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Haec Credimus

For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested on the seventh. —Exodus 20:11

CREATION RESEARCH SOCIETY Resources



The Geologic Column: Perspectives within Diluvial Geology

John K. Reed and Michael J. Oard, Editors 2006. Creation Research Society, 157 pages. Regular price: \$15.00; Member price: \$11.00.

Many wonder how the evolutionary/uniformitarian geologic column fits into diluvial geology. At present, there is a remarkable diversity of original thought on this subject. Recent exchanges in the creationist literature show a tendency for various participants to talk past one another. This book has brought these different perspectives together with two goals: 1) to better define the real differences within diluvial geology, and 2) to identify the concrete issues that will provide a basis for continued research and, hopefully, future resolution. The editors went one step further by providing, at

the end of most chapters, a forum with comments and responses. In addition to the editors, the other authors are: Terry Mortenson, Peter Klevberg, Carl Froede Jr., David J. Tyler, Harold G. Coffin, and Emil Silvestru. Though it may be difficult to visualize now, diluvial geology represents a major paradigm shift that holds the potential to stimulate a revolution within the earth sciences.

Creation vs. Evolution Debate

2006. Creation Research Society, approx. 45 minutes. Audio CD. Regular price: \$10.00; Member price: \$8.00.

Dr. Kevin Anderson (director of the Society's Van Andel Creation Research Center) squares off against local Arizona anti-creationist, Nigel Reynolds. The debate features initial arguments by both presenters followed by lively rebuttals, cross-examinations, and audience questions. This debate provides the listener an excellent opportunity to weigh the arguments of each side and seriously consider where the scientific evidence best fits.



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Editorial

Blogging with Zimmer

Last summer an Institute for Creation Research (ICR; Santee, CA) weekly radio program focused on evolutionists' claims that humans are still evolving. As one of the scientists interviewed for this program, I discussed the genetics of human evolution and argued that mutations, such as that leading to sickle-cell trait/anemia, cannot be offered as examples of continuing human evolution.

One of the listeners to that particular program was the writer (and evolutionist activist), Carl Zimmer, author of several books, including *Smithsonian Intimate Guide to Human Origins* and *Evolution: The Triumph of an Idea*. Not surprisingly, Mr. Zimmer took strong exception to the content of the program, particularly my comments. He expressed his disagreement on his web blog site.¹ Among his various claims, he argued that I had totally misunderstood what sickle-cell trait/anemia was and how it applied to evolution. In a sarcastic and condescending manner (all too common for vocal evolutionists these days), he challenged my scientific competency, as well as that of anyone associated with ICR. Specifically addressing sickle-cell, he argued that "people only get sickle-cell anemia when they inherit two copies of this gene. One copy gives protection to malaria. On balance, natural selection thus favors the gene in regions with high rates of malaria."

I e-mailed Mr. Zimmer, stating that he had both misrepresented my arguments and misunderstood the true nature of sickle-cell trait (a less-severe

defect than sickle-cell anemia). I invited him to enlighten us poor creationists in an "editor's forum" in *CRSQ* or any other format of his choosing. He declined, saying he was satisfied with what he had written in his blog. He later stated that he thought I had made an odd request. Why would an invitation to participate in such a forum be an "odd request"? Apparently it is an "odd request" if you are only interested in being contemptuous of those who have a differing view and have no real interest in scientific discourse and enlightenment.

In light of Mr. Zimmer's declining my invitation, I went directly to the comment section of his blog and posted a peppery response. Part of my response was to challenge Mr. Zimmer's assumption "that any positively selected mutation is beneficial, and all beneficial mutations serve evolution. This is true only if you refuse to acknowledge that evolution is actually common descent, and not just merely any change. Unlike 'any change,' common descent has very specific genetic requirements, and it must account for the origin of biological systems and functions, not their demise. There are many examples of mutations that have a positively selected transient benefit, but they are at the expense of pre-existing biological systems (many antibiotic resistances fit into this category). The sickle cell trait (only one gene) can still cause a deformity of the red blood cell, and often causes microscopic tissue damage and reduced ability of kidneys to fully concentrate urine."

I further argued that sickle-cell trait is still degenerative, even if subclinical. Hence, regardless of any benefit against malaria, it is useless as an example of a genetic mechanism for "common descent." Degeneration of the hemoglobin molecule does not provide an example of a genetic mechanism for the evolutionary origin of hemoglobin or any other biological system or molecule. Rather, it is just the opposite.

To his credit, Mr. Zimmer immediately provided a rather lengthy response, although it still had a condescending flavor. He first introduced the

**Zimmer challenged
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competency,
as well as that
of anyone
associated with ICR.**

Creation Research Society, mostly with the attempt to denigrate it as a strictly religious organization. He accused me of merely using “catchphrases” and not providing any evidence that sickle-cell trait “causes harmful effects.” He cited a sickle-cell information web site that states that people with sickle-cell trait may be able to live completely normal lives. Interestingly, I subsequently pointed out that the very web site he cited contained a link to another web site that listed numerous potential complications of sickle-cell trait, an early indication that Mr. Zimmer was not fully doing his homework.

Primarily though, Mr. Zimmer took exception to my claim that evolution (i.e., common descent) was obligated to offer a genetic mechanism that can account for the origin of various biological systems and functions. I certainly can understand that an evolutionist’s life would be far easier if he or she did not not have to deal with such “trivialities.” However, for evolution to truly be a valid scientific concept, it must offer a viable genetic explanation for where all life’s diversity originated. This mechanism must show how genetic events, such as mutations, generated the types of biological transformation necessary for common descent. As part of this transformation, this genetic mechanism must be capable of developing all the specific types of biological function and activity ever known to have existed (e.g. flight, photosynthesis, neurological activity, vision, locomotion, etc.). Why would evolutionists think their theory does not have to provide such a mechanism? And, my challenge to Mr. Zimmer throughout the entire exchange was to explain how the mutation leading to sickle-cell trait is an illustration of this genetic mechanism.

Mr. Zimmer attempted to argue that certain mutations, such as sickle-cell trait, may have both good and bad affects, but other mutations can compensate, diminishing the bad effects. How-

ever, such compensation rarely happens as Mr. Zimmer envisions, especially regarding sickle-cell. It is like saying the ship is sinking, but the engine is working better than ever. There is not much way for an organism to compensate for the degeneration of its hemoglobin.

I responded that “common descent has very specific genetic requirements, and not just ‘any mutation’ or ‘any change’ will suffice. The mutations must be the types that provide a basis for a genetic mechanism that accounts for the origin of contemporary biological systems and functions. Not their loss. A mutation in *Escherichia coli* will reduce or eliminate synthesis of its OppA transport protein. This phenotype can provide the bacterium some resistance to the antibiotic, kanamycin. Thus, in the presence of kanamycin, this mutation can be positively selected. However, is positive selection of a mutation the sole criteria of a genetic mechanism for evolution (i.e., common descent)? Does loss of OppA constitute a genetic example of the mechanism evolution used to evolve transport proteins? The same can also be asked of the sickle cell trait.”

I continued by asking how “mutating from hemoglobin A to hemoglobin S [provides] any kind of genetic basis for the mechanism required by common descent? Like the loss of OppA in *E. coli* described above, how does a mutation causing reduced function of hemoglobin A give a basis for the mechanism of its origin? Such mutations (even those being positively selected) account only for the loss, not the origin of a system, and my original contention still stands.... How does mutating a preexisting system (hemoglobin A) to a less functional form (hemoglobin S) provide any underlying genetic basis for a mechanism that common descent could have used to originally evolve hemoglobin? It does not. It is an example of the opposite—deterioration of a preexisting system, and that fits very nicely within a creation model.”

Mr. Zimmer responded that sickle-cell trait illustrates how gene duplication provides a genetic mechanism for evolution (i.e., during DNA replication occasionally an event occurs so that a gene is inadvertently duplicated, and the chromosome now contains an additional copy of that gene). He also claimed that I believe “that if sickle-cell anemia cannot provide a mechanism for the evolution of a system like hemoglobin, then evolution must be wrong. But the evidence I’ve just described shows that his argument is nothing but a red herring.”

I neither said nor implied this. I was merely addressing his criticism of my comments on the radio program, and explaining why sickle-cell trait is not a useful example for evolutionists. The trait fails to provide an adequate illustration of a genetic mechanism for common descent (even if it is positively selected in certain regions of the world). My arguments were strictly focused on the genetics of the sickle-cell mutation, not any and every known and unknown mutation. The red herring was on Mr. Zimmer’s part, a definite sign that he sensed he was playing the weaker hand.

What is more, I pointed out that sickle-cell trait is not even an example of a gene duplication. Sickle cell results from a point mutation—a change in a single nucleotide of the DNA sequence. I’m not sure if Mr. Zimmer momentarily forgot this or knew that he was struggling to address my challenge and was attempting to redirect the discussion. Either way, I pointed out that he still had not addressed my initial challenge—how does the sickle-cell mutation provide an example of a genetic mechanism for common descent?

Interestingly, Mr. Zimmer did not respond to my final posting, even though I had stated that it was my final posting and that he would get the last word. I’m sure he will likely say he was just too busy or that he did not want to continue the discussion endlessly. Neither did I,

which was the reason that I said he could have the last word. I cannot help but suspect that he realized he was losing the discussion, and simply dropped it rather than risk further embarrassment.

Another interesting aspect of our exchange was the various comments that Carl's "blog groupies" began to post in response to my comments. With only a few exceptions, these comments revealed an extraordinary lack of scientific understanding of even some of the most basic of facts. Many of them seemed confused by my argument that evolution must account for the origin of biological systems. Do they think otherwise? They seemed to not even understand what

that meant. They also seemed to reason that I was misrepresenting the idea of positively selected mutations. Many apparently thought that if the mutation is positively selected, that makes it an appropriate example of evolutionary change. Understanding the genetic basis and implication of a given "evolutionary change" not only seemed beyond their conceptual grasp but also appeared to be generally irrelevant. Their responses, as a whole, revealed a poor understanding of science and a very confused concept of their own theory. Evolution consistently reveals itself as poor science by the way it causes otherwise intelligent people to

make some very scientifically ignorant and silly claims.

For the most part, I view such Internet exchanges as rarely productive. But when given the opportunity to publicly expose the erroneous thinking of a popular promoter of evolution, some useful results can be achieved. It is also a lot of fun.

¹http://scienceblogs.com/loom/2006/08/07/cystic_fibrosis_blame_eve.php#more

Kevin Anderson, Ph.D.
Editor

Creation Research Society Quarterly



Book Review

Dinosaurs: Where Did They Come from... Where Did They Go?

by Elaine Graham Kennedy

Pacific Press Publishing Association, Nampa, Idaho. 2006, 80 pages, \$12.00.

This is a well-illustrated children's book with many interesting details on dinosaur bones, tracks, and eggs. Dr. Elaine Graham-Kennedy recently retired from the Geoscience Research Institute (GRI) at Loma Linda University. She has traveled worldwide in her study of dinosaurs, and has considerable expertise for writing a book on dinosaurs.

The author describes the two categories of dinosaurs based on their hip bones, the sizes of dinosaurs (many are small), the difference in the ends of the bones between young and adult dinosaurs, dinosaur brains, characteristics of the teeth, and the worldwide discoveries of tracks and eggs. The dinosaur data is

often incomplete, and because of this, the author is conservative, seemingly overcautious, in her interpretations of the data on dinosaurs.

Based on field experience, Graham-Kennedy considers that most dinosaur eggs have been transported by water, which fits in well with the Flood model. Some readers will find some of the ideas controversial such as the possibility that behemoth as described in Job 40 is *not* a dinosaur. Although not dogmatic about it, the reasoning is because behemoth's tail "sways *like* a cedar." The text does not say the tail was the size of a cedar, although I would envision the tail as

large. Also, behemoth lies underneath the lotus plant, hidden among the reeds of the marsh (Job 40:21 NIV). Could a sauropod dinosaur lie beneath a lotus plant? She likes to make the reader think, emphasizing that we must incorporate all the data of Scripture and paleontology.

This book is available from Creation Research Society Books. You can either order by phone from the Van Andel Creation Research Society lab at 1-877-277-2665 or order online under www.creationresearch.org.

Michael Oard

The Crab Nebula

Don B. DeYoung*

Abstract

The Crab Nebula is a vast cloud of gas and dust located about 6,000 light years from Earth. This nebula results from a supernova star explosion that was observed and documented in AD 1054. The supernova remnant continues to expand outward today, more than nine centuries later. At the center is a neutron star, or pulsar, with a rapid rotation of 30 cycles per second. The Crab Nebula is an intense emitter of radio waves, x-rays, and gamma rays. Thousands of research papers, books, and symposiums have appeared on this well-known object. The history of the Crab Nebula and current research findings provide several insights and research opportunities for creationist astronomy.

A Brief History of the Crab Nebula

In the year AD 1054, over nine centuries ago, stargazers noticed an unusual event in the night sky. A bright new star suddenly appeared in the constellation Taurus. The light brightened rapidly over a three-week period, and then slowly faded away over the following two years. This temporary light show was a deep mystery to early astronomers, but we now recognize the 1054 observation as a supernova star explosion. Certain massive stars become violently unstable during the latter stage of their nuclear energy production. The star disintegrates and its outer layers are blasted into surrounding space. For a period of several months, the resulting light and energy output may exceed

that of an entire galaxy of one hundred billion stars.

The 1054 event was recorded by observers in many lands, particularly across Asia. Chinese, Japanese, and Korean observers described the “guest star” in existing records. Reckoning from the Julian calendar places the initial appearance of the celestial fireworks around July 4 of that year. There are intriguing clues that this supernova event also was noted by Native Americans, probably the Anasazi (a Navajo word for the “ancient ones”) (Mitton, 1978). Throughout the southwest United States are many petroglyphs, also called pictographs or rock paintings. Some of them may commemorate the unusual bright light in the heavens. The location of the star explosion lies close to the moon’s path

across the sky. In fact, the crescent moon would have passed within 2 degrees of the bright star. Several petroglyphs appear to picture an unusual light source in the vicinity of a crescent moon (Figure 1). This interpretation is subjective because of uncertainties in the dates and meanings of the Indian art. However, one can be certain that early Americans closely watched the skies by night. (The fascinating search for astronomy connections with ancient records is called archaeoastronomy.)

At the site of the 1054 supernova explosion is a resultant expanding nebula (Latin for “cloud”) of star debris. The nebula was first reported by British amateur astronomer John Bevis in 1731. Decades later, the famous comet hunter Charles Messier prepared a catalog of about 100 nebula and star clusters to avoid their misidentification with comets. The Crab Nebula prompted the catalog and is the first item in the list, today known as M-1, or Messier object number one. The New

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Figure 1. Drawing of a petroglyph painting on a sandstone overhang. The star, moon, and hand figures are each about six inches in size. This drawing is in Chaco Canyon, New Mexico. Chaco was a major center of Indian culture from AD 850–1250.

General Catalog system identifies the Crab Nebula as NGC 1952. In 1844, Irish nobleman and stargazer Lord Rosse noticed clawlike gas filaments around the object's border and first called it the Crab Nebula.

Moving forward two centuries, a neutron star or pulsar was detected within the Crab Nebula in 1968. This extremely compact, rapidly spinning type of star results from the implosion or collapse of the inner regions of the original disintegrating star. Pulsars had been discovered a year earlier by Cambridge graduate student Jocelyn Bell-Burnell. Her advisor, astronomer Antony Hewish, won the Nobel Prize in Physics for working out the model for pulsar behavior. The emitted pulses of radiation from such stars are so regular that they were initially thought to be signals from other civilizations. Hundreds of pulsars are now known to exist in the Milky Way. The Crab Nebula continues to receive active study by many astronomers. Some of the related historical dates are summarized in Table 1.

Table 1. Some historical dates related to the AD 1054 supernova event.

Date	Event
1054	The supernova is observed worldwide.
1731	The gaseous nebula of star debris is discovered by John Bevis.
1780	Charles Messier lists the Crab Nebula in his published catalog of sky objects.
1844	Lord Rosse refers to the crablike appearance of the nebula.
1892	The first photograph is taken of the Crab Nebula.
1913–15	Initial spectroscopic studies of the nebula are carried out by Vesto Slipher.
1968	A pulsar is detected in the Crab Nebula using the Aricebo Radio Telescope, located in Puerto Rico.
1969	An optical or visible flash from the Crab Nebula pulsar is observed.

Supernova Mechanism

The theoretical details of a supernova event have been explored in recent decades with supercomputers (Clayton, 1984). The following description is a model that may be near or far from reality: A star such as the sun produces its energy by the nuclear fusion of hydrogen to helium. As the internal hydrogen is exhausted, additional fusion reactions occur in the star's core as helium fuses to carbon, then oxygen and heavier elements. Finally the element iron builds up in the core. However, nuclear fusion reactions of elements beyond iron absorb rather than produce energy. Iron is the "end of the nuclear road" and the production of energy by nuclear fusion thus ceases. As a result, such a star may slowly contract to become a small, hot, stable star called a *white dwarf*. If the initial star is larger, however, at least

1.4 times more massive than the sun, its eventual collapse is far from tranquil. As the nuclear fusion fire is extinguished by the formation of atomic iron in the core, the inward gravity force on the outer portions of the star is too great to be supported by its interior. In mere seconds the outer layers of the star collapse inward catastrophically. This extreme dynamical motion results in internal temperatures reaching billions of degrees. The collapsing star then rapidly rebounds with an outward shock wave, and star wreckage bursts outward in a cataclysmic supernova explosion. This dramatic description is for Type II supernovae, which mark the death of heavyweight stars. Massive stars need not necessarily reach the iron core stage before exploding. A supernova observed in the Large Magellanic Cloud in 1987, called SN 1987A, was found to be deficient in heavy elements such as iron. It appears that the star simply exhausted its internal fuel supply, collapsed, and then disintegrated. Most astronomers consider the AD 1054 event to have been a Type II supernova (Hester et al., 2005). There is also a Type I category of supernova, somewhat rarer and less energetic, which results either from mass transfer in binary star systems or else variations of the Type II process. There are further supernova subcategories based on their atomic spectra, including types Ia, Ib, Ic, II-P, and II-L.

Heavy atomic elements beyond iron will form by nuclear fusion in the outer regions of the star during its final death throes. These elements are then flung outward across space. In the evolutionary model of the universe, the iron atoms in our blood, the gold in jewelry, and the uranium within Earth rocks originated in the destruction of ancient stars. This is a poetic, but unbiblical, idea that we are made of stardust, and to stardust we will eventually return.

During a supernova event the center portion of the original star may be crushed inward to form a neutron

Table 2. Six historical supernovae in the Milky Way galaxy. The distances are averages from many sources and are uncertain by at least ten percent. The last supernova was not recorded by observers and its exact date is uncertain.

Date	Distance Estimate (light years)	Constellation Location
AD 1006	6500	Lupus (Also the Wolf), near Libra. Documented in Oriental Arabic records. This is thought to be the brightest supernova in historic times.
1054	6000	Taurus
1181	10,000	Cassiopeia. Observed by Chinese and Japanese observers. The Crab Nebula.
1572	10,000	Cassiopeia. Called Tycho Brahe's star.
1604	13,000	In Ophiuchus. Called Johann Kepler's star.
1680(?)	10,000	Cassiopeia A. This supernova remnant was discovered in 1947.

star. This star matter resembles a giant atomic nucleus with all of its component protons and electrons combining to form neutrons. The detailed internal structure of neutron stars is not known. Models variously predict the presence of elementary particles, a solid crystal lattice of neutrons, and superfluid neutron layers. Neutron stars are only about 6 miles (10 km) in diameter, more than 100,000 times smaller than the sun. Neutron stars have an extreme density of 10^{14} grams/cm³ and a surface gravity 200 million times that of the earth. One teaspoon of this extraordinary "stardust" weighs as much as Mount Everest. Most, if not all, neutron stars are also pulsars. The star is spun up to an extremely high rotation rate during its collapse. As nearby material falls onto the star, intense and continuous beams of radiation are emitted from the pulsar's magnetic poles. These beams shine outward from the turning star like searchlight beacons in space. The resulting pulses of radia-

tion reveal the star's rotation rate, as great as one thousand rotations per second. Neutron stars may emit visible light or other components of the electromagnetic spectrum.

For supernovae involving the largest stars, those with a mass greater than about 4 solar masses, current theory predicts an even stranger destiny. During the supernova process, the interior portion of the star collapses inward without limit, and becomes a black hole. This ultimate concentration of mass is called a *singularity*, with infinite density and gravity.

Supernovae are relatively rare within a galaxy. There are six known supernova events in the Milky Way from the last millennium (Table 2). No supernovae have been observed in the Milky Way Galaxy since the invention of the astronomical telescope, popularized by Galileo in 1609–1610. Dozens of earlier supernovae remnants also are observed in our galaxy such as the Veil Nebula in Cygnus. Of all the known supernova

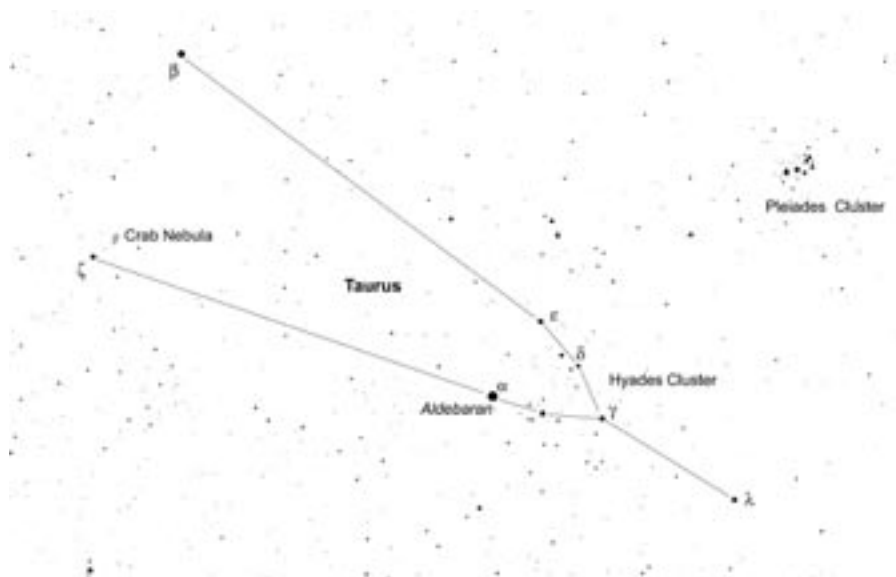


Figure 2. The Taurus constellation, which is visible in the northern hemisphere in winter. The location of the supernova of AD 1054 and its resulting Crab Nebula are indicated just inside the open top of the V shape. This drawing is adapted from the website of the Jodrell Bank Observatory in England.

remnants, the Crab Nebula remains the brightest and best known.

On a smaller scale, the term *nova* (Latin for “new”) is given to the temporary brightening of certain stars. This may occur in binary systems when matter from the larger member, perhaps a red giant star, falls on its white dwarf companion. The flare-up typically lasts several months and is probably recurring. Nova events are observed 30 to 40 times each year within the Milky Way. A nova explosion increases a star’s brightness about 10,000 times. In contrast, the increase in supernova light or luminosity is at least 10,000 times greater still. The chief nova-supernova distinction is the scale of the energy output. A nova does not result in a restructuring of the entire star, as is the case for a supernova.

Description of the 1054 Event

Taurus the Bull is one of the twelve zodiac constellations. This means that Taurus is positioned close to the ecliptic, the plane of the solar system. The con-

stellation has a V-shape arrangement of bright stars with Aldebaran, the brightest, as the eye of the bull. The open star cluster Hyades is part of Taurus, positioned at the bottom of the V, and the Pleiades cluster is also nearby (Figure 2). The 1054 supernova occurred just inside the open top of the V as indicated in the figure. The right ascension and declination coordinates are 05 hr 35 min and +22°. In the northern hemisphere the Crab Nebula is faintly visible during winter months under good conditions using a small telescope. Its apparent magnitude is 8.4 and its absolute magnitude is about -3.

The maximum brightness of the supernova is estimated to have been -16 to -17 on the absolute magnitude scale. This means the explosion was nearly a billion times brighter than the sun. At its great distance from Earth, however, the explosion would have appeared as a bright star with an apparent magnitude of -5, outshining the planet Venus. As with Venus, the supernova would have been visible during the daylight hours for several weeks. The bright light then

gradually faded out of sight over the following two-year period.

The Crab Nebula today is about 10 light years across (Figure 3). This is 7,000 times the size of the entire solar system. The nebula has an angular spread of 4-6 minutes of arc, about 10 times less than the moon’s diameter. The stellar cloud is roughly spherical in nature, but it appears from our perspective as two dimensional and somewhat circular. Extrapolating back 950 years gives an average outward speed for the nebular gas of 50 million miles per day, or nearly 600 miles per second (1000 km/sec). This is one of the highest rates of expansion measured for any supernova remnant. The angular spreading of the nebula is 0.2 seconds of arc (0.000055°) per year, noticeable on photographs that are compared over several decades. A clear comparison of Crab Nebula photographs taken 28 years apart is available. See the Astronomy Picture of the Day (APOD) reference.

A neutron star or pulsar is located at the center of the Crab supernova remnant where it illuminates the surrounding gas cloud. Its rotation rate is measured at 30 rotations per second; the precise period is 0.033089 seconds. The assigned name of the pulsar is PSR0531+21. Distinct radiation pulses are detected across the entire electromagnetic spectrum including radio, visible, x-ray, and gamma ray wavelengths. The Crab Nebula pulsar is among the brightest objects in the sky at nonvisible light wavelengths. Optical or visible light pulses were first observed in 1969. If we could see the pulsar with its rapid rate of blinking, it would appear to our eyes as a steady light. A slight slowdown in the pulsar rotation has been measured in recent years due to a gradual loss of its energy and angular momentum.

Crab Nebula Mysteries

The Crab Nebula is one of the most studied objects in the heavens. Neverthe-

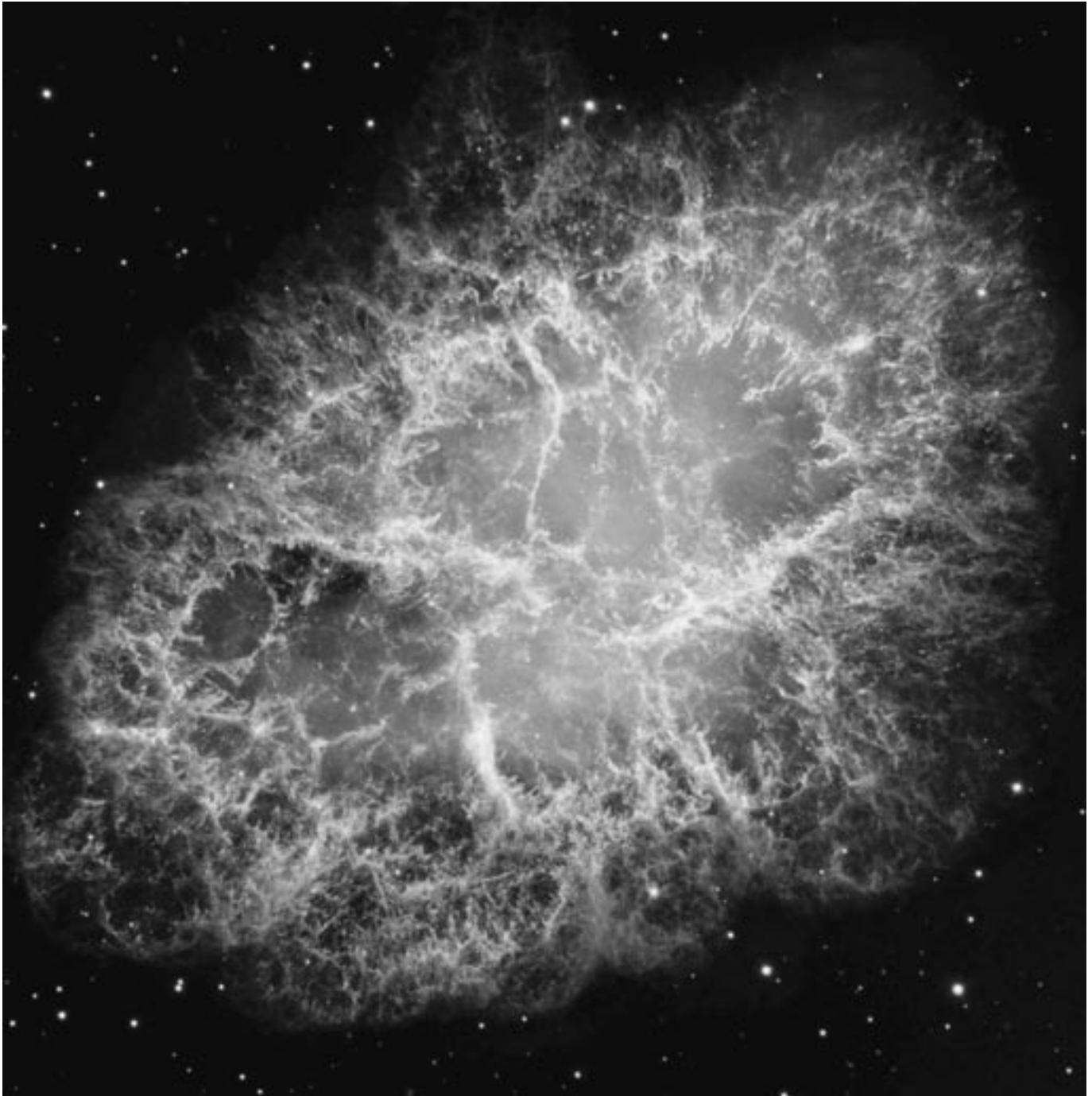


Figure 3. A Hubble Space Telescope photograph of the Crab Nebula. The cloud of gas and dust results from the supernova of AD 1054. The nebula is about 10 light years in size and is 6000 light years from Earth.

less there are several unsolved mysteries, and three will be mentioned here. The first concerns historical observations of the 1054 supernova. As described earlier, stargazers worldwide recorded the unusual event. However, there is

no known mention of the supernova by European observers at its time of occurrence. Surely the bright supernova was noticeable to Western observers as it was elsewhere. Some have suggested that the Catholic Church later expunged all

records of the supernova. The theory is that church authorities had proclaimed the bright light as a sign of the end times, and then they were embarrassed when the light faded away. There is no evidence to back up this typical “religion

bashing” theory. Furthermore, there also are no known Arabic records of the 1054 supernova event. The unanswered question is “Why not?”

A second mystery involves data that shows that the overall Crab Nebula expansion is not gradually slowing, as expected, but is instead accelerating outward (Burnham, 1978). This finding is similar to the much grander observation that the entire universe appears to be accelerating in its outward expansion. These unexplained motions show how little is understood about the dynamics of the cosmos.

A third mystery relates to the total number of known supernovae. Table 2 lists six historical supernovae that have occurred in the Milky Way. Because of the “bunching” of these events in past centuries, supernova frequency within a particular galaxy is usually stated as once every 25 to 50 years. However, the Milky Way has not experienced a known supernova for over three centuries, 6 to 12 times as long. It would appear that we are long overdue for a new supernova event in our galaxy. One might suggest a possible theological connection. The supernovae listed in Table 2 actually occurred sometime before their signals arrived on Earth. Depending on distance uncertainties, several may actually have occurred nearly simultaneously. Is it possible that an era of frequent supernova activity coincided with events such as the Creation, the Fall, or the Flood? As an analogy, recent research has found tentative evidence for a universal acceleration of radioactive decay at multiple times during history (DeYoung, 2005). Further exploration is needed of the possible theological reasons for the temporary acceleration of various rates on a cosmic scale.

If accelerated nuclear decay did indeed occur in the realm of the stars, large-scale changes in stellar energy models would result. Many implications would then follow. For example, smaller mass stars could become unstable and

subject to supernova events. The possibility of rapid nuclear decay is a topic for future theoretical creation research in astronomy.

Observing Supernovae in a Young Universe

Spectroscopic studies of the Crab Nebula give a distance of about 6000 light years, or 33 thousand trillion miles. The precise distance is not known, and published estimates vary between 5500-6500 light years. Using uniformitarian reasoning, the supernova light thus traveled about 6000 years before its detection on Earth in AD 1054. These numbers imply that the supernova actually occurred about 7000 years ago, in conflict with the 6000-year model of creation. Many other supernovae remnants give a much greater time conflict. For example, consider supernova SN 1987A, which was observed two decades ago. It is located in the Large Magellanic Cloud, one of our nearest galaxies at a distance of 180,000 light years. Several additional supernova events are observed each year in more distant galaxies. The question is how such supernovae can be seen in a young universe? How does their light reach us on a short timescale? This topic of seeing distant starlight has been much discussed in the creation literature. The vast distances in space are real and cannot be reduced to just thousands of light years. Also, evidence is lacking for a gradual, historical decrease of light speed. Russell Humphreys has suggested the existence of different clocks on the earth and in deep space (Humphreys, 1994). This theoretical model is called *white hole cosmology*. The details of this model have not yet been worked out for objects in our relatively near vicinity of space such as the AD 1054 event.

Let us consider further possibilities for seeing distant starlight. First, the speed of light may have been infinite

at the very moment of its origin on day four of Creation week when the heavens were supernaturally filled with galaxies, stars, planets, and moons. In this case distant, created starlight from deep space would arrive at earth instantaneously. Then, light speed may have been set immediately to its present constant value of 186,000 miles per second, or 300,000 km/sec. Where do supernova explosions fit into such a picture? Consider some alternatives. God may have greatly accelerated the aging process of stars during their creation. Thus the starlight reaching Earth on the fourth day would have a built-in appearance of age or maturity. This is entirely consistent with the creation of our first parents Adam and Eve, the Garden of Eden, and the entire earth. The idea is also consistent with the conclusion from recent research that radioisotope decay was accelerated a billionfold during Creation and also during the Flood (DeYoung, 2005). In addition, this mature creation of space objects matches observations that show fully formed galaxies at remote distances (Cowen, 2005). These remote, “adult” galaxies are in conflict with the assumption of their gradual formation long after the big bang event. In contrast, the mature galaxies are consistent with a fully functioning creation. It is recognized that the mature creation model expressed here, also called the “light-in-transit” model, faces theological challenges (Humphreys, 1994). The multiple physical connections between accelerated decay, light speed, and stellar decay need further exploration.

If the preceding discussion of a mature creation does not appeal to the reader, there is a second option. The entire cosmos may have been reprogrammed at the time of the Fall of Genesis 3 with a resulting appearance of age. I would suggest that in some ways we read too many physical changes into the Curse, but in other ways we read far too few. Romans 1:20 states that the whole creation, including the heavens,

feels the impact of the Fall. Also, all of creation, including deep space, eagerly awaits an eventual renewal.

Other Creation Implications

Our location in the Milky Way Galaxy appears to be providential for our survival. The solar system is positioned two-thirds of the distance outward from the center of the galaxy. In this outer region the stars are relatively sparse or widely spread. If the earth were instead positioned at the center of the galaxy, among the densely populated stars, we would probably experience a greater number of nearby supernovae events. This situation would be dangerous since a supernova occurring within several light years of Earth would spray us with lethal radiation and destroy the ozone shield, if not life itself (Ward and Brownlee, 2000).

Some of the largest and most complex experiments in physics involve particle accelerators. These machines typically constrain charged particles—protons, electrons, and their antiparticles—to move in a circle while they are accelerated to near light speed. Collisions and interactions with these ultra-fast particles then provide information on the fundamental building blocks of matter. The large particle ring at Fermi Laboratory in Illinois, for example, has a radius of 1 km and a circumference of 6.28 km, or 3.9 miles. A large particle accelerator also is nearing completion in Geneva, Switzerland by the European Center for Nuclear Research (CERN). The larger the particle accelerator, the closer the atomic particles can approach light speed. This high-energy physics research is limited by machine size and budget constraints. Meanwhile, the Crab Nebula may provide the ultimate particle accelerator. Electrons are detected in the nebula moving at speeds

far beyond our capabilities on Earth, extremely close to light speed. As a result their relativistic mass is increased by 100 million times. A light gray haze is noticed in the core of the Crab Nebula, due to synchrotron radiation given off by these ultra high-speed electrons (Figure 3). The electrons follow a cycloid path around lines of magnetic field existing within the nebula. The radii of their circular paths are several billions of miles. The Crab Nebula therefore is a natural particle accelerator on a scale billions of times larger than any man-made device. The extraction of data from the moving electrons remains a challenge because of their remote location. Nevertheless, it appears that physicists are provided with a no-cost cosmic laboratory to explore creation details.

Creationists have pointed out the rarity of observed Milky Way supernova remnants (SNRs), which contrasts with predictions assuming a long age for the universe (Davies, 1994). Some statistical estimates predict thousands of SNRs on a long timescale. However, only about 200 SNRs are known in the Milky Way, in apparent agreement with a young universe. Rebuttals to this young-universe evidence are not convincing (Isaak, 2005). Although this argument is on the side of the young-earth view, it remains tentative. Table 2 shows that the observed supernova occurrence is nonuniform over time. Also, due to intervening matter, it may be that only a small percentage of supernovae and resulting SNRs in our Milky Way galaxy are actually observed.

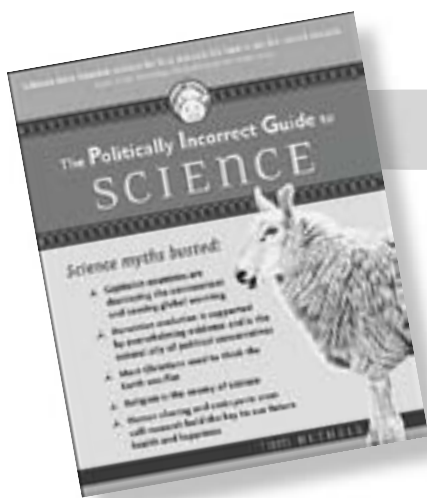
Conclusion

Photographs of the Crab Nebula reveal a beautiful structure of glowing gas and dust in outward motion. Its center is host to a spinning, blinking pulsar. The neb-

ula provides ongoing mysteries for both creationist and evolutionary interpretations. Perhaps the most fundamental lesson to be learned from the Crab Nebula is that the universe is temporary. Stars do not originate by themselves but were created on day 4. Likewise, stars do not live forever, as illustrated by supernova explosions. Sooner or later, the heavens will need refurbishing as described in 2 Peter 3:13.

References

- APOD, The incredible expanding crab. Astronomy Picture of the Day archive, December 21, 2001. http://apod.gsfc.nasa.gov/cgi-bin/apod/apod_search?crab+nebula.
- Burnham, R. 1978. *Burnham's Celestial Handbook*. Dover Publications, Inc., New York, NY.
- Clayton, D. 1984. *Principles of Stellar Evolution and Nucleosynthesis*. University of Chicago Press, Chicago, IL.
- Cowen, R. 2005. Crisis in the cosmos? *Science News* 168(15): 235–236.
- Davies, K. 1994. Distribution of supernova remnants in the galaxy. In Walsh, R.E. (editor), *Proceedings of the Third International Conference on Creationism*, pp. 178–184. Creation Science Fellowship, Pittsburgh, PA.
- DeYoung, D. 2005. *Thousands...not Billions*. Master Books, Green Forest, AR.
- Hester, J., A. Loll, and D. De Martin. 2005. Crab nebula and pulsar. www.solstation.com/x-objects/crab-neb.htm.
- Humphreys, R. 1994. *Starlight and Time*. Master Books, Green Forest, AR.
- Isaak, M. 2005. *The Counter-Creationism Handbook*. Greenwood Press, Westport, CT.
- Mitton, S. 1978. *The Crab Nebula*. Charles Scribner's Sons, New York, NY.
- Ward, P.D., and D. Brownlee. 2000. *Rare Earth*. Springer-Verlag, New York, NY.



Book Review

The Politically Incorrect Guide to Science

by Tom Bethell

Regnery Publishing, Inc., Washington, DC, 2005, 270 pages, \$19.95.

Tom Bethell is a journalist who knows a lot about science and how it works. His *Guide to Science* offers a fascinating glimpse into science and politics, a world in which opinion sometimes overrides the scientific evidence. Other books in Regnery's *Politically Incorrect Guide* series cover the topics American history, feminism, and Islam.

The public likes to think of science as an objective, truthful, unbiased field of endeavor. In actual practice, according to Bethell, "often there is a great deal of uncertainty as to what the facts are. Preferences can then be substituted for facts, and that can happen inconspicuously" (p. vii).

Most non-technical people naively think that a scientific theory "can be regarded as true if it enjoys enough support [from the science community]" (p. xiii). Bethell says, however, that "consensus discourages dissent" (p. xiii). Many theories once thought to be correct have given way to better theories. But the process of change is slow since the science establishment tends to support the prevailing theory until the bitter end.

Science allows scrutiny, Bethell says, but only from within. And scientists in one field tend to accept uncritically the findings of scientists in a different field. "So challenge and disagreement rarely arise. The priesthood of science is undisturbed, and that is the way they like it" (p. v).

The *Guide to Science* covers a number of topics in fourteen chapters. Summaries of a few examples of politically correct science follow.

Global warming. The theory is that a very gradual warming of the earth's surface has occurred due to human activity, "primarily the burning of fossil fuels" (p. 2). The proposed solution is to cut global emissions of carbon dioxide and other greenhouse gases, mostly in the U.S. and other industrial countries. The truth, however, is that the global warming theory is very speculative. Bethell concludes that the "data itself suggests that man-made carbon dioxide has *not* been sufficient to increase global temperatures" (p. 3).

Nuclear power. Nuclear power plants have long been discouraged by environmentalists, called the *Greens*. The Greens instead have promoted renewable energy sources such as the sun, wind, water, and biomass. Yet time has shown that while these sources can make a contribution, they will never be enough to solve the world's energy needs. Nuclear power has proved to be "the safest of all energy sources" (p. 36), and some public figures are calling for its revival as an alternative to fossil fuels.

Nuclear radiation. *Hormesis* is a word that most of us have never heard; it refers to "things that are toxic in large doses," but "beneficial in small doses" (p. 39). Several studies have shown that hormesis applies to nuclear radia-

tion; small doses can be of benefit. But public policy has always been based on the "linear no-threshold assumption: there is no safe level of radiation" (p. 43). Bethell asks, "how long will it be before low-level radiation ceases to be a villain and is used therapeutically?" (p. 53). In another chapter Bethell describes how hormesis applies to many "toxic" chemicals as well.

DDT ban. The pesticide DDT was used very successfully in the 1940s and 1950s in malaria eradication programs around the world. After Rachel Carson's book *Silent Spring* was published in 1962, however, public acceptance of DDT faded. Environmental activists claimed that DDT was carcinogenic and harmed wildlife, and in 1972 the EPA banned the pesticide. As a result, "malaria now kills more than a million people per year in Africa alone" (p. 73). It has never been proven that DDT has any deleterious effects on wildlife or humans, and some public officials now call for an end to its ban.

African AIDS. Most of us have the perception that millions of Africans are dying from AIDS. In developed countries, a diagnosis for AIDS is well defined using laboratory tests. In much of Africa, however, adequate laboratory facilities are lacking. Thus public health officials in 1985 developed a "surveillance" or operational definition of AIDS that included physical symptoms, but *not* HIV testing. The symptoms such as

weight loss, fever, diarrhea, and cough could be signs of numerous diseases, not just AIDS. As a result, “Overnight, millions of Africans now had AIDS, by these criteria” (p. 108). Instead of AIDS prevention programs, Bethell says, “clean water and rebuilt sanitation systems will work wonders for the health of Africans” (p. 121).

Stem cells. There is much controversy these days over adult versus embryonic stem cell research. Adult stem cells do not present an ethical problem since their use does not involve the destruction of embryos. Some promising medical claims have been reported using adult stem cells, but “the evidence is anecdotal, and not reliable” (p. 136). Aside from ethics, embryonic stem cells are problematic because a “patient’s immune system is likely to reject transplanted tissue” (p. 142), and they also tend to cause cancer. Bethell says “it is beginning to look as though scientists have over-promised, a fault to which government-funded science is all too prone” (p. 133).

Cause of cancer. Since the early 1970s, the “overwhelmingly dominant theory is that cancer is caused by gene mutations. It may prove to have been one of the greatest medical errors of the twentieth century” (p. 167). After thirty

years of extensive research, Bethell says, “the gene mutation theory hasn’t gone anywhere” (p. 173). A newer theory (*aneuploidy*) being touted by some scientists is that cancer results when the chromosomes do not separate properly during cell division. For every study in which chromosomes have been reported, “cancer cells turned out to have an incorrect complement of chromosomes – usually too many” (p. 174). Bethell concludes that “the experts will never find a solution to cancer if they continue working with the wrong theory” (p. 180).

Evolution or design. Probably the biggest debate today involving science and public policy is whether the diversity of life developed via evolution, descent from a common ancestry, or intelligent design, purposeful creation by an intelligent agent. Bethell covers familiar territory as he debunks the claims of naturalistic evolution. For example, regarding the fossil record, “It’s not that one link is missing, but that none is known for certain” (p. 204). Bethell talks about Haeckel’s embryos, homology, peppered moths, Darwin’s finches, and irreducible complexity. He concludes that scientists keep “telling themselves that evolutionism is a fact, enjoying their monopoly and telling everyone that creationism shouldn’t be taught in

high school—because it’s religion, not science” (p. 235).

For most readers of *CRSQ*, the main concern is the evolution/design/creation debate. In a sense it is comforting to know that biological origins is not the only issue where science and politics collide. Bethell’s *Guide to Science* shows that a pattern exists in which the authority of the science establishment is used to protect dominant, politically-correct theories and the careers of scientists who support them.

In summary, Bethell’s book is an informative, very readable journey into the world of science and its politics. Bethell concludes, “Scientists like to see themselves as motivated by idealism, but self-interest is not far behind. Their embrace of politics has undermined the objectivity that is supposed to be central to science” (p. 242). In short, the science establishment has learned to “game the system” in order to obtain government grants for research funding. The problem is that this system has often “not been producing the promised results (p. 243),” and billions of tax dollars have been wasted in the process.

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CRSQ

The Current Status of Baraminology

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Abstract

The creationist biosystematic method of baraminology has grown significantly in the past decade. Its conceptual foundations were discussed in the evolution/creation debates of the nineteenth century, long before Frank Lewis Marsh coined the term *baramin* in 1941. Currently, baraminology has been applied to dozens of groups, and the results of 66 baraminology studies are summarized and evaluated here. Though bias in group and character selection prevents firm conclusions, it appears at this time that Price's suggestion that the family is an approximation of the "created kind" may be correct. Criticisms of baraminology from evolutionists and creationists alike can be resolved with further research. Whatever its future, baraminology is at present a useful tool for investigating God's biological creation.

Introduction

Beginning in the eighteenth century, naturalists began to express doubts about the strict species fixity advocated by Linnaeus early in his career. Some of these naturalists entertained the possibility that species could be naturally derived from other species. During the pre-Darwinian period, numerous versions of the concept of evolution appeared, many of which were derived from the emerging field of comparative anatomy. Linnaeus himself, by the sixth edition of *Genera plantarum*, argued that species were derived from created organisms that were different from modern species (see Koerner, 1999). Robert Knox (1855), an anatomy lecturer from Edinburgh, proposed that species could evolve within

genera but that the genera were fixed. Even the staunch Darwinian opponent Richard Owen advocated a kind of evolution by natural law called *metagenesis* (see Desmond, 1982).

In *Origin*, Darwin did not compare his evolution model with the rich variety of evolution and creation models available in his day. He instead critiqued a narrow view of species fixity. Darwin probably derived his view of species fixity from Lyell's (1832) *Principles of Geology*, which he read during the *Beagle* voyage. After returning to England from that voyage, Darwin formulated his theory of evolution. It therefore should come as no surprise that Darwin's (1859) concept of "creationism" closely resembles Lyell's concept of strict species fixity. Probably

as a result of Darwin's *Origin*, even today creation science is often understood to mean extreme species fixity (e.g. Futuyma, 2005).

Early in the twentieth century, models of limited evolution began to appear in creationist writings. These models were new formulations of old ideas, but the creationists proposing them seemed to be unaware of their predecessors. Seventh-day Adventist creationist George McCready Price proposed as early as 1924 that the "created unit" was the family, not the species. He repeated his proposal in 1938 and 1942. Dudley Joseph Whitney (1928) and Harold W. Clark (1940) also accepted wide variation, although neither set specific limits on the variation. Even Byron C. Nelson (1927), who advocated a type of species fixity, allowed for wide genetic and phenotypic variation.

The most enduring limited-evolution model came from Seventh-day Adventist Frank Lewis Marsh. Marsh earned a Ph.D. in botany in 1940 and

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soon thereafter proposed a new formulation of the created kind concept (Marsh, 1941; 1944). According to Marsh (1944), two species belonged to the same created kind, or *baramin*, if they could successfully hybridize. At the same time, Marsh (1944) also argued that discontinuity (morphological and phylogenetic) was a prominent and obvious pattern throughout the living world.

In the 1980s, creationists revised the created kind yet again, but retained Marsh's core ideas and terminology. In Germany, Scherer (1993a) formalized Marsh's ideas and introduced basic type biology. In the United States, ReMine (1990) proposed discontinuity systematics, which Wise (1990) adapted to a young-age creation model to produce baraminology. Since the mid-1990s, the Baraminology Study Group (now BSG: A Creation Biology Study Group) has worked to develop new baraminology methods and to apply baraminology to groups of organisms. These efforts led to a further revision of the baramin concept that corrected methodological problems of earlier concepts (Wood et al., 2003). Recently, a summary of baraminology and the refined baramin concept was published in textbook form by Wood and Murray (2003).

Since baraminology is rapidly advancing, Wood and Murray's (2003) textbook, though still a useful summary, is already outdated in several areas. As a result, a new summary of baraminology is necessary to bring some of the old ideas into step with current thinking in the field. Additionally, new studies have appeared since 2003 (notably Wood, 2005a) that allow us to evaluate some of the underlying assumptions of baraminology. In this review, I will present a brief explanation of baraminology theory and methods before critically reviewing the present status of baraminology. I also intend to address some objections to baraminology. I will conclude with a summary of some of the pressing issues facing baraminologists today.

Baraminology in Theory and Practice

Marsh founded his baramin on the belief that God created organisms to reproduce only "after their kind." This interpretation did not originate with Marsh (e.g. Morris, 1871; Keyser, 1926), but it was not a common or generally accepted interpretation. For example, Clark (1939) claimed that the "kind" was a design pattern rather than a reproductively limited category. As Clark correctly noted, the phrase "after their kind" in Genesis 1 modifies the organisms' creation. Marsh's interpretation of "after their kind" as a reproductive command or law is a mistaken interpretation that has nevertheless had significant influence on creationist thought and persists even today (e.g. Williams, 2005).

The revision of the baramin concept in the 1980s began with the recognition that Marsh never proposed a method of differentiating baramins. Marsh's hybridization criterion could classify two species in the same baramin, but there was no proposed method to test whether two species belonged to different baramins. ReMine (1990) and Wise (1990) attempted to remedy this problem by introducing a methodology and associated terminology for identifying discontinuity that separates baramins. ReMine's discontinuity systematics and Wise's baraminology set the stage for the formation of the Baraminology Study Group (BSG) in 1996 (see Frair, 2000). One goal of the BSG was to develop baraminological methods that could be applied to a wider variety of creatures, including asexual organisms and organisms known only from fossils.

The collaboration of BSG members Robinson and Cavanaugh in the late 1990s introduced new statistical methods to baraminology. Adapting phenetic concepts of Sokal and Sneath (1963), Robinson and Cavanaugh (1998a) defined the baraminic distance as a percentage of characteristics that differ between two taxa, while ignoring unknown

characteristics. The baraminic distance is a modified simple matching coefficient (Cox and Cox, 1994). Because the characters used to calculate baraminic distance depend on the selectivity of a researcher, and because different created kinds seem to vary to different extents, the raw baraminic distance is not a measure that can be used directly to infer baraminic membership. Recognizing this problem, Robinson and Cavanaugh (1998a) proposed a correlation test to measure the relative similarities and differences between taxa.

Cavanaugh also introduced a multivariate method called Analysis of Patterns (ANOPA) at the first BSG meeting in 1997. ANOPA treats each characteristic as a separate "dimension" in multidimensional character space and reduces the dimensionality to three dimensions. The taxa then appear as points in three-dimensional space and can be displayed using any 3D viewing software. The advantage of ANOPA is that it is not distance-based, and thus provides a method of evaluating a set of characters that is independent of baraminic distance correlation.

More recently, Wood (2005b) introduced a standard multivariate technique called *multidimensional scaling* (MDS; see Cox and Cox, 1994) to baraminology. With MDS, a researcher can convert a matrix of baraminic distances into k -dimensional coordinates, where k is determined by the researcher. Typically, $k=3$ is used to maximize the information displayed and still be perceptible to human observers. Because MDS is distance-based and ANOPA is not, one method can serve as a test of the results of the other. When Wood (2005b) applied MDS to the baraminic distance matrix calculated from the Equidae dataset used by Cavanaugh et al. (2003), the 3D coordinates of ANOPA and MDS were strikingly similar, showing the same linear ordering of the taxa with both techniques.

As we applied these new methods to

additional groups, it became apparent that we were operating with a different concept of the baramin than held by Marsh, ReMine, or Wise. Earlier baramin concepts relied on reproductive isolation or common ancestry as definitions of *baramin*. Since the Bible does not teach that the *min* (Hebrew for “kind”) are reproductive units, there is no justification for a reproductively isolated baramin. There is also no way to test objectively for common ancestry. Consequently, ancestry-based baraminology becomes cumbersome: We first evaluate data from which we try to infer common ancestry, from which we try to infer baraminic groups. It is methodologically simpler to infer baraminic groups directly from biological data. These realizations led to the refined baramin concept, as detailed in Wood et al. (2003).

Not basing baraminology on common ancestry does not mean that common ancestry cannot be assumed from a baraminic assignment. For example, I usually assume that the species of a holobaramin of terrestrial animals descended from an ancestral pair that was on the ark. Because this is an assumption, it can be challenged or rejected. On the other hand, because plants survived the Flood both on and off the ark, species of a plant holobaramin need not be related to a common ancestor. For example, the grass holobaramin (Wood 2002a) might consist of many different lineages that survived the Flood separately or might have been created as separate populations belonging to a single holobaramin.

The refined baramin concept has several advantages. First, it has historical precedence in morphological arguments used by Price (1924) and Marsh (1950). Both argued that morphological similarity and dissimilarity defined basic units of living organisms that correspond to God’s original creations. In this respect, the refined baramin concept is not a new innovation but rather a systematization

of old ideas. Second, it retains the best of previous ideas and methodologies, including the terminology and the methods of successive approximation and hybridization.

Successive approximation, a valuable contribution of ReMine’s (1990) discontinuity systematics, is still the standard practice in baraminology. According to this method, different evidences are evaluated to determine continuity and discontinuity. If the evidence is entirely additive, that is, if the evidence indicates continuity of species, the group is called a *monobaramin*. A monobaramin can consist of any group of species for which continuity is demonstrated. That group need not be monophyletic, i.e. all descendants of a single ancestor. Alternatively, if a group of organisms is significantly different from other organisms, this constitutes subtractive evidence, or evidence of discontinuity. A group of organisms defined by discontinuity from other organisms is called an *apobaramin*. Apobaramins can contain one holobaramin or more than one holobaramin.

A holobaramin can be identified by subdividing an apobaramin until it cannot be subdivided further and by adding species or groups of species to a monobaramin until no more species can be added. Each smaller apobaramin or larger monobaramin is a more refined approximation of a holobaramin. When a researcher works on a single group of organisms, eventually a point of agreement is reached at which the membership of an apobaramin (defined by discontinuity from other organisms) coincides with the membership of a monobaramin (defined by continuity among its members). At that point, the holobaramin has (hopefully) been identified.

The refined baramin concept also provides a novel justification for using hybridization to recognize continuity. The ability to combine two different genomes and still produce a viable

offspring is evidence of similarity at the genetic, biochemical, cellular, tissue, organ, and morphological levels, and of similarity between the two species’ basic developmental pathways. As a result, hybridization is a biological demonstration of continuity and therefore membership in the same monobaramin. Baramins previously identified by hybridization are therefore retained as monobaramins under the refined baramin concept.

Summary of Baraminology Results

In Table 1, I list the 66 organismal groups that have been analyzed from the perspective of baraminology or basic type biology. Included are all results published up to June 2005. I excluded articles that lacked any specific baraminic classification. Although it is tempting to draw conclusions from the studies in Table 1, the sample is too biased to infer general principles. The vast majority of groups listed are animals (83.3% of all groups), and the vast majority of animal groups consist of vertebrates (94.5% of animal groups). Conspicuous for its near absence is the most speciose phylum of organisms—the Arthropoda. Though some plant groups have been studied, the selection has been biased toward flowering plants (81.8% of plant groups), and even those groups constitute a poor sampling of the flowering plants.

Despite the sample bias, it might be informative to examine the one plant and twelve vertebrate groups that researchers have classified as holobaramins. Of these thirteen, eight are classified at the traditional rank of family, two consist of multiple families, two are superfamilies, and one is a suborder. These results are consistent with Price’s (1924; 1938) suggestion that the family was approximately equivalent to the “created kind,” but it probably should not be considered a confirmation of his idea. The approximate equivalence of families and kinds has been suggested repeatedly

Table 1. Basic Types and Baramins, arranged alphabetically by taxonomic name. Holobaramins are shown in bold.

Taxon	Classification	Rank	Baramin or Basic Type ¹	Reference(s) ²
Accipitrinae	Animalia: Chordata: Aves	subfamily	basic type?	Zimbelmann 1993
Aegypiinae	Animalia: Chordata: Aves	subfamily	basic type?	Zimbelmann 1993
<i>Agkistrodon</i>	Animalia: Chordata: Reptilia	genus	monobaramin	Hennigan 2005
Anatidae	Animalia: Chordata: Aves	family	basic type	Scherer 1993b
Anhimidae	Animalia: Chordata: Aves	family	basic type?	Scherer 1993b
<i>Antaresia</i>	Animalia: Chordata: Reptilia	genus	monobaramin	Hennigan 2005
Archaeoceti	Animalia: Chordata: Mammalia	suborder	apobaramin	Mace and Wood 2005
Aspleniaceae	Plantae: Bryophyta	family	basic type	Kutzelnigg 1993a
Asteraceae	Plantae: Anthophyta	family	apobaramin?	Cavanaugh and Wood 2002
Astereae	Plantae: Anthophyta	tribe	monobaramin	Wood 2005a
Australopithecinae	Animalia: Chordata: Mammalia	subfamily	basic type?	Hartwig-Scherer 1998
<i>Bitis</i>	Animalia: Chordata: Reptilia	genus	monobaramin	Hennigan 2005
Buteoninae	Animalia: Chordata: Aves	subfamily	basic type?	Zimbelmann 1993
Camelidae	Animalia: Chordata: Mammalia	family	monobaramin	Wood et al. 1999
Canidae	Animalia: Chordata: Mammalia	family	monobaramin basic type	Siegler 1974; Scherer 1993a; Crompton 1993
Carduelinae	Animalia: Chordata: Aves	family	basic type	Fehrer 1993
Cathartidae	Animalia: Chordata: Aves	family	basic type	Scherer 1993a
Cercopithecidae	Animalia: Chordata: Mammalia	family	basic type	Hartwig-Scherer 1993
Chelidae	Animalia: Chordata: Reptilia	family	holobaramin	Wood 2005a
Cheloniidae	Animalia: Chordata: Reptilia	family	monobaramin	Robinson 1997
Columbidae	Animalia: Chordata: Aves	family	monobaramin?	More 1998
Cracidae	Animalia: Chordata: Aves	family	basic type?	Klemm 1993
<i>Crotalus/Sistrurus</i>	Animalia: Chordata: Reptilia	multiple genera	monobaramin	Hennigan 2005
<i>Diadophis</i>	Animalia: Chordata: Reptilia	genus	monobaramin	Hennigan 2005
Equidae	Animalia: Chordata: Mammalia	family	monobaramin	Cavanaugh et al. 2003; Stein-Cadenbach 1993
Estrildidae	Animalia: Chordata: Aves	family	basic type	Fehrer 1993
Falconidae	Animalia: Chordata: Aves	family	basic type	Zimbelmann 1993
Felidae	Animalia: Chordata: Mammalia	family	holobaramin	Robinson and Cavanaugh 1998b
Flaveriinae	Plantae: Anthophyta	subtribe	monobaramin	Wood and Cavanaugh 2001
Funariaceae	Plantae: Bryophyta	family	basic type	Adler 1993
Geeae	Plantae: Anthophyta	family	basic type	Junker 1993a
Geospizinae	Animalia: Chordata: Aves	subfamily	monobaramin	Lammerts 1966; Wood 2005a
<i>Gopherus</i>	Animalia: Chordata: Reptilia	genus	monobaramin	Robinson 1997
Gorillinae	Animalia: Chordata: Mammalia	subfamily	basic type?	Hartwig-Scherer 1998
Heliantheae	Plantae: Anthophyta	tribe	monobaramin	Cavanaugh and Wood 2002

Table 1, continued

Homininae	Animalia: Chordata: Mammalia	subfamily	basic type?	Hartwig-Scherer 1998
Iguanidae	Animalia: Chordata: Reptilia	family	holobaramin	Wood 2005a
Maloideae	Plantae: Anthophyta	subfamily	basic type	Kutzelnigg 1993b
Megapodiidae	Animalia: Chordata: Aves	family	basic type?	Klemm 1993
<i>Morelia/Liasis</i>	Animalia: Chordata: Reptilia	multiple genera	monobaramin	Hennigan 2005
Mysticeti	Animalia: Chordata: Mammalia	suborder	holobaramin	Mace and Wood 2005
<i>Nerodia</i>	Animalia: Chordata: Reptilia	genus	monobaramin	Hennigan 2005
Other cryptodires	Animalia: Chordata: Reptilia	multiple families	holobaramin	Wood 2005a
Other Odontocetes	Animalia: Chordata: Mammalia	multiple families	holobaramin	Mace and Wood 2005
<i>Pantherophis/Lampropeltis/Pituophis</i>	Animalia: Chordata: Reptilia	multiple genera	monobaramin	Hennigan 2005
Pelomedusidae	Animalia: Chordata: Reptilia	family	holobaramin	Wood 2005a
Phasianidae	Animalia: Chordata: Aves	family	basic type	Klemm 1993
Physeteroidea	Animalia: Chordata: Mammalia	superfamily	holobaramin	Mace and Wood 2005
Pleurodira	Animalia: Chordata: Reptilia	suborder	apobaramin	Wise 1992; Wood 2005a
Poaceae	Plantae: Anthophyta	family	holobaramin	Wood 2002a; Wood 2005b
Ponginae	Animalia: Chordata: Mammalia	subfamily	basic type?	Hartwig-Scherer 1998
Proganochelidae	Animalia: Chordata: Reptilia	family	holobaramin	Wood 2005a
Psittacidae	Animalia: Chordata: Aves	family	monobaramin	Jones and Mackey 1981
<i>Python</i>	Animalia: Chordata: Reptilia	genus	monobaramin	Hennigan 2005
Schistosomatidae	Animalia: Nematoda	family	apobaramin	Mace et al. 2003
Schistosome 1	Animalia: Nematoda	multiple species	monobaramin	Mace et al. 2003
Schistosome 2	Animalia: Nematoda	multiple species	monobaramin	Mace et al. 2003
Solanaceae	Plantae: Anthophyta	family	monobaramin	Wise 2005
Spheniscidae	Animalia: Chordata: Aves	family	holobaramin	Wood 2005a
Testudines	Animalia: Chordata: Reptilia	order	apobaramin	Wise 1992; Robinson 1997; Wood 2005a
<i>Thamnophis</i>	Animalia: Chordata: Reptilia	genus	monobaramin	Hennigan 2005
Trionychoidea	Animalia: Chordata: Reptilia	superfamily	holobaramin	Wood 2005a
Triticeae	Plantae: Anthophyta	tribe	basic type	Junker 1993b
Tropidurinae	Animalia: Chordata: Reptilia	subfamily	monobaramin	Wood 2005a
Ursidae	Animalia: Chordata: Mammalia	family	monobaramin	Tyler 1997
Ziphiidae	Animalia: Chordata: Mammalia	family	holobaramin	Mace and Wood 2005

¹I have separately designated basic types, but the reader should be aware that a basic type is defined on hybridization and is therefore equivalent to a monobaramin. Question marks (?) indicate uncertainty of the baraminic assignment on the part of the original author of the study.

²It is anachronistic to refer to studies published prior to 1990 as “baraminology,” but since most of these studies utilize hybridization (or morphological similarity as in the case of Lammerts 1966), they can be updated to the modern nomenclature without altering their methods or basic conclusions.

by creationists (Woodmorappe, 1996; Jones, 2002), and Wood and Murray (2003) recommend using the family as a starting point for baraminology. These ideas and suggestions may have biased the search for baramins.

Using a more restricted sample of 11 groups, Wood (2005a) examined the utility of baraminic distance correlation and MDS. Here, I expand the sample by adding the results of Mace and Wood's (2005) analysis of extant cetaceans. These twelve datasets (Table 2) have been studied using both baraminic distance and MDS. The sample is at least as biased as the full set of studies (Table 1), but it has the advantage of the same baraminological methods used in each case. Three of the datasets included

taxa only from the taxonomic rank of tribe (or multiple tribes). Six datasets include taxa from the rank of family and at least one extra-familial outgroup. One dataset (Equidae) is a single family with no outgroup. Two datasets include more than one family. Of the four datasets that include no extra-familial outgroup, none were interpreted to show evidence of discontinuity. Of the remaining eight datasets, five were interpreted as showing discontinuities, and three were inconclusive. Even though this is a very limited sample, the results of the survey suggest that Price (1924; 1938) may have been correct, in that discontinuity is not found below the rank of family.

The three datasets considered inconclusive were the Sulidae, Phala-

crocoracidae, and Curculionidae. The Sulidae (boobies and gannets) and Phalacrocoracidae (cormorants and shags) exhibited signs of a peculiarly regular geometry when the 3D MDS coordinates were viewed (Wood 2005a). The sulids formed a nearly perfect tetrahedron, with each of the four genera at one of the vertices, and the phalacrocoracids also formed a tetrahedral shape with the outgroup taxon in the center of the tetrahedron. Clouds of taxa are commonly seen in MDS and ANOVA, but regular shapes are not. Lines of taxa have been interpreted as evidence of continuity (e.g. Wood and Cavanaugh, 2003), but the correct interpretation of more complex structures is not apparent. The last inconclusive dataset was the

Table 2. Summary of Datasets Analyzed by Baraminic Distance Correlation and Multidimensional Scaling.

Dataset	Rank	Taxa	Relevance Cutoff	Characters after Relevance Filtering	Nonfamilial Outgroup	Discontinuity	Reference
Astereae	tribe	25	0.95	23	no	no	Wood 2005a
Tropidurus	tribe	27	0.95	66	no	no	Wood 2005a
Heliantheae <i>s.l.</i>	tribe	98	0.95	139	no	no	Cavanaugh and Wood 2002
Phalacrocoracidae	genus/ family	35	0.95	136	yes	?	Wood 2005a
Sulidae	family	10	0.95	109	yes	?	Wood 2005a
Curculionidae	family	103	0.95	106	yes	?	Wood 2005a
Equidae	family	19	0.95	33	no	no	Cavanaugh et al. 2003; Wood 2005b
Poaceae	family	66	0.95	32	yes	yes	Wood 2002a, 2005b
Spheniscidae	family	30	0.95	33	yes	yes	Wood 2005a
Iguanidae	family/ order	35	0.9	57	yes	yes	Wood 2005a
Testudines	order	30	0.9	93	yes	yes	Wood 2005a
Cetacea	order	72	0.95	121	yes	yes	Mace and Wood 2005

weevil family Curculionidae (Wood, 2005a). Wood (2005a) found surprisingly low baraminic distances among the curculionids (average of 0.1). Baraminic distance correlation showed that all taxa were connected by significant, positive correlation, but there was no evidence of significant, negative correlation defining a group.

Criticisms of Baraminology

As I discuss and present baraminology, a variety of questions, objections, and criticisms arise, often repeatedly. Some of these criticisms have not been published, but some have. Some come from evolutionists and some from fellow creationists. Although it is not my habit to respond publicly to most critics, this review seems an appropriate opportunity to discuss a few of these critiques for the sake of those who might be interested in my response.

Often baraminology is dismissed as the anti-evolution argument “this structure is too complex to evolve” repackaged in formal terminology. While I am of the opinion that holobaramins had separate origins by God’s direct creation, I personally do not use baraminology to argue that an organism or group of organisms *could not* have evolved. Rather, I interpret holobaramins as separate creations of God. It is possible that a macroevolutionary theory could be devised to account for the discontinuity between holobaramins. It is also possible that baraminology could become a “too-complex-to-evolve” argument if used as an apologetic rather than as a technique to understand organisms.

Another argument repeatedly made against baraminology is that it limits evolution with arbitrary criteria and at arbitrary classification ranks. Statistical methods developed for baraminology would render this objection invalid. The success of statistical methods is especially apparent when examining the results of baraminic distance cor-

relation and MDS (Table 2), which seem to reveal a consistent pattern of discontinuity around the rank of family. If discontinuity were arbitrarily assigned, we might expect more examples of inconclusive datasets, or datasets that reveal discontinuity within families. While it is possible that future research will find that baraminological methods are not consistent, the present evidence does not warrant that conclusion.

Evolutionists and fellow creationists have sometimes complained that the terminology is confusing or unnecessary. It is hard for me to appreciate this objection when baraminologists use only three special terms (*apobaramin*, *holobaramin*, and *monobaramin*). Although additional terminology has been proposed (e.g. *archaeobaramin*, *potentiality region*) (Wise, 1992; Wood et al., 2003), these terms have limited use and are not common in the baraminology literature. Furthermore, *apobaramin*, *holobaramin*, and *monobaramin* have meaning and utility only to creationists. Because evolutionists do not recognize discontinuity (or minimize it when they do), their terminology is not adaptable to baraminology. Ultimately, history will decide the value of the baraminological terms, but in the meantime, the few special terms provide a convenient and precise way to describe the results of baraminological research.

Some creationists have tried to reprove me for accepting too much evolution. To this I can only respond with the results of my research. I have no preconceived notion of how much evolution could or could not occur. In fact, when I began baraminology research, I expected to find very narrow baramins, at most a few genera in each. I could not find evidence to support that view, so I changed my position. If future work showed discontinuity at the level of genus or even species, I would accept that result also. On the other hand, if I found continuity between different mammalian orders, I would accept that result.

Related to accepting “too much evolution” is the objection that there is no mechanism capable of producing intrabaraminic diversity in the short chronology (<6000 years) implied by the Bible. I agree completely (Wood, 2002b; Wood and Murray, 2003), but I do not believe that this is a legitimate argument against baraminology. Demanding a mechanism seems to be a prerequisite for acceptance among scientists, but it is not always necessary or even prudent. Consider the preformation/epigenesis debate. In the eighteenth century, when the formal study of embryonic development began, many scientists took the position (called “preformation”) that the embryo was merely a miniature adult that mechanically unfolded during development. The epigeneticists argued that development was too complex to be merely the unfolding of preexisting structures, but they had no mechanism to propose instead. The preformationists argued on the basis of the well-known mechanism of Newtonian mechanics, but the epigeneticists held out for an unknown mechanism. Now we know that those who limited themselves to the known mechanisms of the day were wrong, and even 250 years later, we still do not fully understand how embryonic development works. I take from this history the lesson that mechanism is perhaps not as important as what the evidence actually indicates.

Williams (2004) claimed that statistical baraminological methods were taken from “evolutionary biology” without reference. While it is true that *Understanding the Pattern of Life* does not cite secular literature for certain statistical measures, Robinson and Cavanaugh (1998a, 1998b), who are repeatedly referenced in *Understanding the Pattern of Life*, do reference the sources of their phenetic methods where appropriate. Other statistical baraminology methods were not taken from existing literature. For example, ANOPA is a novel method developed by David Cavanaugh. His

procedure is phenetic, but it is a new method developed by a baraminologist for baraminology.

Williams (2004) stated that increasing the number of characters in a sample will not improve the estimate of the true taxonomic distance. I agree in principle that merely adding additional characters will not necessarily improve the estimated distances. I believe that this is not an intrinsic problem with baraminology methods, but rather a problem of character selection. Williams (2004) also claimed that not all characters carry the same information, but applying this principle could easily introduce bias into the baraminology analysis. When we consider the strange results of the Sulidae and Phalacrocoracidae (Wood, 2005a), we should be even more cautious about accepting character sets of "informative" characters. Character selection should be a high priority in future baraminology research.

Woetzel (2005) insisted that the objective of baraminology was to identify the descendants of the created kinds. As I have argued here, his position is technically untenable. The Bible does not teach the reproductive isolation of *min*, and there is no objective test for common ancestry. As a result, baramins cannot be identified by common ancestry, because we cannot know which species share a common ancestor. The refined baramin concept overcomes this methodological problem by removing the inference of ancestry from the identification of baramins.

The Future of Baraminology

As Williams (2004) noted, character selection was a serious problem for phenetics. I have already found this problem in baraminology in the analysis of sulids, phalacrocoracids, and curculionids (Wood, 2005a). Future research projects need to address this issue. Some of these future projects will involve studying the datasets already analyzed

by baraminological techniques. Other projects must focus on analyzing additional datasets to expand the pool of baraminological studies that can be evaluated. Projects on fossil and extant cetaceans, *Hyracotherium*, snakes, and chickens have already been initiated. Since there are so few baraminological studies published (Table 1), the field is wide open for future contributions.

As we expand the number of groups studied by baraminology, we should also get a better idea of what baramins are and how many species they contain. Currently, it seems as if Price (1924; 1938) was right that baramins can be approximated by the rank of family, but this needs far more examples before we can be sure. As more studies become available, we can validate or invalidate Price's idea, and we should get a better perception of the capacity for variation within baramins.

Most lay creationists are interested not in baramins of grasses or ducks but in the more well-known "transitional forms." Whereas I do not believe we should orient our research priorities according to the demands of laypersons or perceived political needs, intermediate forms are of considerable scientific interest. While some appear to be legitimate intrabaraminic intermediates, others do not. Cavanaugh et al. (2003) found evidence that the fossil horse series is a monobaramin, which they interpreted as post-Flood intrabaraminic diversification. Initial results with the archaeocetes (Cavanaugh and Sternberg, 2005; Mace and Wood, 2005), which are thought to be intermediate between modern cetaceans and land mammals, suggest instead that they are discontinuous with both groups. More studies of morphological intermediate groups such as these will help us to interpret them in a creationist context.

Most important to the future of baraminology is training, which will require the development of software that enable baraminologists to conve-

niently analyze groups of organisms. In the meantime, those interested in the work of baraminology can attend the annual conference of the BSG: A Creation Biology Study Group (<http://www.bryancore.org/bsg>). This is a fine opportunity to meet with others interested in baraminology and to hear about the latest research results.

We have come far since Frank Marsh first coined the term *baramin* from the Hebrew for "create" and "kind." Much of what Marsh proposed has been modified now, but the current form of baraminology provides many new opportunities for growth and development. As we continue to work in this field, hopefully we will come to know the Creator better as we discover His creation.

References

- CRSQ: *Creation Research Society Quarterly*
- Adler M. 1993. Merkmalsausbildung und Hybridisierung bei Funariaceen (Bryophyta, Musci). In Scherer, S. (editor), *Typen des Lebens*, pp. 67–70. Pascal-Verlag, Berlin, Germany.
- Cavanaugh, D.P., and R.V. Sternberg. 2005. An ANOPA study of cetacean sister-group relationships. *Occasional Papers of the BSG* 5:13.
- Cavanaugh, D.P., and T.C. Wood. 2002. A baraminological analysis of the tribe Heliantheae *sensu lato* (Asteraceae) using Analysis of Pattern (ANOPA). *Occasional Papers of the BSG* 1:1–11.
- Cavanaugh, D.P., T.C. Wood, and K.P. Wise. 2003. Fossil Equidae: a monobaraminic, stratomorphic series. In Ivey, R.L. (editor), *Proceedings of the Fifth International Conference on Creationism*, pp. 143–153. Creation Science Fellowship, Pittsburgh, PA.
- Clark, H.W. 1939. Genesis and science 5. Each "after his kind." *Signs of the Times* 66 (45):6–7.
- Clark, H.W. 1940. *Genes and Genesis*. Pacific Press, Mountain View, CA.
- Cox, T.F., and M.A.A. Cox. 1994. *Multidi-*

- mensional Scaling*. Chapman and Hall, New York, NY.
- Crompton, N.E.A. 1993. A review of selected features of the family Canidae with reference to its fundamental taxonomic status. In Scherer, S. (editor), *Typen des Lebens*, pp. 217–224. Pascal-Verlag, Berlin, Germany.
- Darwin, C. 1859. *The Origin of Species* (A 1979 facsimile of the first edition). Gramercy Books, New York, NY.
- Desmond, A. 1982. *Archetypes and Ancestors: Palaeontology in Victorian London 1850–1875*. University of Chicago Press, Chicago, IL.
- Fehrer, J. 1993. Interspecies-Kreuzungen bei cardueliden Finken und Prachtfinken. In Scherer, S. (editor), *Typen des Lebens*, pp. 197–215. Pascal-Verlag, Berlin, Germany.
- Frair, W. 2000. Baraminology - classification of created organisms. *CRSQ* 37:82–91.
- Futuyma, D.J. 2005. *Evolution*. Sinauer Associates, Inc., Sunderland, MA.
- Hartwig-Scherer, S. 1993. Hybridisierung und artbildung bei den Meerkatzenartigen (Primates, Cercopithecoidea). In Scherer, S. (editor), *Typen des Lebens*, pp. 245–257. Pascal-Verlag, Berlin, Germany.
- Hartwig-Scherer, S. 1998. Apes or ancestors? Interpretations of the Hominid fossil record within evolutionary and basic type biology. In Dembski, W.A. (editor), *Mere Creation*, pp. 212–235. InterVarsity Press, Downers Grove, IL.
- Hennigan, T. 2005. An initial investigation into the baraminology of snakes: order—Squamata, suborder Serpentes. *CRSQ* 42(3):153–160.
- Jones, A. 2002. The identity and nature of the created kinds—speciation among the Cichlid fish. *Genesis Agendum Occasional Papers* 7:1–12.
- Jones, D., and J. Mackay. 1981. Parrots and Noah's Flood. *Ex Nihilo* 4(3):15–18.
- Junker, R. 1993a. Die Gattungen *Geum* (Nelkenwurz), *Coluria* und *Waldsteinia* (Rosaceae, Tribus Geae). In Scherer, S. (editor), *Typen des Lebens*, pp. 95–111. Pascal-Verlag, Berlin, Germany.
- Junker, R. 1993b. Der Grundtyp der Weizenartigen (Poaceae, tribus Triticeae). In Scherer, S. (editor), *Typen des Lebens*, pp. 75–93. Pascal-Verlag, Berlin, Germany.
- Keyser, L.S. 1926. *The Problem of Origins*. Lutheran Literary Board, Burlington, IA.
- Klemm, R. 1993. Die Hühnervögel (Galliformes): Taxonomische Aspekte unter besonderer Berücksichtigung artübergreifender Kreuzungen. In Scherer, S. (editor), *Typen des Lebens*, pp. 159–184. Pascal-Verlag, Berlin, Germany.
- Knox, R. June, 1855. Introduction to inquiries into the philosophy of zoology. *Lancet*, pp. 625–627.
- Koerner, L. 1999. *Linnaeus: Nature and Nation*. Harvard University Press, Cambridge, MA.
- Kutzelnigg, H. 1993a. Die Streifenfarngewächse (Filicatae, Aspleniaceae) im grundtypmodell. In Scherer, S. (editor), *Typen des Lebens*, pp. 71–74. Pascal-Verlag, Berlin, Germany.
- Kutzelnigg, H. 1993b. Verwandtschaftliche Beziehungen zwischen den Gattungen und Arten der Kernobstgewächse (Rosaceae, Unterfamilie Maloideae). In Scherer, S. (editor), *Typen des Lebens*, pp. 113–127. Pascal-Verlag, Berlin, Germany.
- Lammerts, W.E. 1966. The Galapagos Island Finches. *CRSQ* 3(1):73–79.
- Lyell, C. 1832. *Principles of Geology* (Vol. II). John Murray, London.
- Mace, S.R., B.A. Sims, and T.C. Wood. 2003. Fellowship, creation, and schistosomes. *Impact* 357:i–iv.
- Mace, S.R., and T.C. Wood. 2005. Statistical evidence for five whale holobaramins (Mammalia: Cetacea). *Occasional Papers of the BSG* 5:15.
- Marsh, F.L. 1941. *Fundamental Biology*. Self-published, Lincoln, NE.
- Marsh, F.L. 1944. *Evolution, Creation, and Science*. Review and Herald Publishing, Washington, D.C.
- Marsh, F.L. 1950. *Studies in Creationism*. Review and Herald Publishing, Washington, D.C.
- More, E.R.J. 1998. The created kind - Noah's doves, ravens, and their descendents. In Walsh, R.E. (editor), *Proceedings of the Fourth International Conference on Creationism*, pp. 407–419. Creation Science Fellowship, Pittsburgh, PA.
- Morris, H.W. 1871. *Science and the Bible*. Ziegler & McCurdy, Philadelphia, PA.
- Nelson, B.C. 1927. "After its Kind." Augsburg Publishing House, Minneapolis, MN.
- Price, G.M. 1924. *The Phantom of Organic Evolution*. Fleming H. Revell, New York, NY.
- Price, G.M. 1938. Nature's two hundred families. *Signs of the Times* 65(37):11, 14–15.
- Price, G.M. 1942. *How Did the World Begin?* Fleming H. Revell, New York, NY.
- ReMine, W.J. 1990. Discontinuity systematics: A methodology of biosystematics relevant to the creation model. In Walsh, R.E., and C.L. Brooks (editors), *Proceedings of the Second International Conference on Creationism*, pp. 207–213. Creation Science Fellowship, Pittsburgh, PA.
- Robinson, D.A. 1997. A mitochondrial DNA analysis of the Testudine apobaramin. *CRSQ* 33:262–272.
- Robinson, D.A., and D.P. Cavanaugh. 1998a. A quantitative approach to baraminology with examples from the catarrhine primates. *CRSQ* 34:196–208.
- Robinson, D.A., and D.P. Cavanaugh. 1998b. Evidence for a holobaraminic origin of the cats. *CRSQ* 35:2–14.
- Scherer, S. 1993a. Basic types of life. In Scherer, S. (editor), *Typen des Lebens*, pp. 11–30. Pascal-Verlag, Berlin, Germany.
- Scherer, S. 1993b. Der grundtyp der Entenartigen (Anatidae, Anseriformes): Biologische und paläontologische Streiflichter. In Scherer, S. (editor), *Typen des Lebens*, pp. 131–158. Pascal-Verlag, Berlin, Germany.
- Siegler, H.L. 1974. The magnificence of kinds as demonstrated by the canids. *CRSQ* 11:94–97.
- Sokal, R.R., and P.H.A. Sneath. 1963. *Principles of Numerical Taxonomy*. W.H.

- Freeman and Company, San Francisco, CA.
- Stein-Cadenbach, H. 1993. Hybriden, Chromosomen und Artbildung bei Pferden (Equidae). In Scherer, S. (editor), *Typen des Lebens*, pp. 225–244. Pascal-Verlag, Berlin, Germany.
- Tyler, D.J. 1997. Adaptations within the bear family: a contribution to the debate about the limits of variation. *Creation Matters* 2:1-4.
- Whitney, D.J. February, 1928. Errors of fundamental science. *The King's Business*, pp. 82–83.
- Williams, A. 2004. Baraminology, biology and the Bible. *TJ* 18(2):53–54.
- Williams, A. 2005. Alex Williams replies. *TJ* 19(3):65.
- Wise, K.P. 1990. Baraminology: A young-earth creation biosystematic method. In Walsh, R.E., and C.L. Brooks (editors), *Proceedings of the Second International Conference on Creationism, Vol. II*, pp. 345–360. Creation Science Fellowship, Pittsburgh, PA.
- Wise, K.P. 1992. Practical baraminology. *Creation Ex Nihilo Technical Journal* 6:122-137.
- Wise, K.P. 2005. Interspecific hybrids in the Solanaceae. *Occasional Papers of the BSG* 5:17–18.
- Woetzel, D. 2005. Book review: *Understanding the Pattern of Life*. *CRSQ* 42(1):28–30.
- Wood, T.C. 2002a. A baraminology tutorial with examples from the grasses (Poaceae). *TJ* 16(1):15–25.
- Wood, T.C. 2002b. The AGEing process: rapid post-Flood, intrabaraminic diversification caused by Altruistic Genetic Elements (AGEs). *Origins* 54:5–34.
- Wood, T.C. 2005a. A creationist review of the history, geology, climate, and biology of the Galápagos Islands. *CORE Issues in Creation* 1:1–241.
- Wood, T.C. 2005b. Visualizing baraminic distances using classical multidimensional scaling. *Origins* 57:9–29.
- Wood, T.C., and D.P. Cavanaugh. 2001. A baraminological analysis of subtribe Flaveriinae (Asteraceae) and the origin of biological complexity. *Origins* 52:7–27.
- Wood, T.C., and D.P. Cavanaugh. 2003. An evaluation of lineages and trajectories as baraminological membership criteria. *Occasional Papers of the BSG* 2:1–6.
- Wood, T.C., and M.J. Murray. 2003. *Understanding the Pattern of Life*. Broadman & Holman, Nashville, TN.
- Wood, T.C., P.J. Williams, K.P. Wise, and D.A. Robinson. 1999. Summaries on camel baraminology. In Robinson, D.A. and P.J. Williams (editors), *Baraminology '99: Creation Biology for the 21st Century*, pp. 9–18. Baraminology Study Group.
- Wood, T.C., K.P. Wise, R. Sanders, and N. Doran. 2003. A refined baramin concept. *Occasional Papers of the BSG* 3:1–14.
- Woodmorappe, J. 1996. *Noah's Ark: A Feasibility Study*. Institute for Creation Research, Santee, CA.
- Zimbelmann, F. 1993. Grundtypen bei Greifvögeln (Falconiformes). In Scherer, S. (editor), *Typen des Lebens*, pp. 185–195. Pascal-Verlag, Berlin, Germany.



Book Review

Buried Alive, The Startling Truth about Neanderthal Man

by Jack Cuozzo

Master Books, Green Forest, AR, 1998, 349 pp., \$12.00.

Jack Cuozzo is an orthodontist who made a comparative study of ancient and modern child orthodontic development. He was encouraged by a colleague to examine the original fossils, not just the descriptions in textbooks for the

study of ancient man, and was amazed at what he discovered. Using a portable x-ray machine the author was able to make precise measurements of several Neanderthal skulls which are housed in the museums of Europe. What struck

him was the inaccuracy of the textbook descriptions and museum displays of these fossils. Most were inaccurate and some were downright fraudulent. He concludes that they had all been manipulated to appear ape-like and relatively

young at the time of death. The common description of Neanderthal men is that they were a primitive form of man, heavily built, and living a fairly short life span, 40–130 thousand years ago.

Cuozzo's experience in orthodontics told him that over time a human skull will change in measurable ways, even after reaching adulthood. Throughout a person's lifetime the skull gets larger, mostly in length, some in width, and little in height. The nose and face get larger, and the teeth and jaws move. The jaw rotates counter-clockwise when viewing the head from the right side. All of these changes are measurable and studies have been done to determine the rate and extent to which they occur. The rate of change is greatest while a child is growing into an adult, with growth spurts at particular times. The changes continue for the lifetime of a person, although at a slower rate in adulthood. The growth rates for apes are about twice those of humans.

What Cuozzo found was that the Neanderthal child skulls appeared in many ways to be less developed than modern children's skulls. Also, the sizes of the skulls of the Neanderthals were larger. The Neanderthal adult skulls appeared to be more developed than modern adult skulls. They were larger and appeared to have gone through more growth and the teeth had more wear. The question is, did the Neanderthal people grow faster than modern people, or did they live longer?

Evidence for slower growth rates in the past is presented. Johann S. Bach had a boys' choir back in the mid 1700s with 16-year-olds who had not experienced a voice change. Cuozzo has a reference that claims the average age of voice change in Bach's generation was 17 years. He goes on to say that the average age today is 13.5 years. Girls today are also maturing at a faster rate than in the past based on the age of their first menstrual period. One other piece of information indicating slower rates of growth in the past is skull measurements of bodies in old graves. The markings reveal older ages than the measurements indicate, assuming modern growth rates.

Evidence is given that Neanderthals lived more recently than is generally believed. Their remains are often found intentionally buried in graves, usually in caves. Artifacts are buried with them indicating that Neanderthals were human. Some Neanderthal bones have been found covered with red ochre and with jasper stones placed nearby. This is similar to an ancient Sumerian practice of the period 2000 B.C. Neanderthals are typically assumed by modern archaeologists to have lived 40–130 thousand years B.C.

The revealing of the new evidence by Dr. Cuozzo caused him some persecution. The title of the book *Buried Alive* refers to the evidence, formerly buried in the museums of Europe which he uncovered. It does not suggest that

Neanderthals were buried alive. Cuozzo believes that Neanderthals lived during the period immediately following the Flood and that humans have degenerated genetically since then. The Bible gives a record of long life spans before the flood and progressively decreasing ages after. Noah, the last generation before the Flood, lived 950 years, 600 of them before the Flood. His son Shem was 100 at the time of the Flood and lived to be 600. Joseph, son of Jacob, died at the age of 110.

Cuozzo also touches on the subject of dinosaurs and men living together. The book includes a photograph of what appears to be a confrontation between a mammoth and a dinosaur carved on the wall of a cave. The author concludes that the evidence shows Neanderthals were humans who lived several thousand years B.C., who matured slowly, and lived to great ages. He believes that this confirms the record of pre- and post-Flood life spans.

The book is well written and is technical, especially with regard to tooth and skull measurement. It is very relevant to the debate between creation and evolution and shows just how far evolutionists will go to bury the truth when it does not fit personal prejudices. I highly recommend it to anyone interested in the subject.

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CRS

Did Death Occur Before the Fall? A Further Critique of the Progressive Creationism of Hugh Ross

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Abstract

Dr. Hugh Ross is presently a key advocate of what is called “progressive creationism.” In a previous paper (Henry, 2006) I challenged nine claims of the progressive creationists (PCists) by which they have attempted to establish (1) that cosmic and biological development have occurred by means of evolution, with or without Divine intervention, and (2) that the universe and earth are very old. PCists make additional claims that further imply evolution occurring over vast ages. I focus here on their belief that Genesis chapter 1 is poetic, not historical. They also maintain that death occurred before the Fall of man (Gen. 3). PCists try to buttress their claim of pre-Fall death with several corollary claims that will also be discussed.

Introduction

If Genesis 1 is not actual history, then perhaps the real history of origins is evolutionary. An evolutionary history requires eons of death and extinction. An absence of pre-Fall death disallows this possibility, so progressive creationists (PCists) must have death occurring before the Fall in order to defend their long age theory of origins.

The “death before the Fall” position of PCists implies a number of corollaries, which include the following: (1) that the pre-Fall world was harsh and cruel; (2) that digestion of plants and bacterial decay are processes involving “death”; (3) that carnivorousness occurred before the Fall; and (4) that a death-free

pre-Fall world would quickly overpopulate, a scenario requiring death for its prevention.

PCists Relegate Genesis 1 to Figurative, Allegorical, and Poetic Status

Liberal Bible scholars have long maintained that “Genesis is essentially a folk literature” and that Genesis 1–11 consists of “imaginative stories” that must be understood as “parables” (Gibson, 1981, pp. 2, 11). Though “these chapters have always been in the centre of controversy about the Bible ... [t]he old bitter controversy between science and religion is ... hopefully on the way to becoming a

thing of the past” (Gibson, 1981, pp. 2, 10). Gibson (1981) expressed the belief that the controversy is waning because

There must be very few who would today seriously contend that the world came into being in six days ... We are admitting that science is the proper source to turn to for factual knowledge about the physical origin and nature of the universe ... Genesis 1–11 (and a number of other passages dealing with the same subject of creation) [are not] based on things that actually happened” (pp. 9, 11, 13).

Aware that the controversy is *not* in fact waning, Dr. Ross has fueled it by using loaded words describing the debate as a “hurricane” that is “currently raging,” causing “division and hostility” (Ross, 2004, pp. 15, 67, 71). He acknowledged Gallup polls that since 1982 have consistently revealed

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that about half the American public believed in “a 10,000-year-old creation date” (Ross, 2004, pp. 34–35). Ross asserted that “for six days (the fossil record eras) God created new life forms” and that “the theological underpinnings of a young-earth creation scenario are untenable” (Ross, 2004, pp. 82, 119). He has expressed regret that there are churches and schools that allow “only one position on the creation-day controversy” (Ross, 2004, p. 68). Ross describes himself as being in the “conservative evangelical” camp and has expressed the desire to see the controversy “graciously quelled” with a “peaceful resolution” (Ross, 2004, pp. 135, 239, 247). He stated, however, that such resolution would involve an acceptance of evolutionary interpretations of scientific data (Ross, 2004, pp. 49, 213) as enunciated by “evangelical theologians” who are “esteemed” and “distinguished” scholars (Ross, 2004, pp. 242, 243, 244). Such a “resolution” would position the Bible in a place of non-authority (Ross, 2004, pp. 57, 62, 88). Ross’s publisher, NavPress (NavPress 1995, p. 2), has called for a similar “resolution” by appealing to Christians to heed the “many evangelicals on the faculties of institutions in the Christian College Coalition and among the membership of the American Scientific Affiliation.” The difficulty with this appeal is not with the character or qualifications of any of the men and women in these organizations, but with the total absence of any reference to what the Bible has to say.

By failing to acknowledge the Bible’s authority over human interpretations of scientific data, Ross arrived at the liberals’ position of forcing Genesis 1 into a straitjacket of human reasoning. He has allegorized the Creation days and rendered Genesis 1 as little more than poetry that deals “most strongly [with] the who of creation” (Ross, 2004, p. 18). Ross has echoed the position of framework theorist B.K. Waltke (1988), and the liberal position that Genesis chapter

1 did not “actually” happen as it was written (Gibson, 1981, p. 13). Ross (1994) claimed that he is not taking Genesis 1 to be “figurative” (p. 60), but this claim is obviously hollow. He presented God as speaking in the language of appearances, “anthropomorphically,” to an ancient people ignorant of the teachings of modern science (Ross, 2004, p. 159). But genuine anthropomorphisms involve a body motion or body part picturing God’s senses or actions, and “never take the form of anything like a weekday” (Kulikovsky, 2002, p. 40; see also Young, 1964, p. 58).

Even if Genesis 1 were poetry, “in the ancient world, devoid of printing, without paper for note-taking or on which to type lectures, the trained memory was of vital importance” (Yates, 1966, p. 4). A poetic syntax was an aid to memorizing concrete content. Archeologist W. F. Albright (1957) emphasized that “the verse form is much better adapted for oral transmission than is any kind of prose. The ease with which children learn poetry is well known; lists and recipes were formerly put into verse for mnemotechnic purposes” (p. 66). A poetic syntax in Genesis 1 would still mean that it conveyed the factual information intended by the context of its words.

But Genesis 1 is not actually poetry at all. The first poetic passage in Scripture is Genesis 4:23, sometimes called “The Song of the Sword” (Pfeiffer, 1958, p. 27; and Sarfati, 2004, p. 95). Echoing Aalders, an early opponent of the framework hypothesis, Surburg (1959) asks, “Would the account of Gen. 1 lead the ordinary reader to suspect that the order of created events recorded were [sic] not historical?” (p. 64). Also echoing Aalders, Young (1964), answered that in Genesis 1, “there is not a single allusion to suggest that the days are to be regarded as a form or mere manner of representation” (p. 47). Neither does the inclusion of repetitive phrases in Genesis 1 make it poetry. In the KJV, the phrases “the evening and the morn-

ing” and “God saw that it was good” each appear five times, “but repetition is not a necessary component of Hebrew poetry. Repetition is actually more of a characteristic of Biblical Hebrew prose” (Shackleford et al., p. 303), but is sometimes confused with parallelism. Instead, “if Genesis were truly poetic, it would use parallelisms throughout,” but it does not (Sarfati, 2004, p. 95). Thus Genesis 1 is written in a prose or narrative style that presents “a positive record of things as they actually transpired” (Leupold, 1949, p. 25; see also Kulikovsky, 2001, p. 242). Other Scriptures, including the words of Jesus Himself, cite Genesis 1 as history (e.g., Exod. 20:9–11; 31:17; Ps. 8; 104; Matt. 19:4–6, Luke 3:38, Heb. 4:4; 2 Peter 3:5).

If the only purpose of Genesis 1 had been to teach *who* created, then the first verse would be sufficient (Davis, 1975, pp. 74–75). Summing up, Kaiser (1980) said, “It is often wrongly stated that Genesis 1 tells us *who* created the universe but not *how* it was done—an obvious slighting of the phrase repeated ten times, ‘and God said’ “ (p. 147). Genesis 1 is historical and is not anthropomorphic, allegorical, figurative, or poetic. It tells us the time period God used to create.

PCists Claim That There Was Death Before the Fall

Ross (2004) expressed the belief that the “3.8 billion years of plant and animal death and extinction that preceded humanity” require that death preceded the Fall (p. 103). He recognized that “God could have done things differently” by creating a death-free pre-Fall world (Ross, 1994, pp. 63–64), but concludes that the fossil record negates this possibility. Among creationists, Anderson (1992) also noted the linkage between the long ages of evolution and the requirement of pre-Fall death. Nevertheless, Ross’s publisher, NavPress, has insisted that Ross’s views do not “support ... the theory

of evolution" (NavPress, 1995, p. 1). But Davidheiser (1993) has observed that "progressive creationists accept the time [scale] of the evolutionists," (p. 14) and it has long been observed that a long time scale is the crucial requirement for evolution (e.g., Oparin, 1938). In sum, even if the PCist position is described as non-evolutionary, the fact remains that the requirement of pre-Fall death is an evolutionary requirement.

The ghastly aspect of slaughterhouses and the somber atmosphere of funerals have demonstrated through the ages the terror of the sin that brought death into the physical creation. Martyn Lloyd-Jones (1966) once observed,

Many people seem to think that the sole theme of the Bible is that of man's personal relationship to God. Of course that is one of the central themes [but not] the only theme. ... Ultimately the main message of the Bible concerns the condition of the entire world and its destiny; you and I as individuals are part of that larger whole. (p. 9.)

Ross (2004) ignored this logic by insisting that the entrance of physical death into the creation at the Fall is unrelated to the need for redemption. The physical suffering of Christ on the cross, however, shows that there is a relation. The shedding of His blood was necessary for the remission of sins (Heb. 9:22), but He also allowed Himself to be abused and tortured, thus showing that the Fall was physical as well as spiritual.

Death Is Evil and Did Not Exist Before the Fall

Paul calls death "the last enemy" in 1 Corinthians 15:26. Death before the Fall would mean that "the 'last enemy' was part of God's 'very good' creation," which would be a logical absurdity (Sarfati, 2004, p. 201). Revelation 21:4 says that the new creation will have no more death, because there is "no more curse" (Rev. 22:3). This shows that

death entered the world with the curse pronounced in Genesis 3:17–19. When "Jesus wept" at the death of Lazarus (John 11:35), He responded to death as an evil, not as a good thing.

Since Ross faced a need for billions of years of death and extinction to accommodate the conventional interpretation of the fossil record, he claimed that the words "good" (Hebrew *tov*) and "very good" (*tov me'od*) in Genesis 1 do not signify a death-free pre-Fall world unlike the present one (Ross, 2004, p. 104). In passages after Genesis 1 (e.g., Gen. 24:16; Num. 14:7; Judg. 18:9; 2 Sam. 11:2; 1 Kings 1:6; Jer. 24:2–3), *me'od tov* signifies superlative beauty or wonder, but not absolute perfection. It is an "unwarranted expansion of an expanded semantic field" (Carson, 1996, p. 60), however, to insist on this meaning of nonabsolute perfection for *me'od tov* in Genesis 1. The fivefold description of God's creation as "good," and after the sixth day as "very good," shows that there was yet no evil in the world. "By the application of the term 'good' to everything that God made, and the repetition of the word with the emphasis 'very' at the close of the whole creation, the existence of anything evil in the creation of God is absolutely denied" (Keil and Delitzsch, 1949, p. 67). Physical death did not exist before the Fall.

PCists try to justify the nonperfection interpretation of *me'od tov* in Genesis 1 by pointing to uses of the Hebrew word *tamim* elsewhere in the Bible. *Tamim*, translated "perfect" or "without blemish," is used in Genesis 6:9 to describe the "completeness and moral integrity, not sinless perfection," of Noah, a fallen man. The related Hebrew word *tam* is used of Job, also a fallen man (Sarfati, 2004, p. 196). Thus in Genesis 1 *me'od tov* must not imply absolute perfection either, according to PCists. But neither *ta'am* nor *tam* is suitable in Genesis 1, which describes a world into which evil had not yet entered. Thus the lack of these words in Genesis 1, and their

nonabsolute meaning elsewhere in the Bible, is irrelevant to the meaning of *tov* and *tov me'od* in Genesis 1.

The curse itself (Gen. 3:19) brought physical consequences ("sweat," implying arduous physical labor) and physical death ("to dust you shall return"), not just spiritual death. After Adam's sin, access to the Tree of Life, which prevented physical death, was banned (Gen. 3:22).

Ross argues that New Testament verses linking death and the Fall refer only to human spiritual death, thereby allowing billions of years of physical death and extinction in the putative pre-Adamic world. This would have included the death of "pre-human primate species" such as Neanderthal man (Ross, 2004, p. 225). According to Ross (1994), "Death through sin' is not equivalent to physical death" (p. 60). Echoing Ross, Fischer (2003) claimed that "the Bible tells us ... who or what is affected by Adam's sin—humans, not animals" (p. 225). To strengthen this case, Ross links Romans 5:12 with 1 Corinthians 15:21, maintaining that these verses "also must refer to spiritual death rather than to physical death" (Ross, 1994, p. 61). Sarfati (2004) comments, "This is amazing, since the whole of 1 Corinthians 15 is about the bodily (*physical*) resurrection of Christ, who was *physically* dead" (p. 202).

Ross also argues that the phrase "the whole creation" (Greek *pasahe ktisis*) in Romans 8:22 means only humans (Ross, 1994, p. 65); thus only mankind was affected by the Curse. Arndt and Gingrich (1957), however, state that *ktisis* also signifies "the whole creation below the human level ... animate and inanimate," (p. 457) with which Hodge (1864, pp. 269–270), who believed in a vast earth age, concurred. To Foerster (1965), *ktisis* is "the whole of creation" (p. 1031). Thus all the creation was cursed, along with man who was cursed spiritually and physically. There was no evil in the world until Eve and Adam's

sin, so physical death, which is evil, did not exist before the Fall, and entered the world because of the Fall.

PCists Claim That the Pre-Fall World Was Harsh and Cruel

Ross (2004) states, "In Genesis 3:16, God says to Eve, 'I will greatly increase ... your pains in childbearing.' He does not say 'introduce'; He says 'increase' or 'multiply,' implying that pain already existed" (p. 108). Thus, he argues that since physical pain existed in the pre-Fall world, the Curse did not introduce pain, and by implication, physical death was not introduced then either. According to Ross, the only change the Curse brought about was human spiritual death.

Even in the initial sinless state of the creation, some pain would have been good. Pain prevents a person's losing fingers by fire or by handling searing hot objects. Lepers lose body parts because they lack the normal sense of pain (Brand and Yancey, 1980). A sense of pain can save a person from death. After President McKinley was shot in 1901, he developed internal gangrene, but the absence of pain deluded physicians into believing he was healing almost up to the day of his death (Olcott, 1916, pp. 322–323). Thus the existence of some protective pain in the pre-Fall world is consistent with the absence of physical death at that same time. The presence of pre-Fall pain was like the presence of the Tree of Life (Gen. 2:9; 3:22), "needed even before men fell" (Akers, 1993, p. 62) to prevent ageing. Furthermore, it is entirely possible that pain sensation may not have been as unpleasant before the Fall as after.

Ross (2004) asserts that there was hard physical labor before the Fall, again implying that the Fall introduced only human spiritual death: "Likewise, to Adam, God explains that henceforth he will work *harder* (Genesis 2:15; 3:17–19)" (p. 108). Genesis 3:19 did in

fact introduce a harshness to labor not existing before the Fall, but Ross also erroneously references Genesis 2:15 as indicating man would work harder after the Fall. This verse is about pre-Fall life and says nothing at all about the intensity of his work—hard or easy:

And the Lord God took the man, and put him into the garden of Eden to dress it and keep it.

Finally, Genesis 1:28 also has been used as supposed evidence that the pre-Fall world was physically harsh and cruel, leaving the Curse without effect except spiritually in mankind. This argument centers on the words "subdue" (Hebrew *kabash*) and "dominion" (*radah*). Whether *kabash* signifies constructive or destructive control depends on context. In Micah 7:19, God "subdues" our sins, a compassionate control. This meaning is consistent with the use of *kabash* in Genesis 1:28, even though evil had not entered the world as yet:

And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it; and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.

Likewise, *radah* can have a positive or negative connotation. Leviticus 25:43–46 condemns harsh, cruel dominion, but 1 Kings 4:24–25 says that Solomon's dominion brought peace and safety, a positive connotation consistent with the sinless context of Genesis 1:28. Ironically, those who use Genesis 1:28 to minimize the effects of the Curse by saying that Adam's dominion over nature before the Fall was cruel and harsh, have unintentionally joined ideological forces with radical environmentalists who blame the "Christian" West for the earth's environmental woes (Lewis, 1992, p. 244).

Evidently some pain existed in the pre-Fall world, but there was no evil, and so we cannot infer the presence of physical death back then. Genesis 1:28

and 2:15 do not imply a harsh, cruel pre-Fall world with physical death. The Fall and Curse "introduced ... the inevitability of disease and death" (Schrager, 2004, p. 186).

PCists Equate Digestion of Plants and Bacterial Decay with Death

Ross (2004) claims that before the Fall, "plants or plant parts" and plankton died as other creatures ate them, and that insects and other small invertebrates as well as various one-cell organisms died as they were "stepped on and crushed" by larger creatures or killed by "Snow, hail, rain, heat, wind, and waves" (pp. 98–99). According to Ross (1994), "the mere digestion of food by animals requires death of at least plants or plant parts" (p. 61).

Ross echoed earlier attempts to insert physical death, and therefore geological ages, into Genesis 1. Gap theorist Arthur Custance (1971) wrote:

One might ask ... whether herbivorous animals ate anything during the days or hours of Adam's innocence: and if they did, whether they were careful not to eat any microbes ... that happened to be on the leaves. Or did they not perhaps tread on some and kill them—ants for instance? ... Is it possible indeed for vegetable matter to be sought and eaten at all without the death of some life? Does not the digested leaf die? (pp. 135–136.)

Biblical Hebrew classifies plants apart from animals and humans. Each human and each animal is a *nephesh chayyah*, a "living creature" (Gen. 1:20, 24; 2:7). These were the only creatures God brought to Noah for protection on the Ark (Gen. 6:18–20; 7:7–9, 14–15). Other creatures experience merely a permanent cessation of activity, not death in the sense of animals and humans, and are not said to have died in the Flood (Gen. 7:21–23).

Similarly, individual cells and microorganisms are not “living creatures.” Thus neither programmed “cell death” (apoptosis) nor cell destruction by pathology or decay (necrosis) signifies pre-Fall physical death of animals or humans. Today’s pathogens have harmless variants. The cholera microbe, *Vibrio cholerae*, has a variant causing no illness (Merrell et al., 2002), and harmless flu variants exist (Freemantle, 2005). Viruses, possibly benign initially, become more virulent as they lose information (Wood, 2001). Virulent microbes appear to have resulted from natural selection or by loss of information as conditions on earth changed after the Curse and after the Flood. These processes are not evolutionary because neither generates new information.

Ross (2004) presents examples of biblical passages saying in English that animals are dead or have died (Exod. 17:18–21; 8:13; 10:17; Ps. 105:29; Isa. 50:2), but the Hebrew words for “die,” “died” and “death” in these verses are *mut* and *mawet*, signifying a cessation of activity, not death of a *nephesh chayyah*. Furthermore, these passages refer to the post-Fall world and thus do not signify a pre-Fall presence of physical death.

Ross (2004) claims that plants when harvested or eaten “experience bleeding, bruising, scarring, and death” (p. 102). The implication is that plants also must have experienced physical death before the Fall. But this claim is baseless, for plants “have [no] brain to interpret tissue damage as pain” (Sarfati, 2004, p. 210).

Plants and other organisms outside the biblical “living creatures” group do not die in the sense that animals and people do (Klotz, 1980, p. 203; Van Bebber and Taylor, 1994, pp. 44–45; Berndt, 2003, pp. 85–89). Thus pre-Fall digestion or decay of such does not restrict the Fall to effecting spiritual human death only. Some microbes beneficial in the pre-Fall world evidently became virulent as a result of post-Fall

natural selection and information loss, neither of which is an evolutionary process.

PCists Claim That Carnivores Existed Before the Fall

Pre-Fall carnivorous predation would mean that physical death was inflicted on vertebrates and humans before the Curse of Genesis 3. Accordingly, Ross (2004) has claimed that carnivores existed from “creation day six” because “carnivorous behavior results from the laws of thermodynamics, not from sin” (pp. 100, 101). Although thermodynamic laws probably existed in their present form when the creation was “finished” (Gen. 2:1), there is no thermodynamic requirement even today that certain animals be carnivores. The “laws of nature” are nothing more than the pattern by which the Creator ordains the universe normally to operate; before the Fall these patterns may have been somewhat different than afterward. It is possible “that God withdrew some of His sustaining power at the Fall. He still sustains the universe (Col. 1:17) [but most] of the time He doesn’t sustain it in the way that ... prevented the Israelites’ shoes and clothes from wearing out during the 40 years in the wilderness (Deut. 29:5). But this special case may have been the rule rather than the exception” before the Fall (Sarfati, 2004, pp. 213–214). The burning bush (Exod. 3:2) may have been an additional window into the workings of the pre-Fall world in which fire burned but did not consume.

God created certain animals with the potential for predation on days 5 and 6, but not predation itself (Vorpahl, 1997; Schragin, 2005). The physiological and anatomical changes, if any, involved in the appearance of carnivorous appetites are unclear (Peterson, 1998; Klevberg, 1998). Nevertheless, many animals remain truly herbivorous today, but few

are totally carnivorous and are actually omnivores. Predatory behavior appears to have been superimposed on a more fundamental appetite for herbivorous foods. Wonderly (1977) observes, “Many carnivores even now eat large amounts of such foods. For example, cats eat grasshoppers; bears often eat fruit and honey; and raccoons eat corn, nuts, and other fruits, and even leaves and grasses” (pp. 239–240). Likewise, Rendle-Short (1984) notes, “Many so-called carnivores can easily live on a purely vegetarian diet—the domestic dog or cat for example. Teeth apparently designed to tear prey can also be used to tear tough vegetable fibre” (p. 147).

Genesis 1:29–30 states that the pre-Fall diet included “every green plant,” but no meat was mentioned. This vegetarian diet was supplied by plants “upon the face of all the earth,” so the pre-Fall absence of carnivorous behavior was worldwide, not just in Eden. These points are so obvious that even Ross (2004) admits to a “prohibition on meat consumption” for humans until after the Flood (p. 101). Old-earthier Dan Wonderly (1977) states,

The seemingly ruthless capturing of other mammals, and even of human beings by carnivores appears to be—and perhaps is—contrary to what we believe concerning God’s original creation. So we are quite willing to say that the carnivorous mammals may have begun their ruthless hunting of other animals only after the fall of man. (p. 239.)

Even after the Fall, the permitted diet for man continued to be vegetarian, as in the “bread” that Adam would eat (Gen. 3:17–19). After the Flood meat eating was permitted: “Every moving thing that liveth [*nephesh chayyah*] shall be meat for you” (Genesis 9:3). This verse would be meaningless if man had been allowed to eat meat before the Flood. Before the Flood, however, the earth was “filled with violence” (Gen. 6:13), perhaps signifying that between

the Fall and Flood some animals had become carnivores, and that rebellious humans may have been meat-eaters.

In the present, God allows predation as His provision for some animals and man. Verses such as Psalm 104:21; Job 38:39–41; and Job 39:27–30 reflect only this present provision and yield no insight on pre-Fall conditions. Allegorically, predation is portrayed negatively in Scripture, for example, as judgment on Israel (Hos. 13:8) or as rapacious world powers in Belshazzar's dream in Daniel 7:1–7 (Whitcomb, 1985, pp. 91–93).

In the future the creation will be restored in many ways to its pre-Fall state. If the pre-Fall state were one of predation and death, how would such a "restoration" differ from the present world? But the restored creation will be very different from the present, with no bloodshed in the animal kingdom (Isa. 11:6–9; 65:25), reflecting the lack of predation and carnivorous behavior before the Fall. This is obvious enough that old-earth Norman Geisler stated:

God originally created animals and human beings to be herbivorous. ... God did not appoint animals to be eaten in paradise, and animals weren't eating each other. ... What changed things was the Fall. When God was told, in effect, to shove off, he partially did. ... Ultimately [the damage to paradise] will be remedied (Strobel, 2000, pp. 125–126).

In short, carnivores and predation were nonexistent in the Pre-Fall world, and did not cause physical death back then.

Would a Death-Free, Pre-Fall World Become Hopelessly Overpopulated?

The concerns reflected in this question originate partly from the misconception that the earth today is in the throes of a population explosion. How much more severe would this problem be,

the reasoning runs, in a world without death? But the earth is far from being overpopulated. It could support up to some 50 billion people: "A diet based on 4,000 to 4,500 kilocalories of edible plant material [per day] could be provided for between 38 and 48 billion people" (Revelle, 1974, p. 168), which is about 7 times the current population (Easterbrook, 1999). Most people need far less than 4,500 kilocalories per day, so the earth's ability to support human life has not been pushed near the limit.

There is no population explosion either: "44 percent of the world's people live in countries where the fertility rate has already fallen below the replacement rate, and fertility is falling fast almost everywhere else" (Singer, 1999, p. 24). Population growth rates are falling so fast that the U.N. predicts global population to peak at some 8 to 9 billion in 2050. After that, a precipitous decline will occur, with the result that "unless people's values change greatly, several centuries from now there could be fewer people living in the entire world than live in the United States today" (Singer, 1999, p. 22).

In the present post-Fall world, animal populations are controlled by phenomena commonly involving death, such as predation, infant mortality, cannibalism, and self-destructive mass migrations (Williams et al., 1992). Thus the tendency is to view human population control as an impersonal phenomenon that may also be deadly eventually for increasing numbers of people, especially if man is viewed as an animal in the evolutionary sense. But, man is created in the image of God and so is able to respond to external environmental changes by long-term planning in a way that animals cannot. The Industrial Revolution resulted in plunging infant mortality. Early death from communicable diseases became rare in many parts of the world. This meant that children had a greater chance of living to adulthood, and humanity accordingly planned smaller families. This

has happened in all countries benefiting from modern nutritional, hygienic, and medical advances. Simon (1996) has summarized this trend:

Constant geometric growth does not characterize human population history. Rather, at each stage a major improvement of economic and health conditions has produced a sudden increase in population, which gradually moderated as the major productive advances and concomitant health improvements were assimilated. Then, after the initial surge, the rate of growth slowed down. (p. 315.)

Nevertheless, in a death-free, pre-Fall world, animal and human population would eventually mount. John Calvin (1847) suggested that in such a world people would be translated much like Enoch (Gen. 5:24) was in the post-Fall world:

Truly the first man would have passed to a better life, had he remained upright; but there would have been no separation of the soul from the body, no corruption, no kind of destruction, and, in short, no violent change. (p. 180.)

Had the world remained sinless, God would have foreknown the needs involved in growing population, as surely as He foreknew life's needs in the sinful world. Genesis 3:16 records that after the Fall God told Eve, "I will greatly multiply ... thy conception," signifying that in a sinless world, God may have rendered impossible any overpopulation scenario simply by controlling the conception rate. Even in our post-Fall world, animal growth studies with planaria indicate that nonlethal adjustments in fertility rates occur in the animal kingdom as needed because of environmental conditions (Smith, 1985). Smith (1985) concludes that "animals were designed with the ability to avoid over-exploitation of their habitat without the need for disease, predation, or starvation" (p. 20.)

PCists Believe Science Trumps the Bible

Ross left no doubt about his high regard for science relative to the Bible. This faulty priority is the core difficulty in all PCist claims made to rationalize evolutionary processes. As mentioned earlier, he acknowledged that a recent-creation belief is common, noting, "Nearly half the adults in the United States believe that God created the universe within the last 10,000 years" (Ross, 1994, p. 7; Ross, 2004, pp. 34–35). Without supporting documentation, Ross (1994) then continued as follows: "What reason do they give? 'The Bible says so.'" (p. 7). Before the modern era, this reason would have been sufficient to settle the age issue in the minds of believers, but not according to Ross. He asserted:

The abundant and consistent evidence [of earth's great age] from astronomy, physics, geology, and paleontology must be taken seriously. ... Hundreds of reliable scientific tools demonstrate that the creation (all but modern man) is *old*. (Ross, 1994, pp. 54, 91; italics in the original).

Having concluded that "science" contradicts the obvious meaning of Scripture, Ross attempts to justify his high opinion of "science" by designating the "word of science" as equal to the Word of God: "God's revelation is not limited exclusively to the Bible's words. The facts of nature may be likened to a sixty-seventh book of the Bible. ... One revelation of God's truth cannot be held as inferior or superior to another" (Ross, 1994, p. 57).

He even considers "science" to be another inspired or "God-breathed" book of the Bible in the same sense that Mormons believe the *Book of Mormon* to be another inspired book equal to the Bible (Ross, 1994):

The Bible more than once says God speaks through the creation [he cites Psalm 19:1–4; Psalm 85:11; and Job 12:7–8] ... It would follow from these and other verses that, in

addition to the words of the Bible being 'God-breathed' ... useful for teaching, rebuking, correcting, and training in righteousness' (2 Timothy 3:16), so also are the words of God spoken through the work of His hands. (p. 57.)

More recently Ross (2004) continued this claim, citing Psalm 19 as showing that, in the context of the natural sciences, "the facts of nature constitute a reliable source of information," so that we must look to "science" to know such details as "a particular planet's age" (Ross, 2004, p. 37). Ross confuses general revelation through the creation with inspiration of the Bible's words (Taylor and Van Bebber, 1994, p. 2). Ross' position is erroneous and not biblical. The scriptural position is that general revelation is inferior to the revelation of Christ in Scripture (Strong, 1907; Thiessen, 1949).

In his desire to buttress evolutionary concepts under color of "creation," Ross has taught the erroneous idea that "science"—really evolutionary interpretations of science—is "God-breathed" and is thereby empowered to overturn the biblical teaching on Creation that was commonly accepted until the rise of modern rationalism.

Summary

Despite PCist claims, Genesis 1 is a historical account of supernatural Creation. It is not poetic, allegorical, or figurative. There was no death before the Fall. Continuance of the PCist claim that God used evolution, with its eons of death and destruction, to bring the world into existence is therefore untenable.

PCists also claim that Genesis 1 and 2 are separate Creation accounts, and PCists support a series of false arguments as follows: that Genesis 1 cannot be dated; that radiometric dating is reliable; that the big bang was God's method of creation; that the big bang implies a beginning for the universe;

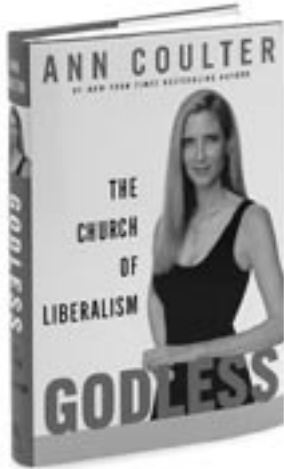
that believers originated the big bang theory but atheists oppose it; that on "day" 4 sun, moon, and stars "appeared" after having evolved earlier; that day 6 of creation had too much activity to be a literal day; that the seven-day week is not a pattern of a literal Creation week; that the long life spans of Genesis are to be reinterpreted as shorter; that the Flood was local; that the ark could not have accommodated all the animals said to board it; that literal six-day Creation detracts from the power and glory of God; that recent-Creation teaching is an offense to the gospel; and that teaching an old-universe leads people to Christ. Future papers are planned to address these and other PC claims.

It has been said that, "evangelicals will fight to the death for the inerrancy of the Scriptures ... *until* they get to Genesis 1–11, and then a double standard takes over, one in which criteria outside the Bible are used to interpret, and worse, to *modify* the Biblical data" (Niessen, 1984, cover). These words apply to PCist claims that exploit extrabiblical concepts, or authorities citing such concepts, to harmonize biblical doctrine with secular origins theories.

References

- CRSQ: *Creation Research Society Quarterly*
- Akers, H. 1993. Tree of life. *CRSQ* 30:62.
- Albright, W.F. 1957. *From the Stone Age to Christianity*. Doubleday Anchor, New York, NY.
- Anderson, A.S. 1992. Magnificent miracle: the virgin conception of Jesus Christ. *CRSQ* 29:89–97.
- Arndt, W.F., and F.W. Gingrich. 1957. *A Greek-English Lexicon of the New Testament and Other Early Christian Literature*. University of Chicago, Chicago, IL.
- Berndt, C. 2003. The pre-Fall mortality of aquatic autotrophs and other designated *nephesh* kinds. *CRSQ* 40:85–89.
- Brand, P., and P. Yancey. 1980. *Fearfully and*

- Wonderfully Made*. Zondervan, Grand Rapids, MI.
- Calvin, J. 1847. *Genesis* (J. King, translator). Banner of Truth Trust, Edinburgh, Scotland. First published 1554.
- Carson, D. 1996. *Exegetical Fallacies*. Baker, Grand Rapids, MI.
- Custance, A.C. 1971. A reply to book review. *CRSQ* 8:135–137.
- Davidheiser, B. 1993. *A Statement Concerning the Ministry of Dr. Hugh Ross*. Logos Publishers, Canoga Park, CA.
- Davis, J.J. 1975. *Paradise to Prison: Studies in Genesis*. Baker Book House, Grand Rapids, MI.
- Easterbrook, G. 1999. Reproductivity: overpopulation is no problem—in the long run. *New Republic*. 221(15):22–28.
- Fischer, D. 2003. Young-earth creationism: a literal mistake. *Perspectives on Science and Christian Faith*. 55:222–231.
- Foerster, W. 1965. Ktiso. In Kittel, Gerhard (editor), *Theological Dictionary of the New Testament* (G.W. Bromiley, translator), 3:1000–1035. Eerdmans, Grand Rapids, MI.
- Freemantle, M. 2005. Keeping one step ahead of the flu. *Chemical and Engineering News*. 83(9):49–56.
- Gibson, J.C.L. 1981. *Genesis*. Westminster Press, Philadelphia, PA.
- Henry, J. 2006. A critique of progressive creationism in the writings of Hugh Ross. *CRSQ* 43:16–24.
- Hodge, C. 1864. *Commentary on the Epistle to the Romans*. Eerdmans, Grand Rapids, MI.
- Kaiser, W.C. 1980. Legitimate hermeneutics. In Geisler, Norman L. (editor), *Inerrancy*, pp. 115–147. Zondervan, Grand Rapids, MI.
- Keil, C.F., and F. Delitzsch. 1949. *Biblical Commentary on the Old Testament*. Vol. 1. (James Martin, translator). Eerdmans, Grand Rapids, MI.
- Klevberg, P. 1998. More comments on “Predators and paradise: one more time.” *CRSQ* 38:49–50.
- Klotz, J.W. 1980. Is the destruction of plants death in the biblical sense? *CRSQ* 16:202–203.
- Kulikovsky, A.S. 2001. A critique of the literary framework view of the days of creation. *CRSQ* 17:237–244.
- Kulikovsky, A.S. 2002. Disappointing discourse. *Creation Ex Nihilo Technical Journal* 16(2):40–41.
- Leupold, H.C. 1949. *Exposition of Genesis*. Baker, Grand Rapids, MI.
- Lewis, M. 1992. *Green Delusions: an Environmental Critique of Radical Environmentalism*. Duke University, Durham, NC.
- Lloyd-Jones, D.M. 1966. *From Fear to Faith*. InterVarsity Press, Downer’s Grove, IL.
- Merrell, D.S., et al. 2002. Host-induced epidemic spread of the cholera bacterium. *Nature* 417:642–644.
- NavPress. 1995. A Statement from NavPress in Response to Criticism of the Books *The Creator and the Cosmos* and *Creation and Time*, by Dr. Hugh Ross. NavPress, Colorado Springs, CO.
- Niessen, R. 1984. Endorsement. In Pilkey, John. *Origin of the Nations*. Master Books, Green Forest, AR.
- Olcott, C.S. 1916. *William McKinley*. Vol. 2. Houghton Mifflin, Boston, MA.
- Oparin, A.I. 1938. *The Origin of Life*. Dover Publications, New York, NY.
- Peterson, E. 1998. Reply to P.V. Vorpahl’s article “Predators and paradise, one more time.” *CRSQ* 35:48–49.
- Pfeiffer, C.F. 1958. *The Book of Genesis*. Baker, Grand Rapids, MI.
- Rendle-Short, J. 1984. *Man: Ape or Image?* Master Books, Green Forest, AR.
- Revelle, R. 1974. Food and population. *Scientific American* 231(9):161–170.
- Ross, H. 1994. *Creation and Time*. NavPress, Colorado Springs, CO.
- Ross, H. 2004. *A Matter of Days*. NavPress, Colorado Springs, CO.
- Sarfati, J. 2004. *Refuting Compromise*. Master Books, Green Forest, AR.
- Schragin, J.G. 2004. Epidemiology and the creation health model. *CRSQ* 41:185–194.
- Schragin, J.G. 2005. The Bible, epidemiology, and edenomics. *CRSQ* 42:115–125.
- Shackleford, D.G., D.M. Fouts, and O.J. Helwig. 1997. How short an evening and morning? *Creation Ex Nihilo Technical Journal* 11(3):301–306.
- Simon, J. 1996. *The Ultimate Resource 2*. Princeton University, Princeton, NJ.
- Singer, M. 1999. Demographics: the population surprise. *Atlantic Monthly* 284(2):22–25.
- Smith, E.N. 1985. Experimental results of crowding on the rate of asexual reproduction of the planarian *Dugesia dorotocephala*. *CRSQ* 22:16–20.
- Strobel, L. 2000. *The Case for Faith*. Zondervan, Grand Rapids, MI.
- Strong, A.H. 1907. *Systematic Theology*. Judson Press, Valley Forge, PA.
- Surburg, R.F. 1959. In the beginning God created. In Zimmerman, P.A. (editor), *Darwin, Evolution, and Creation*, pp. 36–80. Concordia, St. Louis, MO.
- Taylor, P.S., and M. van Bebbler. 1994. *Fact Sheet: Hugh Norman Ross*. Films for Christ, Mesa, AZ.
- Thiessen, H.C. 1949. *Lectures in Systematic Theology*. Eerdmans, Grand Rapids, MI.
- Thompson, B. 2000. *Creation Compromises*. Apologetics Press, Montgomery, AL.
- Van Bebbler, M., and P.S. Taylor. 1994. *Creation and Time*. Eden Communications, Mesa, AZ.
- Vorpahl, P.V. 1997. Predators and paradise, one more time. *CRSQ* 34:84–85.
- Waltke, B.K. 1988. The first seven days. *Christianity Today* 32(11):42–46.
- Whitcomb, J. 1985. *Daniel*. Moody Press, Chicago, IL.
- Williams, E., G.F. Howe, and J.R. Meyer. 1992. Population control without predation. *CRSQ* 28:157–158.
- Wonderly, D. 1977. *God’s Time Records in Ancient Sediments*. Crystal Press, Flint, MI.
- Wood, T.C. 2001. Genome decay in the mycoplasmas. *Institute for Creation Research Impact*. No. 340:a–d.
- Yates, F.A. 1966. *The Art of Memory*. University of Chicago, Chicago, IL.
- Young, E.J. 1964. *Studies in Genesis One*. Presbyterian and Reformed, Nutley, NJ.



Book Review

Godless: The Church of Liberalism

by Ann Coulter

Crown Forum, New York, 2006, 310 pages, \$27.95.

Ann Coulter is a syndicated political commentator who has gained notoriety for her sharp critiques of the intellectual and political liberal establishment. Coulter's thesis is that contemporary liberalism is not simply a political philosophy but is more of a godless religion that tolerates no dissent from its official materialist dogma. Coulter writes, "Liberalism is a comprehensive belief system denying the Christian belief in man's immortal soul. Their religion holds that there is nothing sacred about human consciousness.... They deny what we know about ourselves; that we are moral beings made in God's image" (p. 3).

The early chapters of this book examine topics including radical environmentalism, liberal court decisions that protect criminals to the detriment of the law-abiding majority, abortion, irresponsible and even treasonable dissent, the ineffectiveness of public schools and teachers, the anti-science attitude of modern liberals, and other liberal craziness. Coulter seemingly takes great pleasure in skewing liberal sacred cows with sharp wit and biting sarcasm. For those who agree with her caustic lampooning, the writing style is a delight to read: "Abortion is the sacrament and *Roe v. Wade* is Holy Writ. This is why we have World War III every time there's

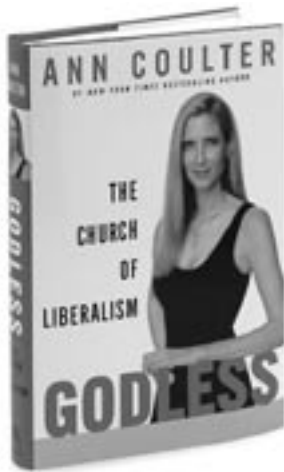
an opening on the Supreme Court" (p. 89). I found myself laughing out loud at her verbal audacity.

Coulter has the temerity to say and write what many conservative Christians might wish they could say. She devotes the last four chapters of the book to the conflict between the liberal scientific establishment aided by their judicial allies with the Intelligent Design (ID) movement. Coulter acknowledges the help of Michael Behe, David Berlinski and William Dembski in preparing these chapters (p. 303). She contends that Darwinian evolutionism is the liberal's sacrosanct "creation myth." She adopts Joseph Sobran's derisive label "Darwinians" for evolution's true believers. She covers DNA evidence (p. 203), the probability arguments of Fred Hoyle and Chandra Wickramasinghe against the origin of life by chance, the fossil record (p. 232), speciation, and the Cambrian Explosion. She also writes of the well known evolutionary frauds including Piltdown man, the peppered moth, and Ernest Haeckel's embryo drawings. She reports on the witch hunting of such Darwin skeptics as William Dembski and Richard Sternberg (himself a Darwinist) by establishment Darwinians and the judicial smothering of even the mildest inclusion of ID thought into the

public school. The social consequences of Darwinian thought do not escape her explosive prose as she elaborates on the influence of evolution on Marx and Hitler: "As Darwinism gained currency, humanity did sink into greater degradation and brutalization than any since-written records of human history began. A generation later, the world would witness the rise of the eugenics movement; Nazi Germany; Stalinist Gulags; and the slaughter of 70 million Chinese at the hands of their exalted chairman" (p. 268).

The 1925 Scopes Monkey Trial is covered with clarity and accuracy. For those familiar with ID and creationary thought Coulter does not bring much that is new to the table, and we don't expect her to. Her strength is that she is perhaps reaching a new audience with ID truth. Her audience is likely to be non-scientific political conservatives, curious liberals with a masochist bent and others who wonder what all the fuss is about. For those conservatives, Christians, and advocates of ID and creation science, this book is a welcome polemical weapon in the arsenal against entrenched Darwinian evolutionism.

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Book Review

Godless: The Church of Liberalism

by Ann Coulter

Crown Forum, New York, 2006, 310 pages, \$27.95.

Ann Coulter is a *New York Times* best-selling author and a frequent guest on Fox News Television. Politically she is a strong conservative and is not hesitant to tell it like it really is. Why should we review her book in the *CRS Quarterly*? It includes four chapters on the creation/evolution controversy and the coverage of this subject is so superb you would think Coulter's background is in biology rather than journalism. She is knowledgeable concerning the arguments put forth by evolutionists, and her responses are accurate and well chosen. As one example, she writes, "The evolutionists attack the idea of design in the universe claiming it is a theory based on what we don't know. The truth is exactly the reverse. The less you know about the physical world, the more plausible Darwinian evolution seems...the more we know about molecules, cells, and DNA, the less plausible Darwin's theory of natural selection becomes" (p 212). Referring to the decision in the Dover, Pennsylvania case, she says, "After Dover, no school district will dare breathe a word about 'intelligent design', unless they want to risk being bankrupted by ACLU lawsuits. They didn't win on

science, persuasion, or the evidence. They won the way liberals always win: by finding a court to hand them everything they want on a silver platter. This isn't science, it's treating doubts about evolution as religious heresy" (p 200).

Coulter's treatment of the creation/evolution controversy is very thorough. She attacks such fallacies as "evolution is no more than change over time"; the efficacy of random mutation and natural selection; the arguments of Richard Dawkins; and the claims that such variations as those of peppered moths and finches constitute examples of evolution. Her coverage of the fossil record is excellent, including the "Cambrian explosion" and the recent finds by Chinese paleontologists. Coulter concludes that there is no evidence in the fossil record for evolution, "only ingenious excuses." Coulter describes the false assumptions involved in Stanley Miller's origin of life experiment (Miller now acknowledges these) which eliminate any plausibility for his experiment, although it is still described in most biology books today. The final chapter of Coulter's book, which begins with the quotation of Romans 1:21–23, is a description of

godlessness that is associated with and is an integral part of Darwinism. Most leading evolutionists are atheists and evolution is taught in our schools as an atheistic theory.

Ann Coulter's book is much more than a discussion of creation and evolution, and you will enjoy the rest of the book as well, but I especially recommend it to those who are interested in this topic. Coulter concludes her book with "God is not our secret Santa. His commands are not whatever we want them to be and the Bible is not a 'living document'...The truth is truth whether we like it or not. While secularists are constantly comparing Christians to Nazis, somehow it's always the godless doing the genocides. By their fruits ye shall know them" (p. 281).

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CRSQ

Charles Darwin's Faulty Scholarship—A Review

Jerry Bergman*

Abstract

Many have suggested that Charles Darwin was one of the greatest scientists in history. However, in reviewing some of Darwin's scholarship, I have identified numerous examples of fraudulent, unethical, and sloppy work. Many more examples of Darwin's faulty research exist, but the few instances cited in this review indicate that the high level of trust still put in Darwin's work is misplaced.

Introduction

Probably no other man in recent history has had such a profound effect on the world as Charles Darwin, the man who produced a theory of evolution as outlined in his *The Origin of Species* (Darwin, 1859). Although Darwin was a prolific writer, a number of researchers have concluded that much of his research on *Origins* was superficial. As a result he arrived at many incorrect conclusions.

E. Lucas Bridges, an author and missionary to Tierra del Fuego, concluded from his firsthand experiences and interviews with the Tierra del Fuego (or Yagan) natives that Darwin naively and uncritically accepted many of their verbal statements (see Bergman, in press). For example, Darwin uncritically accepted the statements by the Fuegians—without investigating the claim—that they were cannibals, a conclusion about which Darwin said he was “certain” (Bridges, 1948, p. 33). He specifically concluded that the different

Tierra del Fuego tribes “when at war are cannibals.” Darwin also presumed on the basis of concurrent “but quite independent evidence of the boy taken by Mr. Low, and of Jemmy Button ... that when pressed in winter by hunger, they kill and devour their old women before they kill their dogs” (Darwin, 1896a, p. 214). Darwin related that his informants killed their victims by holding them over smoke to choke them. He wrote that his informant had mockingly imitated the screams of their victims and then

described the parts of their bodies which are considered best to eat. Horrid as such a death by the hands of their friends and relatives must be, the fears of the old women, when hunger begins to press, are more painful to think of; we were told that they then often run away into the mountains, but that they are pursued by the men and brought back to the slaughter-house at their own firesides. (Darwin, 1896a, p. 214.)

Darwin accepted these accounts as true without investigating them, concluding that the Fuegian way of life resulted in frequent famine, and “as a consequence, cannibalism accompanied by parricide” resulted (Darwin, 1839, p. 236). He then used these conclusions in developing his views on race, which were used to support the racism that developed later in areas such as Nazi Germany (Bergman, 1999; Weikert, 2004). Darwin's conclusions about the Fuegians supported the racism already common in Europe: “In their native habitat, the Fuegians seemed to epitomize the Europeans' image of the brutal and degraded savage” (Bowler, 1990, p. 58).

Darwin's Questionable Claims about Fuegian Cannibalism

Many scholars have repeated Darwin's account of Fuegian cannibalism, adding material from other sources, and even concluding that “frequent and inevitable questions on cannibalism” arose in connection with the Fuegians. An example of the “facts” that were used as support for the cannibalism claim includes:

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Mr. Low, a sealer who came aboard the *Beagle* in Tierra del Fuego, told them that when hunger set in during the winter months, the Indians would kill the old women of their tribe and eat them. He had interviewed a Fuegian boy who had said that the women were suffocated in the smoke of a campfire. When asked why they did not eat their dogs, the boy had replied, "Doggies catch otters, old women good for nothing: man very hungry." As a joke the boy had imitated the sounds of a woman screaming. Jemmy had confirmed the truth of this story, and an appalled Darwin ... [recorded it in his notes]. (Hazlewood, 2001, p. 114.)

Hazlewood's investigation of the relevant historical documents led him to conclude that there were serious problems with Darwin's account. He notes that the three Fuegians Darwin interviewed were

uncomfortable talking about the subject, and when they did there were inconsistencies in their stories: they would not eat vultures because the birds might have fed on a human; they would not dump their dead in the sea because they might be eaten by fish, which might in turn be eaten by them. When cannibalism was talked about, Jemmy would refer to his people with shame and deny that he had ever eaten a human. He would prefer, he claimed, to 'eat his own hands' (Hazlewood, 2001, pp. 114–115.)

According to Hazlewood, the Fuegians were, in fact, averse to eating humans. Keynes (2003) noted that the practice of *tobacana*, a form of "kindly" euthanasia, could have produced a "misleading" conclusion that "gave rise to the mistaken notion that cannibalism was sometimes practiced in Tierra del Fuego" (p. 214).

Bridges was a missionary who lived among the Fuegian people for some time and knew them very well. He ex-

plained that when Darwin first arrived in Tierra del Fuego, the natives had a very limited knowledge of the English language. As a result, they could not explain very much in English, and it was far easier for them to simply answer "yes" to many questions. Consequently, "the statements with which these young men ... have been credited were, in fact, no more than agreement with suggestions made by their questioners" (Bridges, 1948, p. 33). While this fact alone does not disprove Darwin's claim that the Fuegians were cannibals, it casts clear doubt on the idea. Bridges continued by noting that it is not hard to

imagine their reactions when asked what was, to them, a ridiculous question, such as: "Do you kill and eat men?" They would at first be puzzled, but when the inquiry was repeated and they grasped its meaning and realized the answer that was expected they would naturally agree. The interrogator would follow this with: "What people do you eat?" No answer. "Do you eat bad people?" "Yes." "When there are no bad people, what then?" No answer. "Do you eat your old women?" "Yes."

Once this game was started and their knowledge of English increased, these irresponsible youngsters, encouraged by having their evidence so readily accepted and noted down as fact, would naturally start inventing on their own. We are told that they described, with much detail, how the Fuegians ate their enemies killed in battle and, when there were no such victims, devoured their old women. When asked if they ate dogs when hungry, they said they did not, as dogs were useful for catching otter, whereas the old women were of no use at all. The unfortunates, they said, were held in the thick smoke till they choked to death. The meat, they stated, was very good ... This delectable fiction once firmly established, any

subsequent attempt at denial would not have been believed, but would have been attributed to a growing unwillingness to confess the horrors in which they had formerly indulged. Accordingly, these young story-tellers allowed their imaginations full rein and vied with each other in the recounting of still more fantastic tales, emboldened by the admiration of the other two. (Bridges, 1948, p. 33.)

Bridges' information casts considerable doubt on the idea that Fuegians practiced cannibalism. However, the Fuegian cannibalism story is still promoted by Darwinists. For example, a genetics professor at University College, London, recently related Darwin's cannibalism statements as if they were valid (Jones, 2000, p. 26).

Accusations of Forgery

In the 1870s photographs were "understood to be a standard of truth in a wide variety of applications, from the popular to the scientific and documentary" (Prodger, 1998a, p. 143). Illustrations were considered more objective than drawings and paintings. Consequently, they were taken as very convincing support for a theory. In November of 1872, Darwin published his book *The Expression of the Emotions in Man and Animals* to prove that human emotions, and thus humans themselves, evolved from some lower animal type (Prodger, 1998a, p. 149). In this book, Darwin used photographs that have now become famous for several reasons. While Darwin's work was one of the first scientific books to use photographs (giving it a unique type of authority for that time period), it is also now acknowledged "that some of the photographs ... were doctored" (Judson, 2004, p. 49). This doctoring of photographs is often ignored in modern accounts of Darwin's work. One probable reason for ignoring this problem is that "strong is the compulsion to save the great men, to protect their reputation

and [the reputation] of science herself” (Judson, 2004, p. 49, bracketed words added). Had such activity been discovered in the research of Darwin’s critics, however, they no doubt would not have been treated as gently.

Photographs in Darwin’s book were of people’s facial expression in showing what he considered genetically based “elemental and universal emotions,” found in both man and beast. These facial expressions included grief, joy, anger, disgust, surprise, contempt, fear, horror, and shame (Prodger, 1998a, p. 62). To prove humans have a common ancestry with animals, Darwin wanted to demonstrate that the same emotional states were common, not only in human groups worldwide, but also in animals as well.

This view contradicted the beliefs of most Europeans at the time. Sir Charles Bell argued that there existed muscles in the human face that were without analog in the lower animals. He believed that these muscles were designed to display unique human emotions and were both evidence of a Creator and evidence against common descent. Darwin specifically attempted to disprove the conclusions of Bell and others that human expression reflects the design of a divine being, and to prove that the origin of these expressions lies in evolution (Prodger, 1998a). Darwin further tried to prove that the key to understanding human emotions was to understand these emotions as vestigial or residual habits inherited from our evolutionary ancestors. He used photographs of humans expressing emotions as proof of his theory:

The photographs he selected for inclusion in *The Expression* were designed to interest and engage his readers, even at the expense of scientific objectivity. Consideration of the photographic illustrations in *The Expression* demonstrates that Darwin had the capacity to act as a shrewd strategist. (Prodger, 1998a, p. 146.)

Although Darwin admitted that some of the photographs were posed and others were modified, Paul Ekman, a social psychologist and Darwinist at the University of California at San Francisco, “found from the Darwin archives and correspondence that the alterations were more extensive than had been known” (Judson, 2004, p. 62). Furthermore, instead of photographing natural expressions elicited in normal human situations, many of the photographs, which it was implied or openly claimed were typical humans responding to real situations, were actually posed. Thus, Darwin went far beyond simply retouching them (although concealing the act of retouching clearly crosses scientific ethical boundaries).

Judson related that Darwin used several photographs by London photographer Oscar Rejlander because Rejlander “proved especially skillful at securing the expressions Darwin wanted” (2004, p. 63). Rejlander also had, at times, “posed for his own camera” (p. 63). Prodger determined that one picture of Rejlander’s wife (See Figure 1) was



Figure 1. Photograph purporting to be a “sneer,” but was intentionally posed. The photograph was taken from the 1872 edition of Darwin’s *Expression of the Emotions of Man and Animals*, p. 251.

artificially produced for Darwin in order to illustrate “a most convincing sneer” (Judson, 2004, p. 63).

Rejlander is most often identified with the “composite printing” technique (today called “trick photography”) in which several negatives are

combined to create a photographic print with elements of several pictures. As a result Rejlander was able to manipulate his images, and produce convincing photorealistic images that were actually artificially assembled in the darkroom. (Prodger, 1998a, p. 170.)

Rejlander put his skills in trick photography to use helping Darwin prove his thesis. The first, and most celebrated, photograph in Darwin’s *The Expression* is of a weeping baby who actually turned out to be a drawing that Rejlander changed to make it look like a photograph (Judson, 2004). This photograph, titled “mental distress” (Darwin, 1979, p. 149), was a photographic copy of a drawing made from an original photograph (Prodger, 1998a). This allowed Rejlander to “highlight elements of the image Darwin sought to express ... the child’s hair, cheeks, and brow ... seem slightly more lively and energetic in the drawn version” (Prodger, 1998a, p. 173). A major change was that the child was put into an unnaturally small chair by means of trick photography (see Figure 2), making the child look “larger-than-life” (Prodger, 1998a, p. 174). The goal was to create an “illustration that would have seemed persuasive to Darwin’s readers” (Prodger, 1998a, p. 174).

Darwin nowhere mentioned in his writings that this photograph was actually a drawn and altered copy of a photograph that was “changed substantially from the photographic original” (Prodger, 1998a, p. 175). Ironically, T.H. Huxley (called *Darwin’s Bulldog* because of his major role as an apologist of Darwin) was one of the main critics of Darwin’s photograph manipulations (Prodger, 1998a, p. 177).



Figure 2. A “fake” photograph of an infant girl in a chair. The child was made to look much larger than life by using trick photography to put her in an unnaturally small chair for her size. See text for details. The photograph was taken from the 1872 edition of Darwin’s *Expression of the Emotions of Man and Animals*, p. 148.



Figure 3. Photograph from the 1872 edition of Darwin’s *Expression of the Emotions of Man and Animals* (p. 300). A careful inspection of the photograph reveals that electrodes on a mental patient were used to produce the “natural” expression of horror and agony.

It was also discovered that Darwin used eight photographs by Professor Duchenne, a Paris physiologist who actually used electrodes to stimulate groups of facial muscles in patients. Duchenne published a book that contained photographs of patients who were forced to endure such barbaric treatments (see Figure 3 for example). The patients included those diagnosed with epilepsy, spastic disorders, palsy, paralysis, and multiple sclerosis (Prodger, 1998a). From another set of more than 40 photographs of mental patients, Darwin selected a woman diagnosed as insane to use as an example of a normal expression (Prodger, 1998a).

There is a considerable difference between using electrodes to force facial expressions and capturing the results of genuine emotions in natural facial expressions. Likewise, substantial dissimilarity exists between artificial facial contortions touched up by an artist and capturing people on film in the natural act of expressing joy, disgust, or the many other human emotions. The purpose of using photography was to study facial expressions “without relying on the expertise of visual artists” (Prodger, 1998a, p. 141), and presumably their subjectivity as well. From the start, the camera “emerged as an authoritative source of information” to demonstrate scientific theory and concepts.

To obtain scientifically meaningful photographs, it should first be determined that the person in the photograph actually manifested joy, and only then should photographs of his or her facial expression be used to represent that emotion. To artificially produce what an observer *thinks* is a sneer is quite different from evaluating the results of expressing this genuine emotion as confirmed by the subject. This is critical because “Darwin believed that the objectivity of photographic evidence could be used to challenge” existing ideas about the expression of emotion, thus proving his theory of inheritance of emotional ex-

pressions from lower animals (Prodger, 1998a, p. 141).

In one engraved plate, Darwin (1896a, p. 306) used extensive cropping that removed a “substantial portion of the original image” (Prodger, 1998a, p. 166). In this case Darwin instructed the engraver to remove the hands of the experimenter and the electrodes that were used to stimulate the facial muscles of the subject (Prodger, 1998a). The altered picture is reproduced in Figure 4. Prodger (1998a) concluded that Darwin’s changes in the pictures were required because the original

photographs were too honest, in that they recorded the actual situation of the sitter in his laboratory environment. To engage his readers, Darwin cultivated an appearance of objectivity that actually misrepresented experimental events (p. 179).



Figure 4. A drawing from the photograph in Figure 3. The caption in the 1872 edition of Darwin’s *Expression of the Emotions of Man and Animals* says, “Fig. 21 Horror and Agony. Copied from a photograph by Dr. Duchenne.” Note that the electrodes shown on the subject in Figure 3 are not shown on this etching. The etching is from the 1872 edition of Darwin’s *Expression of the Emotions of Man and Animals*, p. 306.

Darwinists have actually tried to justify what they call the compromises that Darwin made in preparing his illustrations. As Prodger admitted, though, much of the criticism against Darwin is justified by contemporary standards. Some even argued, in an attempt to justify Darwin, that “the rules about photographic objectivity did not exist then, partially because photographers frequently manipulated their work to enhance its visual appeal and clarity” (Prodger, 1998a, p. 174). These arguments are an invalid defense, however, because what Darwin was not striving for visual appeal or clarity, such as is done for an art show, but photographic evidence that purported to represent internal emotions accurately to support evolutionism.

The fact is, “far from scientifically factual, these photographs formed part of a narrative strategy designed to advance his theoretical concerns” (Judson, 2004, p. 141). In other words, Darwin used fraud to try to prove his evolution theory. And as Haeckel’s drawings, although “so widely known, [and] so influential, were faked” (Judson, 2004, p. 83) so, too, were Darwin’s photographs; and Darwin’s forgeries were no less blatant than Haeckel’s. As is also true with Haeckel’s drawings, Darwin’s “photographic illustrations were carefully contrived to present evidence Darwin considered important to his work.... He knew that photography ... [was] powerfully persuasive” (Prodger, 1998a, p. 144).

Although the technology did not exist in 1896 to produce ideal photographs, Darwin was clearly amiss in not providing exact details how his photographs were done. It is inexcusable to use photographs that were “contrived” and then offered as accurate representations of research on emotions. It is also of note that Darwin claimed he arrived at his three principle conclusions only at the close of his observations on facial expression in 1896, yet Ekman found that all three

principles are in his notebooks written in 1838–1839 (Darwin, 1998).

Current Research on Human Emotional Expression

Some of Darwin’s obvious observations about the expression of emotions have proven correct. For example, he accurately showed that, although culture was influential, many basic emotional expressions were universal among humans. Much of the research on facial expressions, however, does not support Darwin’s basic conclusion that virtually all human facial expressions are inherited in a Lamarckian fashion and are similar to many primates (for examples see Ekman, 1973). In addition, we now know some of his other basic conclusions “are completely wrong” (Darwin, 1998; Rosenstein and Oster, 1997; Lenoir, 1998).

In support of the evolutionary role of expressive behavior, Darwin concluded that the major expressions in animals, including humans “are not learned but are present from the earliest days and throughout life are quite beyond our control” (1979, p. 352). Current researchers have found that the empirical evidence does not support Darwin’s general position; rather social factors have a critical influence on the

non-verbal expression of emotional states both with and without purposeful or voluntary intent. There appear to be cultural conventions concerning stereotypic displays of pain that enable people to enact them with ease. Facial displays of many subjective states are subject to the influence of “display rules” that are internalized in the course of socialization. (Craig, et al., 1997, pp. 162–163.)

Craig et al. (1997) also reported that his research found that the ingestion of sour, salty, and bitter solutions caused “negative facial expression components

in all three regions of the face” (p. 163). In contrast to Darwin’s conclusions, though, their injection did not result in the widely open, ‘squalish’ mouth facial expression that Darwin claimed were characteristic of the “cry face” (Craig et al., 1997, p. 163).

Darwin was also guilty of anthropomorphism, even claiming that monkeys express vexation, jealousy, grief, sadness, disgust, anger, pleasure, and other clear human emotions. Although animals may experience certain emotions, it is often difficult, if not impossible, for humans to scientifically determine what specific emotions an animal is feeling (Darwin, 1998). Pet owners and farmers know that dramatic differences exist in animal and human expressions. Except to frighten enemies, most animals other than certain primates are largely expressionless. Furthermore, some of Darwin’s examples appear open to many other interpretations (for example, see Ekman, 2003, p. 3). Darwin also relied heavily on anecdotal accounts by others rather than gathering empirical data himself. As a result, in his introduction to Darwin’s Third Edition of *Expression of the Emotions in Man and Animals*, Ekman concluded that Darwin “often dealt with faulty data” (Darwin, 1998, p. xxxii). In conclusion, as stated in the introduction to the St. Martin’s edition of Darwin’s *Expression*, “some of his conclusions are probably correct, others almost certainly incorrect” (Rachman, 1979, p. ii).

Claims about Ancon Sheep

The first person known to use the Ancon sheep as evidence for macroevolution was Charles Darwin. He discussed them at least three times in his published books. In *The Origin of Species* (1859), Darwin speculated that animal variations could have “arisen suddenly, or by one step” in a single generation. An example that he used to support his rapid “one step” macroevolution is known

“to have been the case with the Ancon sheep” (1859, p. 30). This conclusion was left unchanged in all six editions of Darwin’s famous book.

In another work, Darwin (1896b) concluded that whole new breeds could have originated suddenly by evolution, and he gave the example of “a ram-lamb” born in Massachusetts that had “short crooked legs and a long back, like a turnspit-dog” (p. 104). Darwin then claimed that from this lamb “the *otter* or *ancon* semi-monstrous breed” was produced (Darwin, 1896b, p. 104). He concluded that these

sheep are remarkable from transmitting their character so truly that Colonel Humphreys never heard of ‘but one questionable case’ of an ancon ram and ewe not producing ancon offspring. When they are crossed with other breeds the offspring, with rare exceptions, instead of being intermediate in character, perfectly resemble either parent. (Darwin, 1896b, p. 104.)

According to Hull (1999) after a long discussion of artificial selection and “sports” such as Ancon sheep, Darwin reasoned that “if breeders could do so much with so little, one can only imagine how powerful natural selection must be” (p. 1). This example discussed by Darwin has been cited by evolutionists ever since, partly because it perfectly fit the expectations of many evolutionists. Moody (1953, p. 306) called it “the appearance of a new, inheritable characteristic.” Schwartz and Vogel (1994) concluded that the “Ancon sheep are important to the history of biology because Charles Darwin used them to support his argument that animals inherit parental traits without blending” (p. 764).

The Ancon sheep soon became a classic example of evolution by mutations and was important data relating to the origin of species (Bayles and Burnett, 1946). Thomas Huxley proclaimed that the Ancon sheep were one of the

best-known examples of “evolution by selection” (Huxley, 1915, p. 264). This example of “rapid evolution” soon became an icon of evolution, repeated for decades in hundreds of textbooks and references. This new sheep “breed,” however, is now known to be nothing more than a mutation that causes a lethal disease known as achondroplasia (Bergman, 2003).

Julia Pastrana

A final example of Darwin’s faulty research was the case of Julia Pastrana, a so-called ape woman who was offered by many early Darwinists as evidence of a living transitional form. In his discussion of her, Darwin incorrectly claimed she had four rows of teeth. Gylseth and Toverud (2003) commented that what Darwin had written about Julia’s character may have been correct. About her anatomy, however,

scientifically he was wrong because, if anyone had bothered to ask her, she could have immediately responded that she certainly did not have any extra rows of teeth in her mouth (though she did have gum problems) ... Real people don’t have four rows of teeth. (Gylseth and Toverud, 2003, p. 39.)

An English dentist examined the casts of Julia’s jaws described by Darwin and concluded, in contrast to Darwin’s claim, that she in fact had

a few unusually large teeth projecting from greatly thickened and irregular alveolar processes ... [but] she *did not* possess an excessive number of teeth in double rows ... the overgrowth of her gum and alveolar process was responsible for her prognathism and what is described as simian appearance. (Gylseth and Toverud, 2003, p. 40, emphasis added.)

Gylseth and Toverud (2003) also noted that “Darwin was likewise wrong in stating that Dr. Purland made the casts: it was actually a dentist by the name of

Weiss” (p. 40). His mistakes about who made the dental cast and the true nature of Julia’s teeth are illustrative of Darwin’s tendency for making many any such minor mistakes. If a creationist had made these mistakes, evolutionists would have mercilessly condemned him.

Research on Darwin’s Many Errors

Darwin himself, in his *The Origin of Species* book, made thousands of changes to correct errors and improve the accuracy of this book in later editions. One study found that the number of revisions Darwin carried out was so great in his six editions that it is impossible to comprehend without a variorum text (a variorum text contains variant readings of different editions of a text so that they can be compared to determine changes). The study noted that of

the 3,878 sentences in the first edition, nearly 3,000, about 75 per cent, were rewritten from one to five times each. Over 1,500 sentences were added, and of the original sentences plus these, nearly 325 were dropped. Of the original and added sentences there are nearly 7,500 variants of all kinds. In terms of net added sentences, the sixth edition is nearly a third again as long as the first. (Peckham, 1959, p. 9.)

Most authors rewrite their materials to improve clarity (handled more effectively now with computers), but many of Darwin’s changes involved actual errors. Barrett et al. (1987, pp. 1136–1137), listed 70 “errors” in the text of Darwin’s *The Descent of Man*, and Darwin himself listed 25 errors (p. 1135). An example is found on page 68 of *The Origin of Species* where Darwin claimed that no rhinoceroses are destroyed by beasts of prey. However, as Galton pointed out, “it is rare to find a Rhinoceros” that has *not* been attacked by “beasts of prey” (see Darwin, 1991, pp. 417, 427).

Some of his other major conclusions

also turned out to be wrong, such as his prediction that the “Negro races” would go extinct and that men were more highly evolved than women (Bergman, 2002). Among the many other examples of Darwin’s flawed research, probably the most serious were his acceptance of the inheritance of acquired characteristics theory (Lamarckian Genetics) and his pangenesis idea, the view that evolution occurs by cells sending information to the gametes, which changes the next generation. Darwin’s many erroneous conclusions need to be studied further to determine how generalized the examples cited here are. Simonton (1999) adds that

Darwin himself illustrates what can be dug up with only a little effort. For many Darwinists, he appears to represent the model scientist, the bona fide perfectionist ... But if we delve carefully into his lifetime output, this idealized portrait begins to reveal many blemishes. He was capable of publishing erroneous interpretations and even silly conjectures. An early paper provided such a completely mistaken explanation for a particular geological formation that it came to cause Darwin considerable embarrassment. Later, despite his extremely detailed work on the cirripedes, he was forced to admit that he had “blundered dreadfully about the cement glands.” (p. 157.)

When the *The Origin of Species* manuscript was completed, it was sent to Dr. and Mrs. Hooker to proofread. Mrs. Hooker found parts of it so obscure that Darwin trembled, and “vowed to clarify his ideas in the proofs” (Peckham, 1959, p. 15). Darwin was to continue these clarification efforts through six more editions and for 12 more years (Peckham, 1959). Even Darwin, when he finally saw the first edition of *The Origin of Species* in print, found the style “incredibly bad” and made so many corrections that he wrote to his publisher, John Murray, and offered to pay a major part of the cost

of making the many corrections needed (Peckham, 1959, p. 15). By “June 21st he had corrected only 130 pages, and by the next day only 20 more” (Peckham, 1959, p. 15). The many corrections were a “long and dreary struggle.” The endless corrections, the despairing efforts to achieve clarity, the knowledge of what was involved “the last minute changes of fact and interpretation—all these had worn him out” (Peckham, 1959, p. 15).

The problem of errors was so great that the sixth edition of *The Origin* had to be completely retypeset and, as a result, “a good many typographical errors were introduced which Darwin failed to catch” (Peckham, 1959, p. 23). By 1878, six years after the sixth edition was completed, all the typographical errors were finally corrected and this edition is now considered Darwin’s “final text” (Peckham, 1959, p. 24).

Darwin admitted that he had “much difficulty” in expressing himself “clearly and concisely,” which caused him to lose much time but forced him to “think long and intently about every sentence” (Darwin, 1958, pp. 136–137). Furthermore, Darwin admitted that his “power to follow a long and purely abstract train of thought is very limited” and that his memory was so poor that he has “never been able to remember for more than a few days a single date or a line of poetry” (Darwin, 1958, p. 140). In and of themselves these admissions show a spirit of honesty and humility on Darwin’s part. Nonetheless, as a result of these self-admitted shortcomings, there is a strong likelihood that numerous errors may have been introduced and continue to persist in his writings.

Other changes he made include excising “much theological language” from later editions of the *Origin* (Peckham, 1959, p. 10). A few historians allege that part of Darwin’s concern was that he was fully aware his work would cause controversy because the direct intervention of God in creation was “for

most Victorians, even scientists, the only possible explanation for ‘the origin of all animal forms.’ This fantasy was precisely the last stronghold of British Natural Theology” (Peckham, 1959, p. 14). Most likely Darwin knew that his evolution theory would undermine this belief in God’s intervention during creation, the last possible reason to believe in natural theology—and in God.

Darwin also evidently became less confident about his theory as he aged, and this was reflected in his books. Jones stated that “in his old age, faced with a wave of inconvenient discoveries, Darwin began to complicate his ideas” to deal with the “inconvenient discoveries” that argued against his theory (Jones, 2000, p. xxv). Jones notes that “in 1859 Darwin was more confident” about his theory. At that time, Darwin (1859) wrote “I can see no difficulty in a race of bears being rendered, by natural selection, more and more aquatic in their structure and habits, with larger and larger mouths, till a creature was produced as monstrous as a whale” (p. 184). In the sixth edition, Darwin’s “swimming bear ... conceals itself with irony” (Jones, 2000, p. xxv). Hedtke (1983) even concludes from his study that Darwin acknowledged the fatal weaknesses of his theory in the sixth edition of *The Origin*, published in 1872.

Conclusions

Darwin is often regarded as one of the most highly esteemed scientists who ever lived (Simonton, 1999). Yet, a balanced view of his work requires an evaluation of his scholarly shortcomings. These few examples of the many Darwinian errors that exist illustrate the fact that many of his conclusions were based on faulty data, thus were incorrect. His research was often very superficial and strongly biased toward his thesis. In the case of the Fuego Indians he was also very gullible in relying on informants who were, for several reasons, not only inaccurate,

but wrong. It is quite true that much of what is presently known in the life sciences was not known when Darwin wrote his major works. However, this does not excuse his incomplete, misleading, and erroneous conclusions reviewed in this paper. An excellent summation of Darwin's many mistakes by Simonton (1999) concluded that his mistakes have been forgotten or forgiven. For example, Darwin's erroneous

geological paper on Glen Roy is politely ignored by geologists, and his work on the barnacles has been superseded by more accurate monographs. Darwin's theory of pangenesis has been reduced to a tiny footnote in the history of evolutionary theory. What remains in posterity's eyes is a sanitized Darwin whose career seems quite un-Darwinian—no variation and selection, no trial and error, no hits and misses. Yet I hope that this misperception will eventually enter the historical record as just another false idea that did not survive cultural selection. This unjustified glorification of genius must be buried and fossilized along with the dinosaurs. (p. 157.)

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References

- Barrett, P.H., D.J. Weinshank, P. Ruhlen, and S.J. Ozminski (editors). 1987. *A Concordance to Darwin's the Descent of Man, and Selection in Relation to Sex*. Cornell University Press, Ithaca, NY.
- Bayles, E.E., and R.W. Burnett. 1946. *Biology for Better Living*. Silver Burdett, New York, NY.
- Bergman, J. 1999. Darwinism and the Nazi race holocaust. *Creation ex Nihilo Technical Journal*. 13:101–111.
- Bergman, J. 2002. The history of the human female inferiority: ideas in evolutionary biology. *Biology Forum* 95:379–412.
- Bergman, J. 2003. The Ancon sheep: just another loss mutation. *Creation ex Nihilo Technical Journal* 17:18–19.
- Bergman, J. Was Charles Darwin a racist? *Creation Research Society Quarterly* (in press).
- Bowler, P. 1990. *Charles Darwin; the Man and His Influence*. Blackwell, Cambridge, MA.
- Bridges, E.L. 1948. *Uttermost Parts of the Earth*. Hodder and Stoughton, London, UK.
- Craig, K.D., S.A. Hyde, and C.J. Patrick. 1997. Genuine, suppressed, and faked facial behavior during exacerbation of chronic low back pain. In Ekman, P., and E. Rosenberg (editors), *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS)*, pp. 161–177. Oxford University Press, New York, NY.
- Darwin, C. 1839. *Journal of Researches into the Natural History and Geology of the Counties Visited during the Voyage of the H.M.S. Beagle*. New Edition. D. Appleton Publishing, New York, NY.
- Darwin, C. 1859. *The Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life*. John Murray, London, UK.
- Darwin, C. 1872a. *The Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life* (6th edition). D. Appleton Publishing, New York, NY.
- Darwin, C. 1872b. *The Expression of Emotions in Man and Animals*. John Murray, London, UK.
- Darwin, C. 1896a. *The Expression of Emotions in Man and Animals: The Works of Charles Darwin*. Vol. 10. AMS Press, New York, NY.
- Darwin, C. 1896b. *The Variation of Animals and Plants under Domestication*. D. Appleton Publishing, New York, NY.
- Darwin, C. 1958. *The Autobiography of Charles Darwin*. (Edited by Nora Barlow.) Norton Publishing, New York, NY.
- Darwin, C. 1979. *The Expression of Emotions in Man and Animals*. Julian Friedmann Publishers, London, UK. Introduction by Professor S.J. Rachman. A reprint of the 1872 edition.
- Darwin, C. 1991. *The Correspondence of Charles Darwin Volume 7 1858–1859. Supplement to the Correspondence 1821–1857*. Cambridge University Press, New York, NY.
- Darwin, C. 1998. *Expression of the Emotions in Man and Animals* (3rd Edition). Oxford University Press, New York, NY. (Introduction by P. Ekman, and Appendix by P. Prodger.)
- Ekman, P. (editor). 1973. Darwin and facial expression: a century of research in review. Academic Press, New York, NY.
- Ekman, P. 2003. Introduction to emotions inside out: 130 years after Darwin's the expression of the emotions in man and animals. In Ekman, P., J.J. Campos, R.J. Davidson, and F.B.M. de Waal (editors). *Annals of the New York Academy of Sciences* 1000:1–6.
- Ekman, P., and E. Rosenberg. 1997. *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS)*. Oxford University Press, New York, NY.
- Gylseth, C.H., and L.O. Toverud. 2003. *Julia Pastrana: The Tragic Story of the Victorian Ape Woman*. Sutton Press, Gloucestershire, UK.
- Hazlewood, N. 2001. *Savage: the Life and Times of Jemmy Button*. Thomas Dunne Books/St. Martin's Press, New York, NY.
- Hedtke, R. 1983. *The Secret of the Sixth Edition*. Vantage Press, New York, NY.
- Hull, D.L. 1999. Strategies in meme theory: a commentary on Rose's paper: controversies in meme theory. *Journal of Memetics: Evolutionary Models of Information Transmission* 3:1:1–23.
- Huxley, T. 1915. *Lay Sermons, Addresses,*

- and Reviews. D. Appleton Publishing, New York, NY.
- Jones, S. 2000. *Darwin's Ghost: the Origin of Species Updated*. Random House, New York, NY.
- Judson, H.F. 2004. *The Great Betrayal: Fraud in Science*. Harcourt, Orlando, FL.
- Keynes, R. 2003. *Fossils, Finches and Fuegians: Charles Darwin's Adventures and Discoveries on the Beagle, 1832–1836*. Harper Collins, London, UK.
- Lenoir, T. (editor). 1998. *Inscribing Science: Scientific Texts and the Materiality of Communication*. Stanford University Press, Stanford, CA.
- Moody, P.A. 1953. *Introduction to Evolution*. Harper, New York, NY.
- Peckham, M. (editor). 1959. *The Origin of Species by Charles Darwin: A Variorum Text*. University of Pennsylvania Press, Philadelphia, PA.
- Prodger, P. 1998. *An Annotated Catalogue of the Illustrations of Human and Animal Expression from the Collection of Charles Darwin: An Early Case of the Use of Photography in Scientific Research*. Edwin Mellen Press, Lewiston, NY.
- Rosenstein, D., and H. Oster. 1997. Different facial responses to four basic tests in newborns. In Ekman, P., and Rosenberg, E. (editors), *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS)*, pp. 302–319. Oxford University Press, New York, NY.
- Schwartz, K., and J. Vogel. 1994. Unraveling the yarn of the Ancon sheep. *Bioscience* 44:764–768.
- Simonton, D.K. 1999. *Origins of Genius: Darwinian Perspectives on Creativity*. Oxford University Press, New York, NY.
- Weikart, R. 2004. *From Darwin to Hitler: Evolutionary Ethics, Eugenics, and Racism in Germany*. Palgrave Macmillan, New York, NY.



Book Review

Secrets of the Ica Stones and Nazca Lines

by Dennis Swift

Self Published, 2006, 144 pages, \$11.00.

[Book review editor's note: The assertions in this book need further documentation. However, the Ica topic is of sufficient interest to merit review.]

Recently I posed this question to a leading creation science spokesman: "Why do you think that some within the creation science community aren't willing or interested in using artifacts like the Paluxy tracks and the Ica Stones?" His response was twofold. He mentioned that this evidence seems almost "too good" to be true. He also explained

that these artifacts go straight to the jugular of the evolutionary, deep time paradigm. Consequently evolutionists do everything they can to discredit this type of evidence. Many creation apologists who have a difficult enough time getting a hearing would rather not be saddled with defending this highly controversial line of evidence.

Author Dennis Swift started out a skeptic (pp. 9, 10) and spent many years researching the Ica Stones and other controversial artifacts. This book is written in a laymen's style and reads like

an adventure story. The primary focus is on the Ica Stones and secondarily on the Nazca Lines. While the section on the latter is interesting it serves primarily as collaborative evidence for the Ica Stones. They are engraved highly carbonized andesites (p. 18) found in pre-Columbian burial sites in central Peru ranging in size from four ounces to 1000 pounds. Some 11,000 are housed in a museum in Ica, Peru. This museum is part of a mansion owned by the late Javier Cabrera Darrquera. The engraved images on the stones include

truly amazing depictions. There are humans peering through telescope-like devices and magnifiers, ancient physicians performing brain surgery, and other operations. The most amazing stones are those that clearly show ancient creatures including Triceratops, Diplodocus, Stegosaurus, Apatosaurus, Pterodactyls, and Tyranosaurids/Allosaurids. Some stones depict men riding dinosaurs and fighting them (see color photo section).

The first historical reference to the stones is found in writings of a Jesuit priest named Father Simon in 1535 (p. 16). In 1562 Spanish explorers sent some of the stones back to Spain (pp. 17, 121). In more recent times several of the stones were unearthed by Cabrera's grandfather in 1906 (p. 122). In 1936 a single stone was discovered by peasants near Ica. In 1955 the Soldi brothers, Carlos and Pablo witnessed the excavation of stones buried with mummies on their property near Ocucaje, Peru. These stones were tested and showed "a thick layer of salt peter covering the main specimens which could not be explained except by the considerable passage of time" (p. 18). Pablo donated 114 of these stones to the Ica Regional Museum in 1967. In the late 1950s the Callo Naval Museum acquired about 400 Ica stones (p. 123). Swift cites these and other examples of the stones from the historical record (pp. 121–28).

Swift relates some of the theories on the history of the Ica Stones. Carl Sagan presented the idea that dragon legends

are "fossil memories" passed down the evolutionary lineage from our supposed early mammalian ancestors, tens of millions of years ago, who were awe stricken by dinosaurs (pp. 11, 82). Cabrera put forth the notion that the stones were carved by high-tech protopeople who lived 70 million years ago with the dinosaurs (p. 28). Filip Coppens theorizes that the stones are the work of native shamans who picked up dinosaur bones and entered a trance where they visited the age of dinosaurs (p. 126). Others believe the stones were produced by those under the influence of hallucinogenic San Pedro Cactus drinks (pp. 58, 126). The most popular theory used by skeptics of the stones is that they are modern forgeries produced by a poor Peruvian peasant named Basilio Uchuya (p. 57). Swift visited Basilio on four different occasions. On one occasion, at Swift's request, Basilio, using a broken hacksaw blade produced a dinosaur engraving on a stone (p. 62). Swift later took this fake stone, an Ica Stone from Cabrera's collection and a newly discovered burial stone from Rio Grande, Nazca and had them examined by Mason Optical Inc. under a stereoscopic microscope (pp. 69–72). The analysis showed that the fake stone was recent and the other two were of "some age." Swift details other scientific tests (pp. 18, 19, 129–32) that show the Ica stones are not recent forgeries. Swift uses these tests and several other lines of evidence to establish his case that the stones are not recently concocted frauds.

Swift also relates "a cluster of other independent discoveries [that] lends an aura of legitimacy to the Ica Stones" (p. 67). This cluster includes Ica-like dinosaur images on the Nazca Pampa (pp. 98–99), recent excavated tombs with Ica Stones (pp. 64–65), the Moche dragon/dinosaur vases (pp. 77–80), Nazca burial mantles with dinosaur designs (pp. 117–120), the carved boulders (images of animals, humans and dinosaurs) of Toro Muerto (pp. 66–67) as well as discoveries in other parts of the world such as the human and dinosaur tracks in Turkmenistan (pp. 134–135).

Swift's conclusion, consistent with creation science, is that the Ica Stone engravers actually saw dinosaurs within the last two to three millennia. Swift writes, "To say dinosaurs lived with man is tantamount to shouting heresy in the temple of Darwin" (p. 80). He concludes, "evolutionism's geologic column and fine tuned intellectual tower of time with its yawning gap of sixty-five million years between dinosaurs and man was merely a myth. In fact, the only place this tower existed was in the mind of the evolutionist" (p. 137).

This book lacks an index and has typographical errors. However, it deserves to be read within and without the creation community. The Ica Stones need reevaluation as hard evidence for the creation worldview.

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A Large Cliff Scarp Exposure of Beach-Nourished Sands Along the St. Andrew Bay Channel, Florida: Evidence for the Rapid Formation of Siliciclastic Stratigraphy

Carl R. Froede Jr. *

Abstract

Naturalists define Earth history from the stratigraphic record. Modern settings and processes are used to construct the geologic column. Every sedimentary layer purports to convey the passage of time, usually immense periods, and the features within the sediments are used to explain their long depositional history. Conversely, the young-Earth creation/Flood framework proposes that the majority of the rock record is the result of the global Flood of Genesis. Support for this approach has come from highly energetic volcanic settings and laboratory studies of sedimentary deposition. Another setting offers additional supporting evidence for the Flood depositional framework. Beach nourishment activities along Florida's coastline have been ongoing for many years. A nourished dune escarpment occurs along the western side of the St. Andrew Bay Channel at Panama City Beach, Florida. Along this side-wall, the siliciclastic sediments, bedding structures, and fossil content can be closely examined. This quartz-rich sand-particle-size material was naturally segregated and rapidly deposited into bed forms that correspond to siliciclastic strata observed in the rock record. This locale effectively demonstrates the rapid formation of siliciclastic strata within conditions likely analogous to the Flood.

Introduction

Uniformitarian scientists contend that the rocks composing Earth's crust convey the history of the planet. They believe that the passage of eons of time is documented by changes in life-forms within the enclosing sediments. Sediments are eroded from existing geologic materials

only to be transported and recast to rock and eroded once again. We are told this rock cycle has been ongoing since this planet began approximately 4.55 billion years ago. While the deposition of sediments can occur at varying rates, it is usually inferred to have happen at a slow and steady rate. While storm deposits are

recognized within the uniformitarian stratigraphic record they are interpreted to have formed within a brief moment of time and are of a small scale.

Counter to this perspective is the biblical understanding of Earth history which suggests that the majority of the rock record formed during the global Flood of Genesis. During this large and convulsive event, sedimentary materials would have been naturally segregated and deposited by hydraulic forces during transport. Perhaps only short periods of time passed between the deposition

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of successive strata and any changes in material composition is probably due to differences in sediment source areas and associated materials.

Any explanation of the rock record is based in history and not empirical science. The formation of the rock record has already occurred and was not observed. Uniformitarian scientists invoke modern settings and their sediments to define and defend their construction of the global stratigraphic record. However, young-Earth creationists point to the biblical record of catastrophism as a better way of understanding the development of the rock record. Further studies of this approach can be enhanced by contemporary examples of high-energy processes yielding sedimentary products that directly correspond to the rock record. Only recently have examples come from volcanic settings and sedimentological laboratory analyses.

Beach nourishment activities provide an additional setting that supports the rapid formation of siliciclastic strata.

An eroded segment of a constructed beach is exposed along the western side of the St. Andrew Bay Channel (Panama City Beach, Florida). The escarpment displays an unusual exposure of manmade stratigraphy (Figure 1). This outcrop provides a cross-section through siliciclastic sediments rapidly emplaced during high-energy beach nourishment activities. This setting corresponds to conditions expected during the Flood where abundant siliciclastic sediments were eroded, transported, and deposited by highly energetic Floodwater.

Examples of Rapid Stratification from the Field and Laboratory

Studies indicate that sediments naturally segregate, forming layers based on particle characteristics as wind, mud, water, or even gravity transport them. Sedimentologists are learning that time is not a critical factor in the production of individual sediment layers or even

larger-scale strata. What is required is an abundant supply of sedimentary materials transported in highly energetic conditions that allow the separation and segregation of particulates and their eventual deposition.

Rapid Formation of Strata within a Volcanic Setting

An active volcanic setting typically provides both the sediments and energy (via eruptive conditions) necessary to rapidly produce stratified sediments (Fisher and Schmincke, 1984). Delicate sedimentary structures, individual bed forms, and massive strata can all be created almost instantaneously by wind energy (e.g., pyroclastic surge deposits) (Fisher and Schmincke, 1984; Cas and Wright, 1988) or by mudflows (i.e., lahars) (Newhall and Punongbayan, 1996; Orton, 1996).

Deposits derived from subaerial hydroclastic to phreatomagmatic eruptions (i.e., combination of steam and magmatic powered eruptions) can exhibit planar bedding that can range from flat, parallel beds to steep cross-bedding. Structures developed in these types of volcanic deposits include penecontemporaneous soft sediment deformation, gas related vesicles, bedding sags, and mudcracks (Fisher and Schmincke, 1984). Pyroclastic flows and surges develop some of the best sedimentary bedding features associated with volcanic eruptions (Nakada, 2000). These types of deposits were first recognized in rhyolitic strata in New Zealand (Marshall, 1935) and in pumice flows in Japan (Kuno, 1941). Later they were identified in association with underwater nuclear detonations at Bikini Atoll in 1947 (Fisher and Schmincke, 1984), and subsequently at numerous subaerial locations (Moore et al., 1966; Moore, 1967; Fisher and Waters, 1970; Schmincke et al., 1973; Crowe and Fisher, 1973). Bed forms derived from pyroclastic density currents include sand waves, and massive and plane parallel bedding (Fisher and Schmincke,



Figure 1. The area of beach nourishment is located on the western portion of the St. Andrew Bay Channel. This area is within St. Andrews State Park. Sand was added to the beach in July/August, 2003.

1984). These types of deposits can also exhibit fine-grained lamination and delicate bedding structures that are produced almost instantaneously from rapidly-moving volcanic ash and debris clouds (Branney and Kokelaar, 2002). In the past, these styles were thought to be restricted to annual varves. The May 18, 1980 eruption of Mount St. Helens produced variably-bedded and finely-laminated pyroclastic surge and flow deposits documented by both uniformitarian (Hoblitt et al., 1981; Moore and Sisson, 1981) and young-Earth creation/Flood geologists (Austin, 1986; 1991; Morris and Austin, 2003). These deposits demonstrate the natural segregation of particles in air under highly energetic eruptive conditions and provide a somewhat similar analogue to expected sedimentary conditions associated with the Flood of Genesis. (According to Branney and Kokelaar (2002), stratified materials formed under subaerial volcanic conditions do not exactly conform to deposits produced by water. Simple one-to-one comparisons between pyroclastic flow and surge deposits to Flood deposited strata must be conducted with some caution.)

Laboratory Analysis of Rapid Particle Deposition and Strata Formation

Sedimentology has largely developed from extensive field investigations. Numerous reference works contain summaries of these field-based studies (e.g., Reineck and Singh, 1980; Scholle and Spearing, 1982; Scholle et al., 1983; Allen, 1984; Reading, 1996; Friedman et al., 1992). More recently, there has been some effort to better link field studies to laboratory water tank and computerized models (e.g., Pye, 1994; McCaffrey et al., 2001).

Much of the laboratory work in sedimentology is based on fluid mechanics specific to hydrodynamic forces related to the transport of single particles, suspensions, and hyperconcentrations

(Julien, 1995). This work tends to focus predominately on numerical modeling and less on actual field examples. As a result, the extrapolation of laboratory results to the field has not necessarily proceeded in a manner where immediate application can be identified. However, some recent analytical modeling was conducted that focused primarily on depositional results and its application to the fluvial-deltaic setting is impressive (Berthault, 2004).

Several laboratory studies involving sediment transport in water tanks have documented the natural segregation and rapid deposition of sedimentary particles transported by moving water (Berthault, 1994). These studies demonstrate that vertical and lateral stratification occur at the same time and in a manner that appears to contradict, if not violate several important key concepts in stratigraphy (e.g., stratigraphic correlation, law of superposition, and facies succession) (Berthault, 1990; Julien and Berthault,

1994). These findings are important within the context of a biblical approach to defining the rock record. Additionally, this laboratory work has not been limited to the defense of the young-Earth creation/Flood framework, but has also been published in the secular geologic literature (Julien et al., 1993; Berthault, 2002a; 2002b).

Beach Nourishment Activities along the Western Side of the St. Andrew Bay Channel

Much of Florida's coastline is subject to ongoing erosion. Beach nourishment activities occur in an effort to both protect beach property and secure tourism. Typically, quartz sand is collected from offshore source areas and is pumped in a slurry onto the beach through large-diameter pipes (Figure 2). This process both elevates and extends the beach shoreward in the nourished area.



Figure 2. Active beach nourishment along Panama City Beach, Florida. The image is from January 2006, and shows the manner in which the sand-water slurry is pumped onto the beach. The water drains leaving sand deposited under energetic aqueous conditions. The water-sand plume is approximately 8 ft in height.



Figure 3. The cliff scarp exposed in January 2006. Three hurricanes did significant damage to the new beach deposits by removing large volumes of sand from along the shoreline. This resulted in the formation of the lengthy cliff scarp that varies in elevation up to 12.5 ft.



Figure 4. These siliciclastic sediments could be interpreted as reflective of wave-derived bedforms associated with tidal water movement. However, they were rapidly emplaced in a sand and water slurry. Scale in inches and centimeters. This image was taken on January, 2006.

The western side of the St. Andrew Bay Channel beach was nourished in 2003. The added quartz sand contained a minor fraction of mud clasts and invertebrate shell material.

In many instances following sand emplacement, a small scarp is initiated at the shoreline due to disequilibrium. This scarp usually does not develop to any significant elevation (typically less than one yard) as the beach slope changes to maintain its stability to the shoreline. However, hurricanes and other large tropical storm systems can dramatically change conditions; large escarpments can rapidly form due to elevated storm surges and storm waves. This was first recognized and reported following scarp development associated with Hurricane Ivan (Froede, 2006).

Two subsequent hurricanes passed to the west of this study site in 2005, Hurricane Dennis (July 10, 2005), and Hurricane Katrina (August 29, 2005). These storms produced storm surges between 3.0 and 5.5 ft that further eroded the nourished beach sand. The resulting escarpment is approximately 3,200 ft long and as high as 12.5 ft (Figure 3).

One could envision a great variety of coastal depositional settings if this outcrop was examined through an uninformed perspective. Foremost would be the presumption that sea level was higher in this area in the past as these are aqueous deposits. Examining the strata along the escarpment sidewall, one would then note the work of changing tides (Figure 4) and wave-derived features (Figure 5). Lag deposits of mud clasts (now rolled into mud balls) and shells would appear to indicate channel deposits (Figure 6). However, this outcrop of siliciclastic sediments and fossils presents in dramatic form the natural segregation of materials in an energized fluid.

The rapid manner in which these sediments were deposited forming bedding indicative of daily coastal processes, demonstrates the ease of

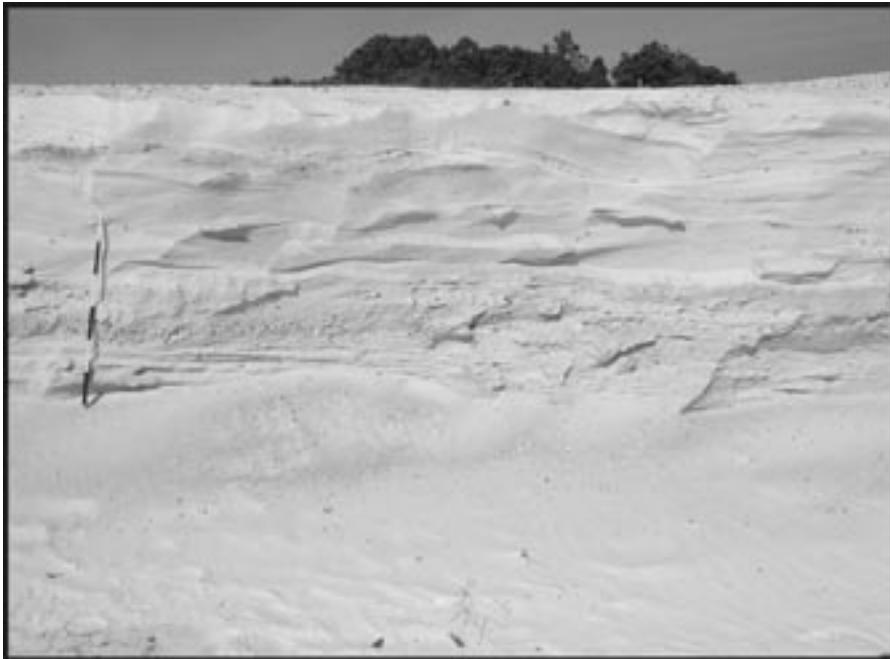


Figure 5. The weakly cemented siliciclastic sediments exposed along the cliff scarp reveal bedforms created from high-energy beach nourishment. Without knowing the history of these deposits, they could be interpreted as reflective of Pleistocene deposits formed under uniformitarian processes. Scale in six-inch divisions. This image was taken on January, 2006.

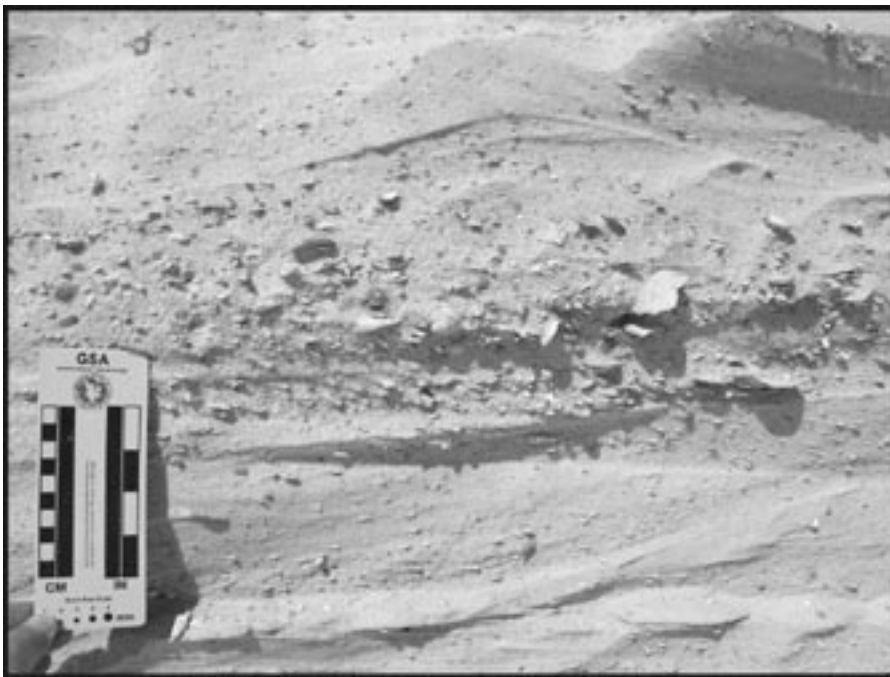


Figure 6. Mudballs and shells lie within a former drainage channel. They could be incorrectly interpreted as lag deposits within a pre-existing tidal channel. It is not surprising that lag deposits like these can rapidly form and still convey two competing worldviews, one purely naturalistic and the other based on Scripture. Scale in inches and centimeters.

understanding siliciclastic strata within both the perspectives of uniformitarian and young-Earth/Flood interpretations. Uniformitarian scientists look to modern settings and uniform processes to explain strata. However, these strata can also form quickly under highly energetic conditions analogous to the Flood.

Conclusions

The reconstruction of Earth history is either derived from an interpretation of its sediments or from Scripture. Naturalists invoke modern settings and processes and project them backward over billions of years to explain the stratigraphic record. The biblical framework invokes a completely different interpretation requiring high-energy processes operating over very short periods of time, little of which can be demonstrated by modern settings. Young-Earth creationists look for special conditions and settings that can be used to demonstrate the formation of strata within the time-restricted requirements of our framework. Most of these studies have come from volcanic environs and water tank experiments.

Along the western side of the ship channel leading into St. Andrew Bay, beach nourishment activities delivered sand, mud clasts, and invertebrate shells from a sand-water slurry in an aqueous manner similar to expected highly energetic conditions associated with the global Flood (i.e., Flood Event Timeframe) (Froede, 1995; 1998). The sedimentary details and bedding structures exhibited at the escarpment are surprising considering the energetic conditions in which these siliciclastic sediments were originally deposited. The resulting bed forms and strata are similar to those found in a variety of modern day aqueous coastal settings ranging from subtidal offshore to nearshore.

This outcrop demonstrates that siliciclastic sedimentary bedding and structures can form quickly as a result of highly energetic geologic forces.

The separation and segregation of the transported materials occurred naturally, forming features ranging from the delicate to the massive. Time was not important in the creation of these stratified deposits, though it is essential in the uniformitarian framework. It is the worldview used to interpret the strata that makes a difference—not the strata. The rapid segregation of siliciclastic sediments is not surprising, and is predicted within the Flood framework. An escarpment along the western side of the St. Andrew Bay Channel allows examination of strata having an appearance of age, but that were rapidly formed during recent beach nourishment activities.

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I am grateful for the constructive reviews provided by A. Jerry Akridge and the anonymous reviewers. My wife Susan kindly allowed me the opportunity to conduct fieldwork, research, and write this article. Any mistakes that may remain are my own. Glory to God in the highest! (Prov. 3:5–6).

References

- Allen, J.R.L. 1984. *Sedimentary Structures: Their Character and Physical Basis*. Vol. 1 & 2 of Developments in Sedimentology series. Elsevier, New York, NY.
- Austin, S.A. 1986. Mount St. Helens and catastrophism. In Walsh, R.E. (editor), *Proceedings of the First International Conference on Creationism* (Vol. 1), pp. 3–9. Creation Science Fellowship, Pittsburgh, PA.
- Austin, S.A. 1991. *Mount St. Helens: A Slide Collection for Educators*. Geology Educational Materials, El Cajon, CA.
- Berthault, G. 1990. Sedimentation of a heterogranular mixture: experimental lamination in still and running water. *Creation ex Nihilo Tech Journal* 3:25–29.
- Berthault, G. 1994. Experiments in stratification. In Walsh, R.E. (editor), *Proceedings of the Third International Conference on Creationism*, pp. 103–110. Creation Science Fellowship, Pittsburgh, PA.
- Berthault, G. 2002a. Geological dating principles questioned, paleohydraulics: a new approach. *Journal of Geodesy and Geodynamics* 22:19–26.
- Berthault, G. 2002b. Analysis of main principles of stratigraphy on the basis of experimental data. *Lithology and Mineral Resources* 37:442–446.
- Berthault, G. 2004. Sedimentological interpretation of the Tonto Group stratigraphy (Grand Canyon Colorado River). *Lithology and Mineral Resources* 39:480–484.
- Brannney, M.J., and P. Kokelaar. 2002. *Pyroclastic density currents and the sedimentation of ignimbrites*. Geological Society Memoir No. 27, Geological Society of London, Bath, UK.
- Cas, R.A.F., and J.V. Wright. 1988. *Volcanic Successions: Modern and Ancient*. Chapman & Hall, New York, NY.
- Crowe, B.M., and R.V. Fisher. 1973. Sedimentary structures in base-surge deposits with special reference to cross-bedding, Ubehebe Craters, Death Valley, California. *Geological Society of America Bulletin* 84:663–682.
- Fisher, R.V., and A.C. Waters. 1970. Base surge bed forms in maar volcanoes. *American Journal of Science* 268:157–180.
- Fisher, R.V., and H.U. Schmincke. 1984. *Pyroclastic Rocks*. Springer-Verlag, New York, NY.
- Friedman, G.M., J.E. Sanders, and D.C. Kopaska-Merkel. 1992. *Principles of Sedimentary Deposits: Stratigraphy and Sedimentology*. Macmillan, New York, NY.
- Froede, C.R., Jr. 1995. A proposal for a creationist geological timescale. *Creation Research Society Quarterly* 32:90–94.
- Froede, C.R., Jr. 1998. *Field Studies in Catastrophic Geology*. Technical Monograph No. 7. Creation Research Society Books, Chino Valley, AZ.
- Froede, C.R., Jr. 2006. The rapid formation of siliciclastic stratigraphy: an example from Panama City Beach, Florida (USA). *Journal of Creation* 20(2):61–64.
- Hoblitt, R.P., C.D. Miller, and J.W. Valance. 1981. Origin and stratigraphy of the deposit produced by the May 18 directed blast. In Lipman, P.W. and D.R. Mullineaux (editors), *The 1980 eruptions of Mount St. Helens, Washington*, pp. 401–419. Geological Survey Professional Paper 1250, Washington, D.C.
- Julien, P.Y. 1995. *Erosion and Sedimentation*. Cambridge University Press, New York, NY.
- Julien, P.Y., Y. Lan, and G. Berthault. 1993. Experiments on stratification of heterogeneous sand mixtures, *Bulletin of the Geological Society of France* 164:649–660.
- Julien, P.Y., Y. Lan, and G. Berthault. 1994. Experiments on stratification of heterogeneous sand mixtures. *Creation Ex Nihilo Technical Journal* 8:37–50.
- Kuno, H. 1941. Characteristics of deposits formed by pumice flows and those formed by ejected pumice. *Tokyo University Earthquake Research Institute Bulletin* 19:144–149.
- Marshall, P. 1935. Acid rocks of the Taupo-Rotorua volcanic district. *Transactions of the Royal Society of New Zealand* 64:323–366.
- McCaffrey, W.D., B.C. Kneller, and J. Peakall (editors). 2001. *Particulate Gravity Currents*. Special Publication 31, International Association of Sedimentologists, Blackwell Science, Malden, MA.
- Moore, J.G. 1967. Base surge in recent volcanic eruptions. *Bulletin of Volcanologie* 30:337–363.
- Moore, J.G., K. Nakamura, and A. Alcaraz. 1966. The 1965 eruption of Taal Volcano. *Science* 151:955–960.
- Moore, J.G., and T.W. Sisson. 1981. Deposits and effects of the May 18 pyroclastic surge. In Lipman, P.W. and D.R. Mullineaux (editors), *The 1980 Eruptions of Mount St. Helens, Washington*, pp. 421–438. Geological Survey Professional Paper 1250, Washington, D.C.
- Morris, J., and S.A. Austin. 2003. *Footprints in the Ash: The Explosive Story of Mount St. Helens*. Master Books, Green Forest, AR.

- Nakada, S. 2000. Hazards from pyroclastic flows and surges. In Sigurdsson, H. (editor). *Encyclopedia of Volcanoes*, pp. 945–955. Academic Press, New York, NY.
- Newhall, C.G., and R.S. Punongbayan (editors). 1996. *Fire and Mud: Eruptions and Lahars of Mount Pinatubo, Philippines*. University of Washington Press, Seattle, WA.
- NOAA-NOS/CO-OPS. 2006. *Station information for Panama City Florida, FL*, National Ocean Service Center for Operational Oceanographic Products and Services, Accessed from: http://co-ops.nos.noaa.gov/data_retrieve.shtml?input_code=00011111vwl&station=8729210-PanamaCityBeach,FL (January 30, 2006).
- Orton, G.J. 1996. Volcanic environments. In Reading, H.G. (editor). *Sedimentary Environments: Processes, Facies, and Stratigraphy*, pp. 485–567. Blackwell Science, Cambridge, MA.
- Pye, K. 1994. *Sediment Transport and Depositional Processes*. Blackwell Scientific, Boston, MA.
- Reading, H.G. (editor). 1996. *Sedimentary Environments: Processes, Facies and Stratigraphy*. Blackwell Science, Boston, MA.
- Reineck, H.E., and I.B. Singh. 1980. *Depositional Sedimentary Environments* (2nd edition). Springer-Verlag, New York, NY.
- Scholle, P.A., D.G. Bebout, and C.H. Moore. 1983. *Carbonate Depositional Environments*. Memoir 33. American Association of Petroleum Geologists, Tulsa, OK.
- Scholle, P.A., and D. Spearing. 1982. *Sandstone Depositional Environments*. Memoir 31. American Association of Petroleum Geologists, Tulsa, OK.



Book Review

The Coming Wrath

by John Reed

Mabbul Publishing, Evans, GA, 2005, 380 pages, \$10.00.

Geologist John Reed has an unsuspected talent for writing. His novel stretches from about one hundred years before Noah's flood to the event itself and beyond. The book has a very engaging and believable plot, excellent character development, and a heart-rending climax. It is my hope that this will not be the last of his books.

The book opens with Madrazi looking back over her adventure-filled life. She was born to a shipping family and grew up in a lovely home by the sea. Her father Pomorolac developed and ran a successful maritime trade. Through experience he learned how to design ships, discovered how to use ocean currents to his advantage, and learned to navigate using the stars. Madrazi loved learning her father's trade but feared the sea. From the time her grandfather Methuselah visited, Madrazi struggled with a frightening dream about a huge tsunami swallowing her along with the land. Her mother was able to comfort

her when she woke from her frightening dreams. One day, much to her horror, her mother never returned from a swim. Madrazi buried her grief by focusing her energies on learning shipbuilding and navigation. Many years later the purpose of Methuselah's visit became apparent. He once again made the long journey from Lamech to the port but this time it was to offer an arranged marriage to her cousin, Shem. The love and trust Madrazi had for this kind man encouraged her to accept. After her marriage, Noah told her of his meeting with God and the coming wrath. He invited her to participate with the family in building the ark. Although she loved them all, she could not and would not accept the prophecy as true. She realized all of her hopes for living in the city had to be put on hold until the prophecy proved false. Meanwhile, she lived in apparent obedience to Shem and his father as she struggled with God.

Madrazi's account traces the growing rebellion of mankind against worship of the

Creator. She expresses well the attitude of the times: "He (Noah) is a good man, but Father (Pomorolac) thinks that he expects too much of people. He and his grandfather speak much of doing good and loving the Creator, but most men wish to pursue happiness, profit, and peace without excess religious restraint." Through the years the rebellion against God grew into full bloom. Jared the young General of Lamech, became convinced he needed to protect the city. Against Noah and Methuselah's wishes, he developed the military into a fighting machine instead of trusting in God's protection. Wars brought unbridled ambition and a lust for violence among his men. Jared's own love for power and recognition led him into an unsuspected trap. Madrazi's once peaceful existence turned into a time of great fear. This is a story of love, betrayal, war, and the Wrath and, ultimately, a time of decision for Madrazi.

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Notes from the Panorama of Science

Mammals, Mammal-like Reptiles, Shared Features, and Origins

Both the pouched mammals (marsupials) and the egg-laying mammals (monotremes) possess a number of reptile-like features. All marsupials are born with a reptile-like articular-quadrant jaw joint. Some marsupials are even born with a caruncle structure, which in monotremes functions in breaking out of the eggshell. Marsupials and monotremes go through a shell-like embryonic stage persisting up to the last third of their development (Brown, 1998). Do these traits indicate that in the past some marsupials laid eggs? If certain ancient marsupials did lay eggs, they still simply would have been mammals that laid eggs and had a reptile-like jaw joint.

Monotremes have an organ called the lagenar macula in the ear. It is found in no other creatures except reptiles. The egg-laying spiny anteater is a monotreme, having in its adrenal gland a type of cell and a cell arrangement similar to what is present in the monitor lizard. Examination of these features in both monotremes and marsupials, however, shows that each is still mammalian in that adrenal gland characteristic (Brown, 1987).

This arrangement of cells in the adrenal gland of the spiny anteater is not present in the duck-billed platypus, another monotreme. So, perhaps the Creator created this adrenal cell feature in the anteater, but not in the platypus. Or perhaps the platypus has lost this condition since the time of Creation. Another possibility is that the cell feature arose from the gene pool of the spiny anteater since Creation.

A newly discovered mammal dated at 164 million years ago (mya) by evolutionists is given the name *Castorocauda*

lutasimilis. This fossil has a modern skin structure and is therefore mammalian in nature. But it also has some mammal-like reptile features such as overlapping ribs (Hecht, 2006, p. 16). Overlapping ribs, however, are not found in the “advanced” mammal-like reptiles but are seen in the so-called “primitive” mammal-like reptiles. The condition of overlapping ribs creates a significant gap between the primitive mammal-like reptiles and mammals themselves, which supports the idea that all features found in all mammals are mammalian in origin—even features that have been judged primitive or “reptilian.”

The brain cells of early mammals shared certain features with “primitive” mammalian reptiles, features not present in “advanced” mammal-like reptiles (Kermack, Mussett, and Rignacy, 1981, p. 3). This is another case showing that all reptile-like features in any mammal were either its property since Creation or may have been produced from its genetic potential since Creation. They do not support or demand an evolution of mammals from reptiles.

A possible monotreme jaw dated at 115 mya has been found and given the name *Teinophos trusleri*. This jaw has what is known as a “trough,” in which a few reptile-like bones may have been present (Rich, et al., 2005). Here again, mammals of the past and of the present can have reptile-like features of varying sorts and yet all are still quite mammalian in origin and nature—having no evolutionary connection with reptiles.

Acknowledgments: I thank George Howe for editorial assistance and computer typing.

References

- CRSQ: *Creation Research Society Quarterly*
- Brown, C. 1987. The law of symmetric variation and the gene-theme model. *CRSQ* 24:75–80.
- Brown, C. 1998. Did certain members of the order Marsupialia lay eggs? *CRSQ* 36:39.
- Brown, C. 1999. The principle of symmetric variation as it relates to silent mutations. *CRSQ* 36:100.
- Hecht, I. 2006. Jurassic “beaver” is new fossil record. *New Scientist* 189:16.
- Kermack, K.A., F. Mussett, and H. Rignacy. 1981. The skull of *Morganucodon*. *Zoological Journal of Linnean Society* 71:1–14.
- Rich, H.T., J.A. Hopson, A.M. Musser, T.F. Flannery, and P. Vickers-Rich. 2005. Independent origin of middle ear bones in monotremes and therians. *Science* 307:910–914.

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When Time Runs Out for Evolution from a Fish (*Tiktaalik*) to Tetrapods

A recently discovered fossil lobe-finned fish called *Tiktaalik* has been given a big fanfare as being a missing link between fish and tetrapods (Holmes, 2006). The uniformitarian age given to this fossil is 375 million years ago (mya), however, which means Holmes's claim that it was a missing link must be discarded. Current evolutionary claims for fossil tetrapods range from 365 to 380 mya and may even extend farther back (Brown, 2006).

The head of *Tiktaalik* is said to have been mobile, and it does not appear to have gill coverings normally seen in fish. Gill coverings help fish fan the water to maximize available oxygen. This fish may have had, to some extent, a differ-

ent way of breathing. The fins, while clearly being those of a fish, are said to have been able to push the fish up and down (Holmes, 2006).

The mud-skipper is an extant fish from the mangrove swamps of Southeast Asia. It has mobile eyes, which are situated at the top of its head and give it the look of being "amphibianlike." It must not be forgotten, however, that the mud-skipper has a different way of holding oxygen and also has a wristlike fin on which it can move up and down in the water or climb upon nearby vegetation. This certainly must surpass anything *Tiktaalik* could have done. And yet we know the particulars about the mud-skipper's family, showing that it has not evolved into any other kind of life-form. This could likewise be the case with *Tiktaalik*, negating the evolutionary conclusions of Holmes (2006). He has speculated that *Tiktaalik* demonstrates that there were not just one or two big leaps from fish to tetrapods, but that the process required a vast evolutionary time period.

At 370 to 373 mya in the speculative evolutionary dating scheme, there were already two tetrapods (Brown, 2006). One of them, *Elginerpeton*, showed signs of having lived in the water previously, and then it appears to have come out on to land, following which it is supposed to have gone back into the water once more. All of this would have required millions of years of evolutionary time. Thus the tetrapods *Elginerpeton* and *Obruchevichys* would each reach back to the 375 mya evolutionary date, if not farther.

Therefore, at 375 to 380 mya there already may have been tetrapods, leaving no time for *Tiktaalik* to have served as any kind of "link" between fish and tetrapods in Devonian rocks! Any shared features between fish and tetrapods are not the result of evolution but are the outcome of creation. All features in both fish and tetrapods were created or else have come through the genetic potential resident in each life-form—or perhaps something of both (Brown, 1996; 2002).

Acknowledgments: I wish to thank George Howe for editorial assistance and computer typing.

References

- CRSQ: *Creation Research Society Quarterly*
- Brown, C. 1996. Devonian fish, amphibians, and the gene-theme model. *CRSQ* 33:13–15.
- Brown, C. 2002. Genetics and the origin of similar features. *CRSQ* 39:57–58.
- Brown, C. 2006. Devonian fish and tetrapods support creation—not evolution. *CRSQ* 43:55.
- Holmes, B. 2006. The fish that headed for land. *New Scientist* 190:14.

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There already may have been tetrapods, leaving no time for *Tiktaalik* to have served as any kind of "link" between fish and tetrapods in Devonian rocks.



Letters to the Editor

The Age of the Universe

Editor's comment. One of my commitments for CRSQ is to allow creationists to discuss various points of disagreement. Many readers of CRSQ will likely disagree with Mr. Gray's position and reasoning. However, a courteous and well-reasoned discourse on these areas of disagreement can be profitable for any creation model.

Clifford Lillo's review of my book, *The Age of the Universe: What Are the Biblical Limits?* (CRSQ March, 2006, p. 227), while unapproving, was fair-minded and distortion free. However, I don't see his arguments against the book's thesis as convincing.

First, he notes that the arguments are not new. Actually, I am pleased that they are not, although my work was not derived from earlier writers but rather from direct biblical research. I deliberately avoided the commentators until after completion of the framework, although, of course, I knew many of the conventional views in a cursory sort of way. Since then, readers have alerted me to similarities with several earlier writers, such as Jameison, Faussett and Brown, Halley, et al. I had not even heard of the McClintock and DeLuc position, referenced by Mr. Lillo, until I read his book review. Evidently all these sources treat the young biosphere view incompletely and with only brief references. *The Age of the Universe: What Are the Biblical Limits?* advocates a much more coherent model with every objection satisfactorily addressed. Ignoring previous work might be wrong procedure if pursuing a research paper on isotopes or geology, but in the quest for the model of origins that would best reflect the intended witness

of both biblical and natural revelation, I wanted to carefully study the Book itself (with linguistic helps), avoiding reliance on prior interpretations that could misdirect the search for meaning.

Second, Mr. Lillo makes brief reference to Job 38, where God Himself declares that at the *foundation and birth* of the earth, "I made the clouds its garment, and thick darkness its swaddling band (or diaper)" (v. 9 NKJV). Well, was there, or was there not such an enveloping cloud? It is called the "waters that were above the *raqia*" in Genesis 1:7. A "first day" is not possible while darkness prevails "on the surface of the ocean," and this *changes everything*. "The earth was barren, with no form of life; it was under a roaring ocean covered with darkness" (Gen. 1:2 CEV). Determine how long darkness continued over the ocean surface, and this will determine how old the earth is. Biblically, it could have been two weeks or two billion years before God thinned that thick cloud to translucence for day one. Like the heaven of stars in Genesis 1:1, the age of the planet is not defined. Venus and Titan are clouded today and probably have never had a completely clear "first day." In a limited way they illustrate earth under perpetual darkness before day one.

The reviewer assumes the traditional young earth view that the sun was created on day four as stated in Genesis. My book shows that it is *not* so stated in Genesis. It rather challenges and tests that assumption and interpretation. It is true that God "did" the great lights and stars for signs, seasons, days, and years on day four. This very loose verb can be translated dozens of ways (74 in KJV). God arranged, or established, or

provided, or brought forth, or put into execution, or set in order, or produced, or performed, or *did* two great lights and the stars for signs and seasons on day four. He created them before day one (and that *is so stated*). If the translation "made" is preferred, then note that God "made" the dry land on day three by simply uncovering it (cf. Jonah 1:9). On day four God completed the thinning of the "cloud of thick darkness" to transparency. I agree that the six literal days of Genesis, including day four, occurred less than 8000 years ago, but they reveal the creation of the *biosphere only*. The definitions for *shamayin*, *eretz*, and *yam* are supplied for us with utter clarity as *air*, *land*, and *sea* by God Himself *within the six-day context* of Genesis 1 and therefore *must* be applied to Exodus 20:11. Verse 1 is outside the six-day context.

Third, the reviewer acknowledges that "how Adam and the people of his time could see stars remains to be solved," but he takes refuge in "the success of the RATE project," which he says will bolster their faith. Well, I attended the RATE II debut, November, 2005, without any sense of bolstered faith except with radiocarbon 14, which, if verified, clearly does confirm a *recent global flood* of Genesis 7 (without accelerated decay). That report did support the Bible and recent flood geology, but, unless I missed something, they neglected to mention at the conference that in explaining isotope ratios by accelerated decay, the heat generated in the time frame suggested calculates to vaporize the plutons and batholiths! "Solving" one problem appears to have generated a far more difficult problem. The RATE

II book and Dr. DeYoung's abridged version makes brief references to these (and other equally difficult problems), but most auditors would have the same reaction that Mr. Lillo had, namely, bolstered faith in a 6000-year-old planet Earth and universe.

From the young biosphere perspective, trusting in RATE II and gravitational time dilation may be "trusting in the staff of this broken reed, Egypt, on which if a man leans, it will go into his hand and pierce it" (Isaiah 36:6 NKJV). RATE II and time stretching during the six days might finally become our "Egypt," crushed by the hard facts, and these theories may then prove to be red-herring distractions. Neither accelerated

decay nor gravitational time dilation has been verified scientifically, certainly not biblically; but even if they would be, it would not change the interpretation of Genesis.

I thank the reviewer for a fair appraisal, but he concludes (bolstered by his confidence in RATE II): "It is this writer's opinion that Gray will continue to find himself in the minority." In the short term, he is probably correct. I hear that at the Council on Biblical Inerrancy, only one scholar was supportive of the young-earth model of origins. I am a biblical literalist (as certainly as Ken Ham or the late Henry Morris), except from Scripture I cannot justify putting a date on Genesis 1:1. Yes, among cre-

ationists that is a minority viewpoint; however, truth is not determined by a show of hands (witness Copernicus, Luther, Bretz, Jeremiah, and a multitude throughout history).

For the quest of wisdom and effectiveness in apologetics, I ask readers to consider chapter 1 of my book on the web at ageoftheuniverse.com and proceed from there to the whole picture. This issue is worthy of a healthy, friendly, thorough debate.

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Observations on Creationist Literature

Originally I intended to write this letter to *TJ* Journal (I certainly will miss reading the insightful and thought provoking articles), but unfortunately it is no longer in print. So I write to you that you might be able to provide explanations/clarifications. (*Editor's Note: The former journal TJ is now Journal of Creation, printed by Creation Ministries International, Eight Mile Plains, QLD, Australia.*)

I would like to express my concerns/observations of some of the creationist literature I have been reading. I have come across several points that have raised questions for me. I am not an expert on these things and may not have all the facts straight. I certainly do not have firsthand knowledge but only what I have read (which means I have to take the word of the authors and make a decision), so I will bring up the topics. These concerns are: (1) the vapor canopy model, (2) the second law of thermodynamics, (3) plate tectonics, and (4) the starlight-time problem.

The Vapor Canopy Model

First of all, I think the vapor canopy

model is a viable working model and is being abandoned far too quickly. The science may not support it as yet (the Vardiman model; see Batten et al., 2000), but I think the biblical support is there. Of course, the assumptions of the Vardiman vapor canopy model are obviously a major starting point. In his book *Climates Before and After the Flood*, Larry Vardiman (2001) discusses several options to explore.

Although this result is disappointing for advocates of a vapor canopy, the story may not yet be complete. It is possible that the high albedo produced at the top of a cloud layer in the canopy may reduce the flux of radiation into the canopy and atmosphere greatly reducing heating. This effect was not included in the simulations by Vardiman and Boussetot [formerly Spelman] (1998) except possibly through the reduction in solar canopy. The albedo changes modeled were only due to those effects at the surface of the earth.

It is recommended that a simulation be conducted where all five

"constants" are held at the values where the surface temperature is minimized simultaneously and the albedo effect at the top of the clouds in the canopy be included to determine the maximum amount of water vapor the canopy can hold. It is also recommended that the complete relationship between cloud thickness, cloud base height, and vertical temperature profiles be explored farther. Three dimensional global circulation models (GCMs) should be used to simulate the affect of varying the albedo and solar zenith angle under the canopy. GCMs are designed to compute the global circulation caused by varying three dimensional patterns of albedo and solar geometry.

If these efforts fail to permit a sizable quantity of water to be maintained in the canopy, then consideration should be given to exploring canopies in orbits above the atmosphere where thermodynamic considerations do not constrain the quantity of water. (p. 21.)

I think there are at least three options that can be explored. The first mentioned by Vardiman is placing the vapor canopy above the present atmosphere, which certainly fits within what the Bible says in placing the waters above the firmament (Gen.1:7). In the *Defender's Study Bible* in his notes on verse 1:7 Morris (1995) says,

The "waters which were above the firmament" are clearly not the clouds or the vapor which now float in the atmosphere. The Hebrew word *al*, definitely requires the meaning "above."

The second option is somehow combining the ecological system with this model. If the earth's surface before the flood had a higher percentage of land exposed at the surface (presently it is approximately 1/3 land and 2/3 water), there would be more plants, which would reduce carbon dioxide in the atmosphere which could possibly reduce the excess heat. I would think that this would be exceedingly complicated, but it could certainly have an effect.

The third option involves looking at the phrase "windows of heaven" in Genesis 7:11 and 8:2. Just what does the Bible imply here? Could it be that the windows of heaven were acting as vents, letting the heat out of the atmosphere in the days before the Flood and this upward flow of air was keeping the "windows" closed? This may be more of a whim than fact, but is it possible?

It seems to me that making an adjustment with these ideas in mind could make a significant difference in the outcome and that more water could be held above instead of the maximum of 6 or 7 feet currently quoted (Batten et al., 2000, p.174).

Second, and more importantly, I think that there is good support from the Bible and other areas of science indicating that there was a vapor canopy. The most obvious is the different conditions mentioned before and after the Flood. In the creation week, "God made the firma-

ment, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so. And God called the firmament Heaven... Thus the heavens and the earth were finished, and all the host of them." (Gen. 1:7-8; 2:1 KJV). The question is which heaven is the water around? From my understanding, the word "Heaven" in 1:8 and 2:1 is the same word, except in 2:1 it has the term "the" in front of it (*shamayim* vs. *hashamayim*). Since there is no difference between the word for heaven (singular) and heavens (plural), then we have to make a choice as to which "heaven" the Bible is referring to. That brings up another question as to how many heavens there are. I think Paul answers that for us when he was taken up to the "third heaven" (II Cor. 12:2). What are the three heavens? They are: (1) the atmosphere, (2) the universe, and (3) the place of God's throne and where Christ dwells right now (Luke 23:43). Of course this is one interpretation, but I think it certainly fits. So which heaven is spoken of in Genesis 1:7-8? In Morris's (1995) study Bible his note on 1:7 says,

The "waters which were above the firmament" are clearly not the clouds or the vapor which now float in the atmosphere. The Hebrew word *al*, definitely requires the meaning "above." Furthermore, the absence of rain (Genesis 2:5) and the rainbow (Genesis 9:13) is not only explained but required by a vapor canopy, not by an atmosphere like that of the present. Furthermore, these waters extending far out into space eventually condensed and fell back to the earth at the time of the Great Deluge, providing the source of the worldwide rainstorm that contributed to the Flood. Although the exact extent and structure of this canopy is still being researched by computer simulations, there are no insuperable scientific problems with the concept.

I am aware that the Humphreys

model puts the water above the second heaven (universe), and that will be addressed later.

There are other indications that support a vapor canopy idea. One is the longevity of people pre-Flood versus post-Flood. There are only three generations that can be compared—Noah (lived 950 years), Shem (lived 600 years), and Arphachshad (lived 433 years). Noah lived before and after the Flood and he lived 950 years, but most of his life was before the Flood (600 years). Shem lived before and after the Flood and he lived 600 years, but most of his life was after the Flood (502 years). That is a considerable difference for one generation considering the average pre-Flood age was over 900 years (excluding Enoch). Also, Shem and his wife were born pre-Flood, so their children probably did not face the bottleneck of the gene pool that took place after the Flood. Their son, Arphachshad, lived 433 years, which is less than half the pre-Flood life span. The generations after this were affected by the gene pool bottleneck of only 6 people, but even then people were living over 400 years for two more generations after Arphachshad. It is obvious that there was something different between the pre-Flood and post-Flood earth. Peter says that "the world that then was, being overflowed with water, perished" (II Pet. 3:6 KJV). One of the major changes was the different environment in which they were living. The environment isn't the only factor of course, but it certainly is a major contributing one.

Another indication that supports the vapor canopy is the physical evidence of a more uniform, worldwide temperature. "The most significant of these Biblical inferences is that of a universally warm climate, with ample moisture for abundant plant and animal life. It is significant that fossil remains everywhere in the world and throughout the geologic column testify to just such a condition" (Whitcomb and Morris, 1961, p. 243). Plate tectonics supposedly has an answer

to this uniform temperature, and it will be discussed later.

In Batten et al. (2000) these ideas are disputed from the Bible, as the contention is that there was rain and rainbows before the Flood and that we should not be dogmatic about these things—which certainly goes both ways. It certainly is plausible that there was no rain on the earth before the Flood, as the Bible says, “But a mist used to rise from the earth and water the whole surface of the ground.” (Gen. 2:6 NASB). It certainly would not be a special sign if rainbows were on the earth prior to the Flood.

I think that the vapor canopy model is the best explanation I have read for the pre-Flood conditions of the earth.

The Second Law of Thermodynamics

Was the second law of thermodynamics working before the Fall? I think that using the Bible we can make a legitimate case for stating the second law of thermodynamics started after the Fall. When Adam and Eve sinned, God cursed the man, cursed the woman, cursed the serpent, and cursed the ground, and the process of death started (Gen. 3:14–19). That affected the entire universe as Paul states that the “whole creation groans and suffers the pains of childbirth together until now” (Rom. 8:22 NASB; see also 19–23). We know that even now in God “all things hold together” (Col. 1:17) and that He “upholds all things by the word of His power” (Heb. 1:3 NASB).

There is also biblical evidence that God can sustain the earth by other processes, as Sarfati (2004) notes “that He prevented the Israelites’ shoes and clothes from wearing out during the 40 years in the wilderness (Deut. 29:5)” (p. 214). Sarfati is not trying to defend this position, as he points out some indications that the second law was in process prior to the Flood. I think that the wilderness wandering is a perfect example of how easily God can suspend the laws of nature (or change them) without anyone

really noticing. When the Israelites were walking, evidently the friction between the ground and shoe necessary to move was suspended; if not, the shoe would not have lasted the 40-year wanderings. Adam certainly could have been walking under the same principles that the Israelites were for that 40-year period. Are the other objections mentioned any different? God sustains us and the universe now, and He could easily have sustained us and the universe then by completely different processes than the ones we see today. That doesn’t mean it was miraculous; it means there were different laws of science.

Furthermore, if the second law was not in effect, then everything worked 100% efficiently. That may answer some of the objections mentioned by Sarfati (2004, p. 213) as digestion of food or baking a cake, which certainly is not 100% efficient now. My thought is if a gas engine gets 30 mpg at 30% efficiency, then it would get 100 mpg at 100% efficiency.

Also, death is the ultimate end of the second law (does anyone know what life would be like without death?). Things wear out and die, not only humans and animals, but we even speak of stars and the universe dying a “heat death.” Currently stars are burning their fuel at such a rate that eventually they will die. However, the Bible says that the sun, the closest star, will endure forever (Ps. 72:5, 17, Ps. 89:36) and that the other stars will also (Dan. 12:3). Obviously, their fuel supply will be refueled or the second law will be revoked. I make the assumption that the latter will happen using the “burning bush,” i.e. “the bush burned with fire, and the bush was not consumed” (Exod. 3:2 KJV), as an example.

Here is my logic:

- The ultimate end of the second law is death;
- There was no death before the Fall;
- Therefore, the second law was not in effect before the Fall.

My logic may not be perfect, and I am not trying to be dogmatic, but I certainly think it is legitimate to state that the second law of thermodynamics did not start until after the Fall.

Plate Tectonics

When I was in college in the mid-70s I learned about plate tectonics. I wasn’t convinced then and I am even less convinced now. What was my initial roadblock to plate tectonics? It was and is the New Madrid fault. I live in Memphis, Tennessee, approximately 35 miles from the southern leg of this fault. It is in the middle of the “North American Plate,” miles and miles from any subduction zone or any plate boundary in any direction. Plate tectonics cannot explain this fault. An “Earthquakes” report written for the City of Memphis in 1988 by Hall Blake and Associates states,

Plate tectonics (*sic*) provide what is believed to be the most satisfactory, certainly the most recent, explanation of earthquakes. The earth’s outermost part, called the lithosphere, consists of several large, fairly stable slabs or plates. Geologists have identified varying numbers of plates, but it is generally agreed that the surface of the earth is essentially made up of seven major plates. Most earthquakes occur along the boundary of these plates, and are called interplate earthquakes. A few, however, occur within the plates, the most noticeable being the New Madrid earthquakes. Plate tectonics (*sic*) do not readily explain intraplate earthquakes.

Of course this report may be outdated as there has been progress since then, although I still haven’t heard a viable explanation for the New Madrid fault. Also, the number of plates has increased many times since then to over 100 (Skobelin et al., 1990, p. 82). However, three of the greatest known earthquakes in the USA occurred in 1811–1812 along the New Madrid fault, and it was reported that the Mississippi River

flowed backwards as it filled Reelfoot Lake. Plate tectonics cannot explain this, but obviously something sank (vertical tectonics) as Reelfoot Lake was formed by this series of earthquakes.

After reading Reed (2000) I am even more convinced that plate tectonics causes more problems than it solves. All the evidence put forth as support in Batten et al. (2000, pp. 159–160) has as good or better explanation using vertical tectonics as discussed in Reed (2000) except for one point—the fit of South America into Africa. All other “fits” are not nearly as good. Chapter 4 in Reed (2000) points out other possible nontraditional fits as well. I also think the scriptural support for vertical tectonics is greater than plate tectonics as Psalm 104:5–9 says, “They go up by the mountains; they go down by the valleys,” indicating that the mountain rose and the valleys sank and even catastrophic plate tectonics uses this as a corollary. As far as plate tectonics goes, the only verse that even hints at this is Genesis 10:25 “the name of the one was Peleg; for in his days the earth was divided” (KJV), which most plate tectonics advocates would not use since it happened after the Flood and not during.

In Batten et al. (2000, pp.162–163) Genesis 1:9–10 is used to suggest that the continents were once together, referring to Pangaea. This is very vague and doesn’t necessarily refer to Pangaea but could be any interconnected landmass as suggested in the notes of the *Defender’s Study Bible* for Genesis 1:10.

Some of these waters were trapped and stored in the “great deep” (Genesis 7:11), subterranean chambers beneath the earth’s crust. Others accumulated in surface basins. However, all were evidently interconnected through a network of subterranean channels. So that they were both singular and plural-gathered together into “one place,” yet called “Seas.”

Also, I think that the world before

the Flood, “being overflowed with water, perished” (II Pet. 3:6 KJV), was completely destroyed. The world was destroyed and not rearranged, which is what catastrophic plate tectonics and Pangaea teaches. I don’t think we can say what the earth before the Flood looked like. Another objection would be the location of the Garden of Eden with its unique river as the Bible says “a river flowed out of Eden to water the garden; and from there it divided and became four rivers” (Gen. 2:10 NASB). If Pangaea were true, it seems that we could locate a place for the Garden, even though the Flood destroyed the world, since plate tectonics teaches a rearrangement of the land. It seems that it would have to be on some sort of plateau or mountain. Where the water would come from would have to be explained and then somehow divide. That is not happening anywhere on earth today, which supposedly resembles the earth prior to the Flood.

Also, my understanding of plate tectonics offers the explanation of more uniform, worldwide temperatures resulting in lush vegetation, because all the continents were located closer to the equator. But if the atmosphere is similar to today, that would still not explain things. The weather patterns necessary to produce this lush vegetation would have to be vastly different from today as there are many deserts on earth (the Sahara and Saudi Arabia are at 20–30 degrees north latitude), and if the continents were all together it would seem to produce even more deserts as rain could not readily get to the interior. I haven’t seen any studies of the pre-Flood weather patterns modeling the Pangea landmass, so I don’t know if that is correct or not. I think the vapor canopy model explains the lush vegetation much better.

One last comment: In Sarfati (2004; pp. 337–338), I liked the explanation of magnetic reversals given by Humphreys, and this explanation certainly can be used in the vertical tectonics model, as

the fountains of the great deep bursting open at the mid-Atlantic ridge in the Atlantic and the “ring of fire” in the Pacific would have the same cooling affect on the earth’s crust as in catastrophic plate tectonics.

Finally, I think vertical plate tectonics is a much better explanation for the evidence both from a scientific and biblical basis.

The Starlight-Time Problem

The starlight-time problem (which I personally think is not as big a problem as it is made out to be) can be answered in several ways. There have certainly been a number of articles on this subject in recent years. I think Humphreys (1994) has done an admirable job in coming up with a viable model that answers the starlight problem. His model seems to have biblical support. The main problem I have with the model is it is too close to the “big bang,” which I think has many, many difficulties (star formation, lumpy universe, dark matter/energy, etc.). It also makes the assumption that the universe is bounded and finite and that the water mentioned in Genesis 1:6 exists outside this (the second heaven).

Naturally I disagree with this as I think the universe is infinite and the water canopy is around the earth’s atmosphere (the first heaven). I am still looking at this model, but am not convinced as of yet. The light “problem” can be explained in other manners, by a slowing speed of light or, as Robert Newton (2001) does, by placing a $1 + \cos(\theta)$ in the denominator so that light coming toward us is instantaneously (infinite) while light going away from us is one-half the speed of light so that the average speed is the speed of light. Light traveling 90 degrees from us is the speed of light. The more and more I think about this, the more and more I like it. But even if the solution is not correct, I think that God could have created the universe fully formed with the light already in place, just as Adam and Eve (and all other plants and animals) were.

Somewhere along the line we have to accept something by faith as Hebrews 11:3 states: “By faith we understand that the worlds were prepared by the word of God, so that what is seen was not made out of things which are visible” (NASB). I am not against science, but science has its limitations. We can measure/observe the electron/proton/neutron model and even smaller particles than that, but somewhere along the line something came from nothing! Science cannot explain that. In the same way, somewhere along the line God spoke, “Let there be lights in the expanse of the heavens,” and it happened. Did He do it according to known laws of science, or did He create a new thing?

Also, there are certain limits placed on man, as the following two verses sum up.

Thus saith the Lord; if heaven above can be measured, and the foundations of the earth searched out beneath, I will also cast off all the seed of Israel for all that they have done, saith the Lord. (Jer. 31:37 KJV)

The heaven, even the heavens, are the Lord's: but the earth hath he given to the children of men. (Psalm 115:16 KJV)

The first verse implies limits to man's science/observations, for the heaven cannot be measured nor the earth's core; and the second states that the earth is to be for men and the heavens are for the Lord.

I also think that the heavens are infinite, as the following verses imply: “For high as the heavens are above the earth, so great is His lovingkindness toward those who fear Him. As far as the east is from the west, so far has He removed our transgressions from us.” (Ps. 103:11–12 NASB)

Also, it should be noted that even “old-earthers” have a starlight problem—the horizon problem—as mentioned by Sarfati (2004) referring to the article by Robert Newton (2003) in *Creation* magazine.

Finally, I think that when we start talking about the universe it does not mean that God has deceived us if He made it fully formed with light en route, along with the many marvels that go with it. Did God deceive us when God spoke on the second day that He made the heavens but really did not finish making the heavens until the fourth day as the Humphreys model seems to imply? Did He deceive us when He made something from nothing? That certainly is outside the laws of science. Somewhere along the line we have to exercise faith. Does that mean we stop searching? No, but I don't think we should be disappointed or frustrated if we never find an answer.

To sum up, we all have certain biases and presuppositions. I agree with the philosophy that we cannot be dogmatic about how things were created and, as I have heard Mike Oard say, that multiple hypotheses are good (also Reed, 2000, p. 78). I think that the vapor canopy model is a viable working hypothesis and is being abandoned far too quickly, probably due to the ascension of plate tectonics and the Humphreys model for starlight and time. I also think that the proposal that the second law of thermodynamics did not start until after the Fall is valid and can be used as a legitimate creationist argument. Furthermore, I think that plate tectonics, whether uniformitarian or catastrophic, does not explain all the evidence, while vertical tectonics has much better explanations. Finally, I think that the starlight and time problem has several possible solutions, including God's creating it fully formed en route. I think that all young-earth creationists would agree that Scripture is the key and the Bible should be our guide to our science and not the other way around. To me the “big bang” and plate tectonics are not driven by Scripture but by secular sources and as a result must be viewed extremely cautiously. Science is constantly changing and it is dangerous to match current science—especially in areas that are so speculative, like the for-

mation of the universe and the historical geology of the earth—to the Bible.

References

- Batten, D (editor), K. Ham, J. Sarfati, and C. Wieland. 2000. *The Answers Book* (revised edition). Master Books, Green Forest, AR.
- Humphreys, R.D. 1994. *Starlight and Time*. Master Books, Green Forest, AR.
- Morris, Henry M. 1995. *The Defenders Study Bible: King James Version*. World Publishing, Grand Rapids, MI.
- Newton, R. 2001. Distant starlight and Genesis: conventions of time measurement, *TJ* 15 (1):80–85.
- Newton, R. 2003. Light travel-time: a problem for the big bang. *Creation* 25(4):48–49.
- Reed, J.K. (editor). 2000. *Plate Tectonics: a Different View*. Monograph Series No. 10. Creation Research Society Books, St. Joseph, MO.
- Sarfati, J. 2004. *Refuting Compromise*. Master Books, Green Forest, AR.
- Skobelin, E.A., I.P. Sharapov, and A.F. Bugayev. 1990. Deliberations of state and ways of perestroika in geology (has plate tectonics resulted in a revolution in geology?). In Belousov, V., M.G. Bevis, K.A.W. Crook, D. Monopolis, H.G. Owen, S.K. Runcorn, C. Scalera, W.F. Tanner, S.T. Tassos, H. Termier, U. Walzer, and S.S. Augustithis (editors), *Critical Aspects of the Plate Tectonics Theory—Volume I (Criticism on the Plate Tectonics Theory)*, pp. 17–37. Theophrastus Publications, S. A., Athens, Greece.
- Vardiman, L. 2001. *Climates Before and After the Flood*. Institute for Creation Research, El Cajon, CA.
- Whitcomb, J.C., and H.M. Morris, 1961. *The Genesis Flood*. Presbyterian and Reformed Publishing Company, Phillipsburg, NJ.

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Minutes of the 2006 Creation Research Society Board of Directors Meeting

On Thursday, 8 June 2006, a meeting of the Board of Directors (BOD) was held at the Jameson Inn, Lancaster, South Carolina, from 1900 hours to 2100 hours to plan for the committee meetings on Friday. On Friday, 9 June 2006 between the hours of 0800 and 1500 the lab, Internet, research, publication, finance, membership, periodicals, and constitution/bylaws/advanced planning committees each met separately for approximately one hour to plan for the closed business meeting. At 1530 hours the closed business meeting of the BOD was called to order. Present: M. Armitage, T. Aufdemberge, E. Chaffin, D. DeYoung, D. Faulkner, R. Humphreys, G. Howe, D. Kaufmann, G. Locklair, M. Oard, D. Rodabaugh, R. Samec, and G. Wolfrom. Not able to attend: J. Reed. Employees K. and D. Anderson were invited guests.

The minutes of the 2005 BOD meeting were accepted. Recording Secretary Kaufmann reported that the following were elected to a three-year term to the BOD: M. Armitage, E. Chaffin, J. Reed and G. Wolfrom.

The lab committee report stated that new shingles were put on the laboratory building in Arizona this spring and that repainting is the next needed maintenance project. Hank Giesecke has resigned as head of development. Lab director Kevin Anderson will carry on promotional/development activity for now. Diane Anderson is administrative assistant.

The Internet committee report stated that our web site (creationresearch.org) continues to expand and improve thanks to able care by our volunteer webmaster Fred Williams. Web site access, mea-

sured in page views, continues to steadily increase with an average visitor increase of 24% year-over-year (April 2005-2006 versus April 2004-2005). In May 2006 our site had 74,000 page views within 34,000 unique sessions and transferred 7.5 gigabytes of information. There are currently 450 CRS members registered and using the "members only" section of our site. During



this year new software for our online store was purchased and configured. Total online sales for the past year exceeded \$50,000, an increase of 50% over the previous year. Several action items were proposed, including: encouraging other creationist web sites to link to the CRS site, updating the organizations listed on our site, implementing a "latest update" link, and updating the speakers bureau on our site. CRSnet, our discussion listserv, continues to serve about 200 CRS members. When asked if participants would like to switch to a threaded discussion web-based tool, a majority of CRSnet members responded "no." CRSnet seems to be serving our members well. Several action items were proposed, including: adding a "join CRSnet" link to the members-only section of the web site, promoting CRS material/activities on CRSnet, includ-

ing the CRSnet "rules" along with the usage FAQ on the web site, and creating a CRSnet FAQ (dealing with technical creation issues). An initial budget of \$2000 was approved by the committee (NB, this was later trimmed by full BOD action to \$1700).

The research committee reported that they had approved two new projects and discussed funding for some possible new research initiatives.

The publication committee reported their plans to publish one book in June or July of 2006, titled *The Geological Column: Perspectives in Diluvial Geology*. There are plans to publish three more books during the next fiscal year, including *Rock Solid Answers: Responses to Popular Objections to Biblical Geology* in the fall

of 2006 and a Grand Canyon creationist road guide in the spring of 2007. Several projects are on the schedule for late 2007 into 2009. There are plans to offer specials for selected books in the CRS newsletters. The wholesale discount policy has been fine-tuned. This winter our royalty policy will be adjusted. Donors will be encouraged to underwrite the cost of publishing some of our books in the future. The Friday session was adjourned at 1800 hours.

On Saturday, 10 June, the closed meeting was resumed at 0800 hours with devotion and prayer led by D. Kaufmann.

A budget for the new fiscal year was approved with an income of \$311,300 and expenses of \$329,870.

The finance committee report resulted in the following actions. It was passed that the financial secretary

request Raymond James, Inc. to send duplicate monthly statements to the CRS office in Chino Valley, AZ. It was passed that the Membership Secretary send a monthly report to the CRS offices at the VACRC containing a statement of source and amount of income received and a listing of checks written against the CRS account in Missouri. A check for the amount received should be sent with the report. It was passed that the earned income of the past fiscal year from our investments be sent to the CRS headquarters and the interest would be added to the loan.

The 2005/06 membership/subscription report stated that the worldwide total number of members and subscribers was 1721 (1536 US, 185 foreign). This represents a net increase of 34 compared to the previous year, and the largest total number in the past 10 years. The number of voting and sustaining members is approximately equal (708 and 697, respectively). The following resolutions were passed by the BOD. (1) The regular member rate will be raised from \$32 to \$35 (effective September 2006). Student, senior and subscriber rates will be adjusted accordingly. (2) A group rate for new members will be made available (when 10 or more new memberships are submitted together) – \$27 each. (3) The surcharge for foreign surface mail will be raised from \$7 to \$8 (effective September 2006). (4) The student category will be expanded to include those enrolled full time in a postgraduate science degree program (MS, PhD, MD, DVM; post-doctoral positions will be excluded). (5) “Patron” will be dropped as a special membership category, thus making the name available to the CRS development staff for use as a fund-raising tool. Future “patrons” (or whatever similar designations are developed) will not become life members unless an application is received by the membership secretary. If requested, they may receive a “free” subscription to our periodicals without being officially enrolled as

a member. The status of the “patron-types” will be recognized and tracked by the development staff. (6) Our webmaster (Fred Williams) has been invited to appear quarterly on a Denver radio station to discuss creation-related issues. In exchange for “free advertising” for the CRS, the station would like to offer a free subscription to a CRS publication for those who purchase something on the station website. The offer would be available for a limited time to those who specifically request it. The station would be required to pay CRS \$5 for each subscription. We have offered *Creation Matters* for this purpose.

The report of the periodicals committee resulted in the following. The editors of the CRSQ for the coming year are Kevin Anderson (editor-in-chief), John Reed (geology), George Howe (biology), Eugene Chaffin (physics), Ronald Samec (astronomy), and Donald DeYoung (book reviews). A replacement for the aging biology editor is being sought. Glen Wolfrom agreed to produce *Creation Matters* for another year. Anderson described the steps that are presently being taken, such as improving the quality of the paper in order to improve the quality of the photographs in CRSQ. Howe reaffirmed the fact that *Creation Matters* is a permanent part of the CRS program. Howe led discussion in creating a July 2006-June 2007 budget proposal for the *Quarterly/Creation Matters* committee. The number of papers processed last year in the CRSQ were reported by editors as follows: geology 22, biology 17, physics 7, astronomy 1, and book reviews 30. The new CRSQ managing editor, Jarl Waggoner, was present at the meeting, as was Lane Lester, previous managing editor. Lester was thanked for his nine years of faithful work producing CRSQ. After talking about various ways CRS board members may sign up new CRS



members right at public creation lectures, the committee meeting was adjourned.

The report of the constitution/by-laws/advanced planning committee resulted in the following. It was passed to have Gary Locklair, a member of the committee, visit the Concordia Historical Institute in St. Louis to review and organize our archival materials, allowing him to spend up to \$500 for expenses. It was passed to make this a “closed archives” with a required approval of the CRS President for anyone to review the collections in the archives.

It was passed to nominate the following persons for the BOD election in 2007: D. DeYoung, R. Humphreys, D. Kaufmann, L. Lester, G. Locklair and R. Samec.

BOD member Ted Aufdemberge, financial secretary, was elected to Fellow of the Creation Research Society.

The following officers were elected for 2006/2007: President, D. DeYoung; Vice President, E. Chaffin; Recording Secretary, D. Kaufmann; Treasurer, G. Locklair; Membership Secretary, G. Wolfrom; Financial Secretary, T. Aufdemberge.

It was passed to hold the 2007 BOD meeting at Prescott/Chino Valley, Arizona, June 7 to 9, 2007.

The meeting was adjourned at 1200 hours.

Respectfully submitted,
David A. Kaufmann,
Recording Secretary

Instructions to Authors

Submission

Submit an original plus two copies of each manuscript to the editor of the *Creation Research Society Quarterly* (see the inside front cover for address). Concurrent submission of an electronic version (Word, WordPerfect, or Rich Text Format) of the manuscript text and graphics is also encouraged. The manuscript and graphics will not be returned to authors unless a stamped, self-addressed envelope accompanies submission. Manuscripts containing more than 30 pages are discouraged. An author who determines that the topic cannot be adequately covered within this number of pages is encouraged to submit separate papers that can be serialized.

All submitted manuscripts will be reviewed by two or more technical referees. However, each section editor of the *Quarterly* has final authority regarding the acceptance of a manuscript for publication. While some manuscripts may be accepted with little or no modification, typically editors will seek specific revisions of the manuscript before acceptance. Authors will then be asked to submit revisions based upon comments made by the referees. In these instances, authors are encouraged to submit a detailed letter explaining changes made in the revision, and, if necessary, give reasons for not incorporating specific changes suggested by the editor or reviewer. If an author believes the rejection of a manuscript was not justified, an appeal may be made to the *Quarterly* editor (details of appeal process at the Society's web site, www.creationresearch.org).

Authors who are unsure of proper English usage should have their manuscripts checked by someone proficient in the English language. Also, authors should endeavor to make certain the manuscript (particularly the references) conforms to the style and format of the *Quarterly*. Manuscripts may be rejected on the basis of poor English or lack of conformity to the proper format.

The *Quarterly* is a journal of original writings, and only under unusual circumstances will previously published material be reprinted. Questions regarding this should be submitted to the Editor (CRSQ_editor@creationresearch.org) prior to submitting any previously published material. In addition, manuscripts submitted to the *Quarterly* should not be concurrently submitted to another journal. Violation of this will result in immediate rejection of the submitted manuscript. Also, if an author uses copyrighted photographs or other material, a release from the copyright holder should be submitted.

Appearance

Manuscripts shall be computer-printed or neatly typed. Lines should be double-spaced, including figure legends, table footnotes, and references. All pages should be sequentially numbered. Upon acceptance of the manuscript for publication, an electronic version is requested (Word, WordPerfect, or Rich Text Format), with the graphics in separate electronic files. However, if submission of an electronic final version is not possible for the author, then a cleanly printed or typed copy is acceptable.

Submitted manuscripts should have the following organizational format:

1. Title page. This page should contain the title of the manuscript, the author's name, and all relevant contact information (including mailing address, telephone number, fax number, and e-mail address). If the manuscript is submitted by multiple authors, one author should serve as the corresponding author, and this should be noted on the title page.

2. Abstract page. This is page 1 of the manuscript, and should contain the article title at the top, followed by the abstract for the article. Abstracts should be between 75 and 200 words in length and present an overview of the material discussed in the article, including all major conclusions. Use of abbreviations and references in the abstract should be avoided. This page should also contain at least five key words appropriate for identifying this article via a computer search.

3. Introduction. The introduction should provide sufficient background information to allow the reader to understand the relevance and significance of the article for creation science.

4. Body of the text. Two types of headings are typically used by the *CRSQ*. A major heading consists of a large font bold print that is centered in column, and is used for each major change of focus or topic. A minor heading consists of a regular font bold print that is flush to the left margin, and is used following a major heading and helps to organize points within each major topic. Do not split words with hyphens, or use all capital letters for any words. Also, do not use bold type, except for headings (italics can be occasionally used to draw distinction to specific words). Italics should not be used for foreign words in common usage, e.g., "et al.", "ibid.", "ca." and "ad infinitum." Previously published literature should be cited using the author's last name(s) and the year of publication (ex. Smith, 2003; Smith and Jones, 2003). If the citation has more than two authors, only the first author's name should appear (ex. Smith et al., 2003). Contributing authors should

examine this issue of the *CRSQ* or consult the Society's web site for specific examples as well as a more detailed explanation of manuscript preparation. Frequently-used terms can be abbreviated by placing abbreviations in parentheses following the first usage of the term in the text, for example, polyacrylamide electrophoresis (PAGE) or catastrophic plate tectonics (CPT). Only the abbreviation need be used afterward. If numerous abbreviations are used, authors should consider providing a list of abbreviations. Also, because of the variable usage of the terms "microevolution" and "macroevolution," authors should clearly define how they are specifically using these terms. Use of the term "creationism" should be avoided. All figures and tables should be cited in the body of the text, and be numbered in the sequential order that they appear in the text (figures and tables are numbered separately with Arabic and Roman numerals, respectively).

5. Summary. A summary paragraph(s) is often useful for readers. The summary should provide the reader an overview of the material just presented, and often helps the reader to summarize the salient points and conclusions the author has made throughout the text.

6. References. Authors should take extra measures to be certain that all references cited within the text are documented in the reference section. These references should be formatted in the current *CRSQ* style. (When the *Quarterly* appears in the references multiple times, then an abbreviation to *CRSQ* is acceptable.) The examples below cover the most common types of references:

- Robinson, D.A., and D.P. Cavanaugh. 1998. A quantitative approach to baraminology with examples from the catarrhine primates. *CRSQ* 34:196–208.
- Lipman, E.A., B. Schuler, O. Bakajin, and W.A. Eaton. 2003. Single-molecule measurement of protein folding kinetics. *Science* 301:1233–1235.
- Margulis, L. 1971a. The origin of plant and animal cells. *American Scientific* 59:230–235.
- . 1971b. *Origin of Eukaryotic Cells*. Yale University Press, New Haven, CT.
- Hitchcock, A.S. 1971. *Manual of Grasses of the United States*. Dover Publications, New York.
- Walker, T.B. 1994. A biblical geologic model. In Walsh, R.E. (editor), *Proceedings of the Third International Conference on Creationism* (technical symposium sessions), pp. 581–592. Creation Science Fellowship, Pittsburgh, PA.

7. Tables. All tables cited in the text should be individually placed in numerical order following the reference section, and not embedded in the text. Each table should have a header statement that serves as a title for that table (see a current issue of the *Quarterly* for specific examples). Use tabs, rather than multiple spaces, in aligning columns within a table. Tables should be composed with 14-point type to insure proper appearance in the columns of the *CRSQ*.

8. Figures. All figures cited in the text should be individually placed in numerical order, and placed after the tables. Do not embed figures in the text. Each figure should contain a legend that provides sufficient description to enable the reader to understand the basic concepts of the figure without needing to refer to the text. Legends should be on a separate page from the figure. All figures and drawings should be of high quality (hand-drawn illustrations and lettering should be professionally done). Images are to be a minimum resolution of 300 dpi at 100% size. Patterns, not shading, should be used to distinguish areas within graphs or other figures. Unacceptable illustrations will result in rejection of the manuscript. Authors are also strongly encouraged to submit an electronic version (.cdr, .cpt, .gif, .jpg, and .tif formats) of all figures in individual files that are separate from the electronic file containing the text and tables.

Special Sections

Letters to the Editor:

Submission of letters regarding topics relevant to the Society or creation science is encouraged. Submission of letters commenting upon articles published in the *Quarterly* will be published two issues after the article's original publication date. Authors will be given an opportunity for a concurrent response. No further letters referring to a specific *Quarterly* article will be published. Following this period, individuals who desire to write additional responses/comments (particularly critical comments) regarding a specific *Quarterly* article are encouraged to submit their own articles to the *Quarterly* for review and publication.

Editor's Forum:

Occasionally, the editor will invite individuals to submit differing opinions on specific topics relevant to the *Quarterly*. Each author will have opportunity to present a position paper (1000 words), and one response (500 words) to the differing position paper. In all matters, the editor will have final and complete editorial control. Topics for these forums will be solely at the editor's discretion, but suggestions of topics are welcome.

Book Reviews:

All book reviews should be submitted to the book review editor, who will determine the acceptability of each submitted review. Book reviews should be limited to 1000 words. Following the style of reviews printed in this issue, all book reviews should contain the following information: book title, author, publisher, publication date, number of pages, and retail cost. Reviews should endeavor to present the salient points of the book that are relevant to the issues of creation/evolution. Typically, such points are accompanied by the reviewer's analysis of the book's content, clarity, and relevance to the creation issue.

Creation Research Society Membership/Subscription Application and Renewal Form

The membership/subscription categories are defined below:

1. **Voting Member** Those having at least an earned master's degree in a recognized area of science.
 2. **Sustaining Member** Those without an advanced degree in science, but who are interested in and support the work of the Society.
 3. **Student Member** Those who are enrolled full time in high schools, undergraduate colleges, or postgraduate science programs (e.g., MS, PhD, MD, and DVM). Those holding post-doctoral positions are not eligible. A graduate student with a MS degree may request voting member status while enrolled as a student member.
 4. **Senior Member** Voting or sustaining members who are age 65 or older.
 5. **Life Member** A special category for voting and sustaining members entitling them to a lifetime membership to the Society.
 6. **Subscriber** Libraries, churches, schools, etc., and individuals who do not subscribe to the Statement of Belief.
- All members (categories 1–5 above) must subscribe to the Statement of Belief as defined on the next page.

Please complete the lower portion of this form and mail it with payment to CRS Membership Secretary,
P.O. Box 8263, St. Joseph, MO 64508-8263, or fax for credit card payment to (816) 279-2312.

Applications may also be completed online at creationresearch.org.

This is a ☐ new ☐ renewal application for the subscription year beginning June ☐ 2006 ☐ _____.

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Cost of single issues (per issue): members (all categories) – \$5.00
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22	☐	☐	☐	☐	33	☐	☐	☐	☐
23	☐	☐	☐	☐	34	☐	☐	☐	☐
24	☐	☐	☐	☐	35	☐	☐	☐	☐
25	☐	☐	☐	☐	36	☐	☐	☐	☐
26	☐	☐	☐	☐	37	☐	☐	☐	☐
27	☐	☐	☐	☐	38	☐	☐	☐	☐
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29	☐	☐	☐	☐	40	☐	☐	☐	☐
30	☐	☐	☐	☐	41	☐	☐	☐	☐
31	☐	☐	☐	☐	42	☐	☐	☐	☐
					43	☐	☐	☐	☐

CRSQ on CD, version 2.0

Members, \$100; nonmembers and subscribers, \$115.
 Upgrade: Members, \$45; nonmembers and subscribers, \$60. (Prices on this item include postage and handling.)
 Two-set CD contains volumes 1–41 (through March, 2005) of the *Creation Research Society Quarterly* and volumes 1–9 (through December, 2004) of *Creation Matters* in Adobe Acrobat format.

Volumes 1–20 are available on CD. See “CRSQ on CD” advertisement on right for details.

Add 20% for postage (for U.S. orders: min. \$4, max. \$25; for Canadian orders: min. \$5, no max.; for other foreign orders: min. \$9, no max.)
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Make check or money order payable to Creation Research Society. Please do not send cash. For foreign orders, including Canadian, please use a check in U.S. funds drawn on a U.S. bank, an international money order, or a credit card.

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Mail to: Creation Research Society, 6801 N. Highway 89, Chino Valley, AZ 86323, USA

Creation Research Society

History—The Creation Research Society was organized in 1963, with Dr. Walter E. Lammerts as first president and editor of a quarterly publication. Initially started as an informal committee of 10 scientists, it has grown rapidly, evidently filling a need for an association devoted to research and publication in the field of scientific creation, with a current membership of over 600 voting members (graduate degrees in science) and about 1000 non-voting members. The *Creation Research Society Quarterly* has been gradually enlarged and improved and now is recognized as the outstanding publication in the field. In 1996 the CRSQ was joined by the newsletter *Creation Matters* as a source of information of interest to creationists.

Activities—The Society is a research and publication society, and also engages in various meetings and promotional activities. There is no affiliation with any other scientific or religious organizations. Its members conduct research on problems related to its purposes, and a research fund and research center are maintained to assist in such projects. Contributions to the research

fund for these purposes are tax deductible. As part of its vigorous research and field study programs, the Society operates The Van Andel Creation Research Center in Chino Valley, Arizona.

Membership—Voting membership is limited to scientists who have at least an earned graduate degree in a natural or applied science and subscribe to the Statement of Belief. Sustaining membership is available for those who do not meet the academic criterion for voting membership, but do subscribe to the Statement of Belief.

Statement of Belief—Members of the Creation Research Society, which include research scientists representing various fields of scientific inquiry, are committed to full belief in the Biblical record of creation and early history, and thus to a concept of dynamic special creation (as opposed to evolution) both of the universe and the earth with its complexity of living forms. We propose to re-evaluate science from this viewpoint, and since 1964 have published a quarterly of research articles in this field. All members of the Society subscribe to the following statement of belief:

1. The Bible is the written Word of God, and because it is inspired throughout, all its assertions are historically and scientifically true in all the original autographs. To the student of nature this means that the account of origins in Genesis is a factual presentation of simple historical truths.

2. All basic types of living things, including humans, were made by direct creative acts of God during the Creation Week described in Genesis. Whatever biological changes have occurred since Creation Week have accomplished only changes within the original created kinds.

3. The Great Flood described in Genesis, commonly referred to as the Noachian Flood, was a historical event worldwide in its extent and effect.

4. We are an organization of Christian men and women of science who accept Jesus Christ as our Lord and Savior. The act of the special creation of Adam and Eve as one man and woman and their subsequent fall into sin is the basis for our belief in the necessity of a Savior for all people. Therefore, salvation can come only through accepting Jesus Christ as our Savior.