

Reviews

Zygon's intention is to foster a new intellectual community, conversant with the general history and implications of the sciences as well as with the past, present, and future functions of man's religions and values. In calling the study of the interrelations of science and religion a "new" field, we do not imply that none has worked it before our time but, rather, that present efforts are too scattered to create the critical mass necessary to the generation of common conceptual schemes and truly cumulative knowledge.

We intend to provide a comprehensive acquaintance with present efforts and some review of past achievements. We shall print reviews of contemporary books and articles as well as selected past classics. We shall also regularly review periodical literature to bring together for better reference many significant contributions now appearing in specialized journals.

Subsequent issues will contain a more substantial Review section. For this issue, it seemed essential to print together all the papers from the Meadville conference. We will naturally welcome suggestions for books to be reviewed in future issues.

R. B. T.

The Relevance of Science: Creation and Cosmogony. By C. F. VON WEIZSÄCKER.
New York: Harper, 1964. 192 pages. \$5.00.

The substance of this book is contained in eight lectures on the history of man's understanding of creation and cosmology. These begin with a treatment of cosmogonical myths and end with modern evolutionary theory and astronomy. They include treatments of the Old Testament, Greek philosophy, Christianity, and leading thinkers from Copernicus to Kant. In these chapters the author's brilliant gift for lucid expression, readily intelligible to the non-specialist, is once again apparent.

This historical material is inclosed between an introductory and a concluding chapter in which its relevance to our present situation is explained. The thesis is presented that science has now taken over the role formerly played by religion, thus giving rise to the phenomenon of scientism. Scientism is negatively judged because science, despite its immense merits, is unable to determine the use to which it is put. Science is a child of Christian faith and probably could not have arisen apart from the belief in order engendered by the Christian belief in God. The rise of science is also to be seen as a part of the larger process of secularization, a process grounded in the de-deification of

worldly powers by Christianity. Yet science in particular, and secularization in general, have lost contact with Christianity. Thereby they have failed also to understand themselves.

My reactions to the two parts of the book as I have distinguished them are quite different. The eight chapters constituting the heart of the book are admirable, even though specialists will object to individual points, and I myself will raise some critical questions below. One can only be amazed at the breadth of historical, humanistic, and theological understanding and knowledge of this philosopher-scientist—and grateful for his willingness to present his material so simply and helpfully. On the other hand, the introductory and concluding chapters seem to me somewhat artificially conjoined with the others—despite elaborate explanations of the intended connections—and fail either to propose original ideas or to go far toward illuminating familiar ones. I find little to quarrel with in these chapters except their omissions, but also little from which to learn. Hence I shall devote the remainder of my space to critical consideration of selected issues suggested in the eight central chapters.

In the treatment of cosmogonical myths Weizsäcker presents three types of interpretations—the physical, the political, and the psychological. He intends to give to each its due place and to emphasize that the myth in its integrity is not really understood by any of these interpretations. This caution is commendable, but the chapter raises more questions than it answers. By its allocation of space, its role in the book, and the obvious thrust of the author's interest, the myths appear chiefly as primitive science or philosophy more or less intelligible as products of a mentality much like our own. Yet the author's own qualifications of this view make clear its inadequacy without offering an alternative interpretation.

If the purpose of this chapter really is to illumine the theses offered in the introductory and concluding chapters rather than simply to reflect the present state of unclarity in the interpretation of myth, its inconclusiveness is a serious weakness. If myth is a prescientific explanation of the world involving belief in multiple supernatural powers, we can understand the process of secularization as that of the progressive elimination of such powers from the world view. This seems to be Weizsäcker's main view. But if in fact, as he says, the interpretation by Jung "penetrates most deeply into the origin of the immense power gods have always exerted on mankind," his rather simple view of secularization would also need major adjustment. What is the relation between dispensing with the God hypothesis in scientific explanations of the universe and the psychological phenomena which give the gods their power?

I find myself dissatisfied also with the chapter on "The Evolution of Life." Here the author argues first for the fact of evolution and then treats its causes. In the discussion of cause he begins by rejecting the two extreme views that life should be explained teleologically and that purpose should be ruled out altogether. Within the phenomenological framework, Weizsäcker believes, we can and should assert both efficient and final causation.

However, Weizsäcker does not remain with this neutrality. He believes that, given the initial state, the laws of physics are sufficient to determine the events. Hence, either the phenomena of life and evolution can be fully accounted for by the laws of physics or the laws of physics are broken. Given these alternatives, the author and most of his readers will elect the former alternative and

accept the conclusion that "man is nothing but a piece of physico-chemical machinery" (p. 136). The further discussion in which he explains what this means indicates clearly that in fact his own humanism and faith are in no way disturbed by this reductionism, but he provides no rational explanation why they should not be disturbed.

I would suggest that the alternatives from which he argues are far too restrictive. Is it really necessary to hypostatize and absolutize scientific laws in such a way as this? If there exist both physical and chemical laws, can there not exist also biological, psychological, and sociological laws as well? Must we assume that all these laws are deducible from physical and chemical ones? Is there any evidence whatsoever for such an assumption? To me it seems far more in accord with the evidence to agree that no action of a person violates physical and chemical laws but to insist that a variety of organic states all illustrate equally well such physical and chemical laws. In that case a psychological explanation of my activity neither contradicts a chemical explanation nor is derivable from it. I cannot, of course, work out here such an alternative theory of law. I wish only to register my disappointment at the apparent hold of a doctrine of rigidly imposed and inflexible physical and chemical laws upon a brilliant and philosophically sophisticated scientist. I am convinced that serious study of the philosophy of Whitehead—whom Weizsäcker also hails as "one of the few great philosophers of our century"—could be immensely liberating on this as on other points.

Having devoted most of my space to critical comment, I want to close with renewed expression of appreciation. As a novice and layman in the field, I personally have found the treatment of Copernicus, Kepler, Galileo, Newton, Leibniz, and Kant the most illuminating brief treatment of their scientific views that I have read. Here, as in the equally interesting chapter on "Modern Astronomy," Weizsäcker is in full control of his material, and his extraordinary powers of simple exposition show themselves to fullest advantage. But also in the chapters on the Old Testament and Christianity, where a theologian might expect to be most dissatisfied with the work of a scientist-philosopher, the author's presentation is basically reliable as well as lucid and enlightening. He speaks as one who understands Christian faith from within as well as from the perspective of a mature modern.

This book comprises the first series of Weizsäcker's Gifford Lectures given in 1959-60. The second series (not yet published) will constitute a critical analysis of present-day physics.

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A History of the Warfare of Science with Theology in Christendom. By ANDREW D. WHITE. Abridged for the modern reader, with a Preface and Epilogue by BRUCE MAZLISH. New York: Free Press, 1965. 538 pages. \$2.95.*

Andrew D. White's book is one of those rare things: a "classic account" of an important revolution in human thought. Because it first appeared in full in 1896, it naturally provokes the spirit of correction and amendment in modern

* Originally copyrighted in 1896. This review is drawn from Mazlish' annotations, with his permission and that of the Free Press.

readers, but the main lines of its thesis as well as its massive support of detail still command immense respect and continued reading. No other single work concerning the conflict of science and theology in Christendom has taken its place.

With all his light touch and good humor, White maintains throughout the *History* a driving sense of mission. It is to tell the story of the relations of two—perhaps *the* two—major concerns of the human spirit: science and religion. The revolution in thought with which he deals is the emancipation of scientific thought from theological stricture.

This is often dealt with today as part of something called the “scientific revolution.” But by “science” White did not mean only the natural sciences. As a glance at his table of contents will reveal, he includes along with astronomy, geography, physics, chemistry, geology, and biology the fields of archeology, anthropology, comparative ethnology, history, meteorology, medical science, psychology (individual and mass, but especially the latter), comparative philology, comparative mythology, and political economy—a rather broad use of the term “science.” It is clear that by “science” White meant not specific disciplines but a certain way, or method, of thinking: a way or method which invokes secular, naturalistic explanations for phenomena rather than divine ones and which involves observation, construction of hypotheses, and either experiment or renewed observation to check the hypotheses.

How does White’s book stand up today? As a history of science, we would have to pass two judgments on it. One, we should probably want to take a more “historicist” approach to the subject; that is, instead of snatching our examples of the conflict of science and theology from any time and place, to serve our polemic purpose, we should want to establish a context—a whole period and a given climate of opinion—in which to examine the interrelationship of the two forces. The way in which theology *gave rise* to science would interest us as much as the way in which it obstructed science; as Whitehead has suggested, for example, in his *Science and the Modern World*, the Middle Ages “formed one long training of the intellect of Western Europe in the sense of order.” We should want to ask *why* a Galileo in Catholic Italy, when outside of Christendom there is no rise of science as we moderns know it. To say all this is not to condemn White for neglecting this approach; he is writing in the same way as the comparative anthropologists of his time, whom he respected so much: consider those other classics, Frazer’s *Golden Bough* or Tylor’s *Primitive Culture*, with their comparative rather than holistic or functional approach.

Two, we should demur as to his blanket condemnation of *all* opponents of the bearers of truth, that is, Copernicus, Galileo, Kepler, etc. The truth, we know today, is and was not so obvious: first-rate scientists, like Tycho Brahe, could object to the Copernican theory on sound, scientific grounds. In fact, the weight of evidence often set against the new theories—the actual dropping of balls from a tower showed that unequal bodies, meeting unequal resistance from the air, did *not* fall equally fast.

Having said this, however, we must remind ourselves that the intent of White’s book was much broader than that of present-day histories of science. It was, first of all, to establish beyond any reasonable doubt a thesis: that theological organizations cannot argue with science upon scientific grounds; that

they must restrict themselves to moral and spiritual considerations of the problems and consequences involved in the effect of science upon society. To demonstrate this, White took a very large definition of science—one which included the natural and human sciences—and amassed an enormous array of scholarly data. His effort was unique—and successful; nothing like it has appeared, or been necessary, since the publication of his *History*.

In our day, science may be seen as having triumphed completely on its own terrain. In fact, it may be partially successful in imposing its general view—the scientific approach—as the *Weltanschauung* of the modern world. The scientist may be the culture hero of our time. But the exceptions to the scientific influence are large and numerous; and it would be presumptuous to overlook them.

If myths about Adam and chosen people no longer enthrall as they formerly did, there are new, powerful myths about race or class which have taken their place. Against the myth of the master race, the dry findings of biological science seem to have had little effect; and even an advanced scientific society, such as the United States, in many parts of the country, appears little better in this regard than certain other outposts of Western civilization in, say, Africa. If the belief in witches on brooms has faded, paranoiac “witchhunts” have only shortly dropped out of fashion in the Soviet Union, the number two nation in scientific progress; and even in America there have been recent spasms and twitchings in the political arena.

Nor is the challenge to science which started perhaps with Rousseau's *Discourse on the Arts and Sciences*, wherein he condemned progress in science and technology as leading to moral degradation, by any means over. The annoyed reaction of many of the nineteenth-century Romantics to the depersonalization of the universe—and worse, of man—is echoed by so recent a figure as D. H. Lawrence, who rejected petulantly the scientific explanation of the nature of the moon with the cry, “It's no use telling me it's a dead rock in the sky! I *know* it's not,” and even more recently by the controversy revolving around the so-called two cultures. There are still, then, many in contemporary society—even of the “advanced” nations—who reject either the products or the outlook—or both—of modern science.

The only fitting conclusion to White's book, therefore, would seem to be the following: the warfare of science with theology in Christendom which he describes so well is simply part of a continuing conflict—a conflict which takes its rise from the contradictory nature of man: rational and irrational, creator of his own conditions and conditioned by forces seemingly beyond his control. The tension generated by these warring elements is not a mere transient phase of man's existence: as long as he remains human, it will be his problem—and his glory. When it ceases, we will no longer be recording history, which by definition deals with human beings. Only then will White's book be classic in the sense of talking of a dead past; until then, it is classic in the sense of being a vital contribution to man's ever contemporary quest for knowledge and control of the universe and himself—in short, the quest for scientific understanding.

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ZYGON

Nature and God. By L. CHARLES BIRCH. London: SCM Press, 1965. 128 pages. 6s. 6d.

What this little book is about is stated clearly in the first three sentences of the Preface: "The concept of God's operations in the universe as a series of fitful interventions from a supernatural sphere overlaying the natural is quite unacceptable to science. No reconciliation is possible between religious fundamentalism and modern science. On the other hand, the traditional thinking of science, sometimes called mechanism, is quite unreconcilable with any reasoned Christian position." We live in an age of a "population explosion" of scientists; considerably more than a half of all scientists who ever lived are alive today. Those among the scientists who do not regard all religion as a superstition to be destroyed root and branch are mostly content to keep their science and their religion in strictly isolated compartments. And only a small minority of scientists (how small we have no reliable statistics to judge by) try to arrive at a tenable *weltanschauung* in which religion and science are allied. This is a more difficult, but also more rewarding, task than the old-fashioned "reconciliations" of religion and science. Birch, the Challis Professor of Biology at the University of Sydney, Australia, and one of the world's leading evolutionary ecologists, is among those striving for such a *weltanschauung*. The five chapters of his book are entitled: (1) "The Universe: A Machine or a Birth?" (2) "Darwin's Century," (3) "Chance and Purpose," (4) "Creation and the Bible," and (5) "The Meaning of Creation." Creation was not an event that took place a few thousand years ago; it is a process which is going on. Birch quotes from the eighth chapter of Romans: "Up to the present we know the whole created universe groans in all its parts as if in pangs of childbirth." Birch comments: "Here is recognition of struggle and cruelty and pain in nature. But it is a struggle pregnant with possibility, the possibility of new birth. It is a struggle with a hope in it." The evolution of the universe took a new aspect when it produced life on at least one of the billions of planets; the evolution of life took a new aspect when it produced man. This reviewer would like to call those events evolutionary transcendences. Teilhard de Chardin has foreseen further transcendences, to "megasyntesis" and to "Omega." Birch has not used these words (although he does quote Teilhard de Chardin), but the trend of his thought is essentially similar to that of Teilhard. Evolution is meaningful. "The history of nature is a history of the actualization of possibilities. It is the making real of the possibilities of God in the concrete world. It is the progressive removal of restraints on matter. It is the increase in sensitivity of the creation, in awareness of the total environment which includes God. It is the enrichment of God's experience as the world reacts on God." In a book as short as the one under review, it would be unfair to expect anything like a full documentation of the views expressed, and even so the list of references takes eight pages of small type. One can only hope that Professor Birch eventually will write a longer book, developing in more detail the important ideas which are sometimes only hinted at in the present short conspectus.

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