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A CRITIQUE OF MATERIALISM

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THE PROBLEM OF ORDER

What is order? I quote the relevant definition from Webster's Dictionary. Order is: a) a condition in which everything is so arranged as to play its proper part; b) the fixed arrangement of phenomena, both physical and psychical. Viewed rather more interiorly, I suggest that it is *the qualitative aspect of the elements of reality*—whatever they may be, substances, forces, forms of energy, curvatures in the space-time continuum—*whereby they conspire to produce the complex universe* of which we are aware. This would fit in with Swedenborg's definition of order:

“Order is the quality of disposition, determination, and activity of the parts, substances, or entities, which constitute form, giving rise to state, whose perfection is produced by wisdom from its own love. . . . Because wisdom from love makes form, and *the quality of the state is according to the order in it*, it follows that God is order itself” (TCR 52, 53). [Italics added.]

The first inference to be drawn from these definitions is that if there were a lesser degree of order, there would be a less complex universe. For instance, we know the inert gasses, neon, argon, krypton, xenon and radon. Is there any reason inherent in the nature of reality why all chemical elements should not be of that inert nature, and the existence of chemical compounds therefore be impossible? Why should the universe not be dead, in all senses of the word, with nothing happening? Jeans, in *The Universe Around Us*, takes it for granted that the elemental particles of the original universal nebula—molecular, atomic, or even smaller—

* Continued from the October-December, 1958, issue, pp. 367-378.

should all have been in the most rapid motion. Why? This is a question which Aristotle thought could not be baulked. Thibaut, in *Energie Atomique et Univers*, takes nuclear, protonic and electronic *spin* for granted. Why?

These fundamental questions are simply not faced. The modern materialist buries his head in the sand just as Leucippus, the first Greek atomist, did.

"Leucippus . . . did not consider any moving force to be a necessary hypothesis. In the beginning existed atoms in the void, and that was all: from that beginning arose the world of our experience. . . . Aristotle blames the Atomists for not explaining the source of motion and the kind of motion—but we ought not to conclude that Leucippus meant to ascribe the motion of the atoms to chance: to him the eternal motion and the continuation of motion required no explanation" (Copleston, *A History of Philosophy*, Vol. I, p. 74).

Auguste Comte (1798–1857), the father of 19th century materialism, more consciously repudiated explanation. He excluded from his system of philosophy everything but the natural phenomena or properties of knowable things, together with their invariable relations of coexistence and succession, as occurring in time and space. He held all inquiries into causes, both efficient and final, to be useless.

The vast mass of semi-educated people, and of the people whose intellectual energies are wholly absorbed in living—in the wider or narrower sense of the word—are perfectly justified in disregarding fundamental issues, and accepting this complex universe just as a basic fact of experience. But men who are in any way leaders of thought, and who are engaged in working out a *Weltanschauung* for themselves, must be prepared to face the question: How is it that the elemental entities of reality are so constituted as to have worked together to produce this amazing universe and to keep it in being? They must not allow themselves to be imposed upon, by philosophers whose system is inadequate to deal with the problem, with the statement that the question is pointless, irrelevant or unanswerable.

Hoyle, in the *Nature of the Universe* (Blackwell, 1950, pp. 115, 116), has a very good paragraph on this too neglected question:

"The apparent simplicity . . . of the materialists' case is only achieved by taking the existence of the Universe for granted. . . . Why is the Uni-

verse as it is and not something else? Why is the Universe here at all? It is true that at present we have no clue to the answers to questions such as these, and it may be that the materialists are right in saying that no meaning can be attached to them. But throughout the history of science people have been asserting that such and such an issue is inherently beyond the scope of reasoned inquiry, and time after time they have been proved wrong. . . . All experience teaches us that no one has yet asked too much. How then can we accept the argument of the materialists, when the essence of their case lies in throwing up the sponge?"

THE PROBLEM OF THE EXISTENCE OF THE PHYSICAL UNIVERSE

We are on difficult ground when dealing with this particular subject, because of the rapid changes in current cosmological theories. My argument will be, however, that whichever of the theories one embraces, on that theory materialism cannot explain the existence of the universe.

Let us first remind ourselves that we have found that materialism cannot account for the non-physical parts of the universe: it cannot account for the intellectual processes whereby one ascertains truth; it cannot account for love; nor can it account for the purposive element in behavior or in the universe generally. And we have seen that it cannot account for the general characteristic of order. We are now, in this section, chiefly concerned with matter itself and with energy. But let us first consider a problem which is basic to the whole discussion, that of a first cause.

The Conception of a First Cause. The objection of the materialists, as of other monists, to the conception of a first cause is that it gets one logically no further. For there is an infinite regression. Every cause has an anterior cause. The postulated first cause must have one also, and, indeed, a mathematically infinite series of causes anterior to it. The flaw in the argument is that it applies to mechanistic, not to purposive, causation.

Aristotle first put forward the argument for a first cause. He put it forward in the form of the Unmoved Mover, in a form which seems quite inadequate. But even as he put it forward, he imagined it to be wholly transcendent. It was outside change and time: it was the eternal source of eternal motion. It was pure act, and so purely spiritual and intellectual.

If the only type of causation were mechanistic, the materialist objection would be good. Mechanistic causation is all on one

level of reality; one can go back into the past for ever without finding a cause of a higher degree of reality than any of the others. It is *apparently* eternal. It is certainly eternal in the mathematical sense. The essence of purposive causation, on the other hand, is that each step is transcendent. Each step takes one to a higher stratum of reality, which has a greater integrative potency, till we arrive at the final source of coherence—at order itself. While mechanistic causation is responsible for the never ending flow of process of almost infinite variety, purposive causation is responsible, among its other effects, for impressing on all that quasi-infinite variety and quantity of process the simple law of least action. Its capacity for integration can be seen from that.

Therefore the objection of the materialists is quite irrelevant, and it is due to their not understanding the problem. Every clear thinking man must see the need for one transcendent source of the coherence of the universe.

Matter and Energy. My argument up to this point has been that only the first cause can have the qualities of self-existence and eternity. I now tackle the problem conversely, by putting forward reasons for believing that neither matter nor energy is self-existent or eternal.

The evidence we shall have to consider consists of:

- 1) The second law of thermodynamics as extended.
- 2) The evolution of chemical elements in the universe from hydrogen.
- 3) The expansion of the universe.

The following arguments will stand out in higher relief if I introduce them by a quotation from as noted a monist philosopher as Bertrand Russell: "There is no reason to suppose that the world had a beginning at all. The idea that things must have a beginning is really due to the poverty of our imagination" (*Why I am not a Christian*, p. 7).

The Second Law of Thermodynamics. The second law of thermodynamics reads: "It is impossible for a self-acting machine, working entirely independently of any external agency, to convey heat from one body to another at a higher temperature." The physical universe, as generally envisaged, is a self-acting machine. The law can be given, and is in fact nowadays generally given, a

more universal application by applying it to energy generally, instead of to heat only. We can then speak of energy-potential instead of temperature. Thus widened, the effect of the law is to assert that no body can acquire energy except from another at a higher potential than itself. As all bodies continually radiate energy, there is thus a continuous and permanent loss of energy-potential on the part of those at the highest potential—unless it is made good by a source outside the physical universe. As Jeans puts it:

“In terms of quanta the transition is from a few quanta of high energy to a large number of quanta of low energy, the total amount of energy of course remaining unaltered. The downfall of the energy accordingly consists in the breaking of its quanta into smaller units. And once the fall and breakage have taken place, it is as impossible to reconstitute the original large quanta as it was to put Humpty Dumpty back on his wall” (*The Universe Around Us*, 4th edition, 1945, p. 279).

He goes on a little further:

“To argue that the total energy of the universe cannot diminish, and therefore the universe must go on for ever, is like arguing that as a clock-weight cannot diminish, the clock hand must go round and round for ever” (*ibid.*).

Now I ask you to turn from the future, to which Sir James Jeans leads us, to the past. On the theory which has hitherto been orthodox, the energy potential of the universe has diminished from a calculable maximum. And that maximum was at a definite number of years ago. It is not relevant to the argument whether we possess sufficient data actually, now, to calculate the exact maximum potential and the exact number of years ago when it first existed. The fact remains that the universe is like a clock which was once wound up and is now running down; and, moreover, for the universe, as for the clock, time began to run from the moment when it had been wound up: because up till then there had been no process—unless, of course, there had been the process of winding up, when another sort of time would have run—or unless again the Hoyle-Bond-Gold hypothesis of the continuous creation of matter is accepted. Unless one is quite mad, creation of any sort, including continuous creation as one variety, implies *a creator*, which is, of course, the antithesis of materialism.

I may at this point say that the idea of continuous creation fits very well into the general scheme argued here; though I am doubtful about Hoyle's view that it has occurred from eternity. It may well have occurred from a mathematical infinity of time on the physical time scale; but it is possible, and to my mind probable, that this infinite regression could have started at a definite point on a higher time scale—or might it have been the other way round? This would be on the analogy of an infinite series totalling up to a definite number. In other words, I am inclined to the view that physical time had a beginning. But this is a subsidiary point. Our consideration of the second law of thermodynamics has shown us that *physical energy was created* at the beginning of the physical universe, or is in process of continuous creation; or, as a third possibility, was created at the beginning of the universe, and has been in continuous creation since. *In none of these cases can energy be self-existent.*

The Evolution of the Chemical Elements in the Universe from Hydrogen. This is the argument put forward by Hoyle in *The Nature of the Universe*.

It is now generally agreed that the sun's energy is chiefly derived from a complicated process involving the conversion of hydrogen nuclei into helium nuclei. Hoyle says that in 1948 it was [virtually] proved that hydrogen formed about 91% [of the mass] of the sun and stars, whereas in the planets hydrogen forms only about a third of the total (pages 35 and 36).

As regards the evolution of the other elements from hydrogen he writes:

“As a recurrent theme in these talks we have seen that hydrogen is the basic material out of which the universe is built. Helium is common in stars compared with other elements because it is produced in appreciable quantities inside them. The abundances of the rest of the elements are so small that it is natural to ask whether all the material in the universe started its life as hydrogen. It seems to me very likely that this is correct. I think that the other atoms have all been produced within the stars, in particular that the heavy elements such as iron have been built up in the dense collapsed supergiants we have just been describing” (pp. 79, 80).

And he draws the inference from this:

“Perhaps you may think that the whole question of the creation of the universe could be avoided in some way. But this is not so. To avoid the issue of creation it would be necessary for all the materials of the universe

to be infinitely old, and this they cannot be. For if this were so, there would be no hydrogen left in the universe. Hydrogen is being steadily converted into helium and other elements throughout the universe, and this conversion is a one-way process—that is to say, hydrogen cannot be produced in any appreciable quantity through the breakdown of the other elements. How comes it then that the universe consists almost entirely of hydrogen? If matter were infinitely old this would be quite impossible. So we see that the universe being what it is, the creation issue simply cannot be dodged” (pp. 105, 106).

To put the matter, from our point of view, into more precise form: hydrogen, which is the basic element in the universe, has been created in the astronomically considered fairly recent past, as otherwise it would all have been converted into heavier elements. In other words, hydrogen—and, *a fortiori*, the other elements—are not self-existent: they have not the quality of eternity.

The Expansion of the Universe. The expansion of the universe is now a well accepted theory. If we look back in time, instead of forward, as we are usually invited to do, there are two alternatives: a) the universe started a definite number of years ago from a focal point or blob, or b) in one form or another there has been continuous creation.

Consider the first alternative in its most dramatic form, Gamow’s suggestion that the universe started as a highly condensed ball of nuclear fluid—the stuff of which the nuclei of atoms and electrons consist—which, owing to the forces inherent in it, expanded explosively, giving birth simultaneously to the galaxies of stars and to the atoms of which they consist. (George Gamow, *Atomic Energy*, Cambridge, 1947, pp. 85–88.)

The implications of this theory are, alternatively: 1) that the nuclear fluid itself only came into existence a split second before it exploded, or, 2) that, until it exploded it was prevented from doing so by some force vastly more powerful than any known physical force.

One can conceive the possibility of alternatives intermediate between Gamow’s big-bang theory and Hoyle’s theory of expansion, in which the force acting is derived from the new atoms of hydrogen appearing thoroughly dispersed throughout the whole universe. In none of these cases, however, can we get away from the notion of creation: and so the universe cannot be self-existent; it does not possess the quality of eternity.

CONCLUSION

It would be as well that we should see our problem in broad historical perspective.

The matrix out of which philosophy developed was the pantheistic, panpsychic view of the universe of the early Greeks. They saw in the universe divinity, soul and the urge of life. But matter, divinity, soul and life all formed one reality, or nearly one. There seems to have been no trace of an apprehension of a stratification of reality. Then came the beginning of transcendental philosophy. Love and hate and *nous* were imagined as different from matter and as controlling it. It was at a third stage, as a repudiation of these transcendent entities—love, hate and *nous*—that materialism came into being. In the view of the Greek materialists, whatever the appearance of reality to men, it consisted only in matter and its motion. Divinity and soul as such had gone. The most modern, 20th century forms of materialism—such as are free from panpsychism—differ only in that the conceptions of energy, of wave-packets of probability, and of the distortion of space-time, have taken the place of matter and motion.

In modern times, starting with the Renaissance, two opposing tendencies have become starkly differentiated, neither succeeding in providing adequate answers. There have been men who have sought mechanistic explanations for everything—implying, therefore, that causation was effective only on the very lowest level. Over against them have been those whose tendency has been to explain everything by powers working downwards—from God or from mind.

Now, all those who have studied the history of thought in the last few centuries will have noticed two remarkable tendencies affecting these groups of men. The first has been the encroachment of scientific fact upon fields in which it had hitherto been thought that mind or personality alone were relevant. This has resulted in religion, and idealism in general, being frequently felt to be fighting a continually retreating rearguard action against science. -

As against this, however, is the less generally realized fact of the successive abandonment of extreme mechanistic hypotheses in favor of less crudely mechanistic ones. Many examples could be

cited. Consider Descartes, for instance, who most definitely was not a materialist. He nevertheless set out to explain the effect of the mind on the body by the motion of material particles. I suggest that the reader dip into his *Traité des Passions de l'Âme*. By the time he has reached article 16, he will realize, that the mechanism imagined by Descartes is so crude that it would appear ridiculous to any modern scientist, however materialistic his bias.

By extrapolating from these facts of past history, one might conclude that on the one side there would be an everlasting softening of materialist theory, and on the other a continual retreat by religion from its former positions—presumably without the two ever meeting; for the basic hypotheses, as hitherto held, appear irreconcilable. The prospect for religion would be bleak—an ever growing skepticism.

All this would be changed if the hypothesis worked out in this paper were accepted. This hypothesis is that of the stratification of reality, with, on each major stratum, a closed field of mechanistic causation and of conservation of energy; the link between these major strata being purposive causation unaccompanied by interchange of energy.

The discovery of mechanisms of increasing complexity and subtlety on every stratum of reality could go on for ever, and would be welcomed; for it would be realized in the first place that the very form of the laws of mechanistic causation is determined by laws of purposive causation, as the principle of least action in conjunction with the law of conservation of energy (plus mass) determines all physical law.

And, indeed, the recent admission by the medical profession of the existence of psychosomatic disease opens an exciting new vista of the possibility of varying the course of mechanistic causation by the application of purposive causation.

When I decide to raise my hand, and my hand rises in the air, the course of mechanistic causation is being altered by purposive causation acting from the spiritual plane. In the language of Swedenborg, this change is effected by influx from the spiritual into the natural world, and so, considered in itself, is a miracle, though it does not appear as such (Addition to *True Christian Religion; Coronis*, p. 107). Now, psychosomatic disease and the

cure thereof by means of a new orientation of the mind open up the vista of purposive causation, operating from progressively more interior strata, affecting the course of mechanistic causation on the physical plane more and more profoundly, producing what in ordinary language would be called miracles, including the Divine miracles recorded in the Gospels.

The implications of this hypothesis take us even further afield. Arguing purely from the scientific evidence now available, there are two major cosmological possibilities: either the universe is running down—the till recently fashionable hypothesis; or, according to the Hoyle-Bond-Gold hypothesis, there is a continuous creation of matter. There is yet another possibility. If the universe is not running down, it is at least remaining at the same total energy potential. As can be inferred from our consideration of the second law of thermodynamics, this would imply the continuous creation of energy-*potential*. Indeed subsistence in the full sense of the word implies continuous creation (AC 3648:2, 5116:3, 6482, 9502; DP 3:2; CL 86).

Now, creation in either sense seems to contradict both the general laws of conservation and the more specific laws which I have suggested, of closed systems of conservation in each of the major strata of reality. Is any reconciliation possible?

We have to remember the increasingly transcendent character of purposive causation as one goes up the scale. It is the Divine which, for instance, by imposing on mechanistic causation the principle of least action, gives to the functioning of the laws of conservation their direction. Similarly, we may suppose, do the laws of creation exercise a hidden control over the laws of nature as determined by the joint effect of the laws of conservation in conjunction with the principle of least action.

Let us for the moment imagine a two-dimensional universe in which the laws of conservation would suffice to determine the course of all process. In a three-dimensional world they would no longer suffice: the law of least action would have to assume control to determine the course of all process. What would happen if we were to add perpetual creation to our universe as a fourth dimension? Let us be clear that all process in its minutiae would be affected thereby. For every process is accompanied by a dispersal of energy—a drop in energy potential. But if the universe

really subsists, if it is not continually running down, that drop of energy-potential must not occur; it must be prevented from occurring by a creative *conatus* acting through the laws of creation.

In the four-dimensional course of process the routine laws of nature, without being abrogated, must have direction imposed upon them by the laws of creation. In other words, creative law must be a higher level purposive law than the principle of least action.

Through the insight which we have attained of creative law active in the *singularissima* of physical process, it may be that we now see the inwardness of Swedenborg's statement, that subsistence is perpetual creation, as we were not able to see it before.

ADDENDUM

The argument developed in the last few pages leads to the solution of one of the most baffling of philosophical problems—that of free will: of the paradox involved in the apparent contradiction between causation and unpredictability (what Whitehead called the originality of response to stimuli, and which, as we have seen, he accounted for by imagining life to reside in empty spaces, especially in the interstices of the brain). This paradox has troubled philosophers deeply, for instance, Leibnitz. It has been at the root of the frequent denial of free will. It was probably at the root of Bertrand Russell's attempt to eliminate causality from the field of metaphysics.

According to the hypothesis developed in this paper, every event is involved in the never ending stream of mechanical causation, so that, if there existed only one stratum of reality, the flow of events would be predetermined to infinity. The element of unpredictability is introduced when another sort of causation acts downwards on to lower strata from the higher strata which we associate with the mind. This purposive causation can change the direction of flow of mechanistic causation on the lower strata.

It might be argued that a purposive cause, in so far as it introduces an element of unpredictability, must itself be uncaused. This is not an unreasonable objection. Unpredictability implies originality, that is, the introduction of something altogether new. We are, in fact, faced with the element of creativity in human behavior. Rather than denying thoroughgoing causality to purposive causation, we would be wise to follow up creativity to its source.

Now Swedenborg tells us in many places (e.g., AC 4319), though not in so many words, that unregenerate men insist on believing that the source of their own creativity is in themselves. This implies that we are each of us individual creators—surely an unreasonable conception. As each stratum of reality acts by purposive causation on the stratum beneath it, we can see that each stratum draws its originality by purposive causation from the stratum above it. The ultimate source of creativity can be only the Infinite. It is because of this influx, direct and indirect, from God that man is able, so wonderfully or so disastrously, to change the course not only of physical events but also of trends of thought and of emotional currents.

It is in human behavior that the meeting of purposive and mechanistic causation is so supremely evident.

SWEDENBORG SCIENTIFIC ASSOCIATION

The Sixty-second Annual Meeting of the Swedenborg Scientific Association will be held at Bryn Athyn, Pennsylvania, in the Auditorium of Benade Hall at 8:00 P.M., Wednesday, May 20, 1959.

There will be reports and election of officers, after which Bishop George de Charms will deliver the Annual Address entitled: Appearance and Reality.

MORNA HYATT, *Secretary*