

refers the reader to "K. O. Schmidt, *op. cit.*, p. 44ff." Such chain dissemination of misinformation is no less uncommon than it is to be deplored, and one can only ponder the enigma of a learned writer speaking with such magnificent assurance on a matter in which he is so incompetent.

An article which appears in this issue refers to the previous editor as asking whether THE NEW PHILOSOPHY will enter its proper field as the organ for the systematic study and exposition of the principles in Swedenborg's philosophy. The answer lies with those who are capable of making the magazine such an organ; but we do not feel that they are to be found entirely among those who are engaged in developing New Church education. There is need also for studies in the application of those principles. The membership of the New Church today contains a wealth of specialized knowledge in various professional and technical fields, and literary contributions of value can be made by men who are prepared to survey their fields in the light of Swedenborg's philosophy and publish the results.

BOOK REVIEW

SCIENCE AND HUMANISM: Physics in Our Time. By Erwin Schrödinger. Cambridge University Press. Cloth, pp. 67; price, \$1.75.

This small book raises many questions in the mind of a reader of the works of Swedenborg. Like many other recent books written by scientists for laymen, it expresses a deep unrest among the scientists of today. Fifty years ago the scientist was secure in his belief that matter was fundamental: that it behaved according to fixed laws as a result of forces in the surroundings. He was confident that while as yet he did not know all the laws, still they were knowable. Further research would bring him step by step nearer to a complete understanding of the operation of nature.

However, there were certain problems—paradoxes seen by the Greeks—which still lurked in the background to embarrass the more thoughtful. Moreover it turned out that further research did not always result in greater clarity in understanding nature's laws, but sometimes in greater confusion.

It is with this confusion that Schrödinger deals in *Science and Humanism*, albeit in a very clear and precise manner. Each point is presented in a simple way to the understanding of the interested layman. Schrödinger puts his finger on the crux of each problem, examines alternatives, and refuses to be carried away into easy solutions.

The work is introduced with the question, "What is the value of scientific research?" Schrödinger shows that although its material achievements tend to stand out in the mind of the non-scientist, these are not the chief goal in the mind of the research scientist himself. To Schrödinger the "scope, aim and value [of natural science] is the same as that of any other branch of human knowledge. Nay, none of them alone, only the union of all of them has any scope or value at all, and that is . . . to obey the command of the Delphic Deity . . . 'get to know yourself'" (p. 4). Isolated knowledge of specialists has no value in itself but only in its synthesis with all other knowledge. Scientists have prided themselves on knowing only their own small field and have "denounced as dilettantist the curiosity that aims at the synthesis of all knowledge," but there are signs of opposition to this attitude in the last fifty years.

Now in trying to synthesize recent discoveries, scientists have been compelled to adopt a new viewpoint. A radical change has come about gradually. Matter has turned out to be much less "materialistic." It has ceased to be the "simple palpable coarse thing in space that you can follow as it moves along, every bit of it, and ascertain the precise laws governing its motion"—(p. 13). Scientists still believe, as did Democritus, that matter is "particles imbedded in empty space," but deeper investigation has led them to abandon the idea that such a particle is an individual entity. When one observes a particle such as an electron here and now, and a moment later observes another similar particle very close by, even if there is every reason to assume a causal connection between the two, one must not say that the second particle is the same as the first. "The question of sameness or identity really and truly has no meaning" (p. 18). It is "form" or "shape" or organization, not material content, that gives individuality to a particle. In fact, Schrödinger says, there seems to be no point in thinking of these ultimate particles as consisting of any material.

They are as it were "pure shape, nothing but shape." "What turns up over and over again in successive observations is this shape, not an individual speck of material." All this recalls the first natural points of the *Principia*, which are "pure and total motion."

One wants to know, of course, what the shape of these particles is. However, hope of ever attaining a true model has been abandoned by physicists, for as they penetrate into smaller and smaller spaces, they find nature behaving so entirely differently from what we observe in palpable visible bodies, that no model shaped after large scale experiences can ever be "true" (p. 25). This brings to mind Swedenborg's principle that nature is the same in greatest and least, which New Church men have seen confirmed in the model of the atom as a little solar system. Schrödinger apparently contradicts this principle, but no more so, it seems to this reviewer, than does Swedenborg himself in his *Principia*. It is evident that this principle is not to be applied indiscriminately.

The goal toward which the classical physicist strove was a clear and complete description of a physical event, a description which would inform one precisely of what is happening at any point in space at any moment of time within the domain covered by the event. This was the postulate of continuity of description. It now appears to be unfulfillable, that there must be gaps in the description. We cannot keep a particle under continuous observation and we cannot assume that "it must have been somewhere in the intervals." Observations are to be regarded as discrete disconnected events. Schrödinger asks, as we do, whether the impossibility of a gapless description, of a continuum, is inherent in nature or only a result of man's shortcomings.

But the problem is much deeper, as the author points out. If events are to be considered as isolated phenomena, if the continuum is to be abandoned, the principle of causality must also be abandoned. This is startling, but upon looking further into what the physicist means by causality, we see that denial of this principle is not inconsistent with an acknowledgment of final causes. Schrödinger paraphrases the principle of causality as: "What happens anywhere at a given moment depends only and unambiguously on what has been going on in the immediate neighborhood just a moment earlier" (p. 29). The question of causality is "by no

manner of means settled" among physicists, and wave mechanics was developed as an "emergency exit to escape the delicate situation" (p. 29).

Another thought may occur to the reader, as it has to philosophers of the present day, a thought that perhaps in the principle of indeterminacy in modern physics lies the answer to the age old problem of free will. This problem is one of those referred to in the second paragraph of this review. If, as according to classical physics, physical events are completely determined by forces in the surroundings, and if man's body is a physical organism, how could man have any free will? On the other hand could indeterminacy allow free will to step into the gaps? Could free will determine those events which the law of nature leaves undetermined? Pascual Jordan, among others, seized on this hope, but Schrödinger shows it to be "physically and morally an impossible solution." It is physically impossible under the laws of quantum mechanics, which, while leaving single events undetermined, yet predict a quite definite statistics of events. It is just as objectionable to interfere with a statistical law as with a strictly causal mechanical law. And it is morally impossible because "there is no statistics in the reaction of the same person to the same moral situation" (p. 61). He paraphrases Cassirer: "Free will includes as its most relevant part man's ethical behavior. This is anything but haphazard. It is intensely determined by motives." Cassirer shows that it is absurd to base free will and ethics on physical haphazard. He makes the antagonism between free will and determinism dwindle to nothing so that in the end Schrödinger concludes that perhaps after all, physical determinism is quite a suitable correlate to mental free will—better at least than physical haphazard.

Here Schrödinger for the second time in this book points to the difficulties that arise when there is no recognition of the discrete degree between mind and body. In both cases he recognizes mind as something higher, obeying different laws. Thus Schrödinger concludes that, "Quantum physics has nothing to do with the free will problem. It is not furthered one whit by the latest development in physics," and (quoting Cassirer): "a possible change in the physical concept of causality can have no immediate bearing on ethics."

Thus Schrödinger has raised many questions and shown the

impossibility of some proposed solutions. But the aporia of the physicist remains. What will be the outcome? A suggestion was made at a recent S. S. A. program that just as there was a new orientation brought about by the first advent which allowed men to make great strides in science, so now there is need for a new orientation based on the revelation to the New Church.

MORNA HYATT

NEWS NOTES

In November, and again in February, the Swedenborg Scientific Association presented a program for the Bryn Athyn public in conjunction with the Civic and Social Club. The programs were held in the Clubhouse in Bryn Athyn following a Sunday night supper.

The November program, arranged by Dr. Hugo Odhner, featured talks by two theological students, Fred Schnarr and Robert Junge, on the subject of "Swedenborg Among the Philosophers." With Mr. Schnarr taking the early period and Mr. Junge the later period, the history of philosophy was traced up to the time of Swedenborg. Three doctrines were traced through these periods, the doctrine of God, of creation, and of the relation between the spiritual and natural. In summing up it was pointed out where Swedenborg had contributed completely new ideas to these subjects.

In February Mr. Charles S. Cole both arranged the program and presented it in its entirety. His subject was "Philosophy and the Life Sciences," and he arrived at the Clubhouse with a brief case full of current books on philosophy and science. Mr. Cole quoted from these current works and pointed out where they were in error and made false assumptions. Particular attention was paid to the attempts of current philosophers to discover the source of life.

There were large audiences at both meetings, and much discussion followed the talks. It was agreed by everyone who attended, that both meetings were very successful, and it was suggested by officers of both organizations that similar programs, perhaps on a larger scale, should be arranged for next year.

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