accepting anything unless one had a "clear and distinct idea" of its truth.

To summarize the significance of Descartes, we quote a paragraph from Jones:<sup>28</sup>

We must conclude... that the Cartesian compromise failed. But this should not blind us to the virtues of Descartes<sup>7</sup> theory. The breakdown occurred because of his determination to work out a theory that would make a place for both the religious and the scientific views of life. He saw that a satisfactory modern synthesis must do justice both to our sense of human freedom and to the claims of universal mechanism. It must concern itself with the actual and existent while undertaking to rise above the here and now. It must recognize that thought is rooted in perception and perception in body, yet it must find a way for thought to reach a rational truth.

Thus, if Descartes did nothing else, he made clear the formidable task that faced his successors. But as a matter of fact, he did much more. His formulation of the basic question confronting philosophy seemed so sensible that it determined the course of philosophical development for more than a cen-

ture and left its mark on the whole subsequent history of philosophy.

This assessment of Descartes' contribution to philosophy is matched by Charles Singer's appraisal of him in regard to science. We read:<sup>29</sup>

Rene Descartes ..., the 'first modern philosopher' and most dominant thinker of the seventeenth century, made striking contributions both to scientific theory and practice . . . .

- (a) He set forth views as to how science should be prosecuted.
- (b) He was the first in modern times to propound a unitary theory of the universe that became widely current.
- (c) He made important contributions to mathematical, physical, and physiological science.

These three activities of Descartes are not as essentially connected as he would have wished. In 1633 he was about to publish his cosmic view in a work which he termed *The World*, when he heard of the condemnation of Galileo. He promptly withdrew the book. In the event his first publication was the *Discourse on Method* (1637).

There are features of Descartes' philosophy that bear superficial resemblance to Swedenborg's. Both were dualists, with mind and body representing distinctly different realms of being; both regarded God as the ultimate source, not only of the material world, but also of ideas; both, like others before them, constructed a method for developing true philosophy, Swedenborg in his *Principia* and Descartes in the *Discourse on Method*; and both desired to overcome the attacks of skeptics and materialists alike. Both, too, had a sense of mission about their life's work (a not uncommon feature with men), and both had experiences which furthered their sense of that mission—on November 10, 1619, Descartes had dreams, while on a military campaign near Ulm on the Danube, which "left the impression that the Spirit of Truth had opened to him the treasures of all the sciences";<sup>30</sup> while Swedenborg had a number of dream experiences, leading ultimately to his full, conscious entry into the spiritual world.<sup>31</sup>

We will note here in reference to the mind-body problem that while Descartes appealed to the pineal gland to serve as the means for their interaction, Swedenborg developed the doctrine of correspondences, whereby the whole spiritual and natural realms of exist-

ence are interdependent, this connected whole consisting of the natural and spiritual realms stemming from God the Creator and Sustainer of both.<sup>32</sup>

### **John Locke (1632-1704)**

John Locke wrote a number of treatises that reflect his various interests in his interesting life.<sup>33</sup> He was educated at Westminster School and Oxford where he took his bachelor's and master's degrees, later studying medicine, although taking no degree in the subject. The forming of the Royal Society in 1660 stimulated him to engage in experiments in chemistry and meteorology, his friendship with Robert Boyle no doubt being an encouragement to him in these activities. Following a period of teaching at Oxford, he entered the political arena through his friendship with Lord Ashley, Chancellor of the Exchequer, and later Lord Shaftesbury whom he served in various capacities, including as physician. Exiled for a period because of his association with Shaftesbury, upon his return from Holland he wrote a number of treatises including *An Essay Concerning Human Understanding*. This work is the one which contains his epistemology, and was written over a twenty year period, begun following one of his frequent informal gatherings with friends, when matters of science and theology were discussed. In one such gathering the question of "the limits of human knowledge" was raised, and the *Essay* was the answer he undertook to provide.

Raised in a Puritan family, throughout his life he remained a deeply religious man. But at the same time, he had become fed up with the Scholasticism of his Oxford education, and his acceptance of the new Galilean experimental science, coupled with his own experience as an experimenter and physician, meant that he had a strong sense of the objective reality of a material world. This had a significant bearing on his epistemology, some aspects of which we now discuss, namely, experience as the only source of our ideas; the denial of innate ideas; simple and complex ideas; kinds and limits of knowledge; the reality of God, mind, and matter; the significance of mathematics in expressing ideas.

Just as Descartes established the reality of his own being by virtue of his ability to doubt, so Locke established the reality of self through the experience of sense perception itself. And this direct experience, and our ability to later remember it, is proof to Locke, not only of the self as a real existent, but also of the reality of the existence of

objects outside of self. And beyond both of these existents is God, whose Being necessarily follows from knowledge we have through the sense experience of the necessity of there being causal connection between events; in effect, God exists because we do.

The nature and origin of knowledge is discussed in Book IV of the *Essay*, the first three being titled "Neither Principles Nor Ideas Are Innate" (I), "Of Ideas" (II), "Of Words" (III), which lay the basis for the elaboration of his epistemology.

All we can hope to do here is present Locke's conclusions, with occasional commentary indicating the path he took to them. This digest is drawn from the reading of the *Essay* itself as well as commentary upon it by others.

In Book IV of the *Essay* titled "Of Knowledge and Probability" Locke gives his fundamental definition of knowledge as "the perception of the agreement or disagreement of two ideas. Knowledge then seems to me to be nothing but the perception of the connection of and agreement, or disagreement and repugnancy of any of our ideas. In this alone it consists."<sup>34</sup> To appreciate what is meant here we need to appreciate what ideas are. Firstly, they arise either from sense experience or from the mental activity of reflection. And from these, we gain either "simple" or "complex" ideas. Examples of simple ideas arising from sense perception are those of color and extension, which may require the activity of one or more of the senses. And as examples of simple ideas from reflection, we quote from Locke.<sup>35</sup>

The two great and principal actions of the mind, which are most frequently considered, and which are so frequent that everyone that pleases may take notice of them in himself, are these two:

*Perception, or Thinking; and Volition, or Willing.*

The power of thinking is called the *Understanding*, and the power of volition is called the *Will*; and these two powers or abilities in the mind are denominated faculties.

Complex ideas can arise in a number of ways: by combining two or more simple ideas—our idea of beauty, for example; or we can take two ideas, simple or complex, and set them together, whereby we gain our ideas of relation; or we can withdraw an idea from others, and arrive at an abstraction.<sup>36</sup>

Returning then to the definition of knowledge given above, Locke goes on to elaborate it thus:

This agreement or disagreement may be any of four sorts— I. Identity, or diversity. II. Relation. III. Co-existence, or necessary connexion. IV. Real existence.<sup>37</sup>

After elaborating on each of these in turn, Locke summarizes them with examples thus:

Thus, "blue is not yellow," is of identity. "Two triangles upon equal bases between two parallels are equal," is of relation. "Iron is susceptible of magnetical impressions," is of coexistence. "God is," is of real existence.<sup>38</sup>

Of knowledge itself, there are three degrees: "Intuitive," "demonstrative," and "sensitive."

Intuitive knowledge is the most certain and purest kind, deriving from what can only be called the power of the mind to perceive with certainty "the agreement or disagreement of two ideas *immediately by themselves*, without the intervention of any other: and this I think we may call *intuitive knowledge*. For in this the mind is at no pains in proving or examining, but perceives the truth as the eye does light, only by being directed towards it. Thus the mind perceives that *white* is not *black*, that a *circle* is not a *triangle*, that *three* are more than *two* and equal to *one and two*. . . . If is on this intuition that depends all the certainty and evidence of all our knowledge...<sup>39</sup>

Demonstrative knowledge is certain, but not arrived at quickly, by means of reasonings whereby the agreement or disagreement criterion of knowledge is established. In the process of reasoning, it is necessary for intuitive knowledge to establish connections and relations that help establish the certainty of the knowledge. Although certain, it is not as clear as intuitive knowledge.

Sensitive knowledge, on the other hand, scarcely qualifies as such, for it falls short of both other kinds, and "reaches no further than the existence of things actually present to our senses... ."40 and "is but *faith* or *opinion*, but not knowledge . . . ."41

Finally, recalling that for Locke there were no such things as innate ideas per se, nonetheless, we note that he finds it necessary to postulate the *capacity* of the mind to intuit certain (sure) knowledge. And if, as he insists, the mind can only really know, by reflection, its own ideas, between which various types of agreement or disagreement must be established in order to obtain certain knowledge, how

can it be said that "real existence" (outside the mind) is in agreement with an idea *in* the mind which he demands is necessary as the basis for sense perception upon which all else rests? Jones points out that Descartes overcame this problem by arguing that God in His goodness would not deceive man into believing in the existence of an outside, objective reality, and allowed the existence of innate ideas corresponding to the real existent outside of us. Locke, on the other hand, simply begged the question.

As interesting as Locke's analysis of ideas, the use of words, and the nature and origin of knowledge is, and as useful as the *Essay* may have been in contributing to the overthrow of dogmatism and sterile scholasticism, his theory of knowledge is highly elaborate, and indeed so much so that as a practical theory it is too cumbersome in this writer's opinion. However, his insistence that ideas be grounded in sense impression from a real existent world, and that demonstrative knowledge be attained through reasoned thought coupled with intuitive perception of self-evident truth, is certainly good advice.

In comparison with the theory of knowledge drawn from the Writings and presented above, we can note certain general similarities: the insistence that God and the external world are necessary existent realities; that the mind initially (at birth) is without form, but capable of developing ideas on the basis of sense impressions; and that the mind has the intuitive capacity to perceive self-evident truth and is capable of reflection, thought, and reason. This agrees with the assertion of the Writings that these capacities are present with men on account of the influx from the internal man that bestows on the external the capacity for them.

Locke's theory of ethics, involving the recognition of the existence of civil, moral, and divine law finds responsive chords in the Writings also. And this, together with his political theory, exerted no small influence. Of him Jones says: "The spirit of the Declaration of Independence, of the Constitution, and of the Bill of Rights was thoroughly Lockian; indeed, the American political ideal today is still the Lockian state. But as extensive as Locke's influence has been, his appeal is less the appeal of theory than it is the appeal of a humane, generous, and honest mind."<sup>42</sup>

### **George Berkeley (1685-1753)**

George Berkeley was a man of great learning and respected by all, of whom a biographer wrote:

... Ancient learning, exact science, polished society, modern literature, and the fine arts, contributed to adorn and enrich the mind of this accomplished man. All his contemporaries agreed with the Satirist in ascribing "To Berkeley every virtue under heaven" . . . . Even the discerning, fastidious, and turbulent Atterbury said, after an interview with him, "so much learning, so much knowledge, so much innocence, and such humility, I did not think had been the portion of any but angels, till I saw this gentleman."<sup>43</sup>

Born in Ireland and educated in Dublin, in 1709 and 1710 he published his *Essay Towards a New Theory of Vision* [a psychological analysis of the fact of vision] and *Principles of Human Knowledge* respectively. Following a failed attempt to gain government support to establish a university in Bermuda, he spent a few years (and most of his own means) as a missionary to the Indians of Rhode Island. In 1734 he became Bishop of Cloyne.

A factor common to Descartes, Locke, Berkeley and Swedenborg was concern that skepticism would destroy Christian belief in the immortality of man and the existence of God. With Descartes also there was concern as well for the survival of the new experimental science, the theoretical basis for which he was very instrumental in establishing. But Berkeley saw in the belief in the existence of matter (which had primary qualities inherent in it, and by which it could be described in physical terms) an added threat to belief in the transcendental. His most important work, *A Treatise Concerning the Principles of Human Knowledge*, was his response to this threat. He felt that by undermining the belief in the possibility of certain knowledge of a material existent (matter) outside man he could preserve man from materialism, while at the same time preserving the belief in the value of science. We will examine some of his arguments because in comparing his thesis with that of Locke as well as that of the Writings we can get a clearer perspective on the nature of the latter.

On the title page of the 1710 edition below the title we read:

Wherein the Chief Causes of Error and Difficulty in the *Sciences*, with the Grounds of *Scepticism*, *Atheism*, and *Irreligion*, are inquir'd into.

And his remarks in the Introduction make clear that in his view the use of reason with the learned world has brought nothing but

confusion. We quote here paragraph 1 in full because it not only describes his assessment of his day, but also provides a warning to us now.

Philosophy being nothing else but the study of wisdom and truth, it may with reason be expected that those who have spent most time and pains in it should enjoy a greater calm and serenity of mind, a greater clearness and evidence of knowledge, and be less disturbed with doubts and difficulties than other men. Yet so it is, we see the illiterate bulk of mankind that walk the high-road of plain common sense . . . for the most part easy and undisturbed. To them nothing that is familiar appears unaccountable or difficult to comprehend . . . . But no sooner do we depart from sense and instinct to follow the light of a superior principle, to reason, meditate, and reflect on the nature of things, but a thousand scruples spring up . . . concerning those things which before we seemed fully to comprehend. Prejudices and errors of sense so from all parts discover themselves to our view; and . . . having wandered through many intricate mazes, we find ourselves just where we were, or, which is worse, sit down in a forlorn scepticism.<sup>44</sup>

And so, with the problem defined, he states his purpose as:

. . . to try if I can [to] discover what those principles are which have introduced all that doubtfulness and uncertainty, those absurdities and contradictions, into the several sects of philosophy . . . . And surely it is a work well deserving our pains to make a strict enquiry concerning the First Principles of Human Knowledge, to sift and examine them on all sides . . . .<sup>45</sup>

Fundamental to his whole thesis is the rejection of the idea of abstract general ideas. We have only ideas of particular cases; or if we think in terms of the words that are meant to convey the general abstract ideas, such as "man" or "colour," we really only think of particular men, or particular colours; and the source of the problem lies in language.

. . . it is thought that every name has, or ought to have, one only and precise and settled signification, which inclines men to think that there are certain abstract, determinate ideas that constitute the true and only immediate signification of each general name; and that it is by the mediation of these abstract ideas that a general name comes to signify any particular

thing. Whereas, in truth, there is no such thing as one precise and definite signification annexed to any general name, they all signifying indifferently a great number of particular ideas . . . It is one thing to keep a name constantly to the same definition, and another to make it stand everywhere for the same idea; the one is necessary, the other useless and impracticable.<sup>46</sup>

Berkeley begins the treatise itself with this: "It is evident to any one who takes a survey of the *objects* of human knowledge, that they are either ideas actually imprinted on the senses; or else such as are perceived by attending to the passions and operations of the mind; or lastly, ideas formed by help of memory and imagination—either compounding, dividing, or barely representing those originally perceived in the aforesaid ways."<sup>47</sup> Then, because "the existence of an idea consists in being perceived," there must be something that knows or perceives them. "This perceiving, active being is what I call *mind, spirit, soul* or *myself*."<sup>48</sup> For the sake of clarity, and to let Berkeley speak for himself, we quote somewhat fully from his text.<sup>49</sup>

That neither our thoughts, nor passions, nor ideas formed by the imagination, exist without the mind, is what everybody will allow. And it seems no less evident that the various sensations or ideas imprinted on the sense . . . cannot exist otherwise than in a mind perceiving them . . . There was an odour, that is, it was smelt; there was a sound, that is, it was heard . . . This is all I can understand by these and the like expressions. For as to what is said of the absolute existence of unthinking things

without any relation to their being perceived, that seems perfectly unintelligible. Their *esse* is *percipi*, nor is it possible that they should have any existence out of the minds or thinking things which perceive them. (3)

It is indeed an opinion strangely prevailing amongst men, that houses, mountains, rivers, and in a word, all sensible objects, have an existence, natural or real, distinct from their being perceived by the understanding . . . [But] what are the aforementioned objects but the things we perceive by sense? and what do we perceive besides our own ideas or sensations? and is it not plainly repugnant that any one of these, or any combination of them, should exist unperceived? (4)

If we thoroughly examine this tenet it will, perhaps, be found at bottom to depend on the doctrine of *abstract ideas*. For

can there be a nicer strain of abstraction than to distinguish the existence of sensible objects from their being perceived, so as to conceive them existing unperceived? (5)

Some truths there are so near and obvious to the mind that a man need only open his eyes to see them. Such I take this important one to be, viz., that all the choir of heaven and furniture of the earth, in a word all those bodies which compose the mighty frame of the world, have not any subsistence without a mind, that their *being* is to be perceived or known; that consequently so long as they are not actually perceived by me... they must either have no existence at all, or else subsist in the mind of some Eternal Spirit—it being perfectly unintelligible, and involving all the absurdity of abstraction, to attribute to any single part of them an existence independent of a spirit. (6)

From what has been said it follows that there is not any other Substance than *spirit*, or that which perceives . . . [H]ence it is clear there can be no unthinking substance or *substratum* of... ideas. (7)

The following is number nine which we quote in full, because herein lies the crux of the matter regarding science, dependent as it is on the belief in the reality of the existence of matter outside of mind.

Some there are who make a distinction betwixt *primary* and *secondary* qualities [Locke amongst them]. By the former they mean extension, figure, motion, rest, solidity or impenetrability, and number; and by the latter they denote all other sensible qualities, as colours, sounds, tastes, and so forth. The ideas we have of these they acknowledge not to be the resemblances of anything existing without the mind, or unperceived, but they will have our ideas of the primary qualities to be patterns or images of things which exist without the mind, in an unthinking substance which they call Matter. By Matter... we are to understand inert, senseless substance, in which extension, figure, and motion do actually subsist. But it is evident from what we have already shown, that extension, figure, and motion are only ideas existing in the mind, and that an idea can be like nothing but another idea, and that consequently neither they nor their archetypes can exist in an unperceiving substance. Hence, it is plain that the very notion of what is called *Matter* or *corporeal substance*, involves a contradiction in it. (9)

We pause here to comment that the principle of reductionism is that all of material and human existence can be reduced to the modern equivalents of the primary qualities, namely, mass, length, time, and charge, and the gravitational, electromagnetic, and nuclear forces that are invoked to account for motion. Hence all is accounted for in terms of matter and motion. And logical positivism, the thesis that a statement is meaningful "if and only if it is verifiable by appeal to experience,"<sup>50</sup> implies the independent, real existence of matter bearing the qualities stated above. Berkeley's concern that belief in matter and motion as real existents could lead to denial of the reality of spirit has been justified by developments since his time.

Returning to Berkeley's *Principles*, we comment finally on his position in regard to the experimental sciences. The science of Berkeley's day as of ours supposes that it deals with a real, existent, material reality. How did Berkeley reconcile his insistence that to be is to be perceived with his belief in natural law and the value of the study of nature as pursued by natural philosophers (scientists)? We find the answer in numbers 30-33 of his *Principles* from which the following selections are drawn.

The ideas of Sense are more strong, lively, and distinct than those of the imagination; they have likewise a steadiness, order, and coherence, and are not excited at random, as those which are of the effects of human wills often are, but in a regular train or series, the admirable connexion whereof sufficiently testifies the wisdom and benevolence of its Author. Now the set of rules or established methods wherein the Mind [God] we depend on excites in us the idea of sense, are called the *laws of nature*; and these we learn by experience which teaches us that such and such ideas are attended with such and such other ideas, in the ordinary course of things. (30)

This gives us a sort of foresight which enables us to regulate our actions for the benefit of life. And without this we would be eternally at a loss;...and a grown man no more know how to manage himself in the affairs of life than an infant just born. (31)

And yet this consistent uniform working, which so evidently displays the goodness and wisdom of the Governing Spirit *whose Will constitutes the laws of nature*,... (32; emphasis added)

The ideas imprinted on the Senses by the Author of nature are called *real things*; and those excited in the imagination being

less regular, vivid, and constant, are more properly termed ideas, or *images of things*, which they copy and represent. (33)

From these passages it is clear that the exposition of the orderly train of ideas that constitute the laws of nature are very legitimate objects of study, indeed are necessary for the conduct of human life; that God is the Author of these apparent cause and effect relationships between sense impressions, and to men the world is no less "real" because it is regarded only in terms of our sense impressions, than if we believed in a real, existent, material world outside us. "And," says Berkeley, "it is the searching after and endeavouring to understand [this language (if I may so call it) of the Author of nature], that ought to be the employment of the natural philosopher; and not the pretending to explain things by corporeal causes, which doctrine seems to have too much estranged the minds of men from that active principle, that supreme and wise Spirit' from whom we live, move, and have our being."<sup>51</sup>

#### David Hume (1711 1776)

David Hume, like Descartes and Locke, was dissatisfied with traditional philosophy, and the final paragraph of his *An Enquiry Concerning Human Understanding* makes this plain.

When we run over libraries ... what havoc must we make? If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, *Does it contain any abstract reasoning concerning quantity or number* [mathematical? No. *Does it contain any experimental reasoning concerning matter of fact and existence* ["impressions" of sense experience and ideas based thereon]? No. Commit it then to the flames: for it can contain nothing but sophistry and illusion.<sup>52</sup>

But unlike Descartes, Locke, and Berkeley, he was not concerned with the threat to religion from skeptics and experimental philosophers; indeed, settling for a mitigated skepticism, he rejected the ideas of God and the immortality of the human spirit. Jones<sup>53</sup> observes that Hume had "none of the piety of Locke and Berkeley," and, from the accounts of the biographer Boswell, it seems that he was conceited and arrogant as well.

### Empirical Basis of Knowledge

As with Locke, Berkeley, and Swedenborg, Hume's theory of knowledge is grounded in sensation. But with Hume, this empirical basis of knowledge is paramount, and whatever the imagination may conceive (such as the idea of God or of immortality, or of any more mundane things), unless it can be traced back to an *impression* or sensation it has no validity. Hence he says:

But though our thought seems to possess... unbounded liberty [through the exercise of imagination], we shall find, upon a nearer examination, that it is really confined within very narrow limits, and that all this creative power of the mind amounts to no more than the faculty of compounding, transposing, augmenting, or diminishing the materials afforded us by the senses and experience. When we think of a golden mountain, we only conjoin two consistent ideas, *gold*, and *mountain*, with which we were formerly acquainted....In short, all the materials of thinking are derived either from our outward or inward sentiment [sense of touch, and experience of anger, for example]: the mixture and composition of these belongs alone to the mind and will. Or to express myself in philosophical language, all our ideas or more feeble perceptions are copies of our impressions of more lively ones.<sup>54</sup>

Jones encapsulates this by saying that, for Hume, "All simple ideas...are memory copies of simple impressions; complex ideas are combinations of simple ones. Hence a term has meaning (that is, names an idea) only if there is an impression or combination of impressions of which it is a copy."<sup>55</sup> This is philosophical nominalism, and out of it comes the denial of universals, for who has ever seen a universal? What we call universals (such as "laws of nature,") are but imaginative leaps connecting particular impressions, but which themselves have no empirical basis.

### Association of Ideas

Although for Hume impressions and ideas were discrete entities (a kind of psychological atomism), they nonetheless became associated by three principles: (1) by resemblance; (2) by contiguity in time or place; and (3) by cause or effect. For example, "A picture naturally leads our thoughts to the original [resemblance]: the mention of one apartment in a building naturally introduces an enquiry

or discourse concerning the others [contiguity]: and if we think of a wound, we can scarcely forebear reflecting on the pain which follows it [cause or effect]"<sup>56</sup>

We note in passing here that while Hume is insistent that impressions be the basis for ideas, yet these "principles of association" *themselves* cannot be based on impressions, for like universals, who has ever *sensed* a principle of association. Hume, indeed, invokes an "instinct" implanted in us by nature that is manifested in these principles. "As nature has taught us the use of our limbs, without giving us the knowledge of the muscles and nerves, by which they are actuated; so has she implanted in us an instinct, which carries forward the thought in a correspondent course to that which she has established among external objects; though we are ignorant of these powers and forces, on which the regular course and succession of objects totally depends."<sup>57</sup>

### Cause and Effect

Hume places all objects of human reason into one of two classes: "*Relations of Ideas, and Matters of Fact.*"

Of the first kind are the sciences of Geometry, Algebra, and Arithmetic; in short, every affirmation which is either intuitively or demonstratively certain . . . Propositions of this kind [Pythagoras' theorem, for example] are discoverable by the mere operation of thought, without dependence on what is anywhere existent in the universe. Though there never were a circle or triangle in nature, the truths demonstrated by Euclid would for ever retain their certainty and evidence.<sup>58</sup>

Matters of fact... are not ascertained in the same manner; nor is our evidence of their truth, however great, of a like nature with the foregoing. The contrary of every matter of fact is still possible; because it can never imply a contradiction . . . *That the sun will not rise tomorrow* is no less intelligible a proposition, and implies no more contradiction, than the affirmation, *that it will rise* . . .

All reasonings concerning matters of fact seem to be founded on the relation of *Cause and Effect*. By means of that relation alone we can go beyond the evidence of our memory and senses . . . . The hearing of an articulate voice and rational discourse in the dark assures us of the presence of some person: Why? because these are the effect of the human make

and fabric, and closely connected with it. If we anatomize all the other reasonings of this nature, we shall find that they are founded on the relation of cause and effect—

I shall venture to affirm, as a general proposition, which admits of no exception, that the knowledge of this relation is not, in any instance, attained by reasoning *a priori*; but arises entirely from experience, when we find that any particular objects are constantly conjoined with each other.<sup>59</sup>

We have quoted at some length here because in these passages we find ideas that are central to Hume's epistemology and ontology, ideas which have an important bearing on knowledge in general, and on scientific knowledge in particular. Whether or not one accepts the idea that mathematical propositions are discoverable by thought alone without reference to sense impressions, nonetheless there is in the modern world a commonly held view that ideas expressed within the framework of mathematics have a certainty that ideas couched in terms that relate only to impressions do not. Compare the algebraic formulations of the three Newtonian laws of motion with the Davisian theory of landscape evolution which simply does not lend itself to mathematical description, for example. Thus the distinction made by Hume has echoes in modern thought.

But more important is the idea of cause and effect as being something that is the result of our perception of the conjunction of one object with another, either temporally or spatially, and this alone.

When we look about us to external objects, and consider the operation of causes, we are never able, in a single instance, to discover any power or necessary connexion; any quality which binds the effect to the cause, and renders the one an infallible consequence of the other. We only find, that the one does actually, in fact, follow the other. The impulse of one billiard ball is attended with motion in the second. This is the whole that appears to the *outward* senses. The mind feels no sentiment or *inward* impression from this succession of objects: Consequently, there is not, in any single, particular instance of cause and effect, anything which can suggest the idea of power or necessary connexion. . . .<sup>60</sup>

... All events seem entirely loose and separate. One event follows another; but we never can observe any ties between them. They seem *conjoined*, but never *connected*. And as we can

have no idea of any thing which never appeared to our outward sense or inward sentiment, the necessary conclusion *seems* to be that we have no idea of connexion or power at all, and that these words are absolutely without any meaning, when employed either in philosophical reasonings or common life.<sup>61</sup>

The necessary connection that we associate with a given sequence of events is something that results from our observation of the repetition of the same sequence of events. It is this *alone* that makes us conclude that what we then call cause and effect are intimately connected by "forces" which are part of the supposed rationality of the universe. For if in a single case of conjunction of two events we sense no cause and effect connection, why should the repetition of that sequence tell us any more? This challenge to the concept of cause and effect is as much a threat to the belief in an inherently rational universe governed by natural law, as it is to religious belief in the existence of God as a final cause of creation, and in the spiritual world as a mediate cause of events in the natural world and the world of the human mind.

### **Substance, Self, Mind, and the External World**

With the above outline of Hume's epistemology as a background we are now able to state briefly his position in regard to the nature of being.

While Hume presumed the existence of an "outside" world that made possible the impression we have, he would not go beyond what our senses tell us in regard to it. "The idea of substance must be therefore derived from an impression of reflexion [an inward impression obtained by reflection on an outward one], if it really exists. But the impressions of reflexion resolve themselves into our passions and emotions; none of which can possibly represent a substance. We have therefore no idea of substance, distinct from that of a collection of particular qualities, nor have we any other meaning when we either talk or reason concerning it."<sup>62</sup>

The concept of self, too, is tied to impressions, for there is no self consciousness apart from sensation; so when sensation ceases, as in deep sleep, the self cannot be said to exist. And with the death of the body, the organ of sensation, comes the total extinction of self; and hence there can be no immortality.<sup>63</sup>

As to "mind," it follows from the above concept of self that it consists of naught but the succession of perceptions (impressions) that constitute our consciousness.

... The mind is a kind of theatre, where several perceptions successively make their appearance, pass, re-pass, glide away, and mingle in an infinite variety of postures and situations— They are the successive perceptions only, that constitute the mind; nor have we the most distant notion of the place, where these scenes are represented, or of the materials, of which it is compos'd.<sup>64</sup>

Hume is equally skeptical regarding the material world, of which he says:

But this universal and primary opinion of all men [that objects preserve their "existence uniform and entire, independent of the situation of intelligent beings, who perceive or contemplate" them]<sup>65</sup> is soon destroyed by the slightest philosophy, which teaches us, that nothing can ever be present to the mind but an image or perception, and that the senses are only the inlets, through which these images are conveyed, without being able to produce any immediate intercourse between the mind and the object . . . . These are the obvious dictates of reason; and no man, who reflects, ever doubted, that the existences, which we consider, when we say *this house* and *that tree*, are nothing but perceptions in the mind, and fleeting copies or representations of other existences, which remain uniform and independent.<sup>66</sup>

It is clear from this that Hume believed in external existences "which remain uniform and independent." But he makes clear that we have no hope of a knowledge of their own, intrinsic, nature—for our perceptions cannot provide it.

It is a question of fact, whether the perceptions of the senses be produced by external objects, resembling them: how shall this question be determined? By experience surely; as all other questions of a like nature. But here experience is, and must be entirely silent. The mind has never anything present to it but the perceptions, and cannot possibly reach any experience of their connexion with objects. The supposition of such connexion is, therefore, without any foundation in reasoning.<sup>67</sup>

## Hume and Swedenborg

We need not elaborate on the observation that Hume and Swedenborg are poles apart, both in regard to their ontology and epistemology. There are, however, two points of agreement: one in the recognition of mind and object as discrete entities; and the other in giving great importance to sense perception, although whereas for Hume it is *everything*; for Swedenborg, sense perceptions with men on earth are not only the basis for the development of the mind, but also provide the foundation for the very existence of the spiritual world.

## Immanuel Kant (1724-1804)

No treatment of epistemology would be satisfactory without giving consideration to Kant because as a man of both religion and science, he, like Descartes and Swedenborg, was concerned to preserve both religious faith as well as the growing new experimental science from the attacks of the skeptics, as expressed, for example, in the philosophy of Hume.<sup>68</sup>

But while Kant was a lucid teacher in his position at the University of Koenigsberg,<sup>69</sup> his writing is not easily comprehended. However, his ideas were important in establishing the philosophical foundations of the scientific examination of the external world earlier formulated and practiced by Descartes and others, and thereby in countering the threat from the skeptics.

## Kant's Response to Hume's Skepticism

Hume's insistence that the empirical observation of event A following event B (one billiard ball striking another) does not provide grounds for a "necessary connection" (cause and effect relationship) between A and B constituted a real threat to the developing experimental science, as we have seen. Kant's response to this was to transfer the focus away from the supposed real existent external object of the empiricists to the operation of the mind itself, and to an analysis of its role in the elucidation of how the world works. So he says:

When Galileo caused balls... to roll down an inclined plane;... when Stahl changed metal into lime, and lime back into metal... a light broke upon all students of nature. They learned that reason has insight only into that which it pro-

duces after a plan of its own, and that it must not allow itself to be kept, as it were, in nature's leading-strings, but must itself show the way by principles of judgment based upon fixed laws, constraining nature to give answers to questions of reasons own determining. Accidental observations, made in obedience to no previously thought-out plan, can never be made to yield a necessary law, which alone reason is concerned to discover. Reason, holding in one hand its principles... and in the other the experiment which it has devised in conformity with its principles, must approach nature in order to be taught by it. It must not, however, do so in the character of a pupil who listens to everything that the teacher chooses to say, but of an appointed judge who compels the witness to answer questions which he himself has formulated . . . It is thus that the study of nature has entered on the secure path of a science, after having for so many centuries been nothing but a process of merely random groping [as by the alchemists, for example] . . . . Hitherto, it has been assumed that our knowledge must conform to objects. But all attempts to extend our knowledge of objects by establishing something in regard to them *a priori*, by means of *concepts* [the rationalists approach], have, on this assumption, ended in failure. We must therefore make trial whether we may not have more success in the tasks of metaphysics, if we suppose that objects must conform to our knowledge. This would agree better with what is desired, namely, that it should be possible to have knowledge of objects *a priori*, determining something in regard to them prior to their being given. We should then be proceeding precisely on the lines of Copernicus' primary hypothesis. Failing of satisfactory progress in explaining the movements of the heavenly bodies on the assumption that they all revolved round the spectator, he tried whether he might have better success if he made the spectator to revolve and the stars to remain at rest. . . .<sup>70</sup>

This is a very clear statement of the way of natural science, a way that involves not only the necessity of going to nature with already formulated questions that arise from a preexistent concept, designing experiments that ask those questions, then holding to the concept if the experience agrees with the concept, or rejecting or modifying the concept to bring about closer agreement of the two. Or, to use Jones' encapsulation of Kant's idea, we proceed "until the mind's objects [experience] agrees with the mind [our concepts]."<sup>71</sup>

Kant's answer to Hume's skepticism was to take away emphasis on the object itself and our experience of it, to explore how the mind operates, in particular, how it makes judgments. And while he rejected the rationalist approach in which one views nature from ideas gained by reason alone and to which all experience must be made to conform, as well as the Lockian view that would have us approach nature with a completely blank mind,<sup>72</sup> he nonetheless argued for the necessity of an *a priori* something that would allow the mind to proceed to establish the sciences of mathematics and natural science, physics in particular. The "something" consisted of the "categories" by which the mind can organize and structure a welter of experiences. For example, "attribution" allows us to say that "the book *is* on the table"; unity, plurality, and totality enable us to deal with quantities; causality and dependence; and so on. Kant's task, then, was to show how the mind operates.

Beyond the categories, Kant classified our judgments into four types: *a posteriori*, *a priori*; and analytic and synthetic.

The first, also called empirical by Kant, is the kind we make on the basis of sense experience: "the tree is tall." *A priori* knowledge has "necessity and strict universality"<sup>73</sup> as its criteria: "the square on the hypotenuse is equal to the sum of the squares on the other two sides in a right triangle" is an example. Note too, that because it is universal it allows for no exceptions and therefore cannot be derived from experience. Analytic judgments are those in which the predicate is "covertly contained in the subject and may be obtained by analysis of it. 'Roses are flowers' is an example: That roses are flowers is a part of the definition of roses. In a synthetical judgment the predicate is *not* contained in the subject. 'Some roses are red' is an example: Red is not a part of the definition of roses."<sup>74</sup>

We can show these diagrammatically as Jones does, thus:

	<i>a posteriori</i>	<i>a priori</i>
analytical	1 analytic <i>a post.</i>	2 analytic <i>a pr.</i>
synthetical	3 synthetic <i>a post.</i>	4 synthetic <i>a pr.</i>

Of these four, 1 is clearly out of the question; 2 and 3 are possible; but what of 4? It is in consideration of this that Kant confronts Hume's denial of causation, and in affirming its possibility by argument, he establishes that cornerstone idea of modern science that cause and effect relations do exist as necessary connections, the idea that Hume's empiricism denied.

It appears at first sight that 4 is impossible, for how can something that has necessity and universality intrinsic in it be of such a nature that the predicate is not contained in the subject? And if you are dealing with the world of particular objects and events (which necessarily cannot have universality associated with them) how can you ever discover such universals as laws of nature? For Kant, there are basic *a priori* propositions such as the presumption of order in the elements and events we experience, and cause and effect. And these allow for the possibility of synthetic *a priori* judgments, as when we obtain a high level of predictability from a hypothesis in respect to particular events. And this is what modern science is all about.

### SWEDENBORG'S THEORY OF KNOWLEDGE

In Swedenborg's pre-theological works there are expositions of his method of exploration of nature, as, for example, Chap. 1 of *The Principia* titled "On the means which conduce to true Philosophy, and on the true Philosopher," the Epilogue to Part II of *The Animal Kingdom*, and in the *Worship and Love of God* (Note to no. 52). And these methods have received treatment by Swedenborg scholars, as in *Words for the New Church* in the section headed "Science and Philosophy in the Light of the New Church," particularly Part III; and in *The New Philosophy* by Edward F. Allen in *Philosophical Notes*<sup>75</sup>, and by the writer in the same journal.<sup>76</sup>

Although the time is ripe for an updated, extended treatment of Swedenborg's philosophy of science and epistemology in general as it appears in the pre-theological works, we must settle here for an outline of it which we trust is more or less faithful to his ideas, and attempt to see it in relation to Kant. We will make some numbered observations regarding it, adding a few of our own reflections.

1. At the outset, we note that Swedenborg used the term "synthesis" interchangeably with "*a priori*," and "analysis" with "*a posteriori*." And while the synthetic method was that used by the "spiritual man" such as Adam, when men in a pristine state could think from true interior, higher principles, with men since the "fall" the analytic method was the only way to go if one was to avoid problems. Hence, as we show below, Swedenborg had nothing but condemnation for the synthetic method of the scholastics. By way of support of this we quote from *Worship and Love of God*, as did the author of Part III of "Science and Philosophy in the Light of the New Church."<sup>77</sup>

There are two methods of teaching and learning; one is called *synthetic*, and the other *analytic*.

The... synthetic method begins ... the view of things from inmost principles, and proceeds in order to outermost things; ... or what is the same... it proceeds *a priori* to posterior things....

The... analytic method is the reverse of the former; for it sets out from the outermost things, and traces its way backward or inward toward interior things... by that way which is commonly called the *a posteriori* way to prior things. . . .

All spiritual minds proceed by the synthetic method... for they are in the very first or highest things, and they regard... below themselves those things which succeed in their order to ultimate things. . . . According to the same order also the soul constructs its body;... and in the same order, finally, the world was created by the Divine or Supreme Mind.

Swedenborg goes on to say that this is not now the case with Adam's posterity, for whom the analytic method is the only sure way to go, as we noted above.

2. Hence Swedenborg did not condone the synthetic method of the Scholastics, as illustrated by this from *The Animal Kingdom*:

Synthesis, which begins its thread of reasons from causes and principles, and evolves and unwinds it until it reaches the effects of the causes, assumes some particular principle familiar and favorable to the intellect, as formed by previous ideas; and however susceptible this principle may be of doubt and controversy, synthesis seizes it as the truth, and lays it down; and thus presumes, defines and disengages it, and confirms it, first rationally, then empirically. Should anything adverse appear, synthesis polishes it away . . . .<sup>78</sup>

Respecting the manner in which the synthetic method carries the human mind altogether astray from the truth, and leads it into errors, and for the most part into insanities, which nevertheless appear rational, see Part I, n. 9, 10; from which it will be sufficient to cite the following: "Hence errors, mental obscurity, fallacies, and strife;... scholastic contentions about straws and trifles; the flight and exile of truths; and stupor and thick darkness in those very things where light is most brilliant . . . All these things flow from that single source—we

mean, from the habit and propensity of reasoning synthetically" (n. 9).<sup>79</sup>

3. Elaborating somewhat more on Swedenborg's analytic method, one that began with effects in nature, ascended to causes, and finally attained ends or purposes. Indeed, for him during the 1730s—when, accepting *a priori* the existence of the human soul, he sought to discover the manner of its operation in the human body—this was the method he used; so that in *The Economy of the Animal Kingdom* and *The Brain*, Swedenborg has sections headed "Induction" following a presentation of the science of the time concerning one or another aspect of human anatomy or physiology. However, things are not that simple; and this method, which sounds very much like the Baconian brand of induction, does in fact involve the influence of what is higher on lower levels of mental activity for analysis to operate at all. And it is attended with various qualifications that bear attention. This can best be brought to view by quoting Swedenborg at length from *The Animal Kingdom*, as follows:

458... Thus we live but little... in early infancy, for to feel is to live: yet this very life increases, grows, and approximates to perfection, as age advances. For the sensoria of the body are opened, into which the visible world flows... with its modes and images (x). These modes creep up to the sensoria of the cerebrum... and produce changes of state therein, by which they teach [them] to receive, retain (y), and at last to perceive, that which comes up and penetrates through the external organic doors. Then in process of time, sensual images ... become ideas; at first analogous to sensual [ideas]; afterwards, disposed into forms and series, they become proximately higher, or imaginative ideas; these at length put on rational forms, and become intellectual ideas (z). Thus we are instructed by the world, by means of the senses ... and are led from the darkness of ignorance more or less into the light of knowledge. There is in the cerebrum an eminent sensorium, and intimate recesses therein, whither these sensual rays of the body ascend, and where they can mount no further (a); there the soul resides, clad in the noblest garments of organization (b). . . . Here especially, the soul infuses her power, and communicates the faculty whereby images become ideas, may be convoluted and distributed into rational forms or analyses, and may put on a certain spiritual attire (c); that is to say,

whereby we are empowered to think below and above ourselves from the objects of the understanding, to conclude from thoughts, to judge from conclusions, to choose from judgments, and thus to will and determine. Besides giving power and faculty, the soul gives us to distinguish, and as it were intimately to feel, whether the forms of images, and in fine whether the forms of ideas, are in agreement or dissonance with the order in which she herself is; if the former, she receives them with somewhat of love; if the latter, with aversion (d). The intellect of the human mind is generated by the cooperation [of these two gifts of the soul].

459. Such appears to be the ground why what is termed the ANALYTIC way... is the only way whereby the human race is permitted to attain knowledge and finally wisdom (e); and why the other, or the SYNTHETIC ... is the way of superior beings, and, therefore, closed against... the inhabitants of the lowest world, or the dwellers of earth; for those who pursue it rush into continual errors and fallacies. . . . Thus we can never arrive at the pinnacle of human knowledge and wisdom, except by the continual analyses and concatenated series, from phenomena and effects; and even then... we can never mount to truths, whether natural or moral, still less to an understanding of spiritual truths, without the influx of a higher power (g). There are then three causes which lead us to intelligence; namely, ministering causes, mediate causes, and efficient causes. *Experience is the first...; the sciences are the second...; the faculty of thinking distinctly is the third...*<sup>80</sup>

Swedenborg goes on in the following numbers to elaborate on these three. Regarding the analytic method outlined above, we note that it is the power of the soul from within that renders the whole process possible. And note, too, that the soul can give agreement to or aversion for the ideas we come up with; and this perhaps sheds light on the assertion of the Writings that "Only those who perceive truth to be true are intelligent."<sup>81</sup> Thus when the soul with its influx of the light of heaven is in agreement with ideas we have, then we "perceive truth to be true." With this in mind, then, it is perfectly clear that Swedenborg's *a posteriori* analytic method, and the inductions he arrives at by its means is not to be confused with induction as proffered by Hume. Thus Berkeley, Locke, Swedenborg, and Kant are all in the same arena in this: that it is only by the interven-

tion of a power from within the mind itself that human experience, from sense impressions to the loftiest of moral concepts, is possible at all.

Swedenborg had a clear perception of the structure of learning and of the unlimited extent of the possible development of the sciences. In addition, he made a distinction between "universal sciences" and others, a distinction that is important and still a matter of debate. These are addressed in number 461 of *The Animal Kingdom* and accompanying footnotes. We now place some extracts from these before the reader, with commentary along the way.

461. With respect to the sciences, of the methods and arts that constitute the mediate or mediant causes [see above], they are the mistresses that teach us to reduce the accumulations of experience to order, to select what is fitting, to insert it in the becoming place, and as architects to construct the edifice, so that all things shall be put together according to rule (m).

Note here that Swedenborg recognizes the need for préexistent ideas whereby the "accumulations of experience" (sense impressions) can be placed in some kind of order. This is reminiscent of Feyerabend's assertion that "the meaning of observation sentences [verbal descriptions of sense impressions] is determined by the theories with which they are connected. Theories are meaningful independent of observations; observational statements are not meaningful unless they have been connected with theories."<sup>82</sup> And it agrees as well both with Kant's insistence that our ideas must start with some theory such as the presupposition of order in nature, and with Karl Poppers similar stance.<sup>83</sup> Continuing with Swedenborg, quoting footnote (m):

(m)... The empirical sciences yield nothing more than materials and instruments [instrumental causes, such as my fingers which are the instrumental cause as I type this], but the theoretical sciences give the laws and the rules according to which we are to work. The latter are in a manner architectonic, and teach us to arrange the materials of experience in suitable order. There is, however, no science, either practical or theoretical, that must not have derived its elements from visible nature and the world: the sciences are only descriptions and as it were types thereof; for instance, those which teach the laws of motion, the rules of fluxions, or other harmonies

and proportions, are either deduced from nature itself immediately, or by the aid of conclusions from other sciences.

Two things are noteworthy here. First, it is Swedenborg's view that all sciences, and this includes mathematics and pure physical science, must be derived or be based on sense experience. And second, he very aptly describes the sciences (and by this he means what we mean by physical, biological, earth, and applied science) as consisting of descriptions and models ("types") of the world or parts thereof. The text then continues:

Then again the sciences examine with their compasses and levels, and ascertain whether the building that has been constructed be graceful and regular in its result. It is utterly impossible by the help of experience alone, apart from the sciences . . . to climb to that Helicon where simple truths reside, and where causes take precedence of effects (n). For the sciences bring vague and scattered ideas together, under a few heads, and place them before the eye of the mind in a simpler and more connected form, and thereby give boundaries to the rational sight, and concentrate it more closely on the essences of things: they also reduce those [ideas] to formulas [mathematization] or words, and circumscribe and define these words by terms, that they may fall the more easily and rapidly under the comprehension of the master and scholar (o). . . . But since in the nature of the world, and in the world of nature, and its three kingdoms, there are infinite varieties, hence infinite genera of these varieties, and species of these genera, therefore each genus is presided over by its tutelar muse, or its peculiar science, who keeps several other sciences under her general auspices, as a mistress having many handmaids; and each ancillary science ... has in like manner many others under her, as domestic servants ...: for there is not the smallest part of a science, but is of such vast extent, that it has almost no bounds... (q). But still there is connexion of all sciences, and finally a concentration into one, the universal of all (r) [see this footnote quoted below], from which superior beings and powers contemplate and govern all lower things, as placed in the circumferences. [Here Swedenborg is back to the true synthetic method possible with men before the fall.] To them it is given to descend by the path of synthesis ... through the mysteries of our human sciences (s). Thus does the soul descend,

under the auspices of the supreme mind, while it is constructing the body, and exciting it to act in conformity to its structures; and hence there is nothing, how deeply soever and intimately it be hidden in the bosom of our sciences—in geometry, mechanics, physics, chemistry, optics, acoustics, pneumatics, logic, psychology, etc.—which the soul does not call forth in order, and determine into act, according to the end in view in the effect, or according to use (t).

We add below the footnotes (q) and (r), for in the first, Swedenborg defines what he means by "universal sciences," and in the second explains briefly what he means by "the universal of all." Thus:

(q) This may be illustrated by the case of physics, mathematics, philosophy, metaphysics, and theology, which being universal sciences, comprehend in their embrace nearly all the other sciences: also by the specific sciences, which respectively to their particular subdivisions or branches, may again be considered as generic sciences.

(r) Respecting the science of sciences, or the universal mathematics, see the *Economy of the Animal Kingdom*, and specifically the Doctrine of Order and Degrees, or the Introduction to a Rational Psychology, n. 639, 649-651.

Respecting the idea of universality of the cited disciplines in (q), that they *are* such may be considered self-evident. But to illustrate, landforms (the focus of study of geomorphology) are the product of forces acting on the earth's crustal matter over time (the focus of attention in physics). But geomorphology has only the very remotest connection with immunology, whereas physics does have close connections. This does not mean that all immunologists must be physicists; only that there is intersection of the sets of their fields of interest.<sup>84</sup> The universality of mathematics needs no elaboration, for it can find application as a tool in most other sciences. And likewise with philosophy and its subordinate metaphysics, dealing as they do with questions of the nature of being and knowledge, etc.; their universality is obvious. Finally, theology with her central concern with the nature of God, is clearly the most universal of all.

When Swedenborg speaks of a universal mathematics (or universal mathesis), he is referring to his hope to construct a kind of unifying theory that would embrace all knowledge. Although he

seems to have originally envisaged this as something that could be expressed in mathematical terms, as it transpired, he developed the doctrine of series and order (also called the doctrine of series and degrees)<sup>85</sup> in its stead. This developed into the doctrine of correspondences, which, if applied, brings the whole of creation into a connected whole, embracing both the physical and mental realms of creation.

(To be concluded)

## NOTES

1 The author is well aware of the existence of the wealth of literary sources, both primary and secondary, relating to the authors named here; and he is only too well aware of his own ignorance of them. However, if an awareness of one's ignorance were to lead to hesitation in approaching, or failure to attempt, an enquiry of some kind, none would ever be made. In my own case, and in what follows, I draw on W. T. Jones' *A History of Western Philosophy*, 2nd ed., Harcourt, Brace & World, New York, 1969, in four vols. Jones writes with great clarity, and illustrates his treatment with many quotations from primary sources, giving the reader a sure basis for appreciating the philosophy of the man whose thoughts he is expounding.

2 See Gilbert Ryle, "Plato," *The Encyclopedia of Philosophy*, Paul Edwards, Ed. in chief, (London & New York: Macmillan) 1967; reprinted 1972.

3 Plato's *Republic*, Chap. VIII. From the translation in W. T. Jones, *A History of Western Philosophy*, 2nd ed., vol. 1. *The Classical Mind*, (New York: Harcourt), 1969, p. 137.

4 For a comparison of early philosophical ideas with those of the Writings, see Linda Simonetti Odhner, "Some Philosophers and Scientists Look at Nature," *The New Philosophy*, 86:2:90-98.

5 D. W. Hamlyn, "Epistemology, History of," in *The Encyclopedia of Philosophy*, *op. cit.* vol. 3, p. 12.

6 Jones, 1:245.

7 Quoted in R. A. Markus, "Augustine, St." in *The Encyclopedia of Philosophy*, *op. cit.*, vol. 1, p. 200; from Augustine, *DeMor. Eccles. I*, 27, 52.

8 Jones, 1:133.

9 Jones, 1:212-213.

10 P. K. Feyerabend's comment that while theories are meaningful apart from observations, "observational statements are not meaningful unless they have been connected with theories" (from "Problems of

Empiricism" in R. G. Colodny, *Beyond the Edge of Certainty*, (Englewood Cliffs, New Jersey: Prentice-Hall), 1965, p. 145-260; quoted in David B. Kitts, "Physical Theory and Geological Knowledge," *Journal of Geology* 82:1:1-23, (1974) speaks to the same point. And the need for particular instances to be placed in an abstract, cultural context to take on meaning is well illustrated by the hero in the film *The Gods Must Be Crazy*; for him and his Bushmen group the bottle that fell from the sky had no meaning in terms of the function that its form was meant to serve.

11 In "Epistemology, History of" in *The Encyclopedia of Philosophy*, vol. 3, p. 15.

12 Francis Bacon, *Novum Organum* (1620), First Book no. 19, (Chicago: *Encyclopaedia Britannica*) 1952, p. 108.

13 Francis Bacon, *op. ext.*, nos. 26-31.

14 Jones, vol. III, *Hobbes to Hume*.

15 Jones, III:76, quoted from *The Works of Francis Bacon*, J. Spedding et al, (eds.) vol. IV, Longman, 1886, pp. 7 & 26-27.

16 For further analysis of this, see P. K. Feyerabend, "Problems of Empiricism," in R. G. Colodny, *op. ext.* pp. 145-260; M. & I. F. Goldstein, *How We Know*, (New York: Plenum), 1958; and Karl R. Popper, *Conjectures and Refutations*, (London: Routledge & KeganPaul), 1963.

17 Jones, III:86.

18 *Ibid.*, p. 87.

19 *Ibid.*, p. 87. Added emphasis.

20 Committee on Science and Creationism, National Academy of Science, (Washington D.C.: National Academy Press), 1984; reprinted 1987.

21 See R. S. Peters' entry on Hobbes in *The Encyclopedia of Philosophy*, vol. 4, pp. 30-46.

22 René Descartes, *Discourse on Method* (Baltimore: Penguin), 1964, trans. A. Wollaston, p. 36.

23 *Ibid.*, pp. 41-42.

24 *Ibid.*, p. 50.

25 *Op. ext.*, III:183.

26 Descartes, *op. ext.*, p. 62.

27 Quoted in Jones, III:184, from Descartes' *Meditations*.

28 Jones III:189.

29 Charles Singer, *A Short History of Scientific Ideas to 1900*, (Oxford: Oxford Univ. Press), 1959, pp. 259-260.

30 Biographical Note on Descartes in *Great Books of the Western World* (Encyclopedia Britannica), 1952, vol. 31, p. ix.

31 See Swedenborg's *journal of Dreams*.

32 Other philosophers before Swedenborg addressed the mind-body problem, Spinoza and Leibniz for example. These ideas are discussed in the Writings—in the Memorable Relations (TCR 695-96) and in *Last Judgment* (Posth.) 264, for example.

33 The Biographical Note on Locke in the collection of some of his works in the Great Books series (vol. 35) published by the *Encyclopedia Britannica* is the source of the biographical information that follows.

34 *Essay*, Bk. IV, Chap. I, Section 2. In subsequent references to this work (New York: Dover), 1959, in two volumes, citation will be abbreviated—to IV:1:2 in this case.

35 *Ibid.*, II:6.

36 Jones, III:247-248.

37 *Essay*, IV:1:3.

38 *Ibid.*, IV:1:7.

39 *Ibid.*, IV:2:1.

40 *Ibid.*, IV:3:6.

41 *Ibid.*, IV:2:14.

42 Jones, III:279.

43 Quoted from Lewes's *Biographical History of Philosophy (1845)* in Editor's Preface, pp. iv-v, to Berkeley's *A Treatise Concerning the Principles of Human Knowledge* (La Salle, IL: Open Court), 1963. Hereinafter referred to as *Principles*.

44 *Principles*, pp. 5-6.

45 *Ibid.*, pp. 6-7.

46 *Ibid.*, pp. 20, 21.

47 *Ibid.*, p. 29

48 *Ibid.*, p. 30.

49 The numbers that follow the selections are the paragraph numbers of the *Principles*.

50 Frank Thilly, *A History of Philosophy*, (Revised by Ledger Wood), 3rd ed. (New York: Holt), 1965, p. 655.

51 *Principles* n. 66. The bracketed phrase is from the first edition of the work.

52 *Human Understanding*, Sect. XII, Part III, in *Enquiries Concerning Human Understanding and Concerning the Principles of Morals*, edited by Selby-Bigge, (Oxford: Clarendon Press), 3rd ed., 1975, p. 165.

53 Jones, III:296.

54 *Human Understanding*, *op. ext.*, p. 19.

55 Jones, III:303.

56 *Human Understanding*, p. 24.

57 *Ibid.*, p. 55.

58 The idea that man could conceive of a circle, or anything for that matter, without a foundation for the idea in sense experience is denied in the Writings, as has been amply shown in earlier parts of this treatise.

59 *Ibid.*, pp. 25-27.

60 *Ibid.*, p. 63.

61 *Ibid.*, p. 74.

62 Quoted in Jones, III:304, from Hume's *Treatise of Human Nature*.

63 Based on *Treatise of Human Nature* I.□iv:6 quoted in part in Jones, III:305.

64 *Ibid.*

65 *Human Understanding*

66 *Ibid.*

67 *Ibid.*, p. 153.

68 We are fully aware of the inadequacy of the treatment that follows; but the omission of Kant from this survey would be a serious one. So we plan here to present only Kant's response to Hume's denial of cause and effect relationships as generally understood (as necessary connection), and his emphasis on the *mind* and its judgments in the examination of the world, rather than on the external world itself in the Lockian empirical sense. Our presentation is solely dependent on Jones' treatment of Kant and on the passages Jones quotes from Kant's *Critique of Pure Reason*.

69 Jones, IV:14.

70 From the front matter of the 2nd edition of *Critique of Pure Reason*, quoted in Jones, IV:17 & 18.

71 Jones, IV:19.

72 The first of these approaches is rejected because it brings about no connection between our concepts and the assumed external objects of our experience, while the latter is rejected because it is impossible.

73 *Critique of Pure Reason*, quoted in Jones, *ibid.*, p. 22.

74 Jones, IV:22

75 Notes 244-257, Oct.-Dec. 1968.

76 In Notes and Comments, *New Philosophy*, Jan-March 1986.

77 The following quotation is drawn from *Words for the New Church*, vol. 2, pp. 447-448.

78 *Animal Kingdom* 7.

79 *Animal Kingdom* 459, footnotes (f).

80 The letters in parentheses give reference to Swedenborg's footnotes. These contain a lot of very substantial material, and the reader is encouraged to consult them.

81 *Divine Providence* 318:8.

82 Quoted in David B. Kitts, "Physical Theory and Geological Knowledge," *Jour. of Geology*, 82:1:3, Jan. 1974, from P. K. Feyerabend, "Problems of Empiricism" in R. G. Colodny (ed.), *Beyond the Edge of Certainty*, (Englewood Cliffs, New Jersey: Prentice-Hall), 1965, p. 213.

83 As, for instance, in his *Conjectures and Refutations*, (London: Routledge & Kegan Paul), 1963.

84 For a discussion of the relation of the physical sciences to geology, see David B. Kitts, "Physical Theory and Geological Knowledge," *loc. cit.*, 1974.

85 See the current series (1987-88) of Philosophical Notes by Edward F. Allen in *The New Philosophy*, titled "Swedenborg's Philosophy as a Connected Whole."