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Departments

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

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Evidence for the Recent Existence of Mammoths and Mastodons: Implications for Creation and Evolution

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Abstract

Most evolutionists believe the wooly mammoth *(Mammuthus primigenius)* was extirpated from mainland Eurasia and North America approximately 10,000 years ago, with the last individuals surviving on Wrangel Island until 3,700 years ago. Similarly, the American mastodon *(Mammut americanum)* is believed to have gone extinct circa 10,000 years ago. This paper examines the hard data conflicting with these interpretations, including an Egyptian painting of a dwarf mammoth, surviving mastodon intestinal bacteria, sedimentary ancient DNA, and datable artifacts portraying proboscideans. This evidence suggests that mammoths and mastodons survived much later than evolutionists believe, perhaps as late as 800 years ago. It is concluded that the evolutionists' estimates for the extinction dates of mammoths and mastodons are in error, which not only affects their timescale but also creates problems for their hypotheses on the causes of the end-Pleistocene extinction event.

Introduction

Mammoths were hairy, elephantlike creatures that thrived before and during the Ice Age (Figure 1). Mastodons were superficially similar to mammoths; however, differences exist that suggest mastodons and mammoths were representatives of separate created kinds (Lister and Bahn, 1994, p. 22; Dixon et al. 1988, pp. 244–245). According to the standard evolutionary timescale, the ancestors of mammoths and elephants lived about 55 million years ago. *Mammuthus* (*M. subplanifrons*) supposedly evolved around 4 million years ago in Africa (Lister and Sher, 2001). The genus, represented by *Mammuthus primigenius*, *M. columbi*, and *M. jeffersonii*, allegedly went extinct in Siberia and North America about 10,000 years ago, along with *Mammut americanum*, the American mastodon (Lister and Bahn, 1994, pp. 19, 125). The last living mammoths on Earth allegedly died out about 3,700 years ago on Wrangel Island north of Siberia (Vartanyan et al., 1993).

This paper will examine the evidence from archeology, bacteriology, ^{14}C (carbon-14) dating, paleontology, and sedimentary ancient DNA that indicate that mammoths and mastodons did not become extinct 10,000 years ago but

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Figure 1. Artist's rendition of a herd of wooly mammoths, *Mammuthus primigenius*. Illustration by Charles R. Knight, copyright © Rhoda Steel Kalt. Used by permission.

rather survived for a significant amount of time after the Flood.

A Biblical Perspective

According to the Bible, the proboscideans were created with the rest of the land animals on Day 6 of the Creation Week, about 6,000 years ago. Proboscidean populations underwent an extreme reduction at the time of the Flood, probably about 4,400 years ago (Ussher, 2003, p. 19), but they were preserved in the ark to repopulate the earth. The so-called Pleistocene extinction, when the mammoths, mastodons, and other Ice Age megafauna supposedly became extinct, probably occurred after the Flood (Oard, 2004, pp. 189–192; Oard 2010). The mammoths and mastodons may have become extinct in the early post-Flood years, but evidence discussed in this paper suggests they persisted in small numbers long into the post-Flood era.

No proboscidean is ever mentioned in the Bible. Some believe the behemoth of Job 40 was an elephant or mammoth, but the description does not fit either of these animals (Ste. Marie, 2010, and references therein). However, there are thirteen references to ivory in the Bible (1 Kings 10:18, 22; 22:39; 2 Chronicles 9:17, 21; Psalm 45:8; Song of Solomon 5:14; 7:4; Ezekiel 27:6, 15; Amos 3:15; 6:4; Revelation 18:12).

Results

Several types of evidences were found that indicate *Mammut* and *Mammuthus* were alive long after their supposed extinction. The evidence comes not only from Siberia and North America, but also from Egypt and South America. (Table I summarizes the evidence discussed in this paper.)

Artistic Portrayals

Several pieces of rock art have been found that seem to portray proboscideans. These petroglyphs are controversial because their intended meaning is not always indisputably clear. In addition, there is no completely reliable method for dating rock art (Barnes, 1979, p. 197; Malotki and Weaver, 2002, pp. xvi-xvii; Malotki and Wallace, 2011, pp. 143, 149). Nevertheless, the following examples are offered of portrayals of proboscideans that indicate mammoths or mastodons were alive much later than evolutionists currently assume.

At Flora Vista, New Mexico, among Indian ruins dated to AD 1200, two stone slabs were found on which have been carved portrayals of what appears to be a proboscidean. The depictions suggest the artist witnessed a living proboscidean in North America around AD 1200 (Figures 2 and 3; Swift, 1997a).

Possible examples of mammoth pictographs have been found near Moab, Utah, Thousand Lake Mountain, Utah, and Shay Canyon, Colorado. The pictograph near Moab shows many of the mammoth's diagnostic features. Barnes (1979, p. 203) states, "No rock art known to be older than about 1,000 years resembles the sophistication of design and technique that was used in making these mammoths." This date places these pictures in the time of the Anasazi Indians, who lived from 150 BC to AD 1200 (Figures 4 to 7; Swift, 1997a). Barnes (1979, p. 203) believes that this dating indicates that the petroglyphs were not meant to depict mammoths or mastodons but rather modern elephants. Malotki and Weaver (2002, p. 192) suggest that the Moab petroglyph may be a depiction of a bear with a fish in its

Evidence	Identification	Date
Carvings on stone slabs	Unknown Proboscidean	800 ya
Petroglyphs	*Mammuthus* or both	1000 ya
Urals Pictographs	*Mammuthus*	6390–6080 ya
Mayan Proboscidean Sculpture	Mammoth? or Indian Elephant?	1,000–2,000 ya
Mexican Proboscidean Sculpture	Mammoth?	?
Codex Borgia Figure	Proboscidean?	800–700 ya
Egyptian Mammoth Painting	*Mammuthus creticus?*	3,500 ya
Fossils	Unknown Mastodon	<5000 ya
Skeleton, Ecuador	Unknown Mastodon	ca. AD 30
Skeleton/archaeological	Unknown Mastodon	2nd-4th century
Cuvier's Proboscidean Foot	*Mammut?*	?
Burning Tree Mastodon	*Mammut americanum*	? Recent
14C Dates	*Mammuthus*	ca. AD 1860
*sed*aDNA	*Mammuthus primigenius*	7,600 ya
Snowmass Fossil Site	*Mammuthus* & *Mammut*	Recent

Table I. A summary of the scientific evidence indicating a recent existence for mammoths *(Mammuthus)* and mastodons *(Mammut)*. The pieces of evidence are listed here in the order they are discussed in the paper. ya = years ago.

Figure 2. The carved slab from Flora Vista, New Mexico, which includes portrayals of some type of proboscidean. Photograph copyright © Dennis Swift. Used by permission.

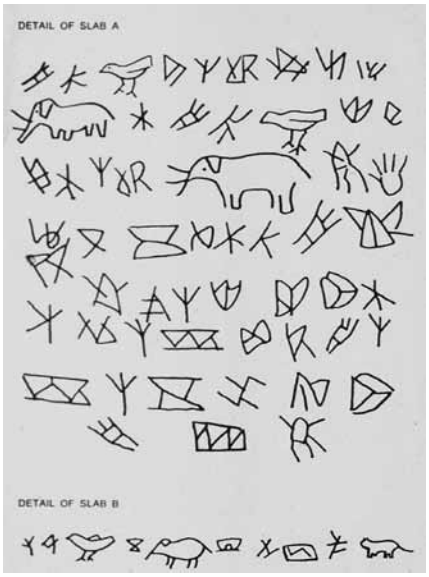

Figure 3. Sketch showing the figures and symbols on the carved slab in Figure 2. Illustration copyright © Dennis Swift. Used by permission.

mouth. Unfortunately, like many other petroglyphs, it has been vandalized by bullet holes in recent years, making further analysis difficult.

In Ignatievskaya Cave in the Ural Mountains of Russia are several pictographs painted on the cave walls with charcoal and other materials. Included among these pictographs are some that appear to represent Ice Age animals, including mammoths. Steelman et al. (2002) collected a small sample of charcoal from one of the mammoth depictions, and it was dated at 7370 ± 50 ^{14}C years old (6390–6080 calibrated years old). No convincing evidence existed for a significant amount of carbon contamination that would have skewed the date.

Smith (1915) discussed a sculpture of what seems to be a proboscidean found in Copan (a Mayan site in Honduras [Corliss, 1996, p. 56]). Smith (1915) disputed the notion that it represents a tapir or tortoise, and most modern archaeologists believe the sculpture

Figure 4. The Moab Mammoth Petroglyph. Photograph copyright © Dennis Swift. Used by permission.

Figure 5. Another view of the Moab Mammoth Petroglyph. Photograph copyright © Dennis Swift. Used by permission.

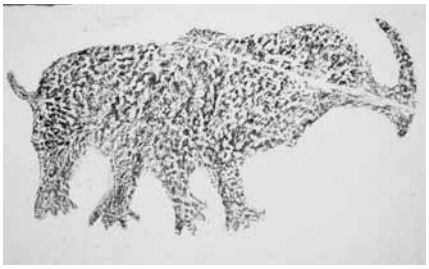

Figure 6. Rock art etching of the Moab Mammoth Petroglyph (see Figures 4–5). Illustration copyright © Dennis Swift. Used by permission.

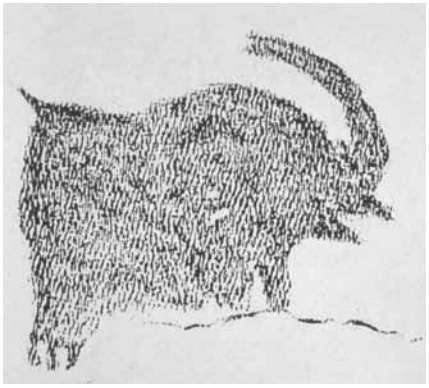

Figure 7. Rock art etching of the Thousand Lakes Mountain, Utah, mammoth petroglyph. Illustration copyright © Dennis Swift. Used by permission.

represents a macaw (Corliss, 1996, p. 56.). Despite the close similarity between the sculpture and a proboscidean, Smith (1915) pointed out several errors in the sculpture's representation of an elephant. He proposed that these errors indicate that the sculpture was copied from another depiction, and the artist had not seen a living elephant. He believed it actually represents an Indian elephant and that knowledge of the creature was brought to Central America by unknown travelers from Asia.

Another example of proboscideans in Mexican art was discovered by James P. Fox in 1930, approximately 15 miles southeast of Puerto, Mexico. The object is a 37.5-inch tall statue made of very hard basalt (Nomland, 1932). The eyes, large head, trunk, and legs are discernible, but it is quite aged, and some features are unclear in Nomland's photographs. Nomland (1932, p. 591) states, "Deep pitting on the surface of the statue indicates a considerable age. At the time of manufacture it was undoubtedly smooth and clean cut, but

Figure 8. The Egyptian tomb painting portraying an elephantid similar to a mammoth. Photograph copyright © Dennis Swift. Used by permission.

long weathering has pitted the surface and blurred the outlines." This is also evidence against the possibility of a hoax.

There are only two explanations for these examples of evidence from Central America: either they are representations of mammoths or mastodons, or they reflect a knowledge of elephants that was dispersed to Central America from Asia. The "diffusion of motifs from Asia is *vigorously denied by most archaeologists* … Precolumbian contact with the New World by Asians is implied by many of these artifacts, and they could account for the existence of the elephant motif in this region … the only other explanation is that the natives of Central America knew the mammoth 1,000–2,000 years ago!" (Corliss, 1996, p. 56; emphasis added). Either of these conclusions would be distasteful to many evolutionists.

A proboscidean-like illustration was found in Codex Borgia, a manuscript dated to the twelfth or thirteenth century. It resembles a tusked elephant, and its snout is longer than the snout of a tapir (Mayor 2005, p. 96). Mayor, an evolutionist, suggests that mammoths may have survived in localized areas in the Valley of Mexico and in the southwestern United States, but he also suggests that these occurrences may be due to the passing down of memories from when mammoths lived (according to evolutionary assumptions), or possibly they may have been exaggerations of tapirs. She also suggests that the legends could have come from observations of proboscidean bones. She concluded, "Until we have further evidence … the origin of the elephant images in pre-Columbian art remains unknown." Creationists, not constrained by the assumption of vast ages separating the present day from the mammoths that roamed North America, can accept such discoveries at face value; evolutionists must try to explain them away, ignore them, or show why their own timeline has failed.

A grave painting in the tomb of Rakh-Mara in the Valley of the Nobles in Egypt estimated at about 3,500 years old includes a rendition of a mammoth-like creature being brought with other animals as tribute to the Egyptians by the Syrians (Swift, 1997b; see Figure 8). Rosen (1994) states:

> The … scene painted in a pharonic tomb … is about the ivory trade, and raises the possibility that the elephantid represents a dwarf mammoth … Egyptian artists could reproduce in colour two-dimensional identifying marks of living biological specimens *very much like those in field-identifying manuals today*. Thus specimens such as fish … and birds … can be *placed into the modern frame of genus and species*. … The figure represents tribute brought to Egypt and a parade of exotic animals. The bear is probably a sub-species of *Ursus arctos*, *U. arctos syrioacos* or *U. arctos arctos* … This picture demonstrates the artist's ability to draw a creature alien to him. (Rosen, 1994, p. 364; emphasis added; genus/species italics original. See also Swift, 1997b; Lister & Bahn, 1994, p. 137).

This painting is possibly a representation of a pygmy mammoth or even a symbolic representation of a full-sized mammoth (Swift, 1997b). However, it may instead depict a dwarf elephantid from the Mediterranean (Masseti, 2001). Several kinds of these elephantids existed, and their classification is quite confused (Naish, 2011a, 2011b). Although many are believed to have been elephants (*Elephas*) (Palombo, 2001), there seem to have been some mammoths—or at least mammothlike elephants—on the islands. Palombo (2001) describes the remains of *Mammuthus lamarmorae* found on the island of Sardinia, west of Italy in the Mediterranean Sea. *Elephas falconeri* had strongly curved tusks and a domed skull. Some evidence indicates that it descended from *Mammuthus meridionalis* or *M. trogontherii* and was a true mammoth (Lister and Bahn, 1994, p. 34).

Poulakakis et al. (2006) published genetic evidence suggesting that *Elephas creticus* from the island of Crete was actually a mammoth and proposed that its name be changed to *Mammuthus creticus*. The findings, and their interpretations, were later debated by Binladen et al. (2007) and Orlando et al. (2007). (See also the rebuttal by Poulakakis et al., 2007.) Herridge and Lister (2009) supported the conclusion of Poulakakis et al. (2006) on the basis of morphological data. Various dates for the many different Mediterranean elephantids have been suggested, some quite ancient. However, some have been ^{14}C dated to ~4,000–7,000 years old (Masseti, 2001). The panel depicts Syrians bringing tribute to Egypt, and trade between Southeast Asia and the Mediterranean is known to have occurred at about this time (Masseti, 2001).

Lister and Bahn (1994, p. 137) suggest that the painting represents a stylized African elephant (*Loxodonta africanus*). This suggestion is not at all likely for several reasons. Its large tusks indicate that it was intended to portray a mature animal. It had a domed skull, similar to a mammoth, or, as some have suggested, an Asian elephant (Rosen, 1994). Furthermore, the creature is brown in color like a mammoth and appears to have hair. The bear in the picture can be identified readily, and it is not stylized, and neither are the people; so why would the proboscidean be? Although others have suggested that the creature was an Asian elephant, unlike Asian elephants, the animal depicted has a fairly large ear. Masseti (2001, p. 404) states, "There is no fully convincing evidence for the identification with the morphology of an Asiatic elephant."

Other Archaeological Finds

Near a lake in Managua, Nicaragua, an interesting human footprint site was discovered. The footprints were originally dated at 200,000 years old by evolutionists, but because the form of the feet was perfectly modern, dating work went on until a date of about 6,000 years old was obtained. Above the level of the footprints are eleven solid-rock strata. The combined strata thickness is 16 to 24 feet. Fossils exist in the strata above the footprints, including mastodon remains. This leads us to the conclusion that the mastodons were younger than the footprints, meaning they were alive less than 6,000 years ago (von Fange, 1974, p. 20; Judkins, 2009, pp. 349–351).

A mastodon skeleton was found in 1929 in Ecuador that evidence indicates was killed by natives; a circle of fires had been built around the mastodon. The site, which included artifacts such as painted pottery, was dated at "the beginning of the Christian era" (von Fange, 1974, p. 21).

In Central America, a Mayan workshop (dated to the second to the fourth century) was uncovered in 1928. The archeologist who uncovered the shop concluded that the owner had kept a mastodon—the animal's bones were found among smashed jars and bowls in the shop (von Fange, 1974, p. 21).

Fresh Fossils

In 1821, Georges Cuvier described a proboscidean foot that was reportedly discovered in a cavern in the American West. An elephant tooth accompanied the foot, which Cuvier concluded was "fresh." He said, "The find—if authentic—was almost enough to make one doubt that mastodons were extinct, but I could not refrain from suspecting a fraud" (cited by Mayor, 2005, p. 345). The foot had been purchased from a Mexican trader who said he had obtained it from "les sauvages" somewhere west of the Missouri River. It is possible this foot does not indicate recently living mastodons or mammoths but instead was cut from an ex-

Figure 9. Cast of the Burning Tree Mastodon on display at the Mount Blanco Fossil Museum, Crosbyton, Texas. Photograph copyright © Vincent Ste. Marie. Used by permission.

traordinarily well-preserved mastodon mummy found in a dry cave (Mayor, 2005, p. 345). Such mummies have been found in caves in the southwest (Taylor, 1999, p. 57; Mayor, 2005, p. 345). Mummies are very fragile and cannot last very long, but a mummy would hardly be evidence for living mastodons. According to Mayor, this find "led Cuvier to ask whether some mastodons in North American bogs might be as well preserved as the frozen mammoths of Siberia" (Mayor, 2005, p. 63). Unfortunately, the foot and tooth no longer exist (Mayor, 2005, p. 345), and it is thus impossible to determine if the foot came from a recently dead animal or was simply mummified.

The Burning Tree Mastodon

The Burning Tree Mastodon (Figure 9) is a 95% complete *Mammut americanum* skeleton that was buried in peat. It was unearthed in December 1989 while a golf course pond in Licking County, Ohio, was being enlarged (Lepper et al., 1991, p. 121; Taylor, personal correspondence, 2009). The skeletal material was very well preserved, but the preserved intestinal contents are more revealing than the skeleton.

> During the excavation of some of the ribs and associated thoracic vertebrae, excavators noted an elongate mass of organic material (ca. 60 x 12 cm) distinguished from the surrounding dark brown peat by its reddish-brown color and pungent odor. Due to its location and distinctive properties this material was provisionally identified as gut contents. During sampling the material separated cleanly from the surrounding peat leaving a cylindrical impression in the matrix. Samples of this gut material and adjacent peat differ markedly in floral composition. (Lepper et al., 1991, p. 122)

Lepper et al. (1991) tested the material and found that it contained vegetation very different from, and in different proportions to, the surrounding peat material, reinforcing the conclusion that the material was from the mastodon's gastrointestinal tract.

Lepper et al. (1991, p. 123) state that it was as an attempt to "evaluate further the properties of the material provisionally identified as gut contents"

that resulted in the discovery of living intestinal bacteria in the intestinal contents. They state,

> Two colony types of gram-negative bacilli were isolated from the gut sample and identified as *Enterobacter cloacae*. *Enterobacter* species occur naturally in soil and water … but *E. cloacae* is the most common member of the genus found in the intestinal tracts of animals. ... As a control for our observations on the gut sample, a similar series of tests was run on samples of adjacent peat. Two different strains of gram-negative bacteria were isolated from the peat samples: *Serratia fonticola*, which is found in streams and freshwater environments … and *Citrobacter freundii*, which commonly occurs in soil and water, though it also may be found in the intestinal tract of animals … *E. cloacae* was not isolated from the peat samples. The peat thus contains bacterial taxa that might be expected, independent of the occurrence of a large mammal carcass, whereas the presumed gut material includes a form that is absent in the surrounding peat and that is frequently encountered in animal intestinal tracts. We therefore conclude that the culture obtained from the gut sample is most likely derived from survivors or possibly descendants of the intestinal microflora of the mastodon. (Lepper et al., 1991, p. 124)

Rhodes et al. (1998) did similar testing on the intestinal contents of the Burning Tree Mastodon, with much more impressive results. Whereas Lepper et al. (1991) reported identifying only one species of bacteria—*Enterobacter cloacae*—in the intestinal contents, Rhodes et al. (1998) reported finding over twenty. Among the bacteria discovered were two species of *Enterobacter*, *Yersinia enterocolitica*, five species of *Pseudomonas*, *Bacillus*, and two species of *Micrococcus* (the results of the various bacteriological analyses performed on the Burning Tree Mastodon intestinal mass are summarized in Table II). Of the 21 bacteria species found in the intestinal contents, only one species (*Micrococcus luteus*) was also found in the surrounding peat; only seven (*Enterobacter agglomerans*, *E. cloacae*, *Serratia plymuthica*, *Yersinia enterocolitica*, *Acinetobacter baumannii*, *Comamonas acidovorans*, and *Pseudomonas aureofaciens*) were also found in the bone-associated samples. The researchers state,

Source	Bacteria Species	Found in surrounding peat?
Lepper et al. 1991	*Enterobacter cloacae*	No
Kennedy et al. 1994	*E. cloacae*	No
Ibid.	*E. agglomerans*	?
Rhodes et al. 1998	*E. agglomerans*	No
Ibid.	*E. cloacae*	No
Ibid.	*Hafnia alvei*	No
Ibid.	*Klebsiella planticola*	No
Ibid.	*Serratia plymuthica*	No
Ibid.	*Yersinia enterocolitica*	No
Ibid.	*Acinetobacter baumannii*	No
Ibid.	*Alcalignenes xylosoxydans*	No
Ibid.	*Bordetella bronchiseptica*	No
Ibid.	*Comamonas acidovorans*	No
Ibid.	*Pseudomonas aureofaciens*	No
Ibid.	*P. chlororaphis*	No
Ibid.	*P. coronafaciens*	No
Ibid.	*P. putida*	No
Ibid.	*P. syringae*	No
Ibid.	*Arthrobacter aurescens*	No
Ibid.	*Corynebacterium aquaticum*	No
Ibid.	*Curtobacterium flaccumfaciens*	No
Ibid.	*Bacillus coagulans*	No
Ibid.	*Micrococcus luteus*	Yes
Ibid.	*M. lylae*	No

Table II. Bacteria Found in the Burning Tree Mastodon intestinal mass.

> There is no way of determining how many generations the surviving bacterial strains may have experienced since the death of these mastodons. Once tissue-derived substrates were metabolized, we suspect that usable carbon sources were not available to bacterial survivors, and long-term survival mechanisms drastically reduced growth rates. Thus, any available sources of energy were likely used for cell maintenance and not growth … This study provides microbiological evidence to support

> the hypothesis that the Burning Tree cylindrical mass is of intestinal origin … To date, few other studies have systematically examined the microbiology of remains associated with extinct mammal excavations. Future excavators should keep these findings in mind as proper sample collection and preservation are essential for rigorous microbiological analyses. (Rhodes et al., 1998, p. 657)

Lepper et al. (1991, p. 123) also state,

> Dates of 11,660 ± 120 yr B.P. … and 11,450 ± 70 yr B.P. … were obtained from nonconiferous twigs and other organic matter from the presumed gut contents, and these statistically equivalent dates should provide a more accurate age of the mastodon [than the younger date obtained from dating the bone collagen]."

Rhodes et al. agree:

> Deciduous twigs from the Burning Tree [intestinal] mass were dated … at 11,660 ± 120 years before present (BP) … and 11,450 ± 70 years BP … and bone collagen … was dated … at 11,390 ± 80 years BP. (Rhodes et al., 1998, p. 651)

However, it seems these evolutionists are overlooking some very important basic facts. First, ^{14}C dating has been conclusively shown to be inaccurate, particularly beyond 5,000 years (Riddle, 2006). Moreover, it does not make sense that these intestinal bacteria survived for 11,600 years, even if the bacteria discovered are not the original bacteria but the descendants of the original bacteria. This mastodon simply must be much younger than the evolutionists claim.

The evolutionists' interest in the recovered intestinal bacteria seems to be focused on proving the plant material recovered to be the remains of the intestinal contents of the mastodon. Rhodes et al. (1998, p. 657) also put a happy face on the discovery, saying that this and similar yet-to-be made discoveries "may provide key insights into the survival and evolution of bacteria in recent history."

The discovery of the bacteria does have value as evidence that the intestinal material was correctly identified. However, this discovery is much more important because of the basic conflict with the age assumptions. Could this mastodon be only a few hundred or thousand years old? This possibility needs serious consideration and further investigation.

^{14}C Dates

^{14}C dating has been demonstrated to be inaccurate (*Dating Fossils and Rocks*, 2004; Riddle, 2006). However, ^{14}C test results are definitely useful. Firestone et al. (2006, p. 12), for example, state, "The most astounding Clovis-era site of all was at Grant Lake in Nanavut Province in northern Canada, where the long gone Ice Age Paleo-Indians had apparently been hunting mammoths during the time of the Battle of Gettysburg in the U.S. Civil War!" The authors give no further details. They say this date (as well as some others they mentioned) is clearly "impossibly wrong, although others are correct." Perhaps this date is closer to the truth than Firestone et al. (2006) would be willing to admit.

Miller et al. (2006, p. 89) reported obtaining a date of ~4,980 ^{14}C years before present on a mammoth tusk. They did not mention where the tusk was found. This date is older than those obtained for the Wrangel Island mammoth remains (Vartanyan et al., 1993; Sher et al., 1994), but for a Eurasian or American mainland find, that would be too young for the evolutionary timescale. A piece of mammoth tusk from Clute, Texas, was ^{14}C dated at 4,960 ± 70 years old (Vernor, 2011, p. 4). ^{14}C test results on mammoth remains from St. Paul Island, Alaska, include dates of 7,908 ± 100 years before present (Guthrie, 2004), just over 6,000 years before present (Fisher et al., 2008), and 5,724 years before present (Oard, 2010).

Sedimentary Ancient DNA

Sedimentary ancient DNA (*sed*aDNA) provides another line of evidence supporting the recent existence of mammoths. Haile et al. (2009) reported finding DNA in supposedly ancient soils sampled near Stevens Village, Alaska. The soils sampled were dated by both ^{14}C and optically stimulated luminescence (OSL) and yielded congruent results. Haile et al. searched soils with a range of (evolutionary) ages from 11,000 to 8,000 years old (dates too old for the biblical young earth). Like ^{14}C, OSL dating is fundamentally flawed (Walker, n.d.).

DNA from various mammals was found in the sediments. In one of the higher (younger) layers, the DNA of both *Mammuthus primigenius* (wooly mammoth) and *Equus caballus* (horse) were found. The soil in which the mammoth and horse DNA were found was supposedly laid down sometime between 10,500 years ago and 7,600 years ago. (In North America north of the ice sheets, the youngest mammoth remains are dated at about 11,500 ± 160 ^{14}C years ago; south of the ice sheets, the youngest remains are dated at 10,350 ± 130 ^{14}C years old [Haile et al., 2009, p. 22365].) Haile et al. note that they were

> confident that DNA leaching cannot explain the presence of mammoth and horse *sed*aDNA at the Stevens Village exposure. No evidence of DNA leaching been [sic] found under permafrost settings, despite several investigations … and for mammoth and horse DNA to be recovered from sediments several millennia younger than the youngest macro-fossil remains from mainland Alaska/Yukon would require the DNA to have migrated more than 8 m [yards] upward through frozen sediments, without leaving any

> traces behind in the intervening strata. (Haile et al., 2009, p. 22365).

They also believe an animal has to be physically present at a site in order to leave its DNA:

> Previous studies have shown that mitochondrial DNA (mtDNA) putatively derived from the feces, urine, epidermal cells, and hair of a diverse range of vertebrates may be preserved for long periods in suitable sedimentary environments, such as those in the Arctic, even in the absence of identified macrofossils … This so-called 'sedimentary' ancient DNA (*sed*aDNA) has been shown to be of local origin … requiring an animal to have been physically present at the site for its DNA to be deposited … Although leaching of DNA may occur between layers in nonfrozen depositional settings, several studies have demonstrated that this problem does not appear to affect either perennially frozen sediments … or sediments frozen recently. … Furthermore, in cases where strata have remained undisturbed, DNA extracted from modern surface sediments at localities in the Arctic and temperate regions has yielded the genetic signatures of extant fauna only … which suggests that DNA is not readily reworked from older deposits and incorporated into younger deposits. (Haile et al., 2009, p. 22363)

Snowmass Fossil Site

The Snowmass Fossil Site near Snowmass, Colorado, has yielded an extraordinary amount of Ice Age animals, including bison, deer, mammoths, mastodons, and ground sloths. Because the remains had no measurable ^{14}C, the site was assigned an age of 50,000 to 150,000 years old. There is good evidence, however, that the site is extremely young. Many plant remains—both plant parts and entire plants—found with the bones were still green. It was observed that the plants rapidly turned brown upon exposure to air. The wood from the site was not petrified, and the bones were also fresh (not petrified). Proteins and soft tissues were found in some of the mammoth bones. These observations clearly indicate a very young age for the site—including its mammoths and mastodons (Beh, n.d.).

Discussion

The information presented in this paper has important implications for both creationists and evolutionists. This information is anomalous for evolution because the extinction dates of the mastodons and mammoths are closely tied to the cause of the end-Pleistocene extinctions in the evolutionary construct. Moving the extinction dates even slightly can have disastrous effects on some of the evolutionary extinction hypotheses. For instance, *Mammut americanum* was supposed to have become extinct around 10,395 years ago, but Woodman and Athfield (2009) reported ^{14}C dates on the Overmyer mastodon of 10,055 and 10,032 years old. They explained the results that this ~300-year adjustment has on standard models of extinction due to overkill by Clovis hunters, climate change, and the newer comet theory:

> The new dates on the Overmyer mastodon clearly indicate that the species existed in northern Indiana several centuries later than the last reliably dated Clovis sites, variously reported as either 10,765 ± 25 ^{14}C yr BP at the Jake Bluff site, OK … or 10,530 ± 103 ^{14}C yr BP for the Vail site, ME. … Although these dates on the Overmyer mastodon do not indicate that humans were not responsible for the extinction of the American Mastodon or even that Clovis people did not impact the population, they do indicate that the species was not brought to extinction during the time of Clovis. … The species also survived nearly to the end of the YDC [Younger Dryas Chronozone], indicating that neither the rapid climatic change that initiated this interval … nor the hypothesized extraterrestrial trigger for the YDC … brought about the immediate extinction of the North American Mastodon. (Woodman and Athfield, 2009, p. 361)

Similar conclusions were reached by Haile et al.:

> The classical human overkill ('blitzkrieg') hypothesis for the Americas asserts that extinction took place rapidly, within 1,000 years of human arrival. … The oldest reliable evidence of human presence in Alaska [14,000 yr BP at Swan Point, according to evolutionary dates] and the youngest macrofossil age for mammoth in this region (13,100–13,710 yr BP) are consistent with the blitzkrieg model. But the *sed*aDNA evidence for mammoth and horse persisting into the Holocene in interior Alaska is incompatible with such rapid extinction and indicates that late-surviving mammoths in the New World were not confined to islands in the Bering Sea that might have afforded protection from human hunters. … The protracted survival of mammoth and horse is also inconsistent with the hyper-disease hypothesis … (which requires their swift demise following human contact) and with mega-faunal extinction due to end-Pleistocene environmental changes associated with abrupt climatic events … altered vegetation patterns … or intense wildfires sparked by a presumed extraterrestrial impact. … We cannot exclude the possibility that the drastic decline in the number of mammoths surviving into the Holocene was originally triggered by human overkill, hyper-disease, climate and vegetation changes, and/or an extraterrestrial impact in the late Pleistocene. But our findings

> suggest that these events, if they occurred as classically conceived, did not deliver the deathblow. (Haile et al., 2009, pp. 22366–22367)

Corliss (1996, p. 51) also recognized this, stating, "Any historical observations [of mammoths or mastodons] later than … 8,000 years ago, would contradict the entire accepted mammoth-extinction scenario and, therefore, would be anomalous in the sense the word is used in this Catalog."

For creationists, this data gives us information to use when constructing hypotheses of mammoth and mastodon extinction. This evidence does not indicate a late survival for mastodons and mammoths but rather indicates that the time period when these animals were in their peak numbers was much more recent than is assumed by evolutionists. However, some of the information presented here clearly indicates the survival of some remnant populations of mastodons and mammoths long after their numbers were dealt a crushing blow by some sort of catastrophic happening or series of happenings after the Flood.

This information indicates that mammoths and mastodons lived and became extinct (if they did go extinct) quite recently. Furthermore, when developing models about the mammoth's extinction, we should leave enough room in the models to be able to account for the existence of living or recently surviving mammoths. In other words, when developing a new model or revisiting an old one that attempts to account for the extinction of the mammoths, we need to be able to understand how some mammoths could have escaped the fate of their relatives and continued living longer than evolutionists expect or even until today.

Conclusions

Based on the evidence summarized in this paper, we can reasonably conclude that evidence exists to demonstrate that evolutionary dates for the extinction of the mammoths and mastodons are grossly inflated. More research is needed, but at present we can state with confidence that mammoths and mastodons did survive much later than evolutionists believe—perhaps until as recently as 800 years ago. This conclusion harmonizes perfectly with the young earth that the Bible teaches.

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Phanerozoic Animal Tracks: A Challenge for Catastrophic Plate Tectonics

Carl R. Froede Jr., A. Jerry Akridge, and John K. Reed*

Abstract

Originally inferred from 2-D and 3-D computer simulations of crustal plate movement across the face of the earth, catastrophic plate tectonics was proposed as a young-earth creationist alternative to naturalistic plate tectonic theory, and has become widely accepted. Catastrophic plate tectonics claims that the Paleozoic, Mesozoic, and, in some instances, Cenozoic stratigraphic sections are Flood deposits. However, the presence of animal tracks throughout these same sections appear to contradict the biblical record, which states that the animals that could have created these tracks were all dead long before the end of the Flood. Catastrophic plate tectonics' adherence to the secular chronostratigraphic geologic timescale, or the standard geologic column, is the source of this apparently insoluble problem. Until advocates of this model can explain how animal tracks could have been produced in strata that supposedly formed *after* the extinction of the track makers, their model exhibits a glaring inconsistency with field data.

Introduction

Any concept or idea that claims to explain the intricacies of the global biblical Flood must be carefully examined and tested using datasets consistent with Bible history. This is especially true where naturalistic models such as plate tectonics are adapted and adopted. Catastrophic plate tectonics is based on 2-D and 3-D computer simulations and datasets used to support plate tectonics within the naturalistic framework of the standard geologic timescale/column (see Appendix). Despite its broad acceptance, inconsistencies with the field data continue to appear, often because the field data it calls on for support is interwoven with uniformitarian and evolutionary assumptions, i.e., biostratigraphy and radiometric dating.

Catastrophic plate tectonics asserts that strata comprising the Paleozoic, Mesozoic (Austin et al., 1994; Baumgardner, 1994a), and in some cases the bulk of the Cenozoic eras (Baumgardner, 2002) are Flood deposits (Figure 1). However, if the stratigraphic succession of those eras represents deposition throughout the Flood, the presence of animal tracks found globally in these same Phanerozoic sediments is not consistent with the biblical account that states that all air-breathing life-forms

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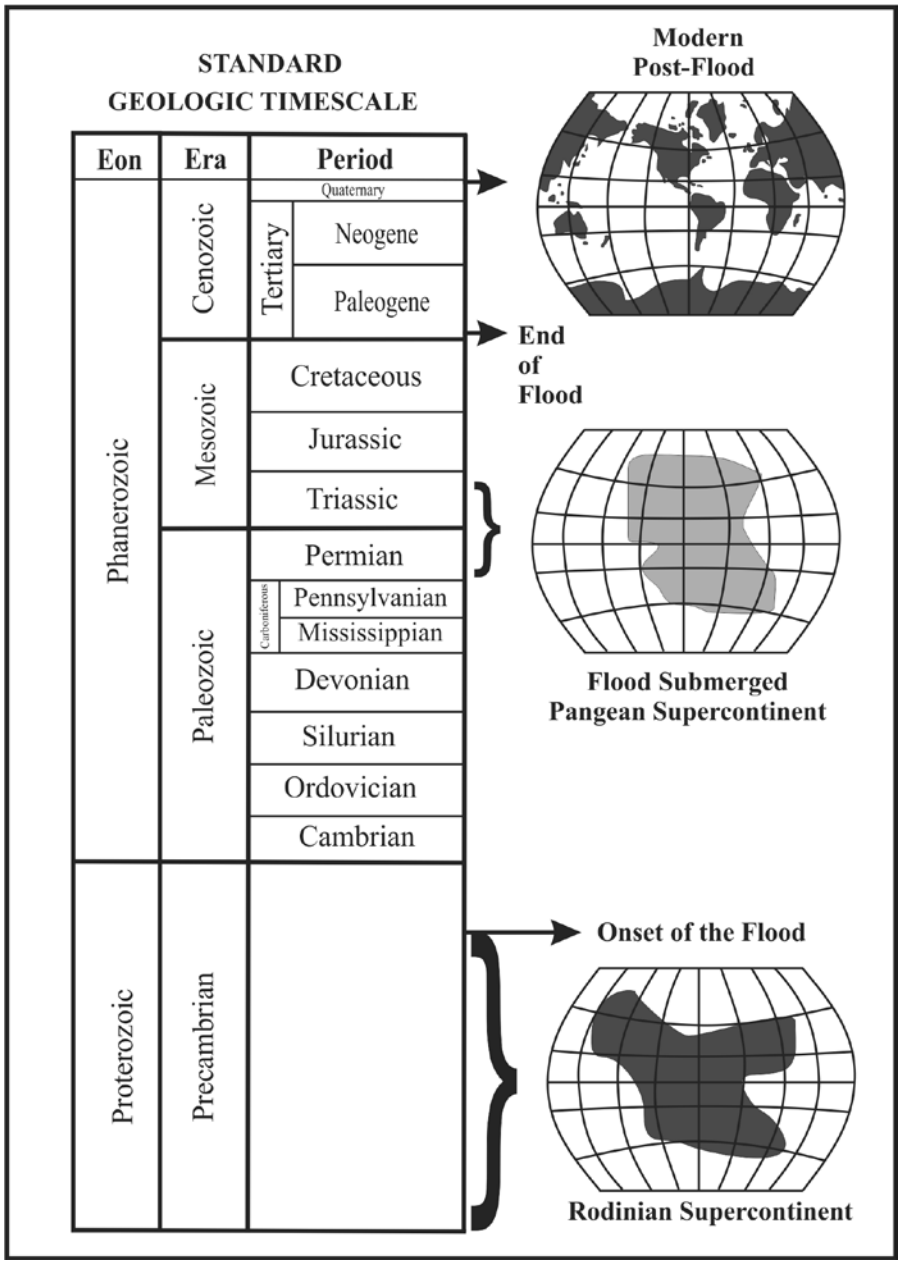

Figure 1. The Standard Geologic Timescale/Column is used to define Earth history within the philosophical construct of naturalism, and advocates of catastrophic plate tectonics use it absent deep time and evolution. Note times of Rodinia and Pangea. The breakup of Rodinia has recently been proposed as the beginning of the Flood (Snelling, 2014). Overlying strata would have to maintain the sequence of Eons, Eras, and Periods. However, the sequential arrangement of the strata still relies on uniformitarian and evolutionary ideas (Reed, 2008).

on the continents were killed within the first 40 but no later than the first 150 days of the Flood (Figure 2). How can this inconsistency be addressed?

Which Supercontinent Broke Apart?

Like most models, catastrophic plate tectonics has been modified by new data and ideas. Originally it called for the initiation of the Flood at or near the Precambrian-Cambrian boundary with the breakup of the Pangean supercontinent (Baumgardner, 1986, 1990, 1994a, 1994b; Austin et al., 1994). From the beginning, this model assumed the validity of the chronostratigraphic (everything but the absolute ages) part of the geologic timescale. We also call this the "standard geologic column," and it represents an organized burial progression from simple plants and animals to the more complex (Baumgardner, 1994a), consistent with secular evolutionary theory and the diluvial theory of ecological zonation (Clark, 1977; Coffin, 1983).

Reed and Froede (2002) pointed out that the selection of Pangea as the pre-Flood supercontinent was inconsistent, since data consistent with the standard geologic column placed that breakup during the Mesozoic and also supported the opening and closing of other supercontinents well back into the Precambrian. Baumgardner (2003, 2009) then identified an earlier unnamed supercontinent as the starting point for the initiation of the Flood, and Snelling (2014) identified Rodinia as that supercontinent. This change in the model kept the Flood-initiating supercontinental breakup close to the Precambrian/Cambrian boundary, included the lower Paleozoic fossil section in the Flood, and addressed evidence for Wilson cycles (Froede, 2002). In this new scenario, Pangea assembled and then quickly splintered late in the Flood, when the continents were still submerged (Snelling, 2014). Whether the onset of the Flood is recorded by the breakup of Rodinia or the breakup of Pangea or even the breakup of a different, unspecified supercontinent, all biblical Flood models must account for the fact that all land-dwelling and air-breathing life on Earth was dead no later than 150 days into the Flood (Genesis 7:17–24).

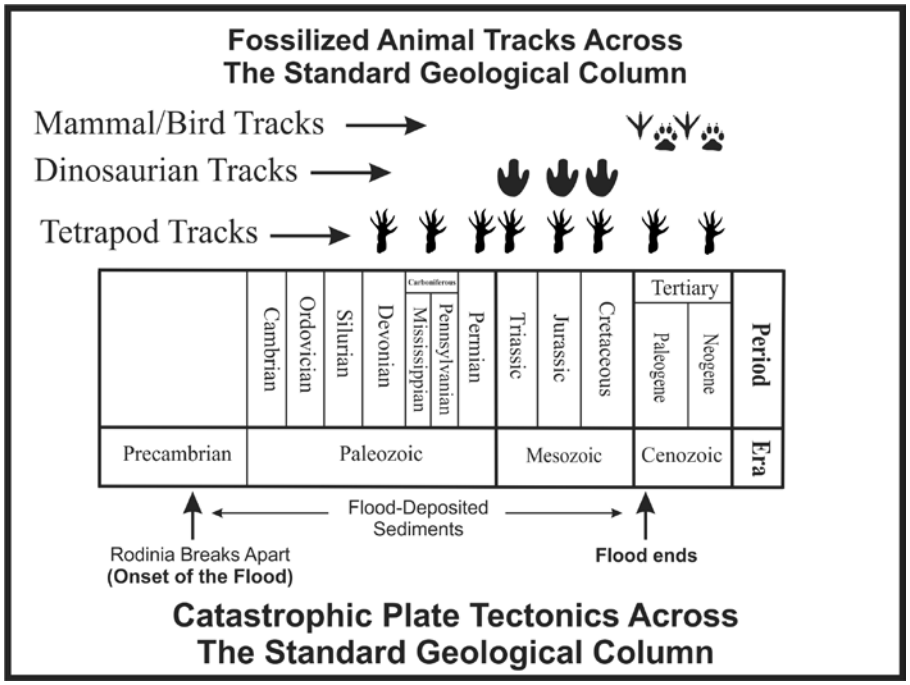

Figure 2. Catastrophic plate tectonics initiates the Flood with the breakup of the Precambrian supercontinent of Rodinia and ends it at or near the Mesozoic/Cenozoic contact or later in the Cenozoic (depending on the author). Animal tracks span much of this time and actually increase in number and kind as the Mesozoic/Cenozoic boundary is approached. The Bible states that all the track makers would have been dead within—at most—the first 150 days of the Flood. Any interpretation that invokes support from the geological column is at odds with that statement.

Phanerozoic Animal Tracks

If the biblical record of the Flood is consistent with catastophic plate tectonics, then we should expect to observe animal traces only in the lowest Paleozoic sediments. Baumgardner conveys the utter destruction of Earth's surface with the onset of the Flood:

> If the earliest Cambrian rocks mark the beginning stage of Noah's Flood just a few thousand years ago, then most of the subsequent geological record, from Cambrian to recent, must be the product of a global catastrophe of a magnitude beyond the ability of the human mind to imagine. (Baumgardner, 1990, p. 35)
>
> The Flood is understood, in terms of normal usage of the words in the Genesis account, to be a global catastrophe that destroyed all the non-aquatic air-breathing life on the earth except for that preserved in the ark. (Baumgardner, 1994a, p. 49)

Whether the Flood ended at the end of the Mesozoic (Baumgardner, 1986; Austin et al., 1994), the lower part of the Cenozoic (Baumgardner, 1994a), or the late Cenozoic (Baumgardner, 2002), the problem remains the same. Animal tracks have been identified in sedimentary rocks extending from the Devonian through the Cenozoic (Figures 3, 4, and 5). Naturalists have documented animal footprints globally (e.g., Olsen et al., 1991; Retallack, 1996; Raath, 1996; Olsen and Huber, 1998; Chen et al., 2006; Lockley et al., 2006; Lucas, 2007; Diedrich, 2008) in sediments that catastrophic plate tectonics defines as Flood deposits (Baumgardner, 1986, 1990, 1994a; Austin et al., 1994).

In fact, the abundance of dinosaurian tracks and trackways in Mesozoic sediments has yielded a plethora of books written by naturalists in an effort to understand and reconstruct their paleoenvironments within an evolutionary framework (Gillette and Lockley, 1989; Lockley, 1991, 1999; Lockley and Hunt, 1995; Weishampel and Young, 1996). Tetrapod tracks, bird tracks, and mammal tracks have all been identified throughout Cenozoic sediments (e.g., Lucas, 2007; McDonald et al., 2007; Remeika, 2001).

If these rocks were deposited during the Flood, what are the ramifications of finding these tracks so late in a column-based Flood model? The investigation of animal tracks in Paleozoic and Mesozoic strata has not been limited to naturalistic scientific studies. Articles have been written about these trace fossils by young-earth creationists, revealing problems, especially for those who adhere to the standard geologic column (Brand and Florence, 1982; Snelling, 1996, 2009; Whitmore, 2009). The recently proposed concept of "Wholistic Geology" (Brand, 2007) shows great promise in interpreting animal tracks and trackways in a Flood context, but since Brand remains committed to the chronostratigraphic timescale, it results in a disjointed chronology.

Some young-earth creationists have realized the problems inherent to the standard geologic column defining Paleozoic, Mesozoic, and lower Cenozoic ichnofossils for the Flood instead of the Flood defining the progression of eras (e.g., Froede, 1995, 2010, 2012; Oard, 2003, 2014; Walker, 1994) [Figure 6]. The Bible leaves only three times in which tracks could be preserved: (1) before the Flood, (2) during the early part of the Flood, or (3) after the

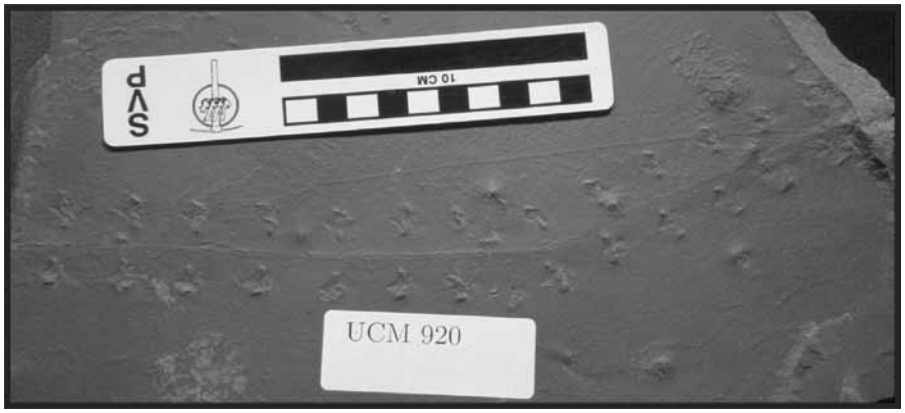

Figure 3. The underside of a tetrapod (amphibian) trackway from the Union Chapel Mine (UCM), which has been renamed the Steven C. Minkin Paleozoic Footprint Site, in Walker County, Alabama. According to naturalists, this trackway is from the lower Pennsylvanian (base of the Westphalian Stage; Kopaska-Merkel and Buta, 2012). Scale in cm. These tracks occur in sediments overlying coal-bearing layers in the Black Warrior Basin. These animal tracks limit these sediments to the early part of the Flood, indicating problems with models such as catastrophic plate tectonics, which attempt to link the geological column to the biblical record.

Flood. The presence of tracks in every period from the Devonian constrains all Flood models to reexamine their relationship to the standard geologic column. Strata that are clearly identified as Flood deposits and contain animal tracks must by default be dated to the first 40 to 150 days of the Flood. Tracks also can be preserved in rocks formed after the Flood. However, our focus is on the sequence of strata defined as Flood deposits by catastrophic plate tectonics. Because they assume a linear progression from late Precambrian to either the beginning of the Cenozoic or later in the Cenozoic (depending on the author), there are strata with tracks that the model would place during the mid to late Flood, which is inconsistent with Genesis 7.

Figure 4. A surface track impression of an *Atreipus* sp. (Archosaurian reptile) from the Triassic Cow Branch Formation, Solite Quarry, near Cascade, VA (see Olsen and Baird, 1986). Scale in cm and inches. These tracks formed in a rift basin partially filled with volcanic sediments capped by silts, clays, and sands. Some sedimentary layers contain animal tracks while others contain body fossils. A vertical tectonic interpretation by Froede (2010) places it in the uplift of the adjacent Appalachian Mountains early in the Flood, contrary to the column.

Figure 5. Several different animal tracks and trackways on the surface of the Late Cretaceous Dakota Sandstone (Lockley, 2001), at Dinosaur Ridge, Morrison, Colorado. Field of view in foreground is approximately 8 ft and extends approximately 18 ft. These sediments also contain dinosaur bones and mostly macerated (now charcoalified) plant fossils, suggesting a catastrophic depositional environment (Holroyd, 1992). Tracks in these strata are difficult to reconcile to the column and the Flood.

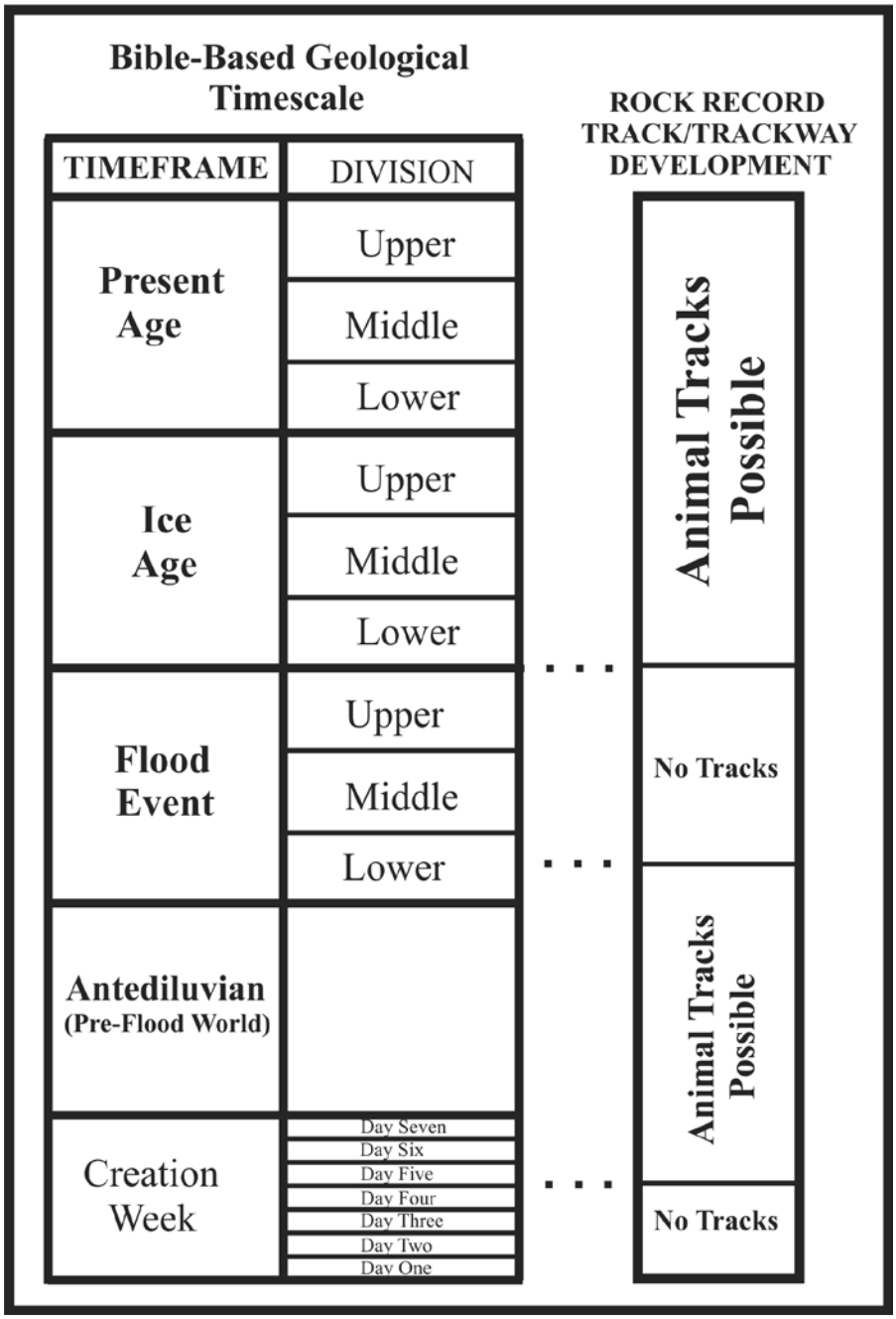

Figure 6. An alternative for understanding animal tracks and trackways in a biblical geologic framework (Froede, 1995). These ichnofossils could have formed in the antediluvian timeframe, the lower division of the Flood-event timeframe, or following the Flood from the Ice Age to the present-age timeframes. Each occurrence of tracks needs to be interpreted in this framework, without regard for the column.

Alternatives

We recognize that Psalm 104:5–9 and Genesis 8:1–19 provide a limited understanding of the tectonic forces in operation at the end of the Flood. However, nothing in Scripture demands or even strongly suggests the necessity of catastrophic plate tectonics. Given its dependence on datasets weighted by uniformitarian and evolutionary assumptions (Reed et al., 1995), creationists should expect inconsistencies because of the inherent inconsistencies between biblical history and today's secular natural history. We are better off working within a biblical framework, recognizing that the standard geologic column may create more problems than it solves.

Other creationists have addressed the stratigraphic distribution of animal tracks and trackways in interesting ways yet have clung to the column to do so. Some (e.g., Tyler and Coffin, 2006) have proposed a "recolonization model," which initiates the Flood in the earliest Precambrian and ends it in the Devonian, placing all animal tracks *after* the Flood. However, this model is not consistent with biblical or field evidence (Reed et al., 2009). Another attempt by Oard (2001) argues that strata up as far as the Cenozoic represent deposition early in the Flood and that later sediment—barren of tracks and trackways—was deeply eroded during late Flood erosion of the continents.

Both of these positions accept the chronostratigraphic column, although Oard (2006) argues that it is only generally true, has exceptions, and is used in this context for discussion purposes only. We suggest that Flood models could be made simpler and avoid such inconsistencies if the assumption of the validity of the column was abandoned. Instead of using the secular chronostratigraphic scale, we suggest that timescales be built on the biblical record, following the work of Walker (1994) and Froede (1995). Both allow the development of a scripturally based, internally consistent, and technically sound understanding of earth history. What remains largely undeveloped is a tectonic framework consistent with those timescales.

There was obviously intense tectonism at the onset of the Flood at the release of the "fountains of the great

deep." There was obviously tremendous vertical movement, upward by the continents and downward by the oceanic basins, to cause the retreat of the waters off the continents and into those basins. We believe this should be the starting point in the development of any biblically based tectonic theory. If advocates of catastrophic plate tectonics believe that lateral movement of the continents is necessary, the burden of proving it rests on them, both scripturally and technically. Since the Scriptures are inconclusive, only forensic historical data and conceptual models are available.

In any case, all Flood models must account for the distribution of animal tracks and trackways. They are a valuable indicator of the time of deposition of the strata that contain them (Figure 6). The presence of tracks and trackways is limited to rocks deposited before the Flood, deposited during the first 40 to 150 days of the Flood, or deposited after the Flood. No tracks or trackways would be expected during the latter part of the Flood. Not every trace, track, or trackway formed during the Flood, and creation scientists should study these ichnofossils within their field context to determine which of the three options they fit.

Summary and Conclusions

Catastrophic plate tectonics is an impressive computer and conceptual model, but it manifests inconsistencies when compared to the rock and fossil records, especially the ichnological record, largely because it uncritically accepts the standard geologic column. The documented global presence of tetrapod, dinosaur, mammalian, and bird footprints in sediments that should be devoid of them highlights this inconsistency, whether one accepts a Mesozoic/Cenozoic end of the Flood or a late Cenozoic end of the Flood. Like any other Flood model, catastrophic plate tectonics must remain consistent with Scripture. For that reason, its proponents should reconsider their commitment to the standard geologic column.

Creation science will only continue to develop as new tectonic models are crafted within a biblical framework (Figure 6). Until its proponents can adequately address the problem of animal tracks and trackways in strata they would place in the middle and late stages of the Flood, catastrophic plate tectonics must be seen as a flawed theory (Froede and Akridge, 2013).

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Appendix: The Standard Geologic Timescale

Secular geologists recognize that their timescale consists of two parts: (1) the sequential arrangement and correlation of all strata on Earth and (2) the absolute ages that date the boundaries within that sequence. The former is usually called the "chronostratigraphic timescale" and the latter the "geochronologic timescale" (Ferrusquía-Villafranca et al., 2009). All young-earth creationists reject the geochronologic timescale, but many accept the chronostratigraphic timescale (i.e., the standard geologic column). The problem with accepting this conceptual column is that it rests on the assumptions of deep time, uniformitarianism, and evolution (Reed and Oard, 2006; Reed, 2008, 2013).

None of these naturalistic tenets are consistent with biblical history, and so despite their ubiquity and use, they form a construct that should be rejected. Unfortunately, many creationists disagree. We believe that until this issue is resolved, any Flood model(s) relying on the stratigraphic succession presented by the standard geologic column will present the same inconsistencies seen in catastophic plate tectonics.

The conceptual framework of catastrophic plate tectonics relies on secular datasets that are interwoven with assumptions of deep time, uniformitarianism, and evolution (Reed et al., 1995; Reed, 2001). None of these supporting ideas have been redefined in a manner that provides a consistency with biblical earth history.

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The Role of the Transcendental Argument in Creation Research

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Abstract

The transcendental argument for God is fundamental to creation research. Clearly defined, it reveals the biblical foundations upon which real science rests. It links creation research to the objective truthfulness of God while showing the absurdity of the secular view by uncovering its subjective foundation. The transcendental argument also has application to evidence claims, experimentation, and arguments against evolution.

Introduction

Creation research, by its very nature, has both presuppositional and evidential aspects. It is presuppositional in its reliance on the biblical account of Creation, which also links it to absolute truth. It is evidential in its use of science in forensic history to support and enlarge the biblical narrative. The transcendental argument, which addresses axiomatic issues, provides a logical argument to expose the presuppositional truth claims of both Christianity and secular natural history.

The bulk of creation research is evidence based, as demonstrated by the fact that most articles published over the last 50 years by the *Creation Research Society Quarterly* were in evidence-based sciences (Reed, 2013). These articles gain strength and clarity with the foundation of the transcendental argument by connecting evidence to a biblical framework. In other words, evidence does not stand alone without first being interpreted, and the transcendental argument provides a method to expose these interpretations.

Defining the Transcendental Argument

Defining the transcendental argument can be difficult. First, it is clearly different from the more familiar deductive and inductive arguments. Second, many variations of contemporary transcendental arguments have been proposed by thinkers as diverse as Immanuel Kant (1724–1804) and Cornelius Van Til (1895–1980).

Biblical scholar Michael Butler (1997) defines the argument in general terms:

> Popularized by Immanuel Kant, transcendental arguments attempt to discover the preconditions of human experience. They do so by taking some aspect of human experience and investigating what must be true in order for that experience to be possible. (Butler, 1997, p. 6)

Philosopher and apologist Greg Bahnsen further defines the transcendental argument this way:

> It has been central to the philosophies of Aristotle and Kant. … Van Til asks what view of man, mind, truth, language, and the world is necessarily presupposed by our conception of knowledge and our methods of pursuing it. For him, the transcendental answer is supplied at the very first step of man's

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> reasoning—not by autonomous philosophical speculation, but by transcendent revelation from God. (Bahnsen, 1998, p. 6)

The argument typically follows this pattern or takes this form:

> As standardly conceived, transcendental arguments are taken to be distinctive in involving a certain sort of claim, namely that X is a necessary condition for the possibility of Y—where then, given that Y is the case, it logically follows that X must be the case too. (Stern, 2013)

Butler explains:

> The transcendental argument tries to show transcendentals … The word 'transcendental,' used as a noun, is a condition for some kind of experience … and is usually indexed to a certain type of experience or concept. (Butler, 1994)

Van Til explains:

> A truly transcendental argument takes any fact of experience which it wishes to investigate, and tries to determine what the presuppositions of such a fact must be, in order to make it what it is. (Van Til, 1969, p. 18)

So, in the form described above, X is the transcendental based on the observation of Y. For example, if some "natural law" is observed, there must be a prior explanation of the intelligibility of nature to man (Figure 1). Figure 2 shows the differences between transcendental arguments and the more familiar inductive and deductive arguments.

X is a precondition for the possibility of **Y**
Y is the case because **X** is the case
X is the transcendental for **Y**
X = revelation from God (transcendental) for **Y** = conception of knowledge
X = revelation from God for **Y** = any observation

Figure 1. Different ways to look at the transcendental argument formula.

A. Inductive Argument
The meerkat is closely related to the suricat
The suricat thrives on beetle larvae
Therefore, the meerkat probably thrives on beetle larvae

B. Deductive Argument
The meerkat is a member of the mongoose family
All members of the mongoose family are carnivores
The meerkat is a carnivore

C. Secular Transcendental Argument
Everything about the meerkat is understood as the product of evolution. Human science alone uncovers the relationship of the meerkat to other members of the mongoose family or any other fact about the animal.

D. Christian Transcendental Argument
Everything about the meerkat can only be understood in the context of God's revelation. Genesis 1 provides the basis for understanding the relationships of all kinds of animals. Furthermore, God provides the structure of logic and knowledge that allow human reason to understand the meerkat. Without God, understanding is not possible.

Figure 2. Different types of arguments. A and B from Hurley (2008).

The Presuppositional Nature of Creation Research

The application to creation research is obvious, because embedded in creation research are biblical presuppositions (Lisle, 2009; Reed, 2000; Reed et al., 2004). In other words, the Bible is the ultimate epistemological reference point for the events and consequences of Genesis 1–11. This is an appeal to the objective, absolute truth of God, which is different in kind from "subjective" scientific opinions that must be defended experimentally or from historical inferences made by scientists. Rather, it is a stance on the existence of God and His revelation in the Bible and in nature.

The transcendental argument forces the scientist to recognize that his science is not autonomous and that God has a unique ontological status. He is self-sufficient, self-authenticating, self-attesting, and self-identifying. God exists necessarily, and this beginning point must be acknowledged.

> It is only upon Christian presuppositions that we can have a sound scientific methodology. (Van Til, 1975, p. iv)

The certainty, absoluteness, and exclusivity of the God to whom the young-earth position appeals must be clearly presented and not minimized in any *way*. The *way* (presuppositionally) in which creation research is conducted is important.

Failing to recognize God as the source of truth for science as well as for any other human discipline (and not just theology) is essential, as is the contrary—that science is not intelligible apart from Christian axioms. Nothing is intelligible without God, for it is in Christ where all understanding and knowledge are found; in Him "are hidden all the treasures of wisdom and knowledge" (Colossians 2:3 ESV). Bahnsen explains:

> If God did not exist, the intelligibility of human experience, reasoning, and communication would be lost; indeed, God must exist in order for someone meaningfully to deny His existence. (Bahnsen, 1998, p. 620)

Van Til explains that God must be acknowledged to give significance to any object of knowledge:

> It is not as though we already know some facts and laws to begin with irrespective of the existence of God, in order then to reason from such a beginning to further conclusions. It is certainly true that if God has any significance for any object of knowledge at all, the relation of God to that object of knowledge must be taken into consideration from the outset. It is this fact that the transcendental method seeks to recognize. (Van Til, 1969, p. 174)

Creation researchers also must understand the implications for common ground with secular scientists. To the extent that common ground exists in the methods and assumptions of science, it is inconsistent with the secular worldview. Ultimately, any researcher is attempting to support his basic presuppositions. The difference is that the creation researcher admits a prior belief system based on the Bible, while many secular scientists refuse to admit this basic truth. An appeal to the absolute authority of God is an attack on the human autonomy that presuppositionally supports the unbeliever's way of thinking. This challenge to the secular scientist's inconsistent (in the sense that science is Christian) foundations demonstrates the fundamental irrationality, which is shown in attacks on those who oppose evolution (Bergman, 2008; *Expelled: No Science Allowed*, 2008).

Furthermore, presuppositional apologetics should not be misunderstood. Pointing out that assumptions are involved is not enough. That is, it must be clear that God's position as ultimate authority in all matters of epistemology, metaphysics, and ethics is the starting point of all reality, of all knowing and experience.

> Van Til's point is not simply that everybody has assumptions. There is little specific help for a successful program of apologetics in that observation (which nearly everybody can make). Indeed, left there, the insight might woefully suggest that nature and history could be just as well interpreted on a non-Christian basis as on a Christian one—a thought that was abhorrent to Van Til. Instead … the apologist must "press the objective validity of the Christian claim at every point." (Bahnsen, 1998, p. 108)

The Evidential Nature of Creation Research

Although creation science is presuppositional, the bulk of its work is done with evidence and, where possible, experimentation. Because science itself is an enterprise constructed within the Christian worldview, it provides common ground with the public. However, if issues of presuppositional consistency are not raised, creationism runs the risk of being seen as merely another subjective opinion, and the apologetic mandate of Scripture is ignored. The biblical foundations upon which research is conducted should be clearly presented. Nancy Pearcey illustrates the harmfulness of abandoning objective truth:

> If Christians would just relinquish all claims to objective truth, then they would be granted an arena where their beliefs are secure from criticism. But it has become evident that such a bargain offers a false security. … That's why it is dangerous to engage in cognitive bargaining that relegates Christianity to the value realm. (Pearcey, 2004, p. 221–222)

Furthermore, she explains the problem of a fact/value dichotomy:

> By accepting the fact/value dichotomy, many of us have come to think of religion and morality in terms of a privatized, upper-story experience. (Pearcey 2004, p. 203)

In Figure 2, the inductive and deductive arguments about characteristics of a meerkat are helpful and do not overtly reference values. The transcendental argument, which exposes the philosophical underpinnings about how the meerkat is viewed, illustrates that facts are not value free. Van Til uses the term "brute fact" to illustrate this. "If we seek to interpret any fact based on a non-Christian hypothesis it turns out to be a brute fact" (Van Til, 1975, p. 65), he writes, then adds:

> The mere assumption of a brute fact is a denial of the creation doctrine. … Taking brute facts for granted, scientists must also take for granted the ultimacy of the human mind. (Van Til 1975, p. 84)

Bahnsen clarifies this:

> Every fact of the universe and history is preinterpreted by the sovereign Creator; it is *what* it is in virtue of His plan and knowledge. Hence to understand the world correctly one must subordinate his thinking to

> the revelation of God, thinking His thoughts after Him in a receptively reconstructive fashion. Meaning is not attached to brute facts by man's mind, but all facts bear the meaning that God assigns and must be known as such. (Bahnsen, 2008, p. 227)

Therefore, facts (evidence) cannot be neutral because then the best we could hope for is an apologetic that points to an indeterminate God.

Secular science is vulnerable to an assault on its presumed neutrality and autonomy. Scientific evidence operates in one belief system or another. The only consistent one is that which points to the self-defining God of Scripture:

> If God himself provides evidence for what he declares to be truth it is calumnious to repudiate the value of evidence. (Sproul et al., 1984, p. 20)

So while the value of evidence is enormous, it must be understood in its proper perspective.

> Discussions usually sink to a 'my evidence' versus 'your evidence' level, while in reality all evidence must be *interpreted* … discussions should be 'my interpretations based on my assumptions' versus 'your interpretations based on your assumptions' and the reasonableness of each set of assumptions and interpretations. (Morris, 1994, pp. 119–120)

This flow from assumptions to data to conclusions by way of interpretations has been used by many (Chittick, 1984; Ham, 1987; Morris, 1994).

Ken Ham has been using this approach effectively for years. It is the theme of his classic book, *The Lie*. He explains:

> I had been using what can be called an *evidentialist* approach … I then changed methods and taught students the true nature of science—what science can and cannot do. … They were told that all scientists have presuppositions (beliefs) which they use in interpreting the evidence. I shared with them my beliefs in the Bible … I had begun teaching from what could be called a 'presuppositional' approach. The difference was astounding. (Ham, 1987, pp. 30–31)

Does Ham abandon arguments from natural theology? No. His popular use of the example of the platypus in many of his lectures is an argument from design. "It's designed to do what it does do and what it does do it does do well." This is an argument from natural theology, specifically a teleological argument. However, it would be an incomplete response if it were not tied to the Designer described in Genesis.

A good illustration of the relationship of evidence and interpretations is found in John 12:28–29:

> "Father, glorify your name." Then a voice came from heaven: "I have glorified it, and I will glorify it again." The crowd that stood there and heard it said that it had thundered. Others said: "An angel has spoken to him." (ESV)
>
> Those who made the assumption that a Creator can act perceived a communication in the form of words. On the other hand, those who made the assumption that nothing supernatural was involved concluded that the noise was thunder … The two groups of people had the same facts available to them … Their conclusions about it, however, were quite different and depended on the assumptions they held. (Chittick, 1984, p. 30)

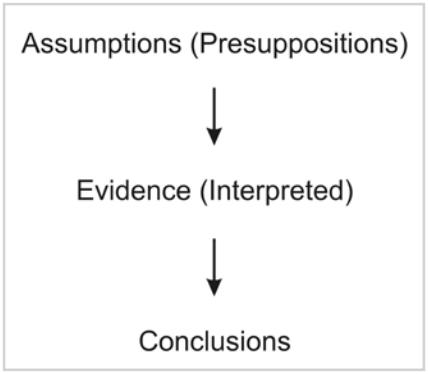

Figure 3. The flow from data to conclusion.

Despite assertions to the contrary, evolutionists develop and maintain their position because of their philosophical starting point. The mere presence of compelling counterevidence for biblical history demonstrates that the debate is over *interpretations* of the evidence. The transcendental argument allows us to resolve that debate. Its usefulness is seen in two areas: (1) the preconditions for intelligibility and (2) in the effectiveness of the argument for the impossibility of the contrary.

Preconditions for Intelligibility

Science rests on nature being intelligible to man. This is what the transcendental method does. Secularists blindly assume that the human mind is the ultimate source of all intelligibility. But this creates a problem for evolutionists.

> Their problem has always been how contingent, limited, fallible humans can achieve absolute, unlimited, and infallible knowledge. At present, they appear to have settled for the abolition of knowledge in favor of emotion (so-called "post-modernism"). (Reed, et al., 2004, p. 225)

An evolutionist has an especially big problem when he is faced with the challenge of accounting for his source of intelligibility.

> The evolutionist must use biblical creation principles in order to argue against biblical creation . … Evolutionists must assume the preconditions of intelligibility in order to make any argument whatsoever. … But the preconditions of intelligibility do not comport with an evolutionary worldview. (Lisle, 2009, pp. 45–46)

Consider two examples. First, how can the evolutionist explain a nonmaterial reality like logic? We know that even though we cannot put our hand

on it or see it, logic is real. How could it have evolved? This is inexplicable in the secular worldview, where materialism is the ultimate reality. However, Christians can readily justify logic by reference to the nature of God. The *transcendental* to the *experience* of logic is a God who is orderly and uniform and displays regularity in time and space (Lisle, 2009). This same argument can be applied to other nonmaterial realities like love, morality, or our senses.

Second, consider a material reality, such as a rock formation. Both creationists and uniformitarian geologists may seek to explain the formation. A creationist can gain historical context by the prior knowledge of the truth of the Bible. The *transcendental* to the *observational feature* of that rock formation is this context of Creation and the Flood. Thus, God, through Scripture, gives intelligibility to the explanation of the rock formation. Conversely, empirical research conducted without a clear acknowledgement of God as the source of intelligibility can appeal only to the limitations of the human mind, and it is only to the extent that the unbeliever borrows from the Christian worldview that he can make sense of anything (Bahnsen 2008).

Reed et al. illustrate this by exposing how naturalism has hijacked Christian axioms:

> Naturalism is formally invalid because it relies on axioms antithetical to its methods and conclusions. Naturalism sprouted from the soil of Christian presuppositions. Larceny is profitable as long as no one notices, but when the spotlight is aimed in the right direction, the long arm of logic must act. We contend that unless Naturalism can recreate these axioms and justify them in a way that is consistent with the rest of its worldview, creationists should be screaming that the entire worldview is false and should be ignored in discussions about origins or Earth history. All of the empirical data in the world cannot save Naturalism from formal flaws. (Reed et al., 2004, p. 228)

The strength of the transcendental method can be seen by its exposing this truth. Oliphint sums this up well:

> Methodologically, what has Van Til done thus far? He has shown that the pragmatist cannot do justice to his own system of thought because it presupposes in its defense that which it rejects. (Oliphint, 1997, p. 6)

Impossibility of the Contrary

Another way in which the transcendental argument is useful is in the form of argument known as the "impossibility of the opposite." Bahnsen writes:

> Only Christianity is a reasonable position to hold and … unless its truth is presupposed there is no foundation for an argument that can prove anything whatsoever. Thus it is irrational to hold to anything but the truth of Scripture. (Bahnsen, 2008, p. 124)

Also:

> At the level where there are conflicting claims as to the true, self-evident starting point, our apologetic argumentation must require all or nothing; either complete surrender to the epistemic Lordship of Christ (Col. 2:3) or utter intellectual vanity and striving after wind (Eccl. 1:13–17). We must argue from the impossibility of the contrary. (Bahnsen, 1996, p. 74)

In the formula above (see Figure 1), Y is the case *because* of X. So, without X, Y cannot be the case. The "impossibility of the contrary" states: If X is a necessary condition of Y, then without X, Y is impossible. If God is X and Y is the operational features of nature, and if God is a necessary condition for them, then Y cannot be explained without God. Absent God, the source of all knowledge, there is no accounting for the components of logic, causality, order, etc. because these cannot be explained by materialism. It is the distinct claim of Van Til's (1975) transcendental argument that it is God who provides the preconditions for intelligibility. However, it is not a mere assertion that God provides the preconditions for intelligibility. It is the observation of things for which God is a necessary explanation. Because we observe them, it is logically impossible to propose the absence of God, according to Van Til (1975).

Evidentialism Versus Presuppositionalism

A division has developed between theologians over the method of apologetics. The position of the most prominent modern presuppositionalist, Van Til, was challenged and critiqued by Sproul et al. (1984) in their book *Classical Apologetics*. The details of this debate are beyond this paper, but it has relevance to creationism through the transcendental argument:

> The transcendental method is, according to Van Til, the combination of both the inductive and deductive elements *as these are understood in the Christian context*. To combine these elements for a Christian runs somewhat like this: All facts that are investigated must be seen first of all as created and therefore interpreted by God. (Oliphint, 1997, p. 12)

The problem with a division between these two approaches is that they become competing methodologies. If two baseball teams compete with one another, one team cannot borrow players from the other team. Instead, evidential and presuppositional methods should be viewed as *complementary* methods of arriving at truth.

To think that one has to have either an evidential or presuppositional approach to apologetics is to commit the logical fallacy of a false dilemma. It is not an either/or proposition because

evidentialists have presuppositions, whether they admit it or not, and most presuppositionalists use evidence.

At heart is the ontological error called a *category mistake*. If I want to describe the taste of an apple, I would not say it tastes green. I may say it tastes sweet or sour but not green. That is because "green" is not in the same category as "sweet" or "sour."

Likewise, the transcendental argument is not in the same category as a deductive argument. A deductive argument may be logically valid, following from a premise to a conclusion. But it is not true if the premise is faulty. That determination is left to the transcendental argument. A premise is true only if it meets a precondition for intelligibility. It is through checking premises against the objective standard of God's Word that true advancements in science can be made. It is at this point that the scientific superiority of the biblical creation worldview is most clearly seen.

Conversely, ignoring the transcendental approach to evidence and blindly accepting premises weakens science, whether creationist or evolutionist. Evolution is sustained by its blind acceptance of premises that are inconsistent with its worldview, showing the foundational, and thus scientific, superiority of biblical creationism. This does not minimize empirical science but supports it.

> What then is the benefit of inductive science? Great in every respect—but impossible without the superstructure of theology and philosophy explicit in its formative stages. (Reed, 2000, p. 161)

Intellectual Credibility

In 1992, Sproul and Bahnsen debated apologetic method. Sproul expressed his concern that presuppositional apologetics would cause Christianity to "lose intellectual credibility." (Bahnsen and Sproul, 1992). This statement seemed strong, since the presuppositional approach highlights the logical and intellectual weak points of evolution. The transcendental argument is the logical tool that can uncover arbitrariness, inconsistencies, and the fallacious assumptions of evolution. Lisle proposed three tests to effectively challenge evolutionists. First, he explained that the arbitrariness of the evolutionists can be seen when they express mere opinion, relativism, prejudicial conjecture, and an unargued philosophical bias. Second, their inconsistencies reveal their logical fallacies. Third, when challenging the evolutionist's preconditions for intelligibility, one finds they cannot account for morality, the uniformity of nature, the reliability of the senses, or other fundamental axioms (Lisle, 2009; see also Lisle, 2010; Glover 1984; Reed et al., 2004).

Lisle cites Proverbs 26:4–5: "Answer not a fool according to his folly, lest you be like him yourself. Answer a fool according to his folly, lest he be wise in his own eyes" (ESV). For example, accepting the evolutionist presupposition that the universe is millions of years old is to answer a fool according to his folly. However, if we expose his presuppositions and show him that they lead to absurdity, subjectivism, and skepticism, then we will correctly answer him according to his folly, lest he be wise in his own eyes (Lisle 2009).

This can be a difficult task but a fruitful one. It can be fruitful because it will expose the basic human autonomy that is the authority in the evolutionists' worldview. Most scientists have never seriously questioned their presuppositions and dogmatically hold to their naturalistic worldview (Clark, 1994; Reed and Williams, 2011). John Morris sums it up well:

> Most people believe in evolution because most people believe in evolution. That is all they have ever been taught. If creation is even mentioned, it's ridiculed and unfairly caricatured. Thus, evolution is assumed, not proved, and creation is denied, not refuted. (Morris, 1994, p. 22)

Fideism, Faith, and Science

Another challenge to the presuppositionalist is the claim that Van Til's presuppositionalism is fideistic (Sproul et al., 1984). Since this is also a common accusation made by atheists against Christianity, it is worth considering. The basic problem with the conclusion that presuppositionalism is fideism is that this is a category mistake. The transcendental argument seeks to arrive at axiomatic solutions that do expose faith positions, but it does so by providing rational strength to evidence claims.

If the transcendental argument is seen as a mere appeal to a faith claim, then it is misunderstood. It is an argument from intelligibility that exposes underlying reference points for rationality. The position of this argument in regard to faith is most clearly seen in the comments above regarding the impossibility of the contrary. Faith obviously is involved in this endeavor, but it is not blind or irrational. So, it should not be a concern for the transcendental argument (as outlined above), though it does raise the issue of the relative role of belief and knowledge in the origins debate.

Faith is involved in any belief system, whether naturalism or Christianity. The issue is not the presence of faith but how it is consistent with truth. Creationists should not be ashamed of having faith and of its role in their system. After all, the Bible states that by faith we understand that the world was created by God's word (Hebrews 11:3). At the same time, Romans 1 teaches us that this is not a blind faith but a faith consistent with what we observe.

Naturalists also have faith. The differences are that their faith is not consistent with what we observe, and it is often denied, even though it is obvious to all but the denier. Evolutionists express blind faith in evolution and the big bang.

They express more faith in the axioms of science, which are inconsistent with their worldview. Instead of pretending that faith is not a part of science, we must argue for its legitimate function:

> The apologist must clearly grasp the principal conflict in philosophical positions, think and reason in terms of it, and constantly lay out for the unbeliever this fundamental clash in perspectives as the *defining and determinative context* for their argument with each other. (Bahnsen, 1998, p. 273)

God makes an exclusive claim to truth. Jesus said, "I am the way, and the truth and the life" (John 14:6 ESV). This implies that science cannot be conducted without an acknowledgment of God. Johannes Kepler understood this, as he is often quoted as saying he was "thinking God's thoughts after Him" (Morris 1982, p. 12). Kepler also wrote, "We duly subordinate the created mind—of whatsoever excellence it may be—to its Creator" (Kepler, 1995, p. 243).

If science is defined on purely naturalistic terms, it is not true to reason *or* Scripture. It is only to the extent that human reasoning reflects the mind of God that reason can be considered intellectual or scientific or make any substantive advance in human knowledge. However,

> Many non-Christian scientists have discovered much truth about nature … *because* of the fact that they cannot help but work with the "borrowed" capital of Christianity. (Bahnsen, 1998, p. 298)

> The problem for the unbeliever is that he keeps committing himself to some requirement of "rationality" and insisting on it being honored, only to find upon analysis that only the Christian worldview coheres with it. (Bahnsen, 1998, p. 483)

It is a matter of consistency; since science developed from the Christian worldview, then that is its home belief system. Science is not "neutral," and evolutionary natural history is even less so. The faithful work of creation research submits evidential and experimental science to the consistency test of God's thoughts.

Naturalism in any form is an assault on reason and on the intellectual credibility of Christians. Theologian Robert L. Dabney observed:

> If you must persist in recognizing nothing but natural forces … I will show you that it will land you, if you are consistent, nowhere short of absolute atheism. (Dabney, 1985, p. 261)

The teleological, ontological, and cosmological arguments of natural theology are important and useful. However, *solely* relying on these arguments without a connection to a biblical starting point leads only to "probabilism":

> Such a 'defense' of the faith is not worthy of that name; this is simply a *non-apologetic*, for it offers no positive *reason* for the hope that is in us. The retreat to skeptical probabilism does Christian apologetics no service; the despisers of the faith can make exactly the same move. (Bahnsen, 2008, p. 225)

In his book *Always Ready*, Bahnsen sums up this discussion of faith and intellectual credibility with quotes from both Friedrich Nietzsche and Van Til's mentor, J. Gresham Machen:

> In *The Antichrist: Attempt at a Critique of Christianity* (1895), Friedrich Nietzsche expressed his derision toward this attitude by saying: "Faith means not *wanting* to know what is true." … However, all criticism in this vein flows from a fundamental mistake as to the nature of Christian faith. As J. Gresham Machen boldly put the matter in his book, *What is Faith?*, "we believe that Christianity flourishes not in the darkness, but in the light." He fervently resisted "the false and disastrous opposition which has been set up between knowledge and faith," arguing that "at no point is faith independent of the knowledge upon which it is logically based." Machen declared: "Faith need not be too humble or too apologetic before the bar of reason; Christian faith is a thoroughly reasonable thing." (Bahnsen, 1996, p. 195)

Danger in Ignoring Presuppositions

Certain dangers become apparent when the transcendental method is ignored. Without acknowledging God in the beginning of a scientific endeavor, science becomes elevated to an unnatural place.

> God does not come in at the end of the process, having earned the intellectual right to a place in our thinking. The very process of transcendental thinking or analysis must itself begin with belief in the living and true God. (Bahnsen, 1998, p. 506)

Van Til understood the strength of the transcendental analysis, which he said

> is no doubt the most penetrating means by which the Holy Spirit presses the claims of God on men. By stating the argument as clearly as we can, we may be the agents of the Holy Spirit. (Van Til, 1954, p. 62)

Conversely, the Christian scientist needs to beware of his efforts becoming sterile, abstract, or subjective. This is the weak foundation upon which the secular evolutionist stands because of his *a priori* commitment to oppose the Creator. Instead, standing on the objective and concrete presuppositions of Scripture, science regains its rightful place as an "agent of the Holy Spirit" to uncover God's "invisible attributes, namely, his eternal power and divine nature" (Romans 1:20a ESV).

In addition, if Christians accept conclusions of creation research without considering their clear connection to Scripture, there is a danger when

results change. Relying on human conclusions that by definition cannot be absolute rather than depending on the unchangeable Bible "cheats" believers. Colossians 2:8 states, "Beware lest anyone cheat you through philosophy and empty deceit, according to the tradition of men, according to the basic principles of the world, and not according to Christ" (NKJV). The transcendental argument will help identify false philosophies, empty deceit and the basic principles of this world. In a culture permeated in naturalism, the transcendental argument provides a logical method to check premises and detect deception.

The beginning of evolutionary reason is human autonomy. In contrast, the creationist acknowledges God as the ultimate authority and source of truth. The transcendental argument forces the evolutionist to face his foundational beliefs and to face the emptiness of human authority.

> If Christians retreat from the authority of the Bible, they are swept into that endless philosophical morass. If men depend upon God for knowledge, then acquiring knowledge is not an exploration of the unknown, but the discovery of God's creation that is already known by God … the Christian view of truth is essential for science. That being so, science must accept the entire package, and learn to respect its place within Christian epistemology, submitting itself to special revelation and limiting itself to its proper boundaries. (Reed, et al., 2004, p. 225)

However, if presuppositions are not exposed and if the debate over origins is simply a matter of evidence, then human autonomy is the ultimate judge, and God is judged in the court of human reason. This playing field disarms the biblical creation researchers, leaving them intellectually naked, scientifically impotent, and insignificant to secular society. Even a person convinced of the strength of the creation point of view by "science" has arrived at this point relying on the authority of his own mind. He has no need for the higher authority of God and no reason to question his own autonomous ability. He cannot judge human autonomy with human autonomy. God is not found at the end of a reasoning process. This does not mean that God is not reasonable or that He is not the author of reason in man. But absolute truth relies ultimately on God's omniscience, not finite man's science.

A good illustration of this is my "geology walk" at Stone Mountain Park, Georgia. Using the work of Froede (2000), I explain the geology of Stone Mountain based on a creation model. It incorporates the truth of the geologic implications of Day 3 of Creation and of the Flood but examines the physical features of the mountain. Research like this is valuable, but the Bible does not depend on it; rather, it depends on the Bible. God's truthfulness and His Word are the precondition that provide intelligibility to the observational features in the geology at Stone Mountain.

Summary

At the bottom of creation research is an appeal to the creation account in the Bible and thus to God, its Author. The transcendental argument links biblical presuppositions to scientific truth. The transcendental argument

> is a forceful, all-or-nothing intellectual challenge to unbelief in all of its manifestations. Our method of apologetics should not be concessive or compromising. As Van Til put it: "The natural man must be blasted out of his hideouts, his caves, his last lurking places." (Bahnsen, 1998, p. 503)

This suggests the transcendental argument is a powerful tool for biblical creation researchers to wield with grace, patience, and humility.

> Thus the Christian-theistic position must be shown to not be as defensible as some other position; it must rather be shown to be the position which alone does not annihilate intelligent human experience. (Van Til, 1955, p. 503)

It is from the mind of God that facts gain intelligibility—*not* from the mind of man. This is an all-important reminder to the research scientist who pours his mind into his work, who spends hours in the field with interpretation, experimentation, and observation and who relies on his efforts to produce a scientific paper of significance and relevance. So, it is natural for the research scientist to honor his efforts, but it is critical that he be reminded that it is from God that he gains even the most basic components of intelligibility. The transcendental method applied to biblical creation research does this.

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The Jurassic Coast: Evidence for the Flood

Michael J. Oard, John D. Matthews, and Andrew Sibley*

Abstract

A portion of the Dorset and Devon coastline, considered a 185-million-year "walk through time," has been declared the UK's first geological world heritage site. But there are numerous contradictions to its deep time, evolutionary, and uniformitarian interpretations. One of the most obvious is the lack of erosion within and between geological layers—a feature common in practically all sedimentary rocks. Surficial Jurassic Coastal erosion rates, similar to the rest of England, suggests that the entire island would be eroded to sea level in only a few millions years, contradicting the elongated timescale. Evolutionary dating, based on the fossils, especially the classical ammonite series, shows several problems. Other strange features of the Jurassic Coast challenge its uniformitarian explanation, such as the absence of a significant change at the supposed Paleozoic/Mesozoic boundary, when 90% of species supposedly went extinct. We examined Lulworth Cove, an iconic area for the Jurassic Coast that includes so-called stromatolites, a "fossil forest," and "dirt beds." Dinosaur tracks also were found, as well as catastrophically deposited shell layers in the Purbeck Limestone. These, and many other features, suggest better interpretations are provided by the Genesis Flood. One in particular is the erosion of the sedimentary sequence, which created a unique gravel-capped planation surface, which was subsequently dissected, creating local water gaps perpendicular to ridges. This corresponds to the recessive stage of the Flood, with its two phases of sheet and channelized erosion. The Jurassic Coast makes a better "icon" for biblical history than for deep time and evolution.

Introduction

The United Nations has set aside iconic areas around the world that supposedly demonstrate deep time, uniformitarianism, and evolution. In 2001, they designated 155 km (95 mi) of the Dorset and Devon coast of south-central England as the UK's first geological world heritage site. It is called the Jurassic Coast, since much of the strata are dated as Jurassic, but the strata also include Permian, Triassic, and Cretaceous deposits. Some scientists also include the patchy Tertiary in the eastern part of the area. The Jurassic Coast is promoted as an area of outstanding natural beauty, fantastic ecology, and wide-ranging recreational opportunities that emphasize England's contribution

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Figure 1. The Jurassic Coast draws millions of tourists every year and teaches them millions of years, uniformitarianism, and evolution.

to Jurassic geology (Zielinski, 2014). It is claimed to be a 185-million-year "walk through time" demonstrating evolutionary earth history:

> This internationally important landscape not only represents major states of the Earth's history spanning 185 million years, but gives us an insight to past environments and the record of life held by fossils. (Pfaff and Simcox, 1999, p. 4)

Some claim the walk shows 265 million years, if the Tertiary is included. The Jurassic Coast attracts millions of tourists each year (Figure 1), and there is no attempt to discuss the problems caused by false dating information and fossil evidence that contradicts evolution. This article intends to mention the contradictions to the evolutionary/uniformitarian paradigm.

We are aware that most mainstream scientists consider themselves "actualists," not uniformitarians. Actualism is a part of uniformitarianism (Reed, 2010, 2011), but the change in terminology allows a modicum of neocatastrophism when needed, such as impact events. While admitting that the present is not necessarily the key to the past, geologists insist that only natural processes operated in the past. This hidden philosophical naturalism often causes geologists to not see evidence from the rocks and fossils that contradict present processes. But since few people understand the distinction between actualism and uniformitarianism, and since most geologists default to uniformitarianism anyway, we will use that term, especially since it was the philosophical principle used to dismiss the Flood.

The Jurassic Coast begins at Studland, Dorset, and goes to Orcombe Point near Exmouth in East Devon and includes the land between the cliff top and the low water mark (Figure 2). The main towns, travelling westward, are Swanage, Weymouth, Portland, Bridport, Charmouth, Lyme Regis, Seaton, Sidmouth, and Budleigh Salterton. Many of these towns have museums or visitor centers that describe the geology in uniformitarian and evolutionary terms. Under the auspices of the UK's Natural History Museum, fossil fairs are regularly held at places like Lyme Regis.

Lack of Time in the Sedimentary Rocks

Not counting any Cenozoic rocks, the sedimentary rocks are dated from Permian to Cretaceous (Table I), so the very

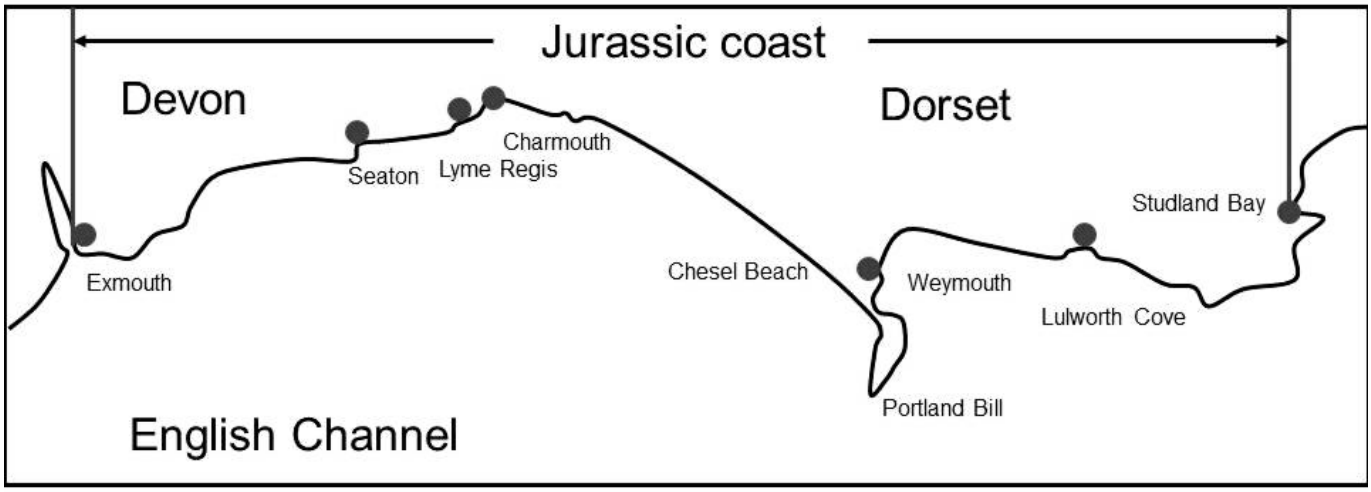

Figure 2. The Jurassic Coast from Exmouth to Studland Bay.

Period	Western Jurassic Coast	Eastern Jurassic Coast
Cretaceous	Chalk	Chalk
Cretaceous	Upper Greensand	Upper Greensand
Cretaceous	Gault	Gault
Cretaceous		Lower Greensand
Cretaceous		Wealden Group
Cretaceous		Purbeck Limestone
Jurassic	Charmouth Mudstone	Portland Group
Jurassic	Blue Lias	Kimmeridge Clay
Jurassic		Corallian Group
Jurassic		Oxford Clay
Triassic	Penarth Group	
Triassic	Mercia Mudstone	
Triassic	Otter Sandstone	
Triassic	Budleigh Salterton Pebble Bed	
Permian	Aylesbeare Mudstone	
Permian	Exe Breccia	

Table I. Strata of the western and eastern Jurassic Coast are generally different lithologically.

Figure 3. Large ammonite fossil found at the Jurassic Coast.

late Paleozoic and the whole Mesozoic are represented.

The dates are provided mainly by fossils, such as the classic ammonite index fossil sequence (Figure 3). The layers are tilted at 2° to 3° down to the east, so as one travels west along the coast, one travels into older rocks—from Cretaceous gradually into Permian. There are some local areas of major folding with high-angle strata exposed, such as at Lulworth Cove (Pfaff and Simcox, 1999). Half way along the Jurassic Coast, a near vertical fault has caused many more Jurassic formations to be exposed to the east that do not exist in the west and are thought to have been eroded (Figure 4). The reality as one travels along the Jurassic Coast is somewhat more complicated than shown because of occasional local dipping of strata to the south and a coastline that is not straight. The erosion apparently took place before the deposition of the Cretaceous sequence, producing a slight angular unconformity (Figure 5).

However, there is little if any erosion within and between the layers (except what shows up at the angular unconformity) during this 185 million years. Modern erosion rates, which are based on river sediment output into the oceans, imply that the continents would have been eroded to sea level in just 10 million years (Roth, 1998)! However, Roth's rate neglects coastal erosion, which has been shown to be quite rapid in areas like the Arctic coast. Adding this factor would result in the erosion of the continents in around 8 million years. Other factors could act to slow erosion down; it is thought that man's influence has doubled the rate, so a corrected extrapolation would see the continents leveled in around 16 million years. Of course, as the relief of the terrain is reduced, the erosion rate decreases. Schumm (1963) neglected coastal erosion but included many other factors to estimate that the United States would be planed to sea level in

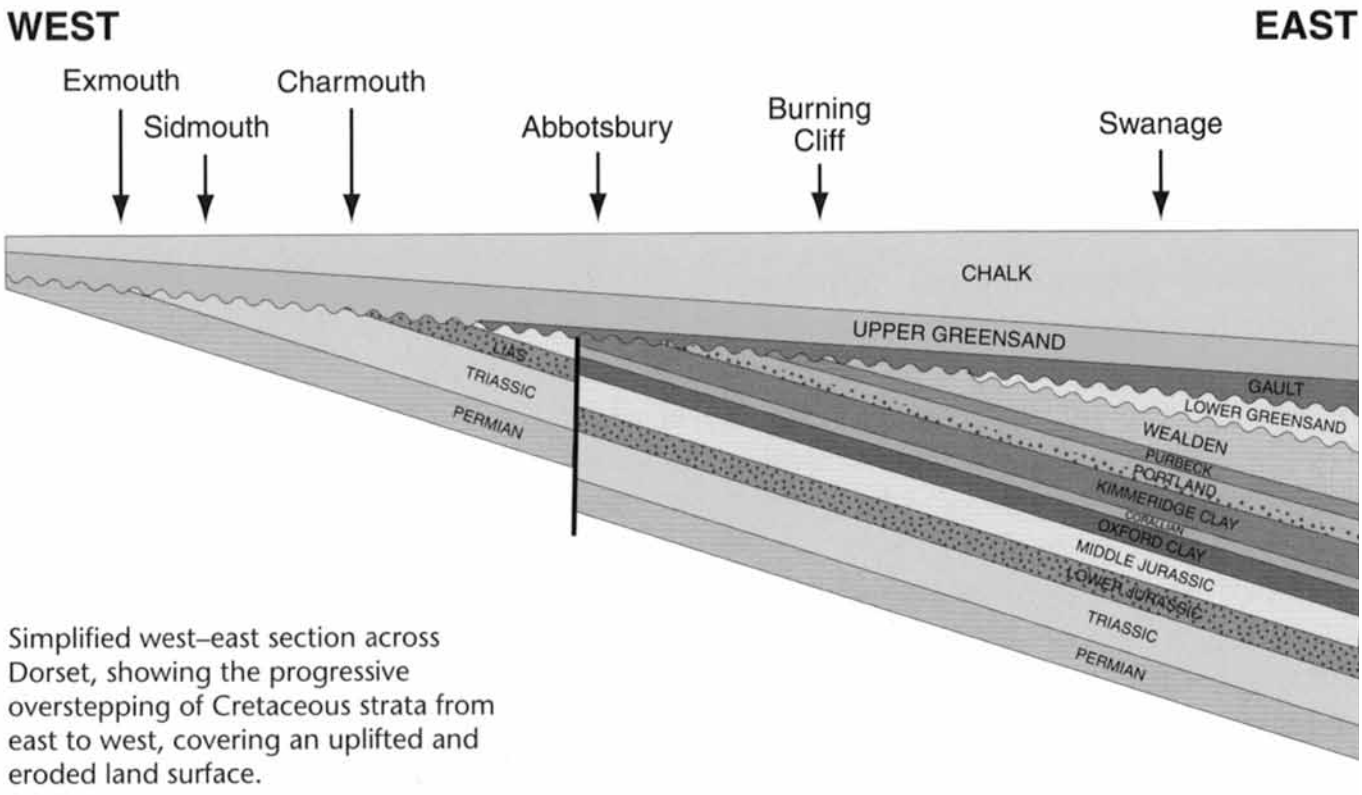

Figure 4. Geological map of Jurassic Coast showing the periods and/or formations and the fault near Abbotsbury (from Ensom and Turnbull, 2011, p. 13).

Figure 5. Angular unconformity between Triassic and Cretaceous rocks.

33 million years, granted a warm, humid climate. But rates depend on local factors, too. Erosion can be significant in drier climates, due to flash floods and heavy rainstorms in the spring and summer, and the absence of vegetation (Summerfield, 1991).

In any instance, however, on the scale of a million years, there should be abundant evidence of erosion in the strata of the Jurassic Coast; canyons and valleys can be cut in thousands of years. The fact that one layer is laid upon another with little if any erosion within and between layers (Figures 6 and 7) is strong evidence against the millions of years. The fact that most of these layers can be traced over wide areas of England (Winchester, 2001) with little or no erosion within and between layers is

Figure 6. Sedimentary layers showing little or no erosion within the Jurassic Coast sedimentary rocks (Beverly Oard for scale).

powerful evidence for rapid catastrophic deposition. Even at the angular unconformity (Figure 5), there is little or no evidence of channels; rather it appears to be a planation surface with 120 million years of evolutionary time missing (Edwards, 2008).

So, the Jurassic Coast is *not* a walk or trip through time but a reminder of the devastation wrought by a global Flood. The lack of erosion within and between layers of strata is common everywhere. We suggest the deposition was early in the Flood by sheet deposition (Walker, 1994). Dinosaur tracks found in the Jurassic Purbeck Limestone in the eastern Jurassic Coast reinforce this conclusion (Oard, 2011).

It is also interesting that the layers show evidence of being deposited in sheets and not by fluvial or other processes, since there is a lack of channels in some of the sedimentary rocks that should have been conduits for sediment transport before deposition, for instance within the 400-meter-thick (1,312 ft) Permian Aylesbeare Mudstone:

> These muds and sands [of the Aylesbeare Mudstone] were probably laid down in a type of inland lake that periodically dried out (a playa lake). It used to be thought that the sandstones were laid down by rivers, but this now seems less likely in view of the *lack of channels* and improbability that such a thickness (400 m) of mudstone would be deposited on a floodplain *without any channels*. Instead, it now seems more likely that the sandstones were laid down by wind, representing the movement of sand dunes across the dry lake surface. (Edwards, 2008, p. 32, emphasis ours)

The lack of channels shows that the mudstone with interbedded sandstone was laid down as a sheet, as expected in the Genesis Flood. It is curious that uniformitarian scientists often propose a paleoenvironment inconsistent with the field evidence. We are unaware of any field evidence of sand dunes in the Aylesbeare Mudstone. Such situations are the norm within evolutionary/uniformitarian paleoenvironmental interpretations (Oard, 1999).

Coastal Erosion Shows That the Millions of Years Do Not Exist

The chalk cliffs and other cliffs around England are eroding, with large blocks falling into the sea. It is typically episodic, like that at the rocky coastal cliffs along the North Sea of the York shoreline. Average erosion is around 5 cm/yr (2 in/yr) (Rosser et al., 2013). At that rate, 50 km (31 mi) of coastline would erode in one million years and 500 km (310 mi) in ten million years.

Similar erosion takes place along the Jurassic Coast. Cliff falls and rotational slides occur episodically, sometimes with fatal consequences. The sea then removes the fallen material from the beach. One of us has observed these kinds of events for more than 50 years and recorded 2 to 5 cm (0.8 to 2 in) retreat of the chalk on average per year (Matthews, 2009a). Goudie and Brunsden (1997) record 40 to 70 cm/yr (1.3 to 2.3 ft) retreat at Lyme Regis over a 100-year period. At that rate of erosion, the Jurassic Coast and all of England would have eroded to sea level within less than ten million years, but uniformitarians claim the Jurassic Coast has existed since early Tertiary times, based on the youngest sedimentary rocks.

What about the Fossil Dating?

Ammonites are used as index fossils for biostratigraphical correlation (Figure 8) to date and identify the rock layers on the Jurassic Coast. But ammonites show no evolutionary progression through the strata, as even Winchester (2001, p. xiii) acknowledges. Woodmorappe (1978) noted that the ammonite taxonomy is

Figure 7. Red Triassic Mercia Mudstone east of Seaton with interbeds of banded grey-green limestone.

subjective because differences cannot be shown to be caused by evolution. Thus, ammonite biostratigraphy is based on taxonomic manipulation.

There are fossils unique to different strata, such as the ammonite beds on Monmouth Beach, immediately west of Lyme Regis. Some layers in the Blue Lias contain the oyster bivalve *Gryphaea arcuata* without ammonites; other layers contain mainly ammonites. This differentiation, of course, needs an explanation, but there are other possibilities besides evolution, especially if the strata do not reflect the uniformitarian paleoenvironments but instead were the result of rapid inundation by sediment. *Gryphaea* is often found resting at angles that suggest burial in a disturbed environment (West, 2013). Ammonites also suggest sudden deposition. As De La Beche (1839, pp. 229–230) noted, "The number of ammonites found under conditions from which we may suspect that the animal was alive and retreated into its shell when overwhelmed with mud, is considerable." Pulman quoted De La Beche at length:

> "Some of the fossils are so beautifully preserved, their bones so well connected, with even the contents of their intestines between their ribs, and with traces of skin upon them, that many Ichthyosauri and Plesiosauri must have been suddenly enveloped alive, or immediately after death, by the matter of the rock enclosing them, so that neither their decomposition took place in the water nor the predaceous animals existing in the same seas had access to their bodies. Fish also are so frequently found entire that we would adopt the same conclusion respecting their remains. So that while we suppose the layers to have been gradually accumulated, minor accessions to the mass from time to time may have been more suddenly caused. The number of Ammonites found under conditions from which we may suspect that the animal was alive and retreated into its shell when overwhelmed with mud, is considerable." (Pulman, 1975, p. 11)

Therefore, evidence of rapid burial in these strata has been known from the early nineteenth century. Buckland reported on the presence of extractable *sepia* from fossilized ink-bags associated with belemnite fossils in the Lias near Lyme Regis. The fossil resembles the living *Loligo vulgaris* and requires both sudden death and rapid burial for such organic material to remain:

> I might register the proofs of instantaneous death detected in these ink-bags, for they contain the fluid which the living Sepia emits in the moment of harm; and might detail further evidence of their immediate

Figure 8. A display of the dating of Jurassic Coast sedimentary rocks by ammonite biostratigraphy from the fossil museum at Charmouth.

Figure 9. Well-rounded (but split) quartzite rock from the beach at Lyme Regis, western Jurassic Coast. The quartzite likely came from the Budleigh Salterton Pebble Beds or the Otter Sandstone a little farther west.

> burial, in the retention of the forms of these distended membranes; since they would speedily have decayed, and have spilt their ink, had they been exposed but a few hours to decomposition in the water. The animals must therefore have died *suddenly*, and been *quickly* buried in the sediment that formed the strata in which their petrified ink and ink bags are thus preserved. The preservation also of so fragile a substance as the pen of a Loligo, retaining traces even of its minutest fibres of growth, is not much less remarkable than the fossil condition of the ink bags, and leads to similar conclusions. (Buckland, 1869, pp. 256–259)

Other evidence for rapid burial of fossils includes the presence of fossilized stomach contents and skin with various *Icthyosaur*, *Plesiosaur*, and *Scelidosaurus* fossil remains (De La Beche, 1839; En-

Figure 10. Lulworth Cove of the Jurassic Coast.

som, 1989; Martill, 1991). Marine and terrestrial fauna and flora is found buried in the same Jurassic layers, including wood and very fine structures such as insect wings. Snelling also reports the presence of ^{14}C in wood and ammonites from Jurassic layers, strongly pointing to a more recent burial (Snelling 2000, 2008).

Further Contrary Features

The Jurassic Coast shows a number of other features that are problematic for the uniformitarian and evolutionary paradigms. These will be noted and left for future research. Secular scientists believe that the transition from the Permian (late Paleozoic) to the Triassic (early Mesozoic) was a major time of earth upheaval, resulting in the extinction of 90% of Earth's species (Erwin, 1996). However, the transition on the Jurassic Coast shows no catastrophic break but rather steady sedimentation. In fact, the supposed Permian and Triassic portions are so devoid of useful fossils that the boundary cannot be identified, and a symbolic one has been subjectively chosen (Matthews, 2011). Some geologists admit the problem, labeling these sediments as "Permo-trias" with a question mark. Likewise, the dramatic extinction event at the base of the Jurassic shows nothing unusual along the Jurassic Coast.

Another interesting feature is the presence of abundant dinosaur tracks in the Purbeck Limestone and occasionally in the overlying Wealden strata (Ensom and Turnbull, 2011). Tiny pieces of eggshell have also been found. Like other track sites around the world, bones and teeth are rare. Tracks and eggs have been explained in the Flood paradigm by the BEDS (Briefly Exposed Diluvial Sediments) hypothesis (Oard, 2011) and by the "recolonization" view (Tyler, 2006), although problems have been noted with the latter (Reed et al., 2009).

In addition, there are several features that indicate rapid, if not catastrophic, accumulation. The Purbeck Limestone has areas of concentrated mollusk-shell beds called coquinas, which represent catastrophic conditions (personal observation). Well-rounded quartzite rocks (Figure 9) occur in the Budleigh Salterton Pebble Beds and the Otter Sandstone (Edwards, 2008). Quartzite is metamorphosed sandstone, likely representing deep burial and heating. The currents that deposited the original sandstone were from the south. So the quartzite rocks represent deep burial to metamorphose the sandstone, then rapid tectonic uplift, erosion, and long-distance transport—all indicating catastrophic action.

Catastrophic action is also indicated by feldspar grains found in the Otter Sandstone (Edwards 2008). Feldspar weathers rapidly, so feldspar in sedimentary rocks is evidence of rapid deposition.

Lulworth Cove Iconic Area

Lulworth Cove is famous for its outcrops (Figure 10). It is regarded as a good training ground for neophyte geologists (Goudie and Brunsden, 1997) but is difficult to explain, especially in conjunction with the dry valleys that surround it. Earlier views on how the cove formed were based on erosion by the sea. At present, geologists think the erosion was the opposite—from land to sea. But the very short, dry valleys leading to the cove and the source of the eroding currents are not discussed. A reasonable explanation can be made for rapid uplift at the end of the Flood, but despite its fit with the field evidence, it is not acceptable to uniformitarian geologists.

To the east of the cove is an area known as the "fossil forest," with stromatolite-like bulbous forms (Figure 11). Some of these contain cavities, giving them the appearance of an open bird's

Figure 11. "Stromatolites," the bulbous forms, at the "fossil forest" at Lulworth Cove.

Figure 12. A stromatolite-like feature around an upright log, which has since disappeared, partly due to collectors of petrified wood.

nest (Figure 12). These cavities contained silicified fragments of fossilized conifer trees (until collectors removed all the samples). The trees are assumed to have grown in situ (West, 2013) on what are known as the "dirt beds," thin layers of about 5 to 10 cm (2 to 4 in) of rock fragments and organic matter, really a black limestone (West, 1975). Although these obviously are not sufficiently substantial to support trees, the idea that the beds represent ancient soil horizons fits the uniformitarian model and thus is interpreted in that fashion. West stated: "The trees rooted in the dirt beds confirm the origin of these as soils" (West, 1975, p. 217). A better explanation for the vegetation at this location is its transport there by floating log mats and trees sinking in a vertical position into accumulating sediments (Oard, 2014).

Dissected Planation Surface

After the strata of the Jurassic Coast were deposited early in the Flood, differential vertical tectonics uplifted continents and mountain ranges, while ocean basins and valleys subsided (Psalm 104:6–9). There is significant evidence for this general sequence around the world, which resulted in the erosion of the continents and the transport of that sediment to the continental margins. This explains the thick sediment wedges at continental margins and the erosional features on the continents, which include large planation surfaces, erosional remnants, water and wind gaps, the long-distance transport of resistant rocks, pediments, and submarine canyons (Oard, 2008, 2014). To the east of the Jurassic Coast is an uplifted dome called the Weald, which was eroded at least 1,300 m (4,260 feet) (Matthews and Oard, in press; Oard and Matthews, in press).

Sheet-flow erosion planed this area, forming a flat-to-rolling planation surface in the chalk. This surface is especially well developed in the area

Figure 13. Rolling planation surface about 240 m above msl (Hardy's Monument in the distance from the hill at Hell Stone).

Figure 14. Flat planation surface near Seaton, seen in the background, dissected about 50 to 110 m.

north of the Jurassic Coast (Figures 13 and 14). In fact, it is thought that a planation surface formed all across southern England and was especially well developed in East Devon and west Dorset (Jones, 1999). This erosion left a gravel cap that is often matrix supported, called "Clay-with-Flints" (Figure 15). This gravel cap is unlike those seen in the western United States, being composed of angular flint, eroded from flint nodules, layers, and lenses within the chalk and deposited in a fine-grained matrix (Jones, 1999; Loveday, 1962).

Consistent with the two-phase erosion of the latter half of the Flood, the sheet erosion that formed the planation surface was followed by channelized erosion, which dissected the planation surface. In places it eroded the flat surface to more of a rolling erosion surface (Figure 13). In other places, it formed valleys, some occupied today by rivers and others with little or no water flowing in them (Figure 16).

The streams or rivers flowing in these relatively large valleys are *underfit*, which means that the water flow is too small to have formed the larger valley and its meanders. Dury (1964a, 1964b, 1965), who has spent a considerable part of his research career analyzing underfit streams all over the world, has produced several equations for estimating the amount of water that could have flowed in the larger valleys. Those valleys of southern England not associated with the Ice Age are underfit. Dury primarily focused on the wavelength of valley meanders and the width of the valley compared to the current stream or river. Meander wavelength is about ten times the valley width (Knighton, 1998) and is the best criterion for determining the size of historic maximum flow: "Meander wavelength is the most unambiguous measurement of channel properties that can be made" (Moore et al., 2003, p. 3). At one time, Dury concluded the valleys contained up to 100 times more water than the current rivers. He later revised that figure to 20 to 50 times as much water (Dury, 1976, 1986), possibly due to the catastrophic implications. Regardless, he showed that valley formation required much larger volumes than are present today. Thorne and Brunsden (1977) estimated a volume differential of 50 times the present. At 2 to 3 times today's average rainfall, Dorset becomes flooded in many places. The amount required to carve the valleys would almost completely flood the area (Matthews 2009b). The erosional sequence from a large planation surface to large valleys fits well with the scale and predicted sequence of the late phase of the Flood.

It is possible that the smaller dry valleys could have been caused by heavy Ice Age precipitation (Oard, 2004), but that mechanism seems insufficient for the large ones. The dry valleys had always been a puzzle to the early geologists:

Figure 15. Clay-with-Flints capping the planation surface in Figure 13.

Figure 16. A dry valley near Lulworth Cove called Scratchy Bottom.

Figure 17. The Corfe Castle water gap (actually a double water gap on either side of the ancient castle) (view north).

> Valleys were observed to be of many forms. A few could plausibly be attributed to erosion by the streams that flowed in them, but most could not. For example, the "dry valleys" of the Chalk hills of northern France and southern England were just like some other valleys in form, but they contained no streams at all. (Rudwick, 2005, p. 102)

Earlier in his career, William Buckland considered the dry valleys evidence for the Genesis Flood:

> Buckland discussed early controversies between science and religion in an 1822 paper 'On the Excavation of Valleys'. He noted that the hills and valleys of East Devon are abruptly terminated by the sea, and considered that the present-day streams were incapable of having shaped the valleys. He concluded that the valleys had been eroded by torrential floodwaters which he took as evidence of the biblical Flood. (Edwards, 2008, pp. 17–18)

Goudie states that the origin of the dry valleys is unknown, with many hypotheses for their origin:

> One of the most widespread and most discussed features of the British landscape is the dry-valley network that is developed on many rock types. The classical localities are on Chalk … There are a vast number of hypotheses that have been developed to explain the presence of dry valleys. (Goudie, 1990, p. 176, 178)

Water Gaps

During the channelized-flow phase of the recessive stage of the Flood (Walker, 1994), water flowing off the continents would often have eroded through barriers, such as ridges. This process created the numerous wind and water gaps observed today. There are thousands documented; in the Susquehanna River drainage basin alone above Harrisburg, Pennsylvania, USA, there are 653 water gaps (Lee, 2013).

Water gaps are observed near the Jurassic Coast. There is a classic water gap through the Isle of Purbeck's uplifted and tilted chalk ridge at Corfe Castle, near the coast (Figure 17). This double gap was likely formed from currents moving north to south as the English

Figure 18. One of the small streams passing through the Corfe Castle water gap.

landmass rose relative to the English Channel. However, the flow of today's streams is in the opposite direction because of a small uplift near the coast, the Isle of Purbeck. Figure 17 faces north, and small streams from the southeast and southwest turn to flow north through the water gap (Figure 18). Uniformitarian scientists have had little success in explaining water and wind gaps (Oard, 2008, 2014).

Conclusion

The Jurassic Coast is said to be a 185-million-year walk through time: a showcase for evolution in the late Paleozoic and Mesozoic. Millions of tourists visit every year and are told only the evolutionary story. However, the actual field evidence along the Jurassic Coast shows numerous contradictions to that story. Many pieces of the field evidence actually support the paradigm of rapid erosion, deposition, and uplift during the Genesis Flood. For example, the limited erosion between and within the strata and its sheet deposition both argue for Flood processes. Likewise the presence of a broad planation surface dissected by valleys is consistent with late Flood processes. Instead of being an icon to secular science, the Jurassic Coast is actually an icon to the Genesis Flood.

Acknowledgments

We thank the Creation Research Society for a research grant to study the Jurassic Coast of the south-central English coast and the Weald in southeast England.

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Author and Title INDEX for Volume 50, 2013–2014

Robert Mullin*

This title/author index covers articles, panorama notes, and other features. For items with two or more pages, the reference is to the first page only. After the page number, a letter indicates which type of entry is involved: article (A), panorama note (P), letter to the editor (L), book or video review (R), cover photo (CP) or other departments (such as editorials, editor's forum, laboratory director's comments, president's remarks, photo essays, etc.) (D).

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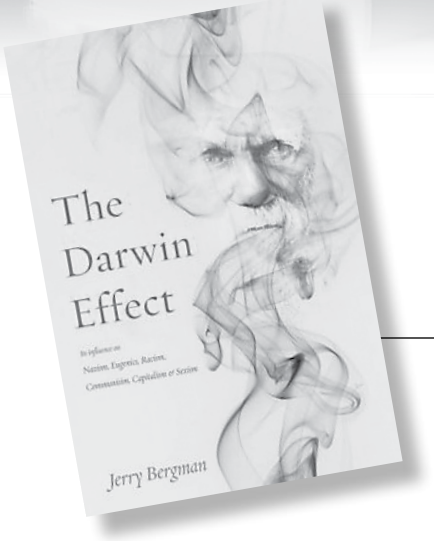
Media Reviews



The Darwin Effect: Its Influence on Nazism, Eugenics, Racism, Communism, Capitalism and Sexism

by Jerry Bergman

Master Books, Green Forest, AR, 2014, 360 pages, $17.00

Jerry Bergman has knocked it out of the park again. *The Darwin Effect* is a real page turner. I have enjoyed reading it and learned much that I didn't know before, particularly regarding the treatment of the Tasmanians. I did not know before about their sad fate due to Darwinist beliefs. One could draw a partial parallel to the fate of the American Indians as well. I especially benefited by learning about Ota Benga, an amazing, tragic story about the influence of Darwinism on society.

On page 49, Bergman presents a picture of Thomas Malthus. Even though Malthus is briefly mentioned later on, I looked for more discussion about him and his theories. We are "teased" with his picture and left wanting more. I also missed a book index; future editions could use an index and at least a brief glossary of terms.

I agree with all that Bergman says in the book; however, some readers will remain theistic evolutionists in spite of the adverse effects of Darwinism on society. Some might conclude that the book attacks Darwin's character rather than his science, an ad hominem argument. While the social and political impact of Darwinism has been horrible due to the misappropriation of some of Darwin's principles, this in and of itself doesn't disprove his theories. There are probably no multiple biological races, and the author rightly points out the evils regarding the misuse of eugenics. This book is not intended to analyze the *science* of Darwinism. I'm sure Bergman addresses these issues in his many other books.

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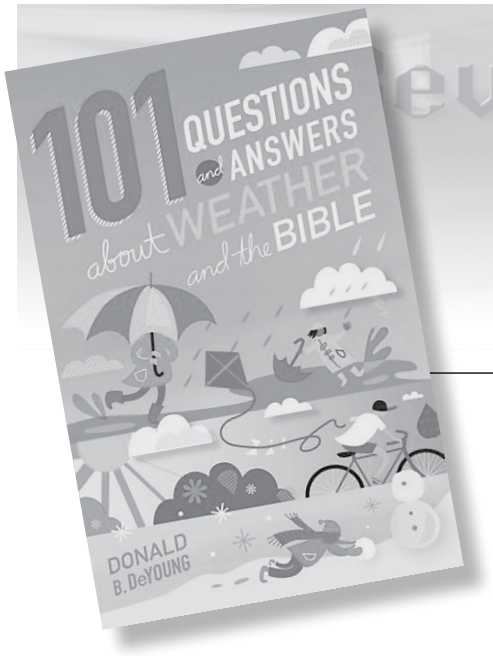

101 Questions and Answers about Weather and the Bible

by Don DeYoung

Baker Books, Grand Rapids, 2014, 169 pages, $13.00

This book is an update of an earlier version entitled *Weather and the Bible: 100 Questions & Answers*. In this edition we have another fun, fact-filled book that everyone can understand and enjoy, whether young or old. DeYoung is an expert in physical science and how it relates to the creation and to the Creator, and this book exemplifies his ability to explain complex topics in simple terms. The 101 questions range from the difference between weather and climate to what weather we can expect in the distant future. All the answers summarize the latest scientific research while maintaining a deep respect for God's Word and the unique perspective that comes from the young-earth creationist position.

The book is organized into major topics, including "Weather Basics," "Stormy Weather," and "Future Weather." All the questions are interesting and informative, but some of my favorites are "Should a Christian become a meteorologist?" "What is the jet stream?" "Has it ever rained frogs or fish?" and "Has God controlled history with weather?" Other questions cover more controversial topics such as climate change and whether Christians should be concerned about the environment. Questions such as these give us a good opportunity to consider what it means to care for and nourish creation, as DeYoung points out, remembering that the universe belongs to God and not to us. These are examples of how answers to some weather issues are closely tied to how one views the Creator.

All the answers in the book are relatively short and ideal for daily reading or reference. The wording is simple, so even the youngest readers and listeners can benefit, but the topics are educational even for adults. It is highly recommended for all students as a supplement to their science curriculum, and also for students' parents. The book contains a helpful glossary of terms, as well as Scripture and subject indices.

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The Trilobite Book: A Visual Journey

by Riccardo Levi-Setti

University of Chicago Press, 2014, 273 pages, $45.00

This coffee table-sized book contains the most complete selection of color photos of trilobites in print today. A major observation one gleans from the 235 photos is the enormous variety of trilobites that exist, both in size and morphology. So far, more than 20,000 species have been identified. Trilobite fossils have been unearthed on every continent, and this book includes many examples worldwide.

This is the third book the author has published that includes collections of trilobite pictures. His previous two books were in black and white, and in this edition every picture is in color. The volume is not just a color version of his earlier book, titled *Trilobites* (first edition 1979, second revised edition 1993). Rather it is an entirely new book with a different text and hundreds of new color photos of expertly prepared specimens.

The quality of the photos is of such high level and detail that the morphology of these creatures can be studied in some detail. Levi-Setti has an engaging, informative writing style that includes how he discovered some of his fossils, and his detailed descriptions and explanations of each fossil are clear and concise.

The author was trained as a physicist and is now Professor Emeritus of Physics at the University of Chicago; however, his passion for much of his life has been trilobites. He has become one of the world's leading authorities in this field and has transformed our perception of these fascinating creatures. A section titled "The Eyes of Trilobites" (pp. 243-258) is especially useful. This section documents both the variety and complexity of their compound eyes, a problem for evolutionists ever since research on their eyes commenced (Bergman, 2007). Except for the long age dates ascribed to the trilobites, no mention is made of evidence of trilobite evolution from their putative ancestors. In fact, the word "evolution" is almost never mentioned.

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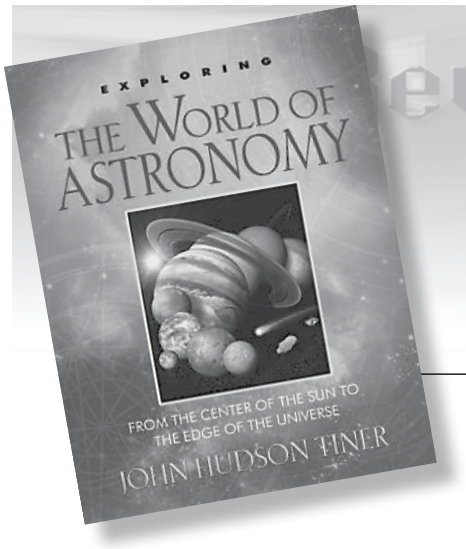

The World of Astronomy

by John Hudson Tiner

Master Books, Green Forest, AR, 2013, 175 pages, $15.00

John Tiner has authored more than 80 books for homeschool and younger age readers. Topics include astronomy, biographies, biology, chemistry, devotions, mathematics, and medicine. Without exception, these books are accurate and clearly written. The author was a classroom teacher and has traveled the world visiting major observatories. He holds a graduate degree from Duke University and currently resides in Missouri.

This book centers on the solar system, with brief excursions beyond. Each planet is fully described, including tables of data. Along the way we learn such details as the background of Ole Roemer's 1676 speed-of-light measurement (p. 49). Other discussion includes the Roche limit (p. 60), a French-English controversy over the 1846 discovery of Neptune, the 1838 detection of stellar parallax (p. 114), and the history of several major telescopes. The writing is up to date, with a description of the Chelyabinsk meteor, which crossed Russian skies on February 13, 2013.

This book does not address the age issue. Tiner simply describes distant space objects and how they were discovered. This "neutral approach" to age and origins puts astronomy into the hands of youth without explicit bias. At the same time, however, it is pointed out how well designed planet Earth is for our well-being.

Each book chapter includes a set of questions with answers provided in a key. There are many black-and-white photographs throughout. The index appears a bit uneven, with no mention of terms such as "comets" and "light-years," although they are used in the text. The book ends with descriptions of familiar constellations and is accompanied by two star charts. The *World of Astronomy* is recommended for any youth through the teen years who are interested in space studies.

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Design and Origin of Birds

by Philip Snow

Day One Publications, Leominster, UK, 2006, 256 pages, $13.00

Philip Snow is a wildlife and landscape illustrator and writer. His work has appeared in numerous publications and many leading UK and other galleries. He has illustrated, or contributed to, over sixty books and many magazines, calendars, guides, and decorated maps. His publications include several Collins guides to the UK and European birds. His other books include *Light and Flight: A Hebridean Wildlife and Landscape Sketchbook* and *Tall Tales from an Estuary.*

As a lifelong student of birds, Snow has evaluated the evolutionary explanation of the bird origins problem, documenting that birds, like all animals, could only be the product of divine creation. Using numerous excellent black-and-white illustrations, Snow documents the remarkable, complex flight mechanism of birds that requires many unique and irreducibly complex features. Although similarities exist, the radically different design of birds from all other life-forms makes impossible the evolution of bird flight from reptiles, not to mention any other common ancestor incapable of flight.

As the Wright brothers discovered, understanding how flight works requires knowledge of the complex, interrelated mechanisms needed to make it possible. The history of human flight documents that if all of these many basic mechanisms are not, as a set, right, flight fails!

Birds are not only excellent flyers, but most are also very efficient runners, requiring a unique design to do both well. The key is strong, yet light, bones using trusses for strength that are similar to those used in many modern structures (p. 14). Instead of ligaments and cartilage, bird's bones are heavily fused together in the spine, shoulder, hip, and other areas. Intermediate proto-bird forms that attempted flight never could have survived. This argues for an intelligent Creator who made these magnificent creatures.

Another example of unique design is the third eye buried beneath the skin that uses information obtained by the other two eyes (p. 17). Birds display enormous variety, not only in color, but also in their feet (pp. 22–27), beaks (pp. 27–43), feathers (pp. 54–64), and flight (pp. 64–100).

One of the best chapters is on bird migration (pp. 101–108), which requires planning, direction, and a goal. The major migration issue is how they succeed, a question still debated by ornithologists. Likely, they use more than one method, such as the sun, moon, stars, ground visual clues, smells, and magnetic fields (pp. 106–108). Some birds have small magnetic receptor crystals in their heads that function as a compass (p. 107).

Snow also covers courtship and breeding (p. 109–126), nest building, and even egg variety (pp. 127–146). The longest chapter is on bird origins (p. 147–199). Last, the author discusses bird folklore. Snow documents that the bird fossil record is still very good (p. 155) and it reveals little evidence of the evolution of reptiles into birds (pp. 154–155). Archaeopteryx was an advanced flyer, and judging by the 11 known specimens of its claimed 21 unique reptilian features, only one, the extended tailbones, is actually unique (pp. 155–158). The penguin and swan both have tailbones but not as long as Archaeopteryx. Snow concludes Archaeopteryx is similar to the Hoatzin, the South American bird that, when young, has wing claws (p. 157). In short, this book is a 256-page argument for the intelligent design of birds and against the theory of their evolutionary origin. The bibliography is excellent, and the index indispensable (pp. 246–256).

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Reviews

Life of Sir Isaac Newton

Anonymous

American Sunday-School Union, Philadelphia, 1907.

Reprinted by Attic Books, a division of New Leaf Publishing Company, Green Forest, AR, 2014, 192 pages, $13.50

A valuable project of New Leaf Press is the reprinting of free domain classic books from past centuries. The titles now number about twenty, including biographies of Washington, John Knox, and John Newton. This Isaac Newton book is faithful to the century-old writing font, British spellings, and a facsimile worn-hardback cover.

The original book was prepared to equip missionaries as they started Sunday schools and Bible classes. The goal was to promote the best in Christian moral values by featuring leading men and women of faith. The book was written more than a century closer to the Newton era than the present day, which gives the material an impression of authority.

There are no references for verification of the ideas presented. Nevertheless, the book offers many unique insights into the life of Isaac Newton. Newton's physics masterpiece *Principia* was written over a short period of 17–18 months and published in 1687 (p. 42). It included a discussion of astronomy, dynamics, gravity, and kinematics, much the same content as presented in modern physics texts. Newton led a simple life and at times limited his meals to bread and water (p. 43).

Newton explored the historical idea of a 360-day calendar for ancient (Old Testament) nations. He decided against it, writing, "The beginning of such a year would have run round the four seasons in seventy years … [and] would have been mentioned in history" (p. 70). Discussion continues today on this possible calendar alteration.

It is commonly assumed that Newton held to deism and also denied that Christ was part of the Trinity. Both ideas are strongly challenged, although it is certainly possible that the purpose of the book led to bias. Still, regarding the latter charge with respect to the person of Christ, the book states, "We find no [such] warrant in any portion of [Newton's] writings, or in any act of his life. On the contrary, we find him referring to this doctrine as 'the faith' of the church of Christ in all ages" (p. 84). It is true that Isaac Newton does not refer to the New Testament gospel of salvation in his theological writings. However, personal testimonies were not part of the common literature during Newton's day.

An interesting comment appears on page 100. It is stated that those without faith sometimes express frustration and loss at the time of death. I am reminded of the final words of Pierre-Simon Laplace (1749–1827), who lived a century after Newton: "Man follows only phantoms." In contrast, this book challenges the reader to name any "earnest, consistent believer in Jesus Christ who has renounced his faith at the end of life."

The personal glimpses of Newton's life are valuable. He was seldom seen without a book and a pen for taking notes. Some of our *Quarterly* readers could be similarly described. The astronomer Edmund Halley once made some comments disrespectful of religion in Newton's presence. Newton corrected him and said, "I have studied these things – you have not" (p. 138).

The book ends with selected minutes from the British Royal Society, of which Isaac Newton was the president during 1703–1727. There is also a concluding challenge for the new generation of scientists to carry on Newton's work and to continue his godly heritage. Because of the informal nature of the book, there is no index. Whoever the authors were, they are owed thanks for this gem.

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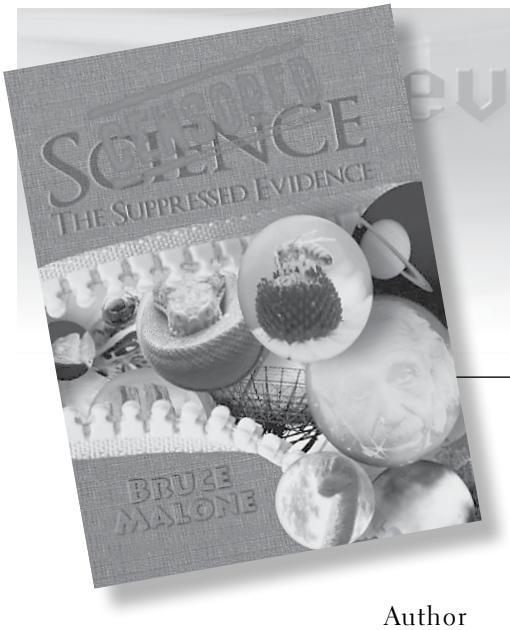

Censored Science: The Suppressed Evidence

by Bruce Malone

Search for Truth Publications, Midland, MI, 112 pages, $15.00

Author Bruce Malone holds an undergraduate degree in chemical engineering from the University of Cincinnati. In 2008, following a 27-year career at Dow Chemical Corporation, he launched the apologetics effort called Search for Truth Ministries (www.searchforthetruth.net). Bruce has written several books, and he gives lively and effective presentations on creation/evolution. More than 100,000 books have been distributed to schools and prisons.

This attractive book is available in hardcover and softcover editions, with glossy pages and many full-page color pictures. The approach is a description of fifty scientific evidences for biblical creation covering biology, geology, and astronomy. Each evidence presented also includes a "Skeptics Corner," where typical evolutionary rebuttals are given and critiqued.

Regarding the origin of life, it is suggested that the spontaneous origin is negated by "canned food experiments" performed a billion times each year. "Everything from canned tuna to preserved vegetables contain all the chemicals needed for life to form, in a far more purified form than any random laboratory experiment could ever produce," yet thankfully, no life-form appears in these products as long as the ingredients are initially sterilized (p. 20).

Instead of mutations leading to evolutionary progress, changes to the DNA code are "ultimately driving all life toward extinction" (p. 17). This deterioration of information is thoroughly discussed elsewhere (Sanford, 2005).

Designed complexity is discussed for bees, chameleons, bird flight, frogs, geckos, plants, the human ear, and more. The mechanism of hearing is especially well explored (p. 24).

Several creationist astronomy models are reviewed positively. One is the use of relativistic cosmology to explain seeing distant starlight in a young universe (p. 93). A related idea is that the earth is positioned near the geometric center of the observable universe (pp. 83, 93). It is stated that "stellar evolution [actually stellar aging] is an impossibility" (p. 80). Also covered is Dr. Russ Humphreys's suggestion that all matter in the universe was initially limited to water molecules with aligned nuclear magnetic moments (p. 95). One should realize that there are many unanswered questions on all sides of these tentative models and concepts.

The Genesis Flood description includes treatment of the post-Flood ice age. Also touched on are the nautiloid fossil finds of Steve Austin within the Grand Canyon (p. 72), frozen mammoth finds (p. 68), and soft dinosaur tissue (p. 76). Regarding dinosaurs, it is stated that in England's Carlisle Cathedral, the well-known 1496 dinosaur brass relief image has now been covered with a carpet to prevent viewing by visitors (p. 61). This certainly supports the book's emphasis on suppression of any and all evidence that challenges deep-time naturalistic evolution.

The book gives an excellent survey of current creationist discussion. It concludes with a gospel challenge and has no index.

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Reference

Sanford, John. 2005. *Genetic Entropy and the Mystery of the Genome*. FMS Publications, Waterloo, NY.

Instructions to Authors

Submission

Electronic submissions of all manuscripts and graphics are preferred and should be sent to the editor of the *Creation Research Society Quarterly* in Word, WordPerfect, or Star-Office/Open Office (see the inside front cover for address). Printed copies also are accepted. If submitting a printed copy, an original plus two copies of each manuscript should be sent to the editor. The manuscript and copies will not be returned to authors unless a stamped, self-addressed envelope accompanies submission. If submitting a manuscript electronically, a printed copy is not necessary unless specifically requested by the *Quarterly* editor. Manuscripts containing more than 35 pages (double-spaced and including references, tables, and figure legends) 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 (CRSQeditor@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 Star-Office/Open Office), 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 100 and 250 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 abbrevi-

ated by placing abbreviations in parentheses following the first usage of the term in the text, for example, polyacrylamide gel 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.

Margulis, L. 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, NY.

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.

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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.

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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.

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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 (2000 words), and one response (1000 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.

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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* is a peer-reviewed technical journal. It has been gradually enlarged and modified, and is currently recognized as one of the outstanding publications 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.

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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.

iDINO

Investigation of Dinosaur Intact Natural Osteo-tissue

A CRS Research Initiative

Scientists of the Creation Research Society are conducting a project to investigate the presence of intact tissue in dinosaur bones.

In the past several years, different studies have reported evidence of non-fossilized tissue (e.g., compact bone cells) and intact protein remaining inside fossilized dinosaur bones. Since these fossils traditionally have been dated at ages greater than 65 million years, the presence of this non-fossilized tissue is a direct challenge to the entire evolutionary "millions of years" time frame.

As part of the iDINO project, supraorbital horn of a Triceratops has been obtained and analyzed. This analysis revealed intact osteo-tissue containing osteocyte-like structures with detailed filipodial-like interconnections and secondary branching. The intricate detail of these observed cells offers a strong challenge to claims that the tissue is bacterial biofilm or microscopic artifacts. Instead, these results give powerful evidence that dinosaur fossils are really only a few thousand years old.

The Society is seeking funding from interested groups, churches, and individuals. This funding for the iDINO project will enable a more extensive examination of this supraorbital horn as well as other dinosaur specimens.

For more information contact us at (928) 636-1153 or crsvarc@crsvarc.com.

Also visit www.creationresearch.org for project updates and details.

Figure 1. CRS excavation team at a site in Hell Creek Formation, MT. Dinosaur specimens were obtained that have revealed the presence of intact tissue.

Figure 2. CRS team members excavated a large Triceratops horn at a the Montana site. Analysis of this horn indicates the presence of intact compact bone cells that have not yet fossilized.

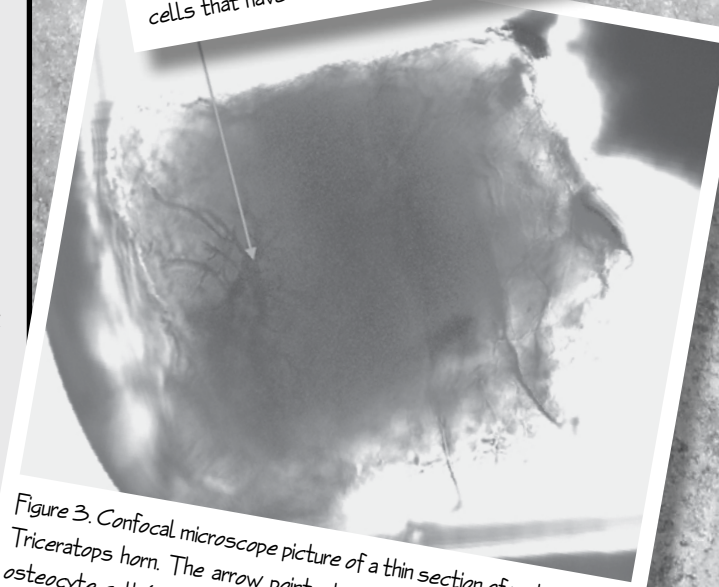

Figure 3. Confocal microscope picture of a thin section of material from Triceratops horn. The arrow points to what appears to be an intact osteocyte cell (a common cell in mature bone). The fluorescence of the cell indicates that it has not yet fossilized.