Book Reviews

Anthropology & Archeology

GENES, PEOPLES AND LANGUAGES by Luigi Luca Cavalli-Sforza. London: Alien Lane, 2000. 207 pages, bibliography, index. ISBN: 071399486X.

This is the fourth book Cavalli-Sforza has authored or co-authored. The most influential was the massive *History and Geography of Human Genes*, written with P. Menozzi and A. Piazza. The first two chapters consist of an introduction to population genetics, genetic distances, and a discussion of the issue of race. This is all done at a popular level and is not difficult to follow. In the third chapter, the author discusses the Out-of-Africa view of human origins, which is the popular view that modern man arose 120,000 years ago and replaced all the archaic humans on the planet with little genetic contribution from those people. He discusses the search for both the mtDNA Eve and the Y-chromosome Adam.

The fourth chapter details the genetic evidence for past human migrations associated with the invention of farming, a controversial view first proposed by Colin Renfrew. The fifth chapter compares linguistic families with genetic groupings, showing that these independent lines of evidence support each other. Linguistic families delineate, in large measure, biological descent. The final chapter discusses how culture and cultural transmission of ideas affect human evolution. The book achieves many of the author's goals in determining past migrations.

The most important issue raised concerns our relationship with the archaic *Homo sapiens*, such as Neanderthal and *Homo erectus*. Cavalli-Sforza states categorically that Neanderthals left no genetic imprint on modern humans and that there is no evidence of any Neanderthal / Modern human hybrids. These statements are not supportable with the data at hand. He ignores the Portuguese Lagar Velho child found, who shows hybrid characteristics of both modern humans and Neanderthals. He also ignores fossil evidence from Central Europe that indicates hybridization between the two populations. The correct thing would have been to acknowledge the data and then say why it is not evidence of hybridization. Ignoring data is the worst thing a researcher can do. He also cites the recent isolation of Neanderthal mtDNA as showing that there was no Neanderthal input to modern populations. Merely stating this does not make it so. This claim is also inconsistent with what the author says (p. 79) about there being lots of women (cousins of mtDNA Eve) living when Eve lived, but that her mtDNA was merely the mtDNA which survived until today. All others failed to survive. Given that Eve's cousins lived at nearly the same time as the Neanderthal mother did and that they did not leave any more mtDNA on earth than the Neanderthal mother, it is difficult to see why the failure to find modern mtDNA in a Neanderthal says anything about nuclear genetics.

The book brings out several interesting historical issues. Women throughout history have been much more mobile than men. Macho types presume that men were the explorers of the world, but genetics clearly shows that women spread much farther and faster than men. This might very well be partially through kidnapping, but the fact is their genes show less evidence of isolation. In the area of linguistics, it is often claimed that languages change so rapidly that only 1,000 years is required to split a language into two daughters. This rapid change means that when one tries to date the origin of human language by means of phonetic alterations, one gets a very recent age (~100,000 years) for the origin of human language. However, this assumes that the rate of linguistic change is constant. Cavalli-Sforza points out (pp. 202–3) that Icelandic language is almost a frozen language. It has changed so little over time that Icelanders are able to read the Norse texts from 1,200 years ago. Old English of 1100 AD is totally unintelligible to a modern English speaker. The stasis observed in Icelandic is due to the isolation of Iceland. There is very little input of new words because there is very little contact with the outside. As one goes further back in time, and populations are more and more isolated from each other, the rates of linguistic change would have been slower. If there were an original common language to humankind as Greenberg has suggested, isolation could possibly slow language evolution to the point where the original language would have existed prior to the time when modern humans arose.

The book is not the best one that Cavalli-Sforza has written. He made too many assumptions consistent with his preferences and did not always cite the latest data. Yet, this is a book by the man who practically invented the techniques of using genetics to determine the past migrations of peoples. As such, one should own a copy.

Reviewed by Glenn R. Morton, Ramsden House, 105 Malcolm Road, Peterculter, Aberdeen AB14 0XB, Scotland.

JAVA MAN by Carl C. Swisher III, Garniss H. Curtis and Roger Lewin. New York: Scribner, 2000. 235 pages, notes, index. Hardcover; $27.50. ISBN: 0684800004.

Swisher and Curtis work with the Berkeley Geochronology Center. This is their first book and Lewin's sixth book. Lewin is a science writer who has written extensively on human origins alone and with Richard Leakey. This book covers the events surrounding the 1993 publi-

cation of the first firmly dated evidence that *Homo erectus* was in Java between 1.6 and 1.8 million years ago, and the dating of the youngest known *H. erectus*, the Ngandong specimens, which lived within the past 50,000 years.

Prior to 1993, anthropologists believed that *H. erectus* had not left Africa until around one million years ago. *H. erectus*, it was said, could not have left Africa without inventing a new stone tool technology that would enable him to handle new environments away from his home continent. This new dating, in association with the discovery in Georgia of the Dmanisi *erectus* cranium dating 1.8 million years, turned the anthropological world upside down, giving anthropologists a new respect for the abilities of *H. erectus*. Anthropologists had ignored the fact that elephants and lions, also lacking stone tool technology, were quite successful at leaving Africa. These events show that, in general, anthropologists tend to have a lower expectation for the abilities of early humans than biologists have for animals—an amazing bias toward dumbing down our ancestors.

The two new datings present problems for the multiregional view of evolution. This view holds that various *H. erectus* populations in separate localities evolved into modern man. The Sangiran specimen, which had been believed to be 700,000 years old, was a key piece of evidence for regional continuity. Sangiran was said to show features that modern Australian Aborigines possess. But when it dated at nearly 1.7 million years old, it stretches out the time regional continuity must work and most anthropologists do not believe this is possible. The Ngandong specimens, which dated as young as 38,000 years old, present a similar problem for multiregional continuity. They are too recent to have evolved into modern humans.

None of the data presented rules out interbreeding between anatomically modern humans and *erectus*, which would then transmit their genes into the modern population. The description of the Ngandong fossils, which have been professionally described at various times as *H. sapiens* and *H. erectus*, demonstrates that these fossils share *sapiens* and *erectus* traits. It is unfortunate that the authors do not investigate the possibility of interbreeding as the cause of this trait sharing.

The book sheds some fascinating light on some canards, which have been passed around in apologetical circles concerning Eugene Dubois, the discoverer of *H. erectus*. The claim is often made that Dubois hid the fossils from view, maybe under the floor of his house, in order to keep other researchers from seeing his fossils. This is not true. Dubois had let Gustav Schwalbe view the fossils and Schwalbe gained much fame from his work. Dubois decided that if he was to leave a mark on the bones he himself had found, he needed to restrict the access to his fossils until he had written his description of the bones.

The other canard discounted by this book is the claim often made that Dubois, late in life, had acknowledged that his fossils were nothing more than a big gibbon. Most anthropologists had dismissed Dubois' discovery as a primitive human. Dubois was trying to demonstrate to the world that his fossil was a missing link by comparing it with an extinct gibbon. Placed in this light, the apocryphal apologetical stories should be corrected.

The book delves deeply into the politics of anthropology, displaying in all of the gory details the break-up of the Institute of Human Origins, which had been founded by Donald Johanson. The Institute was the marriage of the Berkeley Geochronology Center and Johanson's institute. For those who want to find dirt on Johanson, this is the place to get it (although another recently published book is even more devastating to Johanson's professional career). Johanson is described very poorly here. Of course, this is only one side, but in fact the Institute of Human Origins was found guilty of a violation of public trust and has since shrunk in importance.

The book is informative of science, its methods, its politics, and its egotism. It is also historically informative concerning events early this century in Java when important anthropological discoveries were being made. This is a book that should grace the shelves of anyone interested in anthropological issues.

Reviewed by Glenn Morton, Ramsden House, 105 Malcolm Road, Peterculter, Aberdeen AB14 0XB, Scotland.

IN THE FOOTSTEPS OF EVE by Lee R. Berger with Brett Hilton-Barber. Washington, DC: National Geographic, 2000. 310 pages, index, bibliography. Hardcover; $26.00. ISBN: 0792276825.

Berger, director of the paleoanthropology unit at the University of Witwatersrand, is the successor to the legendary Phillip V. Tobias and Raymond Dart, two giants in the field of anthropology, who are the only two previous occupants of that position. During Berger's tenure, important discoveries have been made, including the discovery of human footprints that date to 117,000 years ago, the discovery of a nearly complete australopithecine skeleton, and the discovery of the oldest human infant at Drimolen. Berger's first book is sure to be controversial for two reasons: (1) he argues that "Lucy," the *Australopithecus afarensis*, has nothing to do with human evolution and (2) he openly criticizes several world famous anthropologists.

This book is poorly organized, jumping from topic to topic. By starting off with a discussion of the fossil footprints, one thinks the book is going to be about anatomically modern man but that is not to be the case. The authors then turn to what is the main issue on their mind, the advocacy for *Australopithecus africanus* as the human ancestor. They spend several chapters discussing this. While "Lucy" has a more human-like body (long legs and short arms), she has a very primitive skull. This is unlike the earliest members of the genus *Homo*, which have short legs and long arms as does *africanus*. *Africanus* on the other hand has a very advanced skull. Berger and Hilton-Barber argue that it would be unlikely for "Lucy"

with human-like arm and leg proportions to evolve back toward the ape-like state in order to be the parent of the earliest members of *Homo.* Instead, they argue that it would be more likely for *africanus,* who already has the leg and arm proportions of early *Homo* to be the progenitor of us. They also cite dental evidence, which contradicts the idea that Johanson's "Lucy" is the mother of us all. Dental traits, seen on earlier hominids, are not seen in "Lucy" but are seen again in *africanus* and earliest *Homo.*

The authors next turn to paleoanthropological politics at Witwatersrand describing (in detail no one wants) how fellow anthropologists behaved badly toward Berger. Berger takes aim at Ron Clarke as well as his former mentor, Tobias, accusing them of violating university rules and grandstanding. This part of the book, while voyeuristically interesting, does not serve science very well. It all sounds a bit petty. And the authors would be much more credible in their conflicts with their fellow anthropologists if they could spell the names of fossil hominid species correctly (see below).

Of interest to apologists, the book says *Australopithecus garhi,* dated to 2.5 million years, was found in association with stone tools clearly raising the possibility that a creature not of our genus made stone tools. More interestingly, the tools made from rocks were carried fifty-nine miles to the present site. This means that this creature had the ability to plan ahead for at least two days and to understand consequences. This is significantly longer than chimpanzees can plan and raises the possibility that this creature would have been able to understand a moral command such as "Don't eat the fruit of this tree." Secondly, the authors point out that the fossil record of the *Australopithecus* to *Homo* transition has been filled in so that it is very difficult to determine who is and who is not a member of our genus. This means that there are lots of transitional forms, something that many apologists stubbornly refuse to acknowledge.

The book has many flaws, scientific and mechanical. One does not expect to see anthropologists misspell the names of fossil species, yet these gentlemen misspell several names, including *garhi,* and *bahrelghazali.* One would be tempted to blame this on Hilton-Barber, the writer assigned by National Geographic to the project, were it not for the fact that Berger, in the introduction claims that the earliest evidence for the exploitation of marine resources is from South African sites for anatomically modern man dated around 120,000 years ago. He seems not to know his own field ignoring the widely acknowledged Neanderthal exploitation of marine resources at La Grotte du Lazaret in Europe 200,000 years ago. There are also production problems. In one chapter, the last line of each page is reproduced on the following page but on one occasion, an entire line is omitted on the next page. While the book was interesting and I learned a bit from it, all in all, it was not the best anthropological book this year.

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Education

ACADEMIC FREEDOM AND CHRISTIAN SCHOLARSHIP by Anthony J. Diekema. Grand Rapids, MI: Eerdmans, 2000. xviii + 214 pages, index. Paperback; $22.00. ISBN: 0802847560.

Diekema spent the past forty years in higher education, including twenty years as the president of Calvin College (1976–1996). During this time, the scholarly productivity of the Calvin faculty made a great leap forward. He encountered two academic freedom cases involving Professor Howard Van Till (ASA president, 1991) and Professor Hessel Bouma III (ASA fellow).

In the Introduction, he points out that we are in the new era of changing from the Enlightenment to the post-Modern period. Christian colleges must help to guide the community of faith during this transition by providing perspective and insight.

In the next chapter, he proposes a definition of academic freedom as a principle "to protect professors from those forces which tend to prevent them from meeting all their obligations in the pursuit of truth." In the third chapter, he enumerates several threats to academic freedom such as ideological imperialism, dogmatism, political correctness, intolerance of religion, prior restraint, and censorship. As an example of censorship, Diekema gives a four-page description of the Van Till case which occurred after the publication of his book "The Fourth Day" in March 1986. At the end, based on French sociologist Emile Durkheim's work on community, Diekema urges the academic community take up vigilance against the threats of academic freedom.

In chapter four, Diekema emphasizes that academic freedom for Christian colleges should be anchored in the Christian world view. This world view is the boundary of academic freedom. Due to the influence of postmodernism, people realize that an unbiased, objective, ideology-free inquiry of truth is a myth. So holding a Christian world view becomes legitimate. Diekema believes that the Christian community of scholars should expose the fallacy of belief in reason only and work against its dominance over all other world views.

In the fifth chapter, Diekema presents a proposal for policy development about academic freedom in the Christian colleges based on his extensive experience. He finds that the tenure system is not needed and could be replaced by a Socratic covenant similar to the Hippocratic Oath taken by physicians. He states that academic freedom is essential for promotion of scholarship in Christian colleges. About the relationship between a college and the supporting denomination, he requests mutual respect and thinks that colleges should not fill the role of giving catechetical instruction.

In the final chapter, Diekema reflects and summarizes his thought on academic freedom and encourages all

Christian colleges to move toward an ethos of freedom. The book ends with an expanded statement of the mission of Calvin College adopted in October 1992.

Here is an articulate and informed discussion of academic freedom which combines extensive research with the author's personal experience. Since many ASA members are professors at Christian colleges, this book should be highly relevant and the proposals given should be debated. I agree with most of his ideas.

However, regarding the influence of postmodernism, I think the area of natural science is least affected because of its objectivity. That is why the Van Till case could be defended under various world views. For other areas of inquiry, because of limitation of methodology and complexity of subject, different world views can play a legitimate role in scholarship. Still, the Christian faith holds that world views will be unified when Christ returns. Meanwhile, Christian scholars need to demonstrate with good teaching and research that the Christian world view is beneficial for society.

Diekema proposes that Christian colleges develop first-rate scholarship with graduate programs and in-house research. Instead, I think Christian colleges should place their emphasis upon undergraduate education, so that alumni can be trained in other good research universities and become first-rate Christian scholars. In my opinion, to remain as undergraduate colleges is better than aspiring to be research universities with graduate programs.

Regarding the relationship between churches and colleges, I think it is essential to focus on Christian education in Christian colleges, especially for the humanities major. Due to the shortage of sound Christian education in some churches and the rampant biblical illiteracy of young people, Christian colleges need to do remedial biblical education and have a firm commitment to produce lay and clerical leaders and teachers for their churches.

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Environment

ENVIRONMENTALISM UNBOUND: Exploring New Pathways for Change by Robert Gottlieb. Cambridge, MA: MIT Press, 2001. 396 and xvii pages, bibliographical references, and index. Hardcover; $29.95. ISBN 0262072106.

Gottlieb's book shows that some happenings right around us, which we accept as normal, may contribute heavily to pollution. For example, North American governments defend at international conferences the use of automobiles, since they are needed to get to work. Of course, producing cars is good for the economy as well. So exceptions in pollution-control ensue for North America while other countries face controls. Thus, worldwide pollution increases.

Gottlieb points to some causes of increased use of automobiles in North America. Since factories in inner cities pollute, people move to the suburbs looking for a cleaner environment. Fleeing the city means, however, that workers use more fuel. Thus, more pollution results. And, when people leave the inner city it is even more neglected, and the environment becomes even dirtier. More people flee, more polluting occurs, and the vicious circle continues. Gottlieb states the problem well by quoting Raymond Williams: "The consumer wants only the intended product … all other products and by-products he must get away from, if he can. But get away—it really can't be overlooked—to treat leftover nature in much the same spirit: to consume it as scenery, landscape, image, fresh air" (p. 43).

The author points out that workers living close to factories are often too afraid to complain about the environment in which they live for fear that they will lose their job. Progress is being made though. More voices are now heard who want to clean up inner cities.

A section entitled "Exploring Pathways" gives some examples of improvement through the cooperation of workers, employers, and scientists. For instance, a dry cleaner must work where people live and/or work. His work requires the use of chemicals. He has to dispose of dirty, polluted water. The chapter shows that improvement is possible when scientists (who have to invent chemicals to clean clothing, and chemicals to clean dirty water), dry cleaners, trade-organizations, governments and people cooperate.

Another section talks about janitors, their work environments, and their employers. While dry cleaners are often self-employed, janitors are usually employees. Who is responsible for the chemicals used to clean? Who is responsible for the health of the janitors? How do they dispose of dirty water?

Also discussed is the food supply and the changes occurring in producing it. What are the consequences when small farms are taken over by big companies? This book talks about Monsanto. What are the responsibilities of the company and its workers, which include scientists?

The author discusses strategies at ecological improvement. He uses as an example efforts to improve water and parks in Los Angeles. This involves governance strategies, politics, the value of work, remaking industry, and cataloging assets. By social and ecological movements joining hands, progress can be made. I recommend this book to everyone, because everyone wants to live in a clean and productive environment.

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Ethics

BIOENGAGEMENT: Making a Christian Difference through Bioethics Today by Nigel M. de S. Cameron, Scott E. Daniels, and Barbara J. White, eds. Grand Rapids, MI: Eerdmans, 2000. 280 pages. ISBN: 0802847935.

Ethical issues are critical in health care areas. This book, from a conference sponsored by the Center for Bioethics and Human Dignity, tackles this challenging area. The diverse contributions include views on bioethics from the areas of theology, education, the media, law, policy, health care pragmatics, and the church. With new and challenging bioethical issues, now more than ever, Christians must be "salt and light" in the world.

The first section asks "Why bioethics?" and "What do we learn from the Bible?" Sir Brian Mawhinney, a British statesman, focuses on political issues, while others focus on theological or other related issues. The concluding note is that there is a strong biblical imperative to engage the culture through various means, and the following sections on education, media, law, policy, medical practice and the church continue this theme.

Educational and media issues, the focus of section two, involve communication. Communicating relevant Christian messages to the church, schools, and society is essential. The discussion of postmodern approaches to university teaching is more self-pitying than it might have been. Christians have always been called to carry their crosses, but joy and hope are also essential Christian qualities. Teri Goudie, a media expert, focuses positively on getting our message across by being prepared and assertive in interviews. Mary Adam's piece on sex education notes that abstinence, the only 100% effective birth control method, was and is downplayed in many areas. She also focuses on the positive work being done to reintegrate Christian ethics into sex education.

This focus on education brings the discussion quite naturally to policy issues, and in this section, comments by lawyers and politicians deal with such challenging issues as human embryos, in vitro fertilization, ownership and rights of fetuses, euthanasia, and related life and death issues. Information on previous court decisions, reasoning and possible policy directions is well presented.

The fourth section focuses on health care, primarily from the point of view of doctors and nurses. How can health professionals provide moral leadership, remain compassionate, and act in ethical ways in a litigious, rationalistic environment? Can medical education be improved in ethical areas? These and other questions, including an interesting piece on disabilities by nurse Linda Treloar provide much food for thought.

The final section focuses on the church, which can be a leader in ethical areas. Terry Schlossberg notes that few pastors preach on abortion. Sadly, with 1.5 million abortions annually, this is too big an issue to avoid. Other authors focus on teaching, authority, church interaction with society and return again to the theme of the biblical context for bioethics.

BioEngagement presents a diverse collection of Christian views on bioethics and healthcare. However, bioethical issues are broader than this. Creation care (environmental) ethics are also biblically mandated and challenging today. Questions on genetically modified organisms, rights of others, and teleological issues are not discussed in this book. Nevertheless, as a current broad approach to ethical issues in the medical professions, this is an excellent contribution.

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EVOCATIONS OF GRACE: Writings on Ecology, Theology, and Ethics by Joseph Sittler. Edited by Steven Bouma-Prediger, Peter Bakken, and Martin E. Marty. Grand Rapids: Eerdmans Publishing Company, 2000. xiii + 242 pages, notes, selected bibliography, indexes. Paperback; $20.00. ISBN: 0802846777.

It was a joy to read this book. The editors gathered ten essays, speeches, and lectures which Sittler produced between 1954 and 1975; Bakken wrote the Introduction, and Bouma-Prediger wrote the Conclusion. Bakken mentions Lynn White Jr.'s 1967 essay in which he states that Judaism and Christianity were the original cause of the degradation of nature because of their misunderstanding of Gen. 1:28. That verse instructs humankind to "have dominion" over nature which was interpreted to mean "develop as much as you can."

We read in this book, however, that Sittler (1904–1987) was in the forefront of Christians protesting the way people treat nature. In 1954, thirteen years before White's essay, Sittler wrote in an essay titled "A Theology for Earth":

> One finds nowhere in the Bible that strange assertion which one hears almost everywhere else … that God is concerned to save men's souls! How richly, rather, restoration is presented in terms of men's material involvement in the world of nature (p. 29).

Sittler thought Christian theology should articulate a theology of nature: "For it is precisely in this area that the systematicians have historically made pretensions of the most massive asininity, betrayed the most broad-backed insensitivity, and have been most blind to the revelatory fact" (p. 21). Sittler realized the importance of being a citizen of the earth as well as being a professor of Christian theology.

The book's title indicates Sittler was well aware of the necessity of grace, but it should be grace in all areas of human life. The reader will sometimes ponder Sittler's

view of the relationship between nature and grace. In 1968 Sittler wrote:

> When this grace—for that is the lovely name for the presence and work of the spirit in both Jewish and Christian communities—seems to have departed from the secular city as neither affirmed, sought, nor desired, or when God is dead—that departure and that death is but the fateful report that realities that belong together have come apart (p. 75).

That modern man destroys nature is clear, and Christians often participate in this destruction. This book is a wake-up call reminding Christians that faith has consequences for every area of life. Faith involves doctrine, but faith also has consequences for everyday living in the world of nature. I recommend this book although it requires some effort to understand parts of it. It will provide many insights and some joy as well.

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Faith & Science

SCIENCE AND FAITH: An Evangelical Dialogue by Harry L. Poe and Jimmy H. Davis. Nashville, TN: Broadman & Holman Publishers, 2000. 259 pages, index. Paperback; $19.99. ISBN: 0805421424.

Poe currently serves as vice president of Academic Resources and Information Services and professor of Christian Studies at Union University in Jackson, Tennessee. Davis is a professor of chemistry there and is also the associate provost of the College of Arts and Sciences. Together they won a Templeton Award for their course on science and faith at Union University. As stated in the preface, this book was written "primarily for Christian college students and their teachers who struggle with how to believe the Bible and accept modern scientific discoveries at the same time."

What can we know and how do we know it? What kind of universe exists? Where did we come from? What can we know with certainty? When is order disorder? These five questions introduce the five major sections of the book. Each question is addressed by three chapters: the first presenting the scientific perspective, the second providing an "Evangelical Christian" perspective, and the third devoted to a dialogue between the two positions. Topics addressed by these five questions include epistemology, cosmology, origins, quantum mechanics, and chaos theory, all of which are appropriate topics for a text on science and religion.

One strength of the book is the clear and concise coverage of these topics. Important scientists and their contributions are described from a historical perspective with numerous charts and diagrams included to help the reader better understand difficult concepts and theories. One concern regarding the topics is the omission of any discussion of the relationship between science and the environment. An additional question could have been added, "What is our relationship with the natural world?" that would then be answered from both a scientific and biblical perspective. Recent publications by evangelical Christians have argued that there is much common ground between science and biblical theology in the areas of ecology and environmental biology. Including a discussion of this common ground would have strengthened this book.

The chapters written from a religious perspective are for the most part in agreement with the answers to the five questions that are suggested by the discoveries of twentieth century science. The authors reject a conflict and independence relationship and "believe that the dialogue and integration categories are the appropriate modes for relating science and religion" (p. 38). They also feel that the concepts of consonance and dissonance are helpful, and they use this consonance / dissonance approach in their "dialogue" chapters. While Poe and Davis believe that the scientific way of knowing is valid for understanding the physical world, they argue that the Christian approach to knowledge assumes that a spiritual realm also exists and that God communicates with people in a variety of ways. They are able to avoid conflict with the scientific account of creation by suggesting that the creation accounts in Genesis are not meant to be interpreted literally.

While the Bible clearly teaches that God is the Creator of the universe and human life on earth, it does not say exactly how God carried out this creation process. According to the authors:

> God laid down an allegorical veil on the timing of the end in Revelation, while revealing what would happen at the end. At the other end of time, God may have done the same thing with regard to the timing of the beginning while revealing the fact of creation (p. 47).

In the chapter which provides a religious response to the scientific understanding of quantum theory, consonance is proposed among the discoveries of quantum mechanics, the incarnation, and the doctrine of the trinity. In a later chapter, a connection is made between chaos theory and God's use of chaos to accomplish his purposes. The authors suggest that chaos theory has implications for understanding the relationship among God's sovereignty, the ongoing process of creation, and human free will. While the Bible clearly teaches that God has absolute power over time and eternity, chaos theory implies that the exercise of this sovereignty appears to be more artistic than totalitarian. The biblical model of God as "Shepherd" vividly portrays how God exercises sovereignty. Chaos theory is further discussed in relation to the return of Christ and other aspects of biblical eschatology.

Although much of the book is an attempt to find consonance between current scientific theories and evangeli-

cal theology, the authors state that in the final analysis, the Bible must provide the basic resource for theology rather than science. While most recent books on science and religion are mainly concerned about what science can teach us about theology, these authors are to be commended for also emphasizing what the Bible can teach us, as many biblical quotations and references are included. This book could be improved by adding a section on ecology, a bibliography, and more notes for those who would like to explore particular topics in greater depth. But it does provide a basic introduction to the present dialogue between the disciplines of science and religion from a biblical and evangelical perspective.

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THE FUTURE OF THE UNIVERSE: Chance, Chaos, God? by Arnold Benz. New York: The Continuum Publishing Group, 2000. 176 pages; index. Hardcover; $24.95. ISBN: 0826412203.

This book was originally published in German in 1997 and has since been translated into five other languages. Benz is a professor of astrophysics at the Swiss Federal Institute of Technology in Zurich. He has written two textbooks and over two hundred scholarly papers. Benz has a web site devoted to this book at http://helene.ethz.ch/papers/benz/zukunft/future.html.

The book is actually more general than the title indicates. Although Benz does emphasize the future of the universe, he also presents his broad personal perspective (as a Christian and astrophysicist) of the relationship between science and Christianity. He does not view the relationship as direct because science is objective while Christianity is personal. Science and faith are two partially exclusive approaches to the same reality; they are two nonintersecting planes that both intersect the common plane of human experience. Therefore, they interact indirectly. For example, the two things that amaze humans the most are science and faith. Similarly, we encounter reality in both science and faith that engenders experiences which cannot be completely expressed by words. And finally, religious faith allows us to hope in that which science cannot explain, such as the resurrection.

We view the inevitable end of the universe with the same discomfort that we contemplate our personal deaths. But just as God promises a personal resurrection (in spite of its scientific implausibility), so he also promises a new creation (despite the second law of thermodynamics). The resurrection of Christ is a metaphor for a new creation that will follow the passing away of the old creation. Benz interprets the scientific view of the future of the universe in the language of Christianity. The hope of resurrection and new creation is a gift which we can choose to receive.

Benz tries not to presuppose specialized knowledge from his readers. Throughout the book, he relates many fascinating personal observations about how his involvement in science impinges upon his religious experience. The book is full of solid and interesting information about how physics arrives at its conclusions of how the universe came to be and where it is going. Benz notes that astronomical objects were formed not only at the big bang, but continue to form on a continual basis. So God continues to create even today.

Benz purposely distances himself from the intelligent design camp. He states that "the creator has left no fingerprints behind." God reveals himself not through nature but through the "life of a human being who believes." He says that we should not make too much of the fine-tuning of the universe because we do not yet understand it.

Benz's integration of science and Christianity seems indirect, awkward, difficult to follow, and overly subjective. Although he is a Christian, there is nothing distinctively Christian about his approach. I can picture a similar book being written from the perspective of any other religion (Hinduism, Islam, etc.). I tentatively recommend this book to those who are interested in an original, metaphorical, and meditative integration of science and religion.

Reviewed by Dan Simon, Assistant Professor of Electrical Engineering, Cleveland State University, Cleveland, OH 44115.

THE CASE FOR FAITH: A Journalist Investigates the Toughest Objections to Christianity by Lee Strobel. Grand Rapids: Zondervan Book House, 2000. 300 pages. Paperback; $12.99. ISBN: 0310234697.

This book, reasonably priced, packs a big wallop! In developing rational responses to hard questions confronting Christianity, Strobel provides intellectual arguments that can strengthen the faith of laity and laypersons alike. Many apologetics books of this kind are pretty tough reading and are frequently more soporific than they are terrific. No so with this volume. It will stimulate and inform throughout. One of the reasons is that much of the material is presented in a dialogue format involving Strobel and noted Christian apologists. In other words, it is a discussion rather than a sermon.

Strobel bases his presentations on a discussion with Charles Templeton. After being successful as an evangelist (and a close friend of Billy Graham), Templeton became a skeptic and eventually an agnostic. Why? Because of a photo in *Life* magazine. In Templeton's own words:

> It was a picture of a black woman in Northern Africa. They were experiencing a devastating drought. And she was holding her dead baby in her arms and looking up to heaven with the most forlorn expression. I looked at it and I thought, "Is it possible to believe that there is a loving or caring Creator when all this woman needed was rain?"

After recounting his discussion with Templeton, Strobel tells of his visit to eight scholars. He allows each

of them to respond to an objection to the Christian faith held by Templeton and other skeptics. For example, Peter John Kreeft deals with this objection: "Since Evil and Suffering Exist, a Loving God Cannot." Other objections presented are: "Since Miracles Contradict Science, They Cannot Be True" answered by William Lane Craig; "God Isn't Worthy of Worship If He Kills Innocent Children" dealt with by Norman L. Geisler; "A Loving God Would Never Torture People in Hell" critiqued by J. P. Moreland; and "I Still Have Doubts, So I Can't Be a Christian" responded to by Lynn Anderson.

Each respondent does a commendable job in dealing with these objections. As you read the book, you may wish that you could have been included in the dialogue. Perhaps no answer deals a knockout blow to the skeptic, and there are surely other questions which the doubter could pose. On the other hand, if the evidence were overwhelming, everyone would believe. Ultimately, the Christian walks by faith, not sight; by hope, not by proof.

So in conclusion, I highly recommend this book. I wish I had read it in college when I was troubled by Thomas Paine's *Age of Reason*. It would be a good choice for a gift to an inquiring friend, or an addition to your church library.

Strobel is a former atheist. He holds a law degree from Yale and won an award as legal editor of the *Chicago Tribune*. Presently he serves as a teaching pastor at Saddleback Valley Community Church in Orange County, California. He is the author of *The Case for Christ* and *Inside the Mind of Unchurched Harry and Mary*.

Reviewed by Richard Ruble, John Brown University, Siloam Springs, AR 72761.

HOW NOW SHALL WE LIVE? by Charles Colson and Nancy Pearcey. Wheaton, IL: Tyndale House Publishers, 1999. 574 pages. Hardcover; $22.99. ISBN: 0842318089.

This book popularizes *world views* as consisting of answers to ultimate questions and encourages Christians to engage culture in the battle of world views. Chapters 5–9 primarily discuss cosmology and evolution; chapter 40 discusses the Christian origins of science. Colson and Pearcey are to be commended for showing the role of science in contemporary world views and the functioning of theism in the scientific revolution. It is regrettable, though, that the citations on Christian origins of science constitute a narrow slice of a broader historiographical literature, as adherence to positivistic readings in Pearcey's publication with Thaxton of *The Soul of Science* (sections of which reappear here) was critiqued earlier [Sara Miles, *Christian Scholar Review* XXIV (1995) 496–8]. A number of other science problems hamper the book's achieving its goal; in most cases, their thesis remains defensible, but many of the arguments are too simplistic.

The authors at times demonstrate cynicism about the scientific enterprise: "… no one is asking critical questions about what [amino-acid/life] experiments really prove" (p. 70). Secular science is depicted as elevating perceived victors over religion: for his attempts to "create life …, [chemist] Sidney Fox … was promptly inducted into the Modern Hall of Scientific Heroes" (p. 70). Young Christians will not consider science a worthy pursuit if we make caricatures of science.

The authors state: "We should not oppose science with religion; we should oppose bad science with better science" (p. 61). While quoting the Bible may not seem helpful, one of our goals is to remind scientists of their unacknowledged metaphysical and other presuppositions. But "better science" is not well modeled in the book; there are many relevant errors used to advance arguments. Stating that "*the* task for Christians … is … to expose the flaws in scientific naturalism" (p. 422, italics mine) emphasizes reaction instead of promoting science as obedience to the cultural mandate.

Colson and Pearcey cite big bang theory as evidence against naturalism and for divine creation, since science has to stop there, so there was a beginning and a Creator. But big bang theory may, as some cosmologists suggest, be only a passing fad. Even if science could prove there was a beginning (the entropy considerations [p. 58] *do not* rule out bouncing universes [A. E. Sikkema & W. Israel, *Nature* 349 (1991) 45–7], that would be no more evidence for a Creator than an infinite past; the Creator's role is not just in an initial moment [W. E. Carroll, *First Things* 97 (1999) 18–20]). Calling Stephen Hawking's imaginary time approach "little more than fantasy" (p. 60) is unjust, since this complex-number technique is used by theoretical physicists to compute measurable quantities. Since scientists often encounter novel phenomena challenging common sense, one cannot, as the authors suggest, limit science to "established laws of experience" (p. 60).

Colson and Pearcey present well the amazing fact that many physical quantities are finely tuned for life (the anthropic principle) as evidence for a Creator. However, it is not true that "there is … no natural explanation for the precise balance in the electrical charges of the proton and the electron" (p. 64), as Glashow-Weinberg-Salam electroweak theory (1960s) connects conservation of charge to this balance.

The authors state: "Greeks expected to find a certain lack of precision in nature, a fuzziness around the edges … Christians expected the order in nature to be precisely what God wanted it to be—mathematically precise" (p. 424). If so, the Greeks were right and Christianity is wrong: two twentieth-century developments, quantum mechanics and chaos theory, show nature *is* fuzzy around the edges. The authors continue: "Kepler was convinced that everything in creation is precisely the way God wants it to be … " (p. 425). Since planetary orbits were not exactly circular, "they must be *exactly* something else … he finally hit on the discovery that the orbits are ellipses … [What] spurred him on [was] his conviction the biblical God has complete control over matter and, therefore, it will be mathematically precise." Kepler's work

was real progress, but not because the orbits are exactly elliptical, for that occurs only in the abstract: when two point particles interact gravitationally in an otherwise empty universe. Real orbits are only *approximately* elliptical; variations are due, not to a divine lapse, but, for example, to effects of moons and other planets. As pointed out in another review of *Soul of Science*, the reader is left with a universe which seems more mathematically ordered than it is [C. Menninga, *Calvin Theological Journal* 30 (1995) 585–9].

Colson and Pearcey write that "Nature is orderly and predictable. [B]efore modern times, most people regarded nature as mysterious, dangerous, and chaotic" (p. 423). But chaos (exponentially-sensitive dependence on initial conditions) is ubiquitous, for example, rendering weather unpredictable, and who would argue that quantum mechanics (which limits predictability as well) is not mysterious or that tornadoes are dangerous? Nature is not as utterly orderly, predictable, or tame as Colson and Pearcey present Christianity as implying.

Finally, Colson's broad readership will benefit from being made aware of the challenge the intelligent-design movement poses to dogmatic neo-Darwinianism, but it would have been helpful to point out that Christians debate it as well (it perhaps over-emphasizes the role of reason in recognizing God).

I would recommend the book for anyone wishing an introduction to a creation-fall-redemption world view together with model applications in many areas of life. It remains important for readers to be aware of the defects of this widely-read book's science aspects.

Reviewed by Arnold E. Sikkema, Physics Dept., Dordt College, Sioux Center, IA 51250.

History of Science

EINSTEIN, HISTORY, AND OTHER PASSIONS: The Rebellion Against Science at the End of the Twentieth Century by Gerald Holton. Cambridge, MA: Harvard University Press, 2000. 240 pages, notes, index. Paperback; $18.50. ISBN: 0674004337.

Holton holds a joint appointment as Mallinckrodt Professor of Physics and Professor of History of Science at Harvard University. He is the author of several other Harvard University Press books including *Thematic Origins of Scientific Thought*, *Science and Anti-Science*, *The Advancement of Science and its Burdens*, and *The Scientific Imagination*.

This book is in two parts: the first, a presentation of some thoughts on how the modern impersonal approach in science came to be; and the second, a brief biography of Einstein. In the first part, Holton outlines the various roles science and scientists have played throughout history. Holton believes the human side of science is frequently ignored and is a factor in the rejection of scientific thinking in our postmodern world. Furthermore, he believes that the various social, cultural, and intellectual influences to which people are exposed during their formative years have a major influence on the extent to which they accept this impersonal world view that is associated with modern science. This theme is developed further in Part II as Holton reveals a passionate and very human Einstein through an analysis of his writings. I was most fascinated by the chapter in which Holton revealed the love correspondence between Einstein and his first wife, Mileva Maric.

Holton's book is not involved with the interface between science and faith, as many of the books reviewed for *PSCF* are. However, Holton's emphasis on the effect the world view of the scientist has on his science stimulated reflection on how my Christian commitment has influenced my career. Furthermore, I have gained insights from reading this volume that will be useful in presenting the scientific method to my introductory chemistry and physical science classes. I enthusiastically recommend this book to the ASA members and their colleagues.

Reviewed by Elizabeth Hairfield, 325 Winthrop St., Staunton, VA 24401.

Origins

SPARKS OF LIFE: Darwinism and the Victorian Debates Over Spontaneous Generation by James E. Strick. Cambridge, MA: Harvard University Press, 2000. xi + 283 pages, glossary, timeline, index. Hardcover; $45.00. ISBN: 067400292.

The origin of life has been of enduring interest. Aristotle strongly advocated "spontaneous generation" arguing that it was observed *fact* that some animals spring from putrid water, that plant lice arise from the dew that falls on plants, that fleas emerge from decaying matter, etc. With the invention of the microscope previously invisible life forms became further candidates to emerge from nonlife. Skeptics had little on which to base their claims until Italian physician Francesco Redi experimentally demonstrated (1668) that maggots did not appear in meat in which flies were prevented from laying their eggs by wire screens. Later workers gradually demonstrated that the higher animals were not spontaneously generated from the nonliving; microorganisms—the monads and bacteria—were another matter.

The debate waxed and waned in Europe through the eighteenth and nineteenth centuries until the late 1850s when the pot boiled over in England catalyzed by contributors from France and Germany. In exploring the English scene from 1860–1880, Strick has done a masterful job in drawing together a large cast of characters with changing ideas and motives; clashing personalities; and conflicting science, medical theories, politics, and experiments.

Sadly, for this naive chemist, it was not experiments that won the day for the anti-group of T. H. Huxley, John Tyndall, Charles Darwin, and their cohorts against H. Carlton Bastian, an outspoken advocate of spontaneous generation. Power science politics, control of strategic teaching venues, plus *experiments* put the matter to rest after 1880—for a time. Today, the matter has been turned on its head with a variety of *synthetic experimental* strategies suggesting how increasingly complex forms of primordial matter may have come to the point of life.

Strick has written an engaging account of the fighting among Darwinian factions over spontaneous generation. The winners were able to distance the radical implications of spontaneous generation from evolution and thus ease the task of gaining public acceptance of Darwin's ideas.

Sparks of Life belongs in science libraries and on the shelf of biologists concerned with the development of the major motif of their field.

Reviewed by Jack W. Haas, Jr., 3 Villa Rd., S. Hamilton, MA 01982.

THE CREATION OF MAN AND WOMAN: Interpretations of the Biblical Narratives in Jewish and Christian Traditions by Gerard P. Luttikhuizen, ed. Boston: Brill Academic Publishers, 2000. 214 pages. Hardcover; $70.00. ISBN: 9004116710.

This book is a collection of twelve essays delivered at a June 1999 conference held at the University of Groningen, the Netherlands. It is the third volume in the series, Themes in Biblical Narrative: Jewish and Christian Traditions, the proceedings of the yearly Groningen conferences. The editor and other contributors are university professors of biblical languages or theology. All but two of the contributors work in the Netherlands. All essays are in English.

The essays interact with the biblical accounts of the creation of man and woman from various perspectives. The first chapter places the Genesis accounts in the broader context of ancient Near Eastern literature. The next eight chapters examine various Jewish, early Christian, and Gnostic interpretations of the Genesis accounts, 1 Corin. 11:2–16, and a Gnostic work, *The Secret Book of John*. The last three chapters deal not with ancient interpretations but with more modern ones: Milton's poetic retelling in *Paradise Lost*, a feminist interpretation of the Genesis creation stories, and a psychological analysis of the Genesis account as a model for human creativity. None of the essays is written from an evangelical perspective; all employ the canons and methods of higher criticism in handling the biblical texts.

I was disappointed in the book. The higher critical perspective was not the problem: evangelicals in science interact with non-evangelical material all the time. The unsatisfactory aspect of the work was the complete absence of any attempt to interpret the biblical text in light of the discoveries of science. If the essays contained in this volume are representative of the interests and concerns of biblical scholars today, evangelicals in science can expect no help from them in our efforts to reconcile the Word of God and the facts and theories of science. Probably only evangelical interpreters see a need to reconcile biblical faith and science; those who view the Scripture as myth would have no motivation to do so.

In two essays, the door was open, but the interpreter chose not to walk through it. One contributor states: "In Genesis 1:11, the earth is co-creatrix: 'Let the earth put forth vegetation.' But this role is limited; everything happens according to the word of Elohim" (p. 8). But he fails to comment on the implications of this conclusion for theistic evolution or for the view, urged by Van Till, that God created the world with robust functional integrity. Again, another contributor refers to the Copernican Revolution (p. 192), but finds its effect to be a psychological one: a personal "Copernican shift" within human creators of music, literature, and art allows them to put themselves at the center of their work. He has no comment to make regarding the effect of the Copernican Revolution on Western people's view of the cosmos and on the historical development of the modern objective scientific perspective.

In light of the inattention to scientific issues raised by the biblical creation accounts, as well as the high price of the book, I doubt that it would be of much interest to readers of *PSCF*. Institutions might wish to obtain it for their libraries, but science department libraries would not find it particularly valuable.

Reviewed by Robert Rogland, Covenant High School, Tacoma, WA 98465.

COSMIC EVOLUTION: The Rise of Complexity in Nature by Eric C. Chaisson. Cambridge: Harvard University Press, 2001. 274 pages, glossary, notes, references, index. Hardcover; $27.95. ISBN 067400342X.

Chaisson received his doctorate in astrophysics from Harvard University. He was a faculty member at Harvard and at Johns Hopkins University and presently directs the Wright Center for Innovative Science Education at Tufts University. He has published over one hundred scientific articles and nine books.

Chaisson aims high, even for an astrophysicist. His goal in *Cosmic Evolution* is to build "a cosmic heritage—a grand structure of understanding rooted in events of the past, a sweeping intellectual map embraced by humans of the present, a virtual blueprint for survival along the arrow of time … nothing less than a holistic cosmology."

Chaisson sets forth his case in five chapters. The Introduction reviews basic concepts of thermodynamics, quantum principles, probability, statistical mechanics, and information theory. He emphasizes the importance of *dissipative structures*, that is, open systems that spontaneously adopt more ordered forms that can handle increased energy flows. The aim of this chapter is to estab-

lish on accepted scientific grounds the possibility of a spontaneous increase in order for a localized part of the Universe.

Chapter one, "Matter," summarizes current thinking about the Big Bang and the expansion of the Universe. Chaisson concludes, "the Universe is indeed expanding at *some* rate sufficient to give rise to [energy] gradient rich environments and thus to increasing amounts of complexity and intricacy during the course of universal history." Chapter two, "Radiation," summarizes current thinking regarding the conversion of radiation to mass in the first few thousand years after the Big Bang.

Chapter three, "Life," argues that the principles outlined in the first three chapters were at work in prebiotic chemical evolution and subsequent biological evolution. "We reason that *cosmic expansion itself is the prime mover for the construction of a hierarchy of complex entities throughout the Universe*" (emphasis in the original). The specific driver of cosmic evolution is *free energy rate density*, that is, ergs of energy passing through a system per second per gram. The observed rise in complexity is nature's way of dealing with increasing free energy rate densities in localized parts of an expanding Universe.

Chaisson applies his theory to biological evolution with as much confidence as he does to cosmology, since "biology is physics with added features." He believes the tendency towards more efficient handling of ever-greater free energy rate densities is at least as important as Darwinian mechanisms in driving biological evolution. Chaisson recognizes that biologists may not jump on the bandwagon right away: "Though utterly foreign among practitioners of the biological sciences, this term [energy rate density] remains straightforward, physically intuitive, robust and inclusive."

Chaisson admits he is painting with a broad brush: "How … order became manifest specifically in the form of galaxies, stars, planets, and life has not yet been deciphered in detail; that is the subject of many specialized areas of current [research]." He admits of exceptions to the general trend, but dismisses them as "devilish details." Scientists in the specific disciplines where those details raise important questions may be less insouciant.

Like Carl Sagan, Chaisson is an unashamed materialist: "The Universe is all there is, by definition." He sees no progress or design in nature, explicitly rejecting both the strong anthropic principle and the possibility of a Designer. Indeed, Chaisson views his theory as a replacement for religious views:

> The evolutionary epic told here is as ennobling as any religion—enlightening, majestic, awesome, providing a sense of the "ultimate." Material reality, when scientifically analyzed in both breadth and depth, brings to mind not only elegant grandeur and a sacred narrative comparable to any religious tradition, but also enriching empiricism and a genuine connection to the cosmos extending into deep history much older than most religions.

Despite its obvious objectionable features, ASA members would do well to read this book. Those who believe God created a universe with robust functional integrity will want to see if Chaisson's scenario is a possible one. Might God have created out of nothing the radiation of the Big Bang, endowing it with such properties that natural history has fallen out along the general lines of Chaisson's schema? Those not convinced by the functional integrity approach will want to ask themselves the same question. Moreover, ASA members ought to read this book because it creates a materialist mythology, an alternative to creation *ex nihilo* by a transcendent God, which unbelieving colleagues may well embrace. Cosmic evolution is a view ASA members should become familiar with and prepare to answer as Christians in the sciences.

Reviewed by Robert Rogland, Covenant High School, Tacoma, WA 98465.

IMPEACHING MERE CREATIONISM by Philip Frymire. San Jose: Writers Club Press, 2000. 101 pages. Paperback; $11.95. ISBN: 0595001963.

Frymire, a petroleum geologist from Tulsa, is dismayed that a "creationist resurgence" threatens the quality of science education in Oklahoma and the nation. Frymire sees Boalt Hall law professor Phillip Johnson as the principal culprit for the sad state of affairs that has biology educators fighting to keep evolution in the curriculum. The fear is that Johnson's intelligent design movement would introduce supernatural explanations in science and thereby subvert genuine science education. If evolution is, as Dobzhansky claimed, the central organizing principle of biology, then any anti-evolutionary approach that wins popular approval represents a threat to the integrity of biology and must be challenged.

Consequently, Frymire does battle against Johnson in a lively, nontechnical polemic that visits several of the standard criticisms of intelligent design found in the popular scientific literature. Frymire's basic objection with Johnson and the intelligent design movement, as he understands it, is that it is "scientifically useless." It is simply as a gussied-up version of the old creationism. He agrees with Daly and Wilson that this form of creationism is "devoid of empirical implications." Intelligent design theory, Frymire contends, "doesn't explain anything, doesn't predict anything, and is completely untestable."

Frymire begins with a brief objection to Johnson's case against naturalism in science. Given the standard definition of science, Frymire sees absolutely nothing untoward about science's commitment to methodological naturalism. Anything else would not be science. Next Frymire takes on the distinction between micro- and macro-evolution and argues that Johnson produces no evidence that there is an order of magnitude between micro- and macro-evolution. Moreover, if Johnson must stick to this distinction, can he provide any evidence of "animals popping into existence out of thin air?" Frymire, not surprisingly, is quite comfortable with the standard evolutionary model of common ancestry.

In similar fashion, Frymire gives breezy treatment to the problem of the fossil evidence, Behe's irreducible complexity, evidence in favor of human evolution, the question of the role of design in the light of the manifest suffering and violence in nature, and the so-called "moral prostitution argument" (that without God there is no adequate basis for morality). Throughout his brief chapters, Frymire draws from a fairly wide reading of many of the popular scientific works of Dawkins, Gould, Williams, Pinker, et al. But his case against design suffers from too much attention paid to some of Johnson's rhetorical ploys and not enough to the growing body of design literature. To be taken seriously, a critique like his demands a serious engagement with the relevant literature. Unfortunately, Frymire gives no evidence of having done the requisite homework.

Some of Frymire's concerns about design theory are certainly appropriate and have been made more forcefully elsewhere. The regrettable thing about *Impeaching Mere Creationism* is that Frymire makes some very strong claims without giving any evidence either in his text or in his idiosyncratic notes that he has basic familiarity with the major works of the design movement save for three books written by Phillip Johnson and Michael Behe's *Darwin's Black Box*. He gives no mention of Dembski, Meyer, Nelson, Wells, et al. Admittedly, *Impeaching Mere Creationism* is a popular treatment by a nonspecialist for a general audience. And while it may suit Frymire's generalist purposes to use only Johnson and a smattering of Behe, it certainly calls into serious question the value of his book. After all, how can an author of a book offering a critique of intelligent design theory claim that it "doesn't explain anything, doesn't predict anything, and is completely untestable" without at least having grappled with Dembski's "explanatory filter" that purportedly offers a means of detecting design based upon the criterion of "specified complexity?"

I am inclined to ask what prompted this book to be published in the first place. Frymire's answer would no doubt be that, as a concerned scientist and citizen, he simply needed to speak up and challenge Phillip Johnson. But, as he well knows, Pennock, Miller, and a host of others have already done so and, frankly, much better. Perhaps the most compelling reason for the book can be found on the publisher's homepage.

Reviewed by Donald A. Yerxa, Professor of History, Eastern Nazarene College, Quincy, MA 02170; Assistant Director, The Historical Society, Boston, MA 02215.

CREATION RECONSIDERED: Scientific, Biblical, and Theological Perspectives by James L. Hayward, ed. Roseville, CA: Association of Adventist Forums, 2000. 384 pages, contributor list, index. Paperback; $19.95. ISBN: 0967369401.

This book contains papers delivered at the Conference on Geology and the Biblical Record sponsored by the Association of Adventist Forums, August 7–11, 1985. The twenty contributors were Seventh-Day Adventist scholars and pastors, most with doctorate degrees from mostly non-Adventist universities. The academic disciplines represented by the contributors include physics, biology, geology, geochemistry, medicine, anthropology, history, and theology. Along with a few conservatives open to dialogue, the contributors gathered in West Yellowstone, Montana, to address a broad range of scientific and biblical issues focused on the geologic column.

The Association of Adventist Forums is an organization independent of the Seventh-Day Adventist (SDA) Church. Its members are, in the words of one contributor to this volume, "thoughtful, committed Adventists" who nevertheless have views at variance with those espoused by SDA officials. The SDA church, like many fundamentalist churches, is committed organizationally to a young earth, calendar day interpretation of Genesis 1–2. Most of the participants in the Conference found this position untenable on scientific grounds.

Approximately half of the twenty-seven papers deal with such scientific topics as the geologic column, plate tectonics, pleochroic halos and time, radiocarbon dating, amino acid dating of fossils, reefs and natural history, paleoclimatology, and the worldwide distribution of taxa and the implications of that pattern of distribution for natural history. The remaining papers deal with the biblical and theological implications of the evidence for an old earth, the inspiration and authority of the Scriptures, the writings of Ellen G. White (whom the SDA consider to be a prophet), the Adventist view of the Sabbath Day, the interpretation of the Genesis flood narrative, and the relationship between Genesis 1 and Genesis 2.

Much of the scientific material presented in this volume will be familiar to readers of *PSCF*. The Bible-science issues that thoughtful, committed Adventists struggle with are treated regularly in the pages of this journal as well as on the ASA listserve. Moreover, there is nothing groundbreaking here: after all, the conference was held over fifteen years ago! (It should be noted that almost all the authors updated their papers to include references to scholarly literature published since 1985.)

Most readers of *PSCF* will probably want to pass on this book, but it would be of interest to two classes of readers: those just beginning to struggle with the young earth / old earth issue, and those with an interest in the intellectual currents in contemporary Adventism. For the first class of readers, the essays present compelling scientific evidence for an old earth, evidence they need to consider well. The essays dealing with that evidence biblically and theologically are of mixed value. Several papers strive mightily to reconcile the writings of Ellen G. White with the scientific evidence, a matter of no importance outside SDA circles. Other papers contain exegesis and analysis that could have been written by non-Adventists; their range and quality is comparable to that appearing in *PSCF*. (I found the essay on the extent of the Genesis flood particularly good.) For the second class of readers, this book is a good introduction to the thinking and the strug-

gles of Adventists in the sciences. Many outside Adventism will recognize those struggles as akin to their own.

Reviewed by Robert Rogland, Covenant High School, Tacoma, WA 98465.

Philosophy & Theology

FIVE VIEWS ON APOLOGETICS by Steven B. Cowan, ed. Grand Rapids, MI: Zondervan Publishing House, 2000. 398 pages, indexes of Scripture, persons, and subjects. Paperback; $17.99. ISBN: 0310224764.

"Through much of the twentieth century, American evangelical apologists have been battling one another vigorously over apologetic method" writes John M. Frame (Westminster Theological Seminary in California, p. 358). This analysis identifies and critiques the problems in their five most popular apologetic systems. Each has an advocate's overview and critiques by the other four. The book, including ample footnote references, ends with each author's "Closing Remarks" and the editor's conclusions, so it is like a detailed debate report.

Classical Apologetics, presented and defended by William Lane Craig (Talbot School of Theology), emphasizes the role of reason in *showing* Christianity to be true, along with recognition that *knowing* it to be true is warranted by the inner work of the Holy Spirit in a person's life. *Evidential Apologetics* (Gary R. Habermas, Liberty University) appeals to objective facts in the world to warrant the conclusion that Christianity is true. It is a "one-step approach" that does not first try to prove that God exists. Paul D. Feinberg (Trinity Evangelical Divinity School) advocates *Cumulative Case Apologetics*, the "inference to the best explanation approach." Its emphasis is on the internal and external witness of the Holy Spirit as a source of certitude for the believer and of conviction for the unbeliever through tests for truth (consistency, correspondence with reality, comprehensiveness, simplicity, livability, fruitfulness, and conservation by providing the least radical world view shift). Frame's *Presuppositional Apologetics* argues that the fear of the Lord (reverent awe that yields obedience) is the ultimate criterion of truth. God's rationality is the source of human faith, which in turn is the source of human reasoning, since "we do legitimately believe most things without proof or argument" (p. 215). Thus, Scripture is primary to the apologetic tasks of proof (rational confirmation for faith), defense (replies to criticisms), and offense (criticizing non-Christian ideas). *Reformed Epistemology Apologetics* (Kelly James Clark, Calvin College) claims that positive arguments to defend Christianity are unnecessary for rational faith in God. All human beings have an innate sense of the divine, so the focus of apologetics is both negative (defensive) when challenges to theistic belief are encountered and positive, encouraging unbelievers to awaken their latent sense of the divine. Major tenets, methods, concepts, assumptions, strengths, and weaknesses of each system are presented and critiqued in considerable detail.

This book contributes significantly to reconciliation among advocates of the various apologetic methods and to recognition that they are less polarized than once believed. The authors agree that we need both positive reasons for Christian faith and negative defenses of it, that the classical arguments for God's existence and historical arguments for Christian faith are useful apologetic tools, that sin noetically influences negatively the ability and willingness of unbelievers to accept rational arguments for the faith, that the work of the Holy Spirit is crucial, that unbelievers share much epistemological common ground, and that postmodern relativism is an unwarranted self-defeating obstacle to doing apologetics. (Postmodernism is the subject of so many scattered critiques and comments that purchase is warranted for that alone.)

However, the apologists still differ about such topics as how to classify their methods, the role of the Bible in apologetic methodology, whether to invoke the concept of miracle to explain a historical event without first establishing that God exists, the importance of positive arguments in demonstrating the truth of Christianity, whether all world views are defended circularly, and if the resurrection of Christ is antecedently improbable.

These experts give Christians in the sciences many nuggets of truth. Besides an in-depth view of the complexities of arguments for the faith, they remind us that neutrality on any issue of truth and rationality is impossible, that neither logic nor reason is neutral, that absolute religious certainty cannot be obtained through reason on this side of the grave, that it is dangerous to believe simplistic views of either "the Bible only" or "reason only" will convince everyone to accept the faith, that all arguments are relative, and above all that the Bible provides no single apologetic system ("So let a thousand apologetical flowers bloom!" p. 275). Many strikingly perceptive sentences pop up, for example, "The selective and tendentious reading of Scripture by those who claim to be most sensitive to Scripture is curious indeed" (p. 371), and "It is not unusual for modern secularists to claim that all truth is relative while insisting that naturalistic evolution is a proven fact, never conscious of the contradiction into which they have fallen" (p. 212).

Scientists reciprocally help apologetics through contributions to natural theology (knowledge of God's self-revelation in and through nature). Hints of the apologists' need for the social sciences emerges on such topics as how people actually acquire beliefs (pp. 273, 304); the interaction of cognitive therapies with existential techniques in healing (p. 299); "what situations arouse beliefs that transcend evidential defeasibility" (p. 309), and which cultural differences make it easier or harder for people to accept the logical facts of God and his Word (p. 311).

Although "all the authors … tried to write without presupposing that the reader is well-versed in philosophical jargon" (p. 21) and a four-page glossary of key concepts is provided, this book is mainly for people already well grounded in philosophical or theological apologetics, not the average *PSCF* reader. It is a sophisticated study of

apologetic systems, not a manual on how "ordinary Christians" can best defend and share their faith.

Reviewed by David O. Moberg, Marquette University Sociology Professor Emeritus, 7120 W. Dove Ct., Milwaukee, WI 53223.

GOD'S NAME IN VAIN: The Wrongs and Rights of Religion in America by Stephen L. Carter. New York: Basic Books, 2000. 248 pages, notes, index. Hardcover; $26.00. ISBN: 0465008860.

In this book, Carter, a professor of law at Yale, revisits the issues treated in his 1993 book, *The Culture of Disbelief*, and expands upon them. He focuses on the questions, how and when should persons take their arguments based on religious principle into the political arena. Carter is the author of many works in recent years, among them *Integrity and Civility*.

It is a rare author who writes in a way that makes you like him even when you disagree with his arguments. Carter does that. I fill each of his books in my library with marginal notes as I grapple with the issues he deems important. Carter writes with excellence; his discussions, while on a scholarly level, are seldom obscure. They are always thought provoking. He writes with passion and utter integrity. I highly recommend this book (and other Carter volumes) to my ASA colleagues.

Carter pursues two themes. The first is that arguments based on religious grounds (presumably from religious people) should be welcomed into the dialogue of American culture and not, as is done sometimes, marginalized. The second is that religious activists who enter the political arena must do so with considerable care so as not to "lose their souls." He enlarges upon these issues with examples from law and history. He writes from both theological and philosophical viewpoints, and includes utterances by both pro-slavery and anti-slavery preachers of the nineteenth century, and the anti-war and civil rights advocates of the twentieth. Persons who argue that church-state separation should keep religious people and arguments based on religious principles out of political discourse are, as Carter puts it, simply wrong. I find him very persuasive.

The chief weakness in *God's Name in Vain* is Carter's avoidance of the issue of factuality as he wrestles with arguments where religious views conflict with secular culture. In several places, he treats the religious view, held by a substantial number of American people, that the earth is very young. There is no evidence that Carter holds this belief himself, or even gives it any credence, indeed, he calls it "bad science" (see *The Culture of Disbelief*, p. 161). Yet, he avoids the discussion of the question "Does teaching it in classrooms in any significant way hurt the students?" On page 3, he writes: "… I am not sure why it is more 'fanatical' for parents to tell their children that the creation story in Genesis is literally true than for the public schools to tell the same children, required by law to attend, that the religion of their parents is literally false." It would seem to me that when a religion teaches something that is clearly factually untrue, such as a young earth, or a flat earth, or the supremacy of white people, the secular culture is obligated to teach otherwise. In a footnote, Carter makes much of a survey which shows that a significant number of our citizens do hold to the young earth position, but I fail to see how that particular fact holds any significance.

The book is divided into two quite different sections. The first, "Religion's Sphere," shows a number of very specific ways in which politics and religion necessarily interact. The second, "Religion's Voice," suggests a number of current political issues where religious arguments offer a potentially vital contribution. In the second section, Carter treats the important subject of "Measurism," the philosophical position that, if an attribute can be measured, even poorly measured, it is, *ipso facto*, of more importance than an attribute which does not admit to that characteristic. If you read nothing else from Carter—read this section, chapter 10, a brief twenty pages. It will be, I suggest, like eating the first peanut at a baseball game—you will likely finish the bag (book).

If you are an evangelical Christian, you will find much to agree with in this book. If you are a liberal Christian, you will find cogent arguments from the right, and find more areas of agreement than otherwise. To any secularist reading this review, you owe it to yourself to read this book to understand how your religious colleagues might view the issues.

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IS THE BIBLE TRUE? How Modern Debates and Discoveries Affirm the Essence of the Scriptures by Jeffrey L. Sheler. New York: Harpercollins, 1999. 288 pages. Hardcover; $24.00. ISBN: 0060675411.

Sheler is a religion writer at *U.S. News & World Report*. He has done a great service of making available at a popular level a good survey of the literature bearing on the Bible's general reliability—even if one may disagree with him on the details.

His book is divided into six parts. In Part I, "The Bible and History," he surveys the nature of the "battle for the Bible" since the Enlightenment and discusses the authorship and canonization of the biblical books. He notes that any divine involvement or "inspiration" need not preclude historical accuracy—no more than Herodotus' belief in the Delphic Oracle disqualifies him as a reliable source on Greek history (p. 44).

Part II, "The Bible and Archaeology," is probably the most valuable portion of the book. After tracing the relatively recent rise and advance of biblical archaeology, Sheler discusses key archaeological finds that have shown the Bible to be trustworthy at key points. For instance, the 1993 find of the inscription in upper Galilee of "the house

of David" on a *stele* (monument) dating to the ninth century BC brought the Davidic monarchy out of the realm of legend and into history.

Sheler reminds us that absence of archaeological evidence for, say, the patriarchs should not be surprising since the Bible speaks of "family stories" (in this instance) rather than "geopolitical history" (p. 73). But we do see repeated corroborations of the biblical record with secular history (such as inheritance laws or the pricing of slaves in the ancient Near East when diachronically analyzed). When we look for the evidence of an exodus out of Egypt, we obviously cannot expect to find a pharaoh mentioning the embarrassing flight of slaves out of the land under his control! We do, however, have significant corroboration: archaeological evidence for Hebrews (*Apiru*) in Egypt (e.g., their building projects) during a limited time period and then in Canaan afterwards—a remarkable fit with the Bible. Despite some gaps in the evidence, we have significant verification of the Canaanite conquest—even if potential data is limited (e.g., only three cities were recorded as having been burned: Jericho, Ai, and Hazor). The recent discovery of the Philistines (a people probably from Crete originally) and the evidence of their metallurgical prowess (see 1 Sam. 13:19) showed that the skeptical charge of "invention" was erroneous (p. 98). Corroborative evidence for Solomon's reign, for the Assyrian threat on Jerusalem during Hezekiah's reign (pp. 104-6), for Pontius Pilate, and for Jerusalem's topography and architecture as described in John's gospel—to give a sampling—offers us a solid historical core for the Bible.

The topic of Part III is the Dead Sea Scrolls—their discovery, the controversy and politics surrounding them, the various abuses of their interpretation (such as Barbara Thiering's secret-code approach), and their historical value (e.g., Josephus spoke of the Essenes in his writings). The Dead Sea Scrolls revealed the remarkable textual preservation of the Old Testament—as well as the existence of various editions of the Old Testament text during Jesus' time. It was also the discovery of these scrolls that has convinced scholars that John's Gospel is thoroughly Jewish—rather than Hellenistic—in its world view (pp. 166-8).

Part IV deals with "The Bible and the Historical Jesus." Sheler surveys the various Enlightenment-and-beyond "quests" (and the "non-quest") for the historical Jesus. He offers a helpful summary of particular contemporary "questers" such as Robert Funk, Marcus Borg, and John Dominic Crossan—all Jesus Seminar members—in addition to John Meier and N. T. Wright. Sheler examines some of the purported historical difficulties surrounding the birth of Jesus—such as the alleged pagan influence surrounding the virgin birth and the apparent conflicts between Matthew's and Luke's birth narratives—and sorts out the issues succinctly. Sheler then looks at Jesus Seminar-type criticisms surrounding the person / message of Jesus as well as his death and resurrection; upon closer inspection, the orthodox understanding of Jesus fares quite well.

Part V, "The Bible Code and Prophecy," is a bit of a detraction from the upshot of the book, but it is still a good introduction to the issue. In short, the "Bible code" (in which encoded messages within the Hebrew Old Testament text allegedly predict the 1991 Gulf War and the assassination of Yitzhak Rabin as well as the appearance of personages such as Hitler and Nixon) is sensationalistic and naïve. Similar "messages" have been detected by computer searches in the text of Melville's *Moby Dick*!

Sheler concludes that many questions about the Bible's historicity remain elusive, and he rightly does not assert more than he should when doing this type of historical analysis. But he urges the reader to consider that perhaps something transcendent might be moving biblical writers and shaping history in significant and salvifically meaningful ways.

I think the book has much to commend it. It is a fine conservative introduction on biblical criticism and an even-handed defense of biblical reliability from a number of different angles.

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UNAPOLOGETIC APOLOGETICS: Meeting the Challenges of Theological Studies by William A. Dembski and Jay Wesley Richards, eds. Downers Grove, IL: InterVarsity Press, 2001. 280 pages. Paperback; $19.99. ISBN: 0830815635.

This book grew out of a weekly seminar sponsored by the Charles Hodge Society, a student group at Princeton Theological Seminary dedicated to restoring classical Christian apologetics to theological education. The Charles Hodge Society aims to reclaim seminary education from the theological malaise gripping the mainline denominations by "inoculating" potential seminarians against the modernist and postmodernist concepts they will encounter in their studies. In the Society's view, a robust apologetic that confronts and answers those concepts is the best means available to evangelicals for maintaining their faith in a seminary hostile to their beliefs; indeed, not simply for maintaining their faith, but for contending for it.

Unapologetic Apologetics is divided into five parts. Part 1, "Foundations," includes essays dealing with the task of apologetics, the fallacy of contextualism, and the history of apologetics at Princeton Seminary. The task of apologetics is presented as the defense of the catholic faith of the Church, the stable, unchangeable core of Christian belief. That very conception of the Christian faith is challenged by *fallibilism*, the claim that the Bible itself as well as the theological reflection of the Church through the centuries, is inherently fallible. It is also challenged by *contextualism*, the claim that what is true and good is entirely determined by the context in which truth claims and ethical claims arose. Dembski, one of the editors and

the author of five of the fifteen essays in the book, devotes a whole chapter to refuting the logic of contextualism.

Part 2, "Scripture," deals with the problem of error in Scripture, with naturalism in theology and biblical studies, and with Old Princeton's doctrine of Scripture (i.e., the view that predominated at Princeton until its re-organization in 1930). It does not deal with specific alleged errors in Scripture, but looks at the matter more generally. Naturalism intrudes into theology and biblical studies at the seminary level in denying supernatural intervention, whether miracles or inspiration of the sacred text. Challenges to the orthodox view of authority and inspiration based on supposed errors in Scripture or stemming from naturalistic presuppositions are nothing new. Old Princetonians like Charles Hodge and B. B. Warfield had to answer the same challenges over a hundred years ago, and the third essay in this section holds up the Old Princetonian response as a model for today.

Part 3, "Christology," defends the orthodox doctrine of the Incarnation against charges of incoherency and against the claim of radical feminism that Christ, a male, *a priori* cannot be a savior for women.

Part 4, "Theology," contains an essay continuing the rebuttal of the feminist attack on orthodox Christian doctrine and defending the Bible against charges of sexism. A second essay asserts the adequacy of human language in talking about God, in particular, language viewed as sexist by feminists. It also contains an essay arguing against universalism, the unorthodox doctrine that Christ actually saved all human beings.

Part 5, "Science," contains two essays by William Dembski, whose work as a design theorist is probably known to most readers of *PSCF*. He argues not only against naturalistic evolution, but also against theistic evolution, at least as the latter is commonly understood. (Dembski sees theistic evolution as methodologically equivalent to naturalistic evolution; it is therefore unable to reply to the secularist who would cut out the theistic aspect with Ockham's Razor.) In his second essay, he describes his *explanatory filter*, a set of criteria for deciding if an entity or system is the product of random natural forces or intelligent design. Applying it to natural systems, especially biological systems, he concludes that the case for design is well founded. Part 5 also includes a chapter on the challenge of the human sciences to orthodox beliefs.

The appeal of this book for ASA members is probably limited, unless they are contemplating seminary or know someone who is. The essays by Dembski on Intelligent Design would be most interesting to scientists, but they summarize work he has published elsewhere; there is nothing new here. Conservative Presbyterians like myself might enjoy the historical material on Old Princeton, but that, too, is readily available in other works.

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THE CRAFT OF RELIGIOUS STUDIES by Jon R. Stone, ed. New York: Palgrave, 2000. xv + 235 pages, index. Paperback; $18.95. ISBN: 0312238878.

The fifteen autobiographical essays by distinguished scholars in various specialties center around methodological issues in the interdisciplinary field of religious studies. First published in hardcover editions (Great Britain: Macmillan, 1998; New York: St. Martin's Press, 1999), they strikingly reveal how personal life experiences during childhood, youth, and adulthood aroused and shaped spiritual quests. These in turn awakened questions and interests that became major stimuli for their intellectual journeys and careers centered around philosophical explorations, conceptual reflections, research investigations, theological adaptations, and theoretical innovations. For example, Jacob Neusner, whose 675-plus books make him the most published humanities scholar in the world, shares how self-doubt has influenced much of his career and made him his own harshest critic.

The conclusion of John Hick, an internationally esteemed philosopher of religion, that the relationship between world religions is one of the main problems facing Christian thought today (p. 90) is reflected throughout the book. Typical of most authors, he believes that "basic Christian theology ... [as] the most probable picture of reality" is an anachronistic throwback to medieval scholasticism that is "unrelated to the needs of the modern mind" and unable to succeed even in its own terms (p. 83).

Historian Martin E. Marty perceptively argues that "varying prejudgments or biases color the thinking of *everyone* in religious studies" (p. 158). [The same applies to everyone in any academic or scientific enterprise.] Although several authors are critical of rationalism, modernism, postmodernism, and even deconstructionism, they elevate abilities and accomplishments of the human mind above faith in the Creator divinely revealed through nature, the Judeo-Christian Scriptures, and especially Jesus as the Living Word of God (John 1:1–14). Yet even Hick's discussion of the incarnation of Jesus as only a metaphor acknowledges that none of his evidence against Jesus' deity shows the doctrine to be certainly false. It merely induces a "hermeneutic of suspicion" (p. 95), yet he joins "the modern re-understanding of Christianity as one valid context of human salvation among others" (p. 96).

Marty clearly explains that the guiding theoretical assumptions that reduce religion until it is "nothing but" this or that cannot be settled by a determination of whether something is or is not indeed there through either history or any other approach in religious studies. Even Hick, however, acknowledges that facing each problem acutely felt by religious persons is a successive venture like climbing a mountain range; whenever one reaches a summit, another higher mountain comes into view "with the awareness that only the foothills of truth have been reached" (p. 76).

Scientific methodology is reflected throughout these perceptive chapters, even though most, except for those

by sociologists Rodney Stark, Phillip Hammond, and Andrew Greeley, are grounded primarily in humanistic research. "Scientific knowledge springs from intuitions steeped in facts, sharpened by logic and continuously tested by both," writes Frits Staal, professor emeritus of philosophy and of South Asian studies, U. of California, Berkeley (p. 70). Thus, for example, Christian missionaries are often ethnocentric, but their reliable descriptions of indigenous cultures frequently are distorted by the [ethnocentric!] methodological requirements of "scientific anthropology." Staal recognizes that studying religion differs from studying the universe because people are a part of religion and therefore can never be completely objective. He also observes that the "insipid mediocrity which piety preserves is by no means peculiar to Buddhism" (p. 65).

Reading this collection by Editor Stone (Near Eastern Studies, U. of California, Berkeley) was a mind-spinning experience. It reminded me of numerous religion-related concepts and topics worthy of further study, as well as of key resources helpful in beginning their pursuit. (Quoting significant statements would consume an entire page.) It also increased my awareness that the academic field of Religious Studies is generally more unfriendly toward Christian faith commitment than to most other "particularistic" or "exclusivistic" religions. Most of its leading scholars have experienced a personal "theological trajectory" similar to that of James M. Robinson (Claremont Graduate University) who "moved step by step from right to left" (p. 121) under the impact of the "hidden apologetics" (Ivan Strenski, U. of California, Riverside, p. 309) of the discipline's dominant assumptions in biblical and other scholarship.

I have a hunch that the life-experience trajectories of theologically conservative religious studies scholars or of prominent persons in the huge biographical directory, *Who's Who in Theology and Science* (New York: Continuum, 1996), which includes only one of the authors (Marty), would point in quite different directions from those of most authors in this book.

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Letters

Eden and Noah

In her articles on Eden (*PSCF* 52, no. 1 [March 2000]: 31–46) and Noah (*PSCF* 53, no. 1 [March 2001]: 24–40), Carol Hill locates Eden in Mesopotamia, and identifies Noah as King Ziusudra of Shuruppak in Sumer (ca. 2900 B.C.). Hill makes her case very well, but there are some difficulties:

1. Taking "heads" in Gen. 2:10 to refer to estuaries goes against normal usage.

2. Ancient Hebrew did not distinguish between bronze and copper. Native copper and iron were worked much earlier than Hill dates Tubal-Cain.[1]

3. The flood from which King Zuisudra escaped lasted only about two weeks,[2] whereas Noah's lasted over a year.

4. Gen. 6–11 gives the impression that the Flood covered the ancient world, which Noah's family subsequently repopulated. However, there was no break in the history of Egypt around 2900 B.C.[3]

It may be possible to resolve these difficulties. If any readers can throw light on them, this would be helpful.

References

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[2]J. B. Pritchard, ed., *Ancient Near Eastern Texts*, 2d ed. (Princeton: Princeton University Press, 1955).
[3]S. Quirke and J. Spencer, eds., *The British Museum Book of Ancient Egypt* (London: British Museum Press, 1992).

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