



7-1-1980

## Science and Religion: Toward a More Useful Dialogue vols. I and II

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### Recommended Citation

Evenson, William E. (1980) "Science and Religion: Toward a More Useful Dialogue vols. I and II," *BYU Studies Quarterly*. Vol. 20 : Iss. 3 , Article 9.

Available at: <https://scholarsarchive.byu.edu/byusq/vol20/iss3/9>

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HESS, WILFORD M., RAYMOND T. MATHENY, and DONLU D. THAYER (for Volume II), eds. *Science and Religion: Toward a More Useful Dialogue*, vols. I and II. Geneva, Ill.: Paladin, 1979. Vol. I, 196 pp. \$9.50. Vol. II, 241 pp. \$9.50.

Reviewed by William E. Evenson, professor of physics, Brigham Young University.

The two volumes of *Science and Religion: Toward a More Useful Dialogue*, the initial efforts of an intended series, are the first works on science and religion within a Latter-day Saint framework which deal substantially with the scientific questions of interest in religion. Some thirty competent LDS scientists, experts in their subject matter, explore some significant questions carefully and thoroughly in thirty-six different articles. In spite of some problems and disappointments, these volumes of *Science and Religion* far surpass in quality and value anything else presently published on this subject for a Mormon audience. They are an excellent source for the scientific background that is necessary for an intelligent discussion of questions about God's and man's relation to nature, and the relationship of scientific and religious methods of inquiry.

Along with their strengths, Volumes I and II have serious weaknesses in defining the issues relating science to religion and in addressing the implications for religion of the scientific questions they discuss. The philosophical and theological background of these questions, along with additional scientific discussion, can best be found in such non-LDS books as Ian G. Barbour's *Issues in Science and Religion* (New York: Prentice Hall, 1966). It would be most interesting to address the religion side of science and religion from a uniquely Mormon perspective as carefully and thoughtfully as non-Mormons have done from their own perspective, taking modern science fully into account.

#### *SCIENCE AND RELIGION, Vol. I*

The Latter-day Saint who wants to understand how scientists come to the conclusions they do about the nature of the physical universe, the age of the earth, the age and meaning of fossils, and the chronology and development of prehistoric cultures can profitably turn to this volume.

Volume I is divided into four parts: (1) "Science and Religion as the Bases of Modern Life" (philosophical questions); (2) "The Science Base for Earth Chronology" (earth chronology, including a mixture of several quite disparate dating techniques relating both to features of the earth and to prehistoric cultural artifacts); (3) "Revelations from the Earth" (fossils and their interpretation); and (4) "Earth in the Universe" (the physical universe).

The essays I found most valuable include "Dendrochronology—Dating with Tree Rings" by Kimball T. Harper, "The Principle of Uniformity and Constancy of Natural Laws" by W. Kenneth Hamblin, and "Evolution of the Physical Universe" by R. Grant Athay. These papers are well organized and smoothly written, and they provide perspective for the work they discuss as well as for other articles in the volume.

Although the other articles vary in quality, most are well worth reading. I appreciated those papers that are straightforward in their presentation, with no apology, such as the ones by Clark, Bissell, and Hamblin, among others. "Paleobotanic Evidence of Evolution" by William D. Tidwell contains much interesting data, but it is not well written or well organized and will be too technical for most readers.

#### *SCIENCE AND RELIGION, Vol. II*

Volume II is made up of three sections: (1) "The Search for

Reconciliations'' (treats such issues as the absence of an official Church position on organic evolution); (2) ''The Science of Life'' (scientific aspects of organic and prebiotic evolution); and (3) ''The Crown of Creation—Man Inherits the Earth'' (the physical and cultural development of man).

Outstanding essays in Volume II include ''In the Beginning: The Origin of Life'' by James L. Farmer, ''Mechanics, Thermodynamics, and Biological Evolution'' by Everett G. Larson, ''A Geologist Looks at Evolution'' by William Lee Stokes, and ''Man's Tie to the Earth: A View from an Anthropologist'' by Ray T. Matheny.

The paper by E. G. Larson has a somewhat convoluted style and is not easy to read, but it is well organized and very carefully thought through. It makes a real contribution to a difficult subject. Matheny's paper is rather too technical in places, and the glossary provided at the end is not an adequate solution. However, even though the nonscientist may find it difficult reading, he should find it rewarding and worth the effort to understand. There are many other excellent papers in Volume II. Virtually all of Part II is well done and informative, as are the pieces by Wade E. Miller in Part III and Duane E. Jeffery in Part I.

As good as it is, there are also several serious problems in Volume II. Part I is a much more ambitious excursion into philosophy, theology, and metaphysics than anything in Volume I, but it is a great disappointment to find so much naivete and uncritical thought in these efforts. The essays by Donlu D. Thayer and A. Lester Allen are reasonable, occasionally insightful, but of limited perspective: Thayer relies almost entirely on Louis J. Halle's view of science; Allen does not examine religious assumptions and lapses into apologetics.

The real problems, however, are the second half of Bruce W. Warren's article and the paper by John A. Tvedtnes which go off into the wild blue of unsupported speculation which more careful thought would have avoided; we should be able to think as carefully about religion as we do about science. Warren writes about the earth, moon, and sun as ''of increasingly larger size'' (p. 71). He divides W. W. Phelps's 2.555 billion years by four to obtain the length of a day of creation (p. 70), even though 2.555 billion years is just 7000 ''years'' of 1000-year long days (7000 years of the Lord's time?). Then Warren builds a huge cosmology on creation days of 638,750,000 years, but his basis is thin air. He introduces just enough biology, geology, and astronomy to make a superficial case, but not enough to put together a coherent rather than ad hoc picture. With even more problems than Warren, Tvedtnes writes in defense of a basically fun-

damentalist position. Unfortunately, he is not sufficiently acquainted with the relevant science to make a valid contribution. He does not understand uniformitarianism and the role of catastrophic events (earthquakes, volcanoes, meteor showers, etc.) in that point of view. He quotes selectively, or at least naively, from General Authorities relative to the creation of man. In addition, he uncritically introduces thoroughly discredited arguments on such subjects as the Flood and other "catastrophic" events in world history. The volume would be better without this paper. Yet, even with these serious lapses in Part I, Volume II remains valuable for its excellent discussion of scientific questions in Parts II and III.

#### VOLUMES I AND II

There are a few problems of a general nature in both volumes. First, with some exceptions, there is a critical lack of synthesis to connect the essays. The introductory article by the editors in Volume I does not fill this role partly because of its philosophic naivete. This is a problem shared by almost all the papers of philosophical or theological orientation, except for John Sorenson's brief essay. The perspective that could have been gained through study of non-LDS thought on science and religion is sorely missed.

The lack of synthesis is a serious limitation on the science in these books as well. For example, taking the various dating techniques together and finding them remarkably consistent gives much greater confidence than we could gain from any single approach. While this point is alluded to, it is not made effectively. This same problem arises again in the discussion of other topics such as the analysis of the fossil record.

There are a few exceptions to this observation: R. Grant Athay's article on the evolution of the universe weighs the range of arguments for and against certain basic concepts briefly (and necessarily superficially) but effectively. W. Kenneth Hamblin's brief essay to open Volume I, Part III, helps provide perspective on both preceding and following articles. Farmer, Larson, Stokes, and Matheny all contribute substantially to the needed synthesis in Volume II, but necessarily from the context of their own topics. I hope that in future volumes the editors will provide more synthesis. What really is needed is a substantial synthesis article for each of the major themes discussed.

Second, many of the bibliographies seem dated; some of the

discussion of such topics as human evolution and dating techniques is not as current as one would expect of a book with a 1979 copyright. A brief perusal of the bibliographies shows not only few references since 1973 or 1974 but also a clustering of references to articles from the late 1960s and early 1970s. This apparently came about because of long delays in publication. Editor Hess explained that the project was begun seven or eight years ago. Approval for the involvement of BYU faculty members was sought at that time from the BYU administration, the Church Commissioner of Education, and the Executive Committee of the Board of Trustees. The response from these bodies to the preliminary review was unanimously favorable and encouraging. BYU Press, Bookcraft, and Deseret Book (Church-related publishers) were all approached. Eventually, with delays that extended the project several years, all three publishers decided against financing the publication of the books. Although BYU Press agreed to publish them if outside financing could be obtained, the problems of marketing considerations and economic timing precluded printing such specialized material. At that point, Paladin agreed to do the books. They have kept the price as low as possible in order to make the books available to students; and the editors and authors have assisted by personally not receiving any royalties through at least the first printing. The authors did have a chance to revise their essays just prior to publication, and several added more recent references and carefully updated their material.

Third, there are wide variations in technical level and quality of writing. Consequently, *Science and Religion* is not to be read quickly. Rather, most readers will find reading one article at a time over a longer period rewarding.

Although typographical errors are common, serious scientific errors are very few. In Volume I, page 59, Arthur Wallace describes the decay of carbon-14 atoms to boron-14. In fact, carbon-14 decays to nitrogen-14, but this error does not affect the rest of his article. On page 68, both the label on the vertical axis and the figure caption should refer to square hydration thickness in microns-squared.

Fourth, some of the papers, including the editors' introductory essay, are occasionally defensive in tone toward perceived religious views. While the defensiveness is understandable in light of dogmatic assertions many LDS scientists have been confronted with, it is unproductive and unnecessary. Any real dialogue on science and religion can only take place with no condescending attitudes or defensiveness. There must be respect for the aims and methods of both science and religion. There must be willingness to listen and to

withhold judgment until the evidence and our understanding warrant making judgments. Despite occasional defensiveness, the authors of this volume plainly respect spiritual as well as scientific learning and show evidence of willingness to pursue the dialogue in this spirit.

In spite of the many problems in *Science and Religion*, vols. I and II, they make a real contribution in presenting the scientific basis of several issues relevant to religion. The better essays make these volumes well worth purchase and study by all thoughtful Mormons with serious intellectual interests.