Reviews

THEOLOGIANS EVALUATING SCIENCE (I)

In our first issue, we announced our intention to call attention to recent as well as new books in the field of religion and science. The present Review section carries a number of such books representing a variety of Protestant perspectives. These are expository rather than critical reviews, written by the managing editor, and should provide for our readers the beginning of a useful annotated bibliography. Future instalments will include non-Christian evaluations of science.

We will also be printing a parallel series, entitled "Scientists Evaluating Theology." Taken together, those two sets of reviews should furnish a comprehensive introduction to the literature of the field and help with the perennial problem of which books to read and which to avoid. In a few cases, older books will be given full, critical reviews (as was done with A. D. White in Zygon, *1101. I, No.1).*

R.B.T.

Scientific Theory and Religion. By E. W. BARNES. New York: Macmillan Co., 19~~. 685 pages.

These Gifford Lectures by the late Bishop of Birmingham typify a "modernist" approach to scientific knowledge, culminating in an "ethical theism" that sees the modern age as at last being ready to comprehend the ethical principles of Jesus because we are no longer confused by inaccurate religious dogmatisms.

Dealing successively with Space and Time, Matter and Stars, Life and Evolution, Man and Mind, Barnes makes much use of his mathematical training in the exposition. After extensive treatment of Riemann, Minkowski, and Einstein, Barnes suggests that the commonsense qualitative distinctions between space and time may correspond to something in "the universe beyond the reach of physics.

There is no need to posit any divine intervention in bringing together an entropic understanding of matter-energy and the universe of galaxies. Barnes rejects any "God of the gaps" and insists that God must be thought of as present throughout the whole story, not simply at any "moment" of creation.

Barnes relates evolutionary theory in considerable detail and concludes that it is based upon the mechanism of genetic variation. This would appear

to be non-moral, since both "good" and "bad" variations must necessarily appear. Any attempt to explain evil by reference to a "Fall," however, is rejected. It is in man's moral nature that we find some clues that the process is not wholly non-moral. The clues, nonetheless, are surrounded by perplexities. Barnes rejects any affirmation of a psychic realm as impossibly dualistic and at the same time refuses to extrapolate from Heisenberg any justification for "free will." Barnes argues from man's moral experience to the existence of an "objective moral order" which is related to the same God who is the God of nature.

This same moral nature of man, in relation to an ethical God, permits us to affirm some kind of immortality. Barnes rejects pantheism as well as the denial of the reality of time that often accompanies mysticism in order to hold that moral progress is the meaning of life which need not be held to end with bodily death. We may not ever come to a full understanding of this process, but moral and religious living can continue, all the while assimilating scientific knowledge which will be a source of strength.

Maker of Heaven and Earth. By LANGDON GILKEY New York: Doubleday & Co., 1959. 111 pages.

Gilkey re-examines "the doctrine of creation" in the light of contemporary scientific and philosophical problems that it raises. He holds that *creatio ex nihilo* has been, from the earliest times, *the* Christian doctrine. The consequent affinnations have been that the "trancendent holiness and power of God" caused the world to "come to be," that our finite lives have a meaning and purpose, and that our lives are upheld and guided by a "power and will" beyond ours.

Theological concepts spill over into philosophical and scientific concepts, according to Gilkey, but they are not to be seen as alternatives or substitutes. The doctrine of creation is such a religious concept, ruling out both dualism and pantheism. Modern science is "rooted" in this religious view. Gilkey stresses the "pre-philosophical presuppositions" that fonn the existential beginnings of any mode of inquiry. They cannot be proved or understood in the same manner as subsequent propositions, but they are never absent. Science, for instance, presupposes a "freedom" in the inquirer if any sense is to be made of the attempt to determine which of our observations are valid.

This presuppositional realm. the religious realm, is a "deeper" dimension of reality. Our language about God is to be seen as analogical and mythical, rather than literal or philosophical. It points to that which gives life "meaning." But this has implications for our other activities. When we speak of God's "transcendence," certain "revelatory acts" are required and implied.

For Gilkey, distinctions must be made between the "natural" realm of reality and "historical" reality. We cannot do full justice to the latter when we rely upon a scientific search for invariances and necessities. Our inquiries into nature, while helped by the religious doctrine that existence is "good," cannot in themselves do full justice to human, historical reality. Thus science and religion are not in any basic conflict-they deal with different realms.

Revelation through Reason. By ERROIE. HARRIS. New Haven, Conn.: Yale University Press, 1958. 158 pages.

Harris begins his Terry Lectures by noting the parallel thrusts toward truth exhibited by both religion and science and the practical impossibility of holding any faith without giving it some rational foundation or of attempting to dissociate the affective strength of a belief from all cognitive associations. He then identifies religion and science as reflecting ways of "life thought," which head for trouble when they defend outworn creeds or claim any present finality.

Using the identification, a new religion-science can be said to have emerged in the West after the Renaissance-variously labeled "empiricism," "mechanism," or "deism." Harris argues that this had very close affinities with a religious skepticism but, in any event, has been outmoded scientifically in our century. Relativity, quantum theory, and biological organicism characterize this new science.

From this perspective, Harris criticizes contemporary positivism and philosophical analysis as being a good critique of an obsolete fonn of religion. The charge that religious language is non-falsifiable, subjective, and not capable of defending "necessary being" has, therefore, a validity limited to the intel·lectual climate of a former theory of nature.

Modern evolutionary theory requires us to set a continuity of development from the inorganic to the organic. This means that life and mind are somehow "potential" and "inherent" in nature. The end product is therefore the "key" to an understanding of beginnings and processes. In mind activity, we find a striving toward a "single coherent conception of an integrated universe." Life activity appears to be dominated by similar organizational, environmental principles. Even elementary particles (following Margenau's interpretation of Pauli) seem to have a "social" behavior. In view of this patterned coherence, there is indeed a "scale of nature," which points to a new understanding of God.

This new teleological proof, understanding the "process" and extrapolating to an "end" (which is divine), holds that end and process are "mutually indispensable" and that God must therefore exist. The cosmological proof is reinstated on the grounds that these parts are inexplicable wilhout reference to a whole. And the ultimate perfection of the forms within the evolutionary process leads us back to what was the central Platonic core of the ontological proof. This God must be at least "a person" and must be eternal in the sense that an eternal whole is "prior to the temporal process."

Harris' final chapters relate this specifically to Christian doctrines. Creation is a "continuous and progressive development." Inc3, Tnation must be understood in terms of divine immanence in all nature and men. Jesus' ethical teachings embrace the goods of the Greek tradition and incorporate them into a demo·cratic tradition. The Christian God is ultimately a moral God.

Turning to the problem of evil, Harris argues that there is no clear reason for the ethical subjectivist to equate the existence of unpleasant things with the non-existence of God. If value is objective, however, the problem looms large. In part, the answer is involved in the fact of human freedom (in the

sense of responsibility). Further, if good is real, evil is its necessary correlative from a human standpoint. In a cosmic sense, evil is "defect incident upon the level of attainment" and therefore no barrier to a belief in God's omnipotence.

The Promise of Science and the Power of Faith. By M. HOLMES HARTSHORNE. Philadelphia: Westminster Press, 1958. *14S* pages.

Hartshorne sees science as a continuation of ancient magic-men seeking control over nature-to which mathematics has been added. This has provided Western man, since the Renaissance, with a counterfaith. This alternative faith, which glories in man and his potentialities, Hartshorne calls "secularism" or "bourgeois humanism." The Protestant Reformation was really a reaffirmation of biblical faith against this counterfaith in its Renaissance and Catholic fonns. Protestants were more interested in man than nature and saw his problem as the anxiety caused by freedom (i.e., his sin) and saw salvation by faith as the only solution.

The secularism of the eighteenth century did not sharply challenge Christianity since it largely retained a Christian morality. Protestant liberalism continues this tradition but goes beyond it by reinterpreting the Bible in tenns of modern values, instead of a truly biblical perspective (which the liberals "either missed or distorted").

Fundamentalism failed in its opposition to liberalism because it misunderstood the Christian doctrine of creation, holding it to apply to nature. Hartshorne insists it properly applies to history, with God calling "a people" into historical existence. For this reason, no attempt should be made to defend the Book of Genesis as a text in geology. It follows that, "Christianly speaking," men "transcend" nature and ask the question of the ultimate meaning of their existence, a question on which science has nothing relevant to say. God is not in nature, and we cannot, therefore, find meaning by any "conformity to nature."

Hartshorne then discusses the miracles of the Bible. A miracle is "visible only to the heart it touches," and scientific observers in ancient Palestine would not have noticed anything unusual. Liberals make the mistake of "explaining away" miracles. We should, instead, try to understand them in context. Hartshorne suggests that the story of Jesus calming the stormy Sea of Galilee, for instance, may really have reference to the calming effect of his personality upon the troubled spirits of the disciples.

Science, as an activity of inquiry, raises no problems for Christianity; in fact science might have flourished better under Protestantism than it did under secularism. Faith *in* science, however, is quite another matter and is incompatible with Christian faith. Our real problem is sin, and science is powerless either to clarify or solve this problem. Science is most successful when it can be objective, dealing with problems in which men have no decisive interest or commitment. Physics is, therefore, easier to do than is social science, which must deal with men and their free decisions. The realm of decision is the realm of religion and faith, and we cannot expect science either to prove or disprove a faith.

Christian Faith and Natural Science. By KARL HEIM. New York: Harper & Row, Publishers, 196~.256 pages.

Heim, Tiibingen theologian closely associated with Karl Barth, approaches the problems of religion and science from an existentialist epistemology. Primitive religions had located the gods somewhere within the universe or placed them in some kind of superspace (Mount Olympus, Heaven). This long ago became intellectually unacceptable, and Heim cites Psalm U9 as illustrating the break with such gods.

Before discussion of objective knowledge or science, we must clarify the "subject" of knowing. Heim follows Heidegger in stressing the Dasein of that self which properly uses the possessive "my." This viewpoint is inescapable and cannot be exchanged with the Dasein of any other. It exists only in "relationship," as a constant with variables. Relationships between persons (I-Thou) occur in a non-objective now-time.

More important than the temporal aspect of the ego is its spatial dimension. Heim reviews the problems occasioned by Newton's absolute space and Kant's revision of space to a necessary subjective postulate. Both made the mistake of assuming that space must be "one." Since Minkowski and Riemann we know that there are many spaces. The Mitsein space, where relationship occurs, is such a non-objective space.

This plurality of "spaces" helps clarify the ambiguities of certain terms. An object in ordinary public space has a certain "here"-and-"now" quality in relation to the clock and position of its knower. The here-and-now of that knower, however, can never be in the same space as the object known, llor for that matter in the same space as the here·and·now of another knower of the object as known by him. Heim resorts to complementarity to resolve these ambiguities. We cannot ultimately resolve this polarity between perceptual and non-perceptual spaces.

Heim speaks of God as "suprapolar" space, beyond all these polarities. There can be no *analogia entis* between this space and polar space, which are "inseparable" yet "sealed to one another." Events in polar space are causally related. Or, in Heim's formulation, the two spaces have the same contents-differently ordered.

Within polar space, men can do no better than alternate between relativism (the unending dependence of one meaning upon another) and positivism (the arbitrary human selection of some particular meaning as absolute). In this latter tenninology, the Third Reich was a "positivist state." These two extremes are synthesized by the suprapolar space.

Clearly, not all men are aware of suprapolar space (God). The awareness comes by "revelation," not human effort. It bril!gs the consciousness of a mission, a vocation, that makes sense out of polar space (even though it cannot be justified in polar tenns). Four corollaries follow this realization of suprapolar space: God is known to be personal; our existence is seen to depend on him; each man has a vocation; and each life a plan. There is a further realization that "natural law" (in the moral-theological sense) is "unconditionally binding," as are what theologians have called "natural orders" (the state, marriage). Heim asserts that monogamy is biblical, suprapolar, and eternal.

Men must choose, therefore, between this theistic (suprapolar) way and a secular (polar) way. In the latter, power and pleasure are the only norms. No behavior can really evoke a sense of guilt, and therefore there really cannot be "sin" within the horizons of relativism and positivism.

No inferences about the suprapolar world are possible from the polar space, and thus there can be no "natural theology." The design of the universe can point to an "architect God" but cannot establish his omnipotence. Knowledge of suprapolar space is therefore by "faith," a "transformation which is not within our control." It leads to perfect certainty, whereas all inferences within polar space remain merely "probable."

Theology in an Age of Science. By LEONARD HODGSON. Oxford: Clarendon Press, 1944. 16 pages.

Hodgson's Inaugural Lecture as Regius Professor of Divinity is significant as an early development of the "two cultures" theme and a defense of the position that theology is properly a science.

Noting that some define science by its methods, Hodgson rejects this as too broad in that any human inquiry tries to study "what is" in as objective a manner as possible. Definitions of science based upon its subject matter are too narrow when they focus upon how things are connected in causal systems, since psychology and sociology would thereby either be excluded or crippled. At least in the human realm, Hodgson holds, we must deal with "purposive behavior as is explicable in terms not of causes but of reasons." For this reason, a sound philosophy must parallel a sound science and must seek a synthetic view of all events, including this second order of purposive events.

Christian theology is the explication of revelation-that particular sequence of historical events bearing on man's redemption. This is an empirical task, according to Hodgson, and therefore theology is one of the sciences. When we ask what these events mean (and not simply "what is"), we become Christian philosophers. But theology itself is one among the other sciences.

Christian Theology-and Natural Science. By E. L. MASCALL. London: Longmans, Green & Co., 1956. ~28 pages.

Working from a Thomistic Anglican position, these 1956 Bampton Lectures assess the possibility of an orthodox Christian theology in coexistence with the modern sciences. The various liberal theologies, according to Mascall, had too readily tried to replace the essential contents of Christianity with propositions from the sciences, despite the wholesale abandonment of most traditional assertions that this had entailed. They further overlooked the fact that nineteenth.century scientific fonnulations were by no means absolute or final.

Mascall discusses the demise of the Newtonian world view with its presupposition of absolute space and its claim to objectivity. Modern science, being less pretentious, makes theologizing somewhat easier. One reason is the context of scientific propositions. Toulmin's metaphor of "maps" is sympathetically indorsed, as is Braithwaite's description of "models." Thus understood, the propositions of science become considerably more arbitrary, and far less self·

sufficient. Some kind of metaphysical language is required to link them together and to link them to the human activity of science, once we have abandoned the notion that the universe is totally detennined. Mascall follows I. T. Ramsey here in suggesting some necessary metaphysical qualifiers to the scientific maps.

Theology is also again necessary and possible because of the limits of science as such. Mascall reviews contemporary cosmological theories, concluding that they have "no ultimate theological significance." The real issue is not *how* the universe came into being but *why.* And this question points the way to a traditional Christian theism.

Mascall also discusses the implications of evolutionary theory, concluding that somewhere in time man appeared, with qualities sufficiently unique to warrant the metaphysical tenn "soul." In similar fashion, Mascall argues that mental experience cannot adequately be reduced to some kind of brain state. We must reckon with a universally found religious consciousness that points to a super- or trans-sensible order of reality.

While rejecting any attempts at a scientific teleology that would argue from the design of the world to a cosmic Designer, Mascall sees a pattern in sin and its redemption. Man has fallen, but there are better things in store for him, and the Incarnation points to these. Human flesh is good enough to have been inhabited by God, and this gives us some guidelines in assuming our new role as trustees of the evolutionary process.

Models and Mystery. By IANT. RAMSEY. London: Oxford University Press, 1964. 74 pages.

All disciplines of knowledge share, according to Ramsey, a common need for "models" that will help in understanding the mystery that they each confront. Scientific models were once thought to be replicas, scale models, copies of nature. Ramsey calls these "picturing models" and uses Kelvin's luminiferous ether as a classic example. Theology, too, developed models of "another, counterpart world" with images of kings, judges, shepherds, brimstone, and the like.

Picture models produced unsuspected problems in science, however, by overlooking the distortions introduced by a change in scale. Max Black describes the evolution of "analogue models," which Ramsey renames "disclosure models." These are more concerned with reproducing the "structure" of the original than its "magnitudes." The validity of such models is the degree to which they "echo" what is in fact being modeled and the degree to which they lead to useful new generalization.

Theological models can have similar functions-building discourse, reducing complexity, and providing a basis for discussing elusive matters. There also must be some relationship between our experience of this universe and the suggestions of the model (as. for instance, with God as a loving father). Theological models, however, should *not* be judged by their ability to generate verifiable deductions. Rather should they be assessed as to their "empirical fit," their aptness in incorporating a wide range of phenomena. Both science and theology, in this new understanding of models, must recognize that they grow from moments of "insight," when something of the mystery around us

is understood. But the larger mystery remains, and science and theology must live with it.

Turning to psychology and the social sciences, Ramsey notes that this newer understanding of models has been more slowly taken up. Extending his argument that a model arises from an insight, he holds that observational statements and models can never wholly exclude the subjective observer (who can only be made an object by the introduction of another observer). Even supplementing the behaviorist psychological model with a more extended one from sociology will not prove adequate, because they both fail to do full justice to the "personal." The danger here is that social science may repeat all the mistakes of nineteenth.century physics if it holds that its models are really "pictures." If, instead, they are to "disclose," then it is persons, like ourselves, that must be disclosed.

Metaphors, like models, serve disclosure functions by bringing two contexts together in a "tangential" meeting, enabling us to become articulate about an insight into some mystery. Theology, with its cosmic concerns, will necessarily take particular models and keep expanding them, by the use of "qualifiers" ("infinite," "perfect," "all," and the like), to better encompass the pennanent mystery. The qualifier "one" in the theological phrase "the one Church" does not refer to any empirical organizational unity but to the common feature of various churches in disclosing "God in Christ." This is a mystery which no picture model can describe.

Theology should not presume to dictate to any other disciplines. It may point each of them to fulfilment insofar as it achieves successin its own articulation of the overall cosmic mystery.

Natural Religion and Christian Theology. By CHARLES E. RAVEN. 2 vols. Cambridge: Cambridge University Press, 1955. 224 pages; 227 pages.

Histories of Western science have usually stressed the quantitative, mathematical successes that began with Copernicus. Rather late in this chronicle attention turned to living things, and only quite recently to man himself. Religion has had a series of conflicts with this kind of science, inevitably yielding as its primitive truth claims were displaced by better ones.

Raven, in his 1951-52 Gifford Lectures, retells this story from a different perspective. Biologist as well as theologian himself, he argues that modern science really began with Gesner's biology and underwent an unfortunate narrowing of focus in the seventeenth century which developed a mechanistic approach that has only recently been found wanting. This mechanistic science had no real place for man or values, and religious thought found itself either in conflict or uneasy truce with the scientific mainstream.

After Darwin and the rise of psychology, however, science began to focus upon problems of variability rather than order, and the rise of relativity and quantum theory made it clear that this larger calculus, essential for biology, was also necessary for the realm of particles. The thesis of a detenninate, closed, predictable universe passed into limbo.

Raven sympathizes with those evolutionary philosophers who insist that the fuller interpretation of reality must start from the end rather than the begin-

ning. Thus man is (at present) the upper end of an evolutionary sequence and is the best clue to understanding all that came before. We cannot explain the universe in "lower than personal categories."

This new scientific situation, the rise in stature of an evolutionary, biological approach, creates, for Raven, a new theological situation. The irony is that liberal theology, which could have been expected to flourish in this new climate, is in decline and the dominant theological moods are antiscientific.

A viable new theology will make no unique knowledge claims of its own but will be concerned with integrating the whole. Raven insists that "experience" always precedes "interpretation" and that we should start our understanding of religion with men's experiences of the universe. This experience typically combines "dread" and "wonder," and religions have sought to integrate the two. This can be done by "subtraction" (the narrowing of focus) or by "sublimation" (the disciplining of attention). Raven prefers the latter, since it leads to world acceptance. When we turn to the interpretive categories men have used for these primal experiences, the commonality is high (Buddhists and Christians, for instance). Man is both "sinful" and "redeemable," and there is the possibility of evolutionary progress.

Raven makes the Holy Spirit the key doctrine of his new theology, pointing to the indwelling possibilities of growth. Men must enlarge their communities of loyalty and love. These correspond to environment in the heredity-versus-environment discussions of biology and pennit a thoroughgoing reinterpretation of traditional Christian doctrines in a panpsychic, non-dualistic manner.

Modern Science and Christian Beliefs. By ARTHUR F. SMETHURST. London: Nisbet, 1955. ~OO pages.

Smethurst sees no present grounds for conflict between science and theology. There should, in fact, be mutual trust and stimulation. Science rests upon beliefs in the orderliness of the universe, the presence of causality or intelligibility, and the reliability of reason. These, in turn, derive historically from the Hebrew-Christian idea of God (far more than from Greek philosophy). Science also depends upon the ethical values of humility and honesty. A chapter is devoted to the Christian beliefs operative in the seventeenth-century founders of modern science.

Science cannot displace our need for religion because of certain inherent limiting elements in world view. Science necessarily abstracts its phenomena, is detenninistic, and must remain neutral in regard to ethics. Religion, therefore, while remaining appreciative of the appropriate contributions of the sciences, must be faithful to its own concerns for personal freedom, responsibility, and relationship.

Smethurst surveys several areas of physics that are relatively unimportant in religious relevance-relativity, quantum, and uncertainty-and turns to entropy, which seems to support the Christian doctrine of creation, and to complementarity language, which has many parallels to theological doctrines.

During the past hundred years, biology has raised far more profound problems for theology than has physics. Christians cannot agree, for instance, with Julian Huxley and other neo-Darwinians that evolution is the result of fortui-

tous, mechanistic forces. Evolution, instead, is an additive process, exhibiting purpose and design.

Smethurst discusses the problems created by the presence of pain and suf· fering. **In** some sense, we are to overcome these (this is the meaning of the Cross). We have to grant a certain validity, however, to the older "devil" explanations. The world does seem under partial control of a "subordinate spiritual being."

Modern physiology has implications for the old mind-body problem. Smethurst suggests that "self" is a better term than "soul" to cover what is essen· tially personal. We are indeed bodily creatures, and ancient Hebrew mythology was sounder than its Greek counterpart. We are, however bodily, not machines; and the literature adducing this is critically reviewed. Freudian psychology is rejected as overstressing a morally non-responsible subconscious element in the self's behavior.

The final section of the book discusses problems arising from specific Christian beliefs in miracles and creeds. While many miracles can be "explained away" as exaggerations, there remain two essential, "fundamental miracles"- the Virgin Birth and the Resurrection. Smethurst finds "no scientific or philo. sophical objections" to acceptance of the former. Reviewing possible interpre. tations of the Resurrection, he rejects psychological explanations and concludes that the evidence is "overwhelming" for belief in the physical resurrection of Jesus.

Turning to problems raised by the creeds, Smethurst holds that the various propositions of religious knowledge that they contain are not affected by sci· ence, since religious knowledge is based on "revelation." These basic facts, plus historical and personal experience, fonn the basis of religious belief.