



REFLECTIONS ON CREATIONISM

by Philip T. Clampitt, Ph.D.

Introduction

As a student and teacher in the biological sciences for more than five decades, I have become very familiar with the concept of evolution, with evolutionary theory, and with the evidence for evolution. As is true with most contemporary biologists, I see evolutionary biology as a robust, lively science whose general concepts are widely accepted, but whose details are subject to vigorous debate. I try to teach courses that are reasonably up-to-date, and the evolutionary perspective is always an important part of such courses. I am not indifferent to religion, having been raised in the Religious Society of Friends—Quakers—and my evolving religious beliefs are compatible with my views on the natural world. I believe that whatever else we humans are, we are products of evolution. I try not to let my religious beliefs intrude on my teaching of science. I cannot call myself a creationist, at least in the terms described in this essay, for reasons that will become evident.

At least a few students in my various classes identify themselves as creationists. For the most part, I do not attempt to debate the issues with them, but ask simply that they try to keep

an open mind as they study biology. I ask them to learn the concepts, consider the evidence, and be prepared on examinations to show their understanding of evolution—and of other themes in biology—as I have attempted to teach them in the class. I do not tell them what they should believe.

Recently, before I even began to teach a course in introductory biology, one of my prospective students not only identified herself as a creationist, but complained (by e-mail) that our textbook² was biased in favor of evolution. I did not deny the charge, but proceeded to defend both the text and the way I proposed to teach the course. After a brief exchange of e-mails in which we put forth our respective views, we reached an agreement: I would teach the course as I had originally planned, and my student would study the material, ask questions on points that were unclear to her, and prepare herself for examinations just as any other student would. She would do her best to master the material as I presented it through lecture and text (She was very successful in this effort.). In return, as time permitted later on, I would read and comment on some of the creationist literature she had recommended. I have carefully read three creationist books.³ I write this essay as a part of my response to them.

The book I am reviewing here is *Scientific Creationism* by Henry M. Morris (1974), which is chronologically the earliest, the best-written, and probably the most “authoritative” of the three books (all arguing for “young-Earth” creationism). I will attempt to be both fair-minded and honest in my comments about this book. At the outset, I admit bias in considering “Scientific Creationism” to be a contradiction in terms; science deals with natural processes, and super-natural creation is therefore beyond the reach of science. I understand, however, that this book is part of the standard creationist literature, and I want insofar as possible to read it with an open mind. Henry M. Morris, Ph.D. (specific field not indicated), was (in 1974) Director of the Institute for Creation Research. He is listed as “Editor” of *Scientific Creationism*, which includes a long list of “writers and consultants” in a variety of fields of science and

engineering (many with Ph.D.s), and at least one theologian; because more than one author (Dr. Morris) was apparently involved in assembling this book, I will refer subsequently to *authors* when discussing it. My aim here is to summarize some of the book's contents, and to evaluate certain of the ideas, concepts and arguments based on my own understanding of science and faith. *Scientific Creationism* was "prepared by the technical staff and consultants of the Institute for Creation Research," according to the title page, although Henry M. Morris is the most prominent of its authors.

SCIENTIFIC CREATIONISM, **by Henry M. Morris (Editor)**

After a 3-page Foreword, the book contains eight chapters on these subjects: "Evolution or Creation?", "Chaos or Cosmos?", "Uphill or Downhill?", "Accident or Plan?", "Uniformitarianism or Catastrophism?", "Old or Young?", "Apes or Men?", and "Creation According to Scripture." Each chapter has sub-headings which help make clear both the subject-matter and the over-all thrust of the book. These chapters together constitute 255 pages of text, following which is an Appendix with a "Bibliography on Creationism," then in turn an Index of Subjects, an Index of Names, and an Index of Scriptures. It is a well-organized, carefully written (to support its own conclusions, and to attempt to undermine those with an opposing view), and cleverly written book. It becomes clear early on that the authors make an unequivocal choice between two alternatives in each of the first seven chapters, all of which end with a question mark: creation is chosen, not evolution; cosmos, not chaos; downhill, not uphill; etc. The edition I have is the "General Edition." The "Public School Edition," according to the Foreword, "deals with all the important aspects of the creation-evolution question from a strictly scientific point of view . . ." The "Public School Edition" does not contain Chapter

VIII on “Creation According to Scripture,” but otherwise the two editions are “essentially identical.”

The Foreword makes clear the dissatisfaction of the authors with “the failure of the public schools to maintain academic and philosophic objectivity. In the name of modern science and of church-state separation, the Bible and theistic religion have been effectively banned from curricula, and a nontheistic religion of secular evolutionary humanism has become, for all practical purposes, the official state religion promoted in the public schools. . . . Evolutionist teaching is not only harmful sociologically, but it is false scientifically and historically. Man and his world are *not* products of an evolutionary process but, rather, are special creations of God. . . . Somehow textbooks need to be rewritten and teachers retrained!” This book was written to help fill the need the authors see for books with a creationist framework. With it, “the Christian teacher has both Biblical and scientific data at hand to show students the fallacies of evolution and the strong evidences of creation. . . . The book is careful and courteous in its treatment of the evolutionary viewpoint, as well as properly factual and cautious in its advocacy of creationism and catastrophism. . . . It is hoped that the book will help restore confidence in special creation as the true explanation of the origin and meaning of the world.”

I agree that a major transformation of our public education in the United States is required, but this is not the place to expand on my own thoughts on the nature of such a transformation. I do not agree that evolutionist teaching is harmful, or that teaching evolution is teaching religion. I ask these questions: Is the transformation these authors propose either possible or desirable? Are they headed in a helpful direction, or would their proposals, if carried out, lead to more divisiveness and educational and social harm?

Chapter I, “Evolution or Creation?” sets the stage for the entire book, and I will give it most of my attention.⁴ The chapter begins reasonably: “Both parents and children know that children are curious creatures. That is, they are insatiably curious about the why’s and whences of things. This inborn intel-

lectual alertness, if encouraged and cultivated, leads in adult life to a mature scientific attitude toward the world and the ability to think creatively in solving technological, sociological and personal problems.” I have no problem with the above statements, and I hope that both evolutionists and creationists are capable of such admirable qualities. The importance of origins is emphasized, as is the impossibility of the scientific proof of origins: “*Creation cannot be proved,*” and “*Evolution cannot be proved.*” I agree to some extent with both of these statements, in that there is a degree of tentativeness in almost all scientific generalizations, and that is certainly true of evolutionary theory. The word “proof” is not used often in literature in the biological sciences. That being said, I would argue that it is as much a *fact* that evolution has occurred and is occurring as it is a *fact* that gravity exists. Also, there is overwhelming *evidence*, I believe, that natural selection is a major *cause* of evolution. Further, it is my position that evolutionary theory can be tested by scientific means, whereas creation theory cannot be so tested. (More about scientific evidence shortly.)

Statements follow in the book like these: “Evolution operates too slowly for scientific observation.” “Evolution is a dogma incapable of refutation.” “Evolution is an authoritarian system to be believed.” “The reason for favoring evolution is not because of the scientific evidence.” Each statement is “supported” by quotations from evolutionists themselves; some of these statements, I’m sure, are taken out of context. My response:

(1) Microevolution has in essence *been* observed, for example in industrial melanism in the peppered moth in England, in the development of resistance in bacterial populations against specific antibiotics and of particular insect populations against specific insecticides. It is true that macroevolution proceeds slowly, but this does not mean we cannot *infer* evolution from data we *can* observe. (See more under (4) below.)

(2) Use of the word “dogma” in the second statement above is unfortunate because it implies certitude, which is

contrary to the scientific attitude—one of open-mindedness tempered with skepticism. An alternative statement which evolutionists would like (and creationists probably would reject) might be, “Evolutionary theory has validity because there is massive evidence to support it.”

(3) Terms such as “authoritarian system” and “to be believed” are misleading at best. They are contrary to the spirit of science, which always remains open to new evidence. They misrepresent evolution in order to try to show that the evolutionary approach is unscientific. They are incorrect.

(4) What of the statement, “The reason for favoring evolution is not because of the scientific evidence”? On the contrary, the scientific evidence for evolution is overwhelming. It has been accumulating ever since Darwin’s day, and *is* the compelling reason for supporting evolution today. What is that evidence? I can only be suggestive in this short review. Any good biology text⁵ presents voluminous evidence for evolution from such diverse fields as paleontology (the fossil record), taxonomy and systematics, biogeography, population genetics, animal behavior, ecology, comparative anatomy, comparative physiology, comparative embryology, cell biology, comparative biochemistry and molecular biology. Evidence of microevolution in the peppered moth and other species has already been mentioned. As for macroevolution—evolution of new species, genera, and higher taxa, and the broad sweep of evolution over hundreds of millions of years—evidence in the fossil record continues to accumulate linking various taxonomic groups together, including (among vertebrates) fishes and amphibians, amphibians and reptiles, reptiles and birds (*Archeopteryx* being a famous early example), reptiles and mammals, land-living mammals and whales, apes and humans. There are gaps, of course, but many formerly “missing links” are no longer missing.

The authors want at all cost to refute any notion of human evolution, by predicting (as in their chapter on “Apes or Men?”) that the “particular ‘missing link’ [between humans and apes] is permanently missing.” This prediction does not accord with the evidence. While there are still gaps in the fossil record of primates, enough information is available to establish a timeline of about four million years of hominid evolution. Among the hominid species so far discovered are *Australopithecus afarensis*, *A. africanus*, *A. robustus* (all so-called “ape-men,” originating in Africa, with fully upright posture and small brains), *Homo habilis*, *Homo erectus*, *Homo sapiens* (all true “humans” with progressively larger brains, culminating in our own species).⁶ As for the relationship between humans and our closest living relatives, chimpanzees, recent molecular evidence reveals that humans and chimpanzees have 99% of their DNA in common, strongly supporting the evidence from anatomy, embryology, and some aspects of behavior of a close evolutionary relationship.⁷

The fossil record, reflected in the geological time scale found in most modern geology and biology textbooks, provides the most direct evidence both that the Earth is very old—about 4.6 billion years by current estimates—and that macroevolution has occurred in certain recognizable patterns. The geological science of plate tectonics and continental drift theory add powerfully to this evidence. Methods of radiometric dating, based on rates of radioactive decay of elements such as carbon, potassium, and uranium, reveal with considerable accuracy the ages of various strata of sedimentary rocks and their contained fossils. This is pretty settled science. Yet “young-Earth” creationists, such as the authors of this book, totally reject all this evidence. Their geology is the geology of one huge “Noahic” Flood that, they claim, occurred only a few thousand years ago. One biologist—and person of faith—has issued the following challenge recently to these critics of evolution: “Those who deny the data of geology with respect to evolutionary theory must explain why these same methods

and data are so useful, practical, and accurate when applied to petroleum science.”⁸

The key sections of Chapter I are, I believe, the last two: “The Two Models of Origins,” and “Pedagogical Advantages of the Creation Model.” The claim is made that neither the “theory of evolution” nor the “theory of creation” can be *tested*—therefore that neither is a valid scientific theory. (Why, then, is the book titled *Scientific Creationism*?) The authors go on to say: “A valid scientific hypothesis must be capable of being formulated experimentally, such that the experimental results either confirm or reject its validity.” In my judgment, this statement—while valid for certain aspects of such fields as chemistry, anatomy, physiology and Mendelian genetics—is much too narrow to apply to all scientific hypotheses. Most of astronomy, astrophysics, geology, evolutionary biology and other historical “sciences” would be ruled out of consideration as valid sciences; that of course is precisely what the creationists wish to do. I have no problem with using the word *model*—such as *evolution model* and *creation model*—in place of *hypothesis* and *theory*, for purposes of discussion.

The authors summarize the evolution model in a fair although simplified manner: “(1) naturalistic; (2) self-contained; (3) non-purposive; (4) directional; (5) irreversible; (6) universal; and, (7) continuing.” I would add that this is a methodologically valid approach to science; philosophically, one could argue—and I would argue—that not all truth is scientific truth. There may be artistic truth, ethical truth, spiritual truth, etc., that does not flow directly from science. The creation model, “diametrically opposed to the evolution model, . . . involves a process of special creation which is: (1) supernaturalistic; (2) externally directed; (3) purposive, and (4) completed.” This section continues: “Like evolution, the creation model also applies universally. It also is irreversibly directional, but its direction is downward toward lower levels of complexity rather than upward toward higher levels. The completed original creation was perfect and has since been ‘running down.’ ” (The reference here is clearly to the second law of thermodynamics, with

its corollaries of death, decay, entropy, increasing randomness, etc.) Is this the depressing world God has created for us? If this is part of the creation model, the evolution model can be considered more optimistic.

This section continues: “The creation model thus postulates a period of special creation in the beginning, during which all the basic laws [except the 2nd Law, which came after the Fall?] and categories of nature, including the major kinds of plants and animals, as well as man, were brought into existence by special creative and integrative processes which are no longer in operation. Once the creation was finished, these processes of *creation* were replaced by processes of *conservation*, which were designed by the Creator to sustain and maintain the basic systems He had created.” Then: “In addition to the primary concept of a completed creation followed by conservation, the creation model proposes a basic principle of disintegration now at work in nature (since any significant change in a *perfect* primeval creation must be in the direction of imperfection). Also, the evidence in the earth’s crust of past physical convulsions seems to warrant inclusion of post-creation catastrophism in the model.”

The two models are then compared in a simple table which follows:

<i>“Evolution Model</i>	<i>“Creation Model</i>
Continuing naturalistic origin	Completed supernatural origin
Net present increase in complexity	Net present decrease in complexity
Earth history dominated by uniformitarianism”	Earth history dominated by catastrophism”

Before going on, I find on looking at both the table above and the paragraph just preceding it, that the evolution model is preferable to me for several reasons: it is more interesting, it is more aesthetically appealing, it is friendlier, it is

less dangerous, and it seems much more hopeful than the creation model. (All this before even considering the possible scientific validity of either model.) If the God of the creationists—as inferred here—is the true God, and if I were forced to choose, I would consider choosing atheism rather than believing in and submitting to such a God. The God of the creationists, whatever his conservationist “impulses,” appears to be a mean God, a God of judgment, a God of wrath, a God who chose to let things go “downhill” once the Creation was completed. Where is the God of love about which I, as a Christian, was taught in my childhood? Isn’t love supposed to be at the core of Christianity? Surprisingly, I see love as more compatible with the evolution model than I do with the creation model as presented here.

A longer table, listing various categories of nature, and offering “basic predictions” about these categories from the evolution model and the creation model, respectively, is so much tied in with the remaining chapters of the book that I have decided to reproduce it below.

Some of the “basic predictions” given for the evolution model in the above table are misleading; they are not stated as an evolutionist would state them. For example, the evolution model predicts—according to this table—that the “structure of natural law” is “constantly changing.” No evolutionist I know of contends that the laws of physics are “constantly changing.” As for biology, the appearance of *emergent properties* at higher levels of biological organization are accounted for in part by evolutionary principles, but these do not imply that natural laws are “constantly changing.” Another misleading “prediction” is that “life (is) evolving from non-life.” No evolutionist claims that life today is evolving from non-life—i.e., that spontaneous generation is occurring today. The claim is, rather, that conditions in the Earth’s ancient past were very different from those today; for example, evolutionists suggest tentatively that the early Earth had a reducing atmosphere, with very little oxygen, and that some of the early syntheses of organic molecules could have occurred under such condi-

Table: The Contrast Between Science and Creationism as the Creationist Sees It

Category	Basic Predictions of	
	Evolution Model	Creation Model
Structure of natural law	Constantly Changing	Invariable
Galactic Universe	Galaxies Changing	Galaxies Constant
Structure of Stars	Stars changing into each other	Stars unchanged
Other heavenly bodies	Building up	Breaking down
Types of rock formations	Different in different	Similar in all "ages"
Appearance of life	Life evolving from non-life	Life only from life
Array of organisms	Continuum of organisms	Distinct kinds of organisms
Appearance of kinds of life	New kinds appearing	No new kinds appearing
Mutations in organisms	Beneficial	Harmful
Natural selection	Creative process	Conservative process
Age of Earth	Extremely old	Probably young
Fossil record	Innumerable transitions	Systematic gaps
Appearance of man	Ape-human intermediates	No ape-human
Nature of man	Quantitatively superior to animals	Qualitatively superior to animals
Origin of civilization	Slow and gradual	Contemporaneous with Man

tions. Also, according to the table, evolutionists predict a “continuum of organisms” (as opposed to “distinct kinds of organisms” in the creation model); this is misleading, because evolutionists explicitly recognize reproductive barriers preventing interbreeding between species.⁹ (Creationist literature prefers the rather vague and not easily definable term, “kinds of organisms,” in place of the scientific term “species.”) No evolutionist claims, furthermore, that mutations in organisms are generally beneficial, as the table implies; a favorable mutation would be considered a very rare event, to an evolutionist as much as to a creationist.

The claim is made that “the predictions of the creation model do fit the observed facts in nature better than do those of the evolution model. The data must be *explained* by the evolutionist, but they are *predicted* by the creationist.” Clearly the creationist wants to gain and keep the upper hand in this book. But to be fair, these authors should accurately state what evolutionists themselves predict from evolutionary theory, and not “put words into their mouths” which are inaccurate or misleading, as is done in the table.

As for the “Pedagogical Advantages of the Creation Model,” the authors propose that “a sound exposition” of the two models will confer great benefits to both teacher and student, such as: “1. It stimulates real thinking on the part of the student . . . 2. Creationism is consistent with the innate thoughts and daily experiences of the child and thus is conducive to his mental health. . . . 3. The greatest joy of scientific discovery is to find evidence of beauty and pattern in the processes and structures of nature . . . 4. There is no greater stimulus to responsible behavior and earnest effort, as well as honesty and consideration for others, than the awareness that there well may be a personal Creator to whom one must give account. . . .” My considered opinion is that (apart from references to creationism and a “personal Creator”) the described benefits fit the evolution model at least as well as they do the creation model. An interdisciplinary course on origins, taught in the public schools, might well use both of these models,

plus others from a diversity of religious and cultural traditions. Such an approach is inappropriate, however, in a science course, because the creation model (or hypothesis), postulating a super-natural origin of species, cannot be tested scientifically, unlike the evolution model (or hypothesis, or theory) which postulates origins through natural processes.

The authors recommend: “In public schools, both evolution and creation should be taught as equally as possible, since there are children of taxpayers representing both viewpoints in the classes. If people wish *only* evolution to be taught, they should establish private schools with that purpose.” (See my comments in the previous paragraph.) In the next six chapters of this book,¹⁰ “The major facets of origins and early history are evaluated from a scientific point of view, without reference to the Bible. It is shown that, at every point, the creation model is superior to the evolution model. . . . There is not the slightest possibility that the *facts* of science can contradict the Bible and, therefore, there is no need to fear that a truly scientific comparison of any aspect of the two models of origins can ever yield a verdict in favor of evolution.” Thus, we are informed in this first chapter that this book is “stacked” against evolution. In my view, these pronouncements do not reflect a scientific attitude, which requires us to be skeptical about all ideas, including (maybe especially) those found in a sacred book such as the Bible. Why should an evolutionist read further? If for no other reason, he should read on to find out how the creationist comes to these confident conclusions.

It is very clear that these Christian authors take a literalist interpretation of the Bible. If this belief satisfies them and gives them comfort, fine. But what about the Christian who believes the Bible is inspired, but does not interpret it literally?¹¹ Many Christians (both Catholic and Protestant) believe in a God of love and also that we humans are products of evolution—whatever else we may be. What about students who are Jewish, and who don’t regard the New Testament in quite the same way many Christians do? What about non-Christians? What about Muslims? Buddhists? Hindus? Native Americans

who may have a different religious outlook? What about agnostics or atheists? The United States is a pluralistic society, and to the extent that our democracy works, it works because there is a separation of church and state, and broad tolerance of diverse religious and ethnic traditions. People are free to be fundamentalist Christians, or liberal Christians, or Jews, or Muslims, or atheists, and the government cannot punish them for *any* of these various beliefs and practices. The difficulty with teaching a narrow, literalist, sectarian Christian view about science and the Bible—which is what the creationists who wrote this book advocate—in the public schools to *all* children is that it promotes exclusion and divisiveness rather than inclusion and mutual respect.

This entire book is “stacked” in such a way that the reader is forced to choose between two extremes: an atheistic evolutionist model or a Biblical literalist creationist model. Although some may feel comfortable making such a choice, most of us who think for ourselves—that’s how I hope most of our school children, and my own students, will learn to think—prefer to have some mixture of beliefs. We prefer not to be pigeon-holed into either a strict evolutionist or a strict creationist category. We want to be free to make our own choices, in ways that make sense to us as individuals.

To the extent that evolutionary biology is taught in our public schools, it is taught because it is considered central to biology today by the scientists in the field. We do not practice deception or “brain-washing.” We are not teaching religion, as these authors claim;¹² we are teaching science. We present the science as well and honestly as we can, without requiring our students to believe any of it. We ask them only to try to bring an open mind to the classroom, to try to understand the concepts and theories, and the evidence to support them, and to reflect that learning on examinations. We hope that what we teach will make a positive difference in their lives. We hope it will be useful to them. We cannot guarantee it, but we try. This is science which people of diverse religious, racial and ethnic

backgrounds can learn to understand and use in their lives. It does not divide people; it brings them together.

I read the final chapter of *Scientific Creationism*, "Creation According to Scripture," with great interest. It gives me a much clearer idea of the theological background behind creationist "science." The section titles include "The Historicity of the Genesis Record," "Divisions of Genesis," "The Fall, the Curse and the Laws of Thermodynamics," "Overflowed With Water," and "Summary of the Biblical Model." Discussion then follows of various ideas which are considered incompatible with basic creationist doctrine. I will conclude this paper by quoting from—and commenting on—the final passage, "Summary and Conclusion":

"There seems to be no possible way to avoid the conclusion that, if the Bible and Christianity are true at all, the geological ages must be rejected altogether. . . . In their place, as the proper means of understanding earth history as recorded in the fossil-bearing sedimentary rocks of the earth's crust, the great worldwide Flood so clearly described in Scripture must be accepted as the basic mechanism.

"The detailed correlation of the intricate geophysical structure of the earth with the true Biblical framework of history will, no doubt, require a tremendous amount of research and study by Bible-believing scientists. Nevertheless, this research is urgently needed today in view of the world's increasing opposition to the Biblical Christian faith.

"The vast complex of godless movements spawned by the pervasive and powerful system of evolutionary uniformitarianism can only be turned back if their foundation can be destroyed, and this requires the re-establishment of special creation, on a Biblical and scientific basis, as the true foundation of knowledge and practice in every field. This therefore must be a primary emphasis in Christian schools, in Christian churches and in all kinds of institutions everywhere. [The public schools are included, one supposes.] It is hoped that this book will provide the information necessary to undergird and energize this movement."

The narrow, sectarian doctrine expressed above (from the last page of the final chapter) can only be divisive in a healthy, democratic society. As a product of the Judeo-Christian tradition myself, I do not find comfort or hope in the God of wrath and vengeance that is portrayed—bringing down on mankind the curse of the Second Law of Thermodynamics because of the sins of Adam and Eve, and the Noahic Flood because of man’s continuing disobedience, and all the rest. I know some of this (but not including the Second Law) comes directly from the Old Testament, but I do not believe that human cultural evolution (yes, I will dare say it!) stopped there, or even with the New Testament. I believe it continues today. But, speaking of the New Testament, where is the God of love of whom Jesus taught? This is the Christian message that I grew up with, which is part of my religion, and which is so lacking in most of this book. In the end, I accept neither the science nor the theology that characterizes creationist doctrine.¹³ I will continue to teach science as I always have tried to do—with a skeptical, questioning, hopeful spirit that is always open to new insights, and I will continue to have a religion (a faith) that is open to the insights of science, but does not stop there. My religion also includes ethical, aesthetic, and spiritual knowledge, and these to me are just as important as scientific knowledge. They are all part of what makes us fully human. I celebrate that humanity.

Summary

Creationism, as represented by the book *Scientific Creationism* reviewed here,¹⁴ does not qualify as science. It starts with conclusions based on Biblical evidence, and then attempts to gather data in support of those conclusions. True science works in the opposite direction, drawing conclusions only after a study is completed—after the data are in. Science studies natural phenomena, not the supernatural, which is beyond its reach. (Thus, “creation science” is a contradiction in

terms.) Because good science, including evolutionary biology, can be done by people of diverse religious and ethnic traditions—there is no *separate* Christian, or Jewish, or Muslim, or Buddhist, or atheistic science—it can be a unifier of people. “Creation science,” on the other hand, is by its very nature divisive; it claims all truth for itself, and regards people who look at the world differently as somehow unworthy. This is not helpful in a pluralistic, democratic society. At its best, “creation science” is pseudo-science. At its worst—like fundamentalism of all kinds—it is a divisive, destructive, harmful force. People, whether or not they consider themselves children of God, deserve better.¹⁵

NOTES

¹Modified and updated from a longer essay, dated November 12, 2003, and posted on the *Oakland Journal's* website.

²Campbell, Neil A. and Jane B. Reece, 2002, *Biology*, 6th Edition, Pearson Benjamin Cummings, San Francisco. This and earlier editions of this fine textbook have been in continuous use since 1987 at O.U. in introductory biology for majors.

³The three creationist books at issue are Morris, Henry M. (Editor), 1974, *Scientific Creationism* (General Edition), Creation-Life Publishers, San Diego; Wysong, R. L., 1976, *The Creation-Evolution Controversy*, Inquiry Press, East Lansing; and Huse, Scott M., 1993, *The Collapse of Evolution*, 2nd Edition, Baker Books, Grand Rapids. All are reviewed in the longer essay (see note 1). Many other creationist books—some disguised with terms like “intelligent design”—plus critiques by evolutionary scientists and others, have been published in recent decades. The bi-monthly Reports of the National Center for Science Education (P.O. Box 9477, Berkeley, CA 94709-0477), whose major purpose is to defend the teaching of evolution in the public schools, keeps good track of this voluminous literature. An excellent scientific, historical, and psychological perspective is given by Stephen Jay Gould, 1999, in *Rocks of Ages: Science and Religion in the Fullness of Life* (Ballantine Books, New York), specifically in a section entitled “The Struggle Against Modern Creationism.”

⁴Later chapters were each reviewed in the longer essay (see note 1).

⁵See, for example, the appropriate chapters in Campbell & Reece, 2002, *Biology*, op. cit.

⁶See Campbell & Reece, 2002, *Biology*, op. cit., pp. 707–715, “Primates

and Evolution of Homo sapiens,” for a good summary on the topic of human origins.

⁷ Campbell & Reece, 2005, *Biology*, 7th Edition (Pearson Benjamin Cummings, San Francisco), p. 701: “Although the two genomes [human and chimpanzee] are 99% identical, a disparity of 1% can translate into a large number of differences in a genome that contains 3 billion base pairs.”

⁸ Towne, Margaret Gray, 2003, *Honest to Genesis: A Biblical and Scientific Challenge to Creationism*, Publish America, Baltimore, p. 173.

⁹ See Campbell & Reece, 2002, *Biology*, op cit., Chapter 24, “The Origin of Species.”

¹⁰ Space does not permit detailed discussion of these next six chapters, with intriguing titles such as “Chaos or Cosmos?”, “Uphill or Downhill?” (in which the authors grossly misrepresent the evolutionary viewpoint on the 2nd law of thermodynamics, which they also suggest God introduced as punishment because Adam and Eve sinned), “Accident or Plan?”, “Uniformitarianism or Catastrophism?” (the geologist, and evolutionist, James H. Zumberge, 1963, in *Elements in Geology*, 2nd Edition, John Wiley & Sons, New York, states that it is unwise from a purely scientific point of view “to accept uniformitarianism as unalterable dogma. . . . (M)an’s experience with geologic processes is restricted to only a minute fraction of the total span of earth history. He should never close his mind to the possibility that conditions in past geologic time were different than today, and that the doctrine of uniformitarianism may not apply in every case where the reconstruction of some segment of earth history is involved.” Zumberge was being properly cautious scientifically, which our creationist authors consistently fail to be), “Old or Young?” (our authors contend that radiometric dating methods for determining the ages of rocks are totally unreliable, and that, “Contrary to popular opinion, the actual facts of science correlate better and more directly with a young age for the earth than with the old evolutionary belief that the earth must be many billions of years in age.”), and “Apes or Men?” (in which the authors claim that Australopithecus was an extinct ape, and that there “is apparently good evidence that modern man . . . was living prior to Neanderthal, prior to Homo erectus, and even prior to Australopithecus.”) Any good biology textbook, such as Campbell & Reece, 6th Edition, 2002, op. cit, can be consulted to get a reliably scientific treatment of these matters; this book is clearly not reliably scientific.

¹¹ See, for example, Marcus J. Borg, 2001, *Reading the Bible Again for the First Time: Taking the Bible Seriously But Not Literally*, Harper San Francisco, New York.

¹² The authors call evolution “fundamentally religious” through faulty logic, linking evolutionary methodology with evolutionary philosophy as if they are one and the same thing, which they are not.

¹³ I have eloquent support for this view from Margaret Gray Towne, 2003, op cit , a biologist and devout Presbyterian who puts it this way (p. 88): “Religion and science were and are not in conflict. What was and is in con-

flict is modern science and the prescientific beliefs of the ancient Hebrews.” Later (p. 227): “It doesn’t seem consistent with God’s order and dependability that we should ignore the minds we were given and deny the scientific reality that is before us. To some, to do so is not only irrational and un-scholarly, but dishonest. It dishonors the Lord who has blessed us with amazing, questioning minds and commanded us to ask, seek, and knock (Matthew 7: 7–8).”

¹⁴ I am familiar enough with the relevant literature to conclude that Henry Morris’s *Scientific Creationism*, with all its deficiencies, probably presents “young-Earth” creationism as clearly and concisely as any other, and perhaps better than most (including the two other creationist books cited in note 3 above). In other words, it is a good example of the genre.

¹⁵ Although it is beyond the scope of this review to critique in any detail the work of scientists who go beyond science into “scientism” in their attempt to incorporate all kinds of knowledge into what they want to call “science”, I will at least call attention to the problem. Some scientists come across as hostile to religion by expressing their enthusiasm for science to the exclusion of almost everything else. (And this in turn discourages creationists in their attacks on evolutionary science—a very undesirable situation all around.) A case in point is Edward O. Wilson’s *Consilience: The Unity of Knowledge* (1998, Random House, New York), which attempts to “explain” the arts, ethics and religion in terms of science. A non-scientist who is also not a creationist, Wendell Berry, wrote an eloquent and—to me—persuasive rebuttal to Wilson in *Life Is a Miracle: An Essay Against Modern Superstition* (2000, Counterpoint, Washington, D.C.). I have company in this view, having “tested” these two books with a small but distinguished audience: the vast majority of the 24 students enrolled during the winter term 2002 in the O.U. Honors College Senior Colloquium, “Life, Liberty, and the Pursuit of Happiness,” where both books were used, saw Wilson as hostile to religion and were favorable—some enthusiastic—toward Berry’s critique. Wilson’s Harvard colleague, Stephen Jay Gould, an equally eminent scientist, in *Rocks of Ages . . .* (see note 3 above), brilliantly and humanely avoids the problem to which Berry refers by placing science and religion in different “magisteria” (domains). This makes sense to me as a scientist who also takes religion seriously, who doesn’t want it subjugated to science or vice versa, and who wants insofar as possible to be tolerant of those whose views differ from my own.