

# Creation Matters

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## Fossilized Animal Tracks and Trackways Date Uplift of the Appalachian Mountains

by Carl R. Froede Jr., B.S., P.G.

**F**ossilized animal tracks and trackways occur at many different locations around the world. They can be used as tools, not only in animal behavioral studies, but also within the context of Flood-related events.

This article will not address a comprehensive review of all the secular and creationist literature published on these ichnological features. Rather, I contend that fossilized animal tracks/trackways, and specifically those found along the Appalachian Mountains, can assist in determining the timing of tectonic uplift within the context of the global Flood.

### Defining tracks and trackways within a creationist geological timescale

Creationist and uniformitarian scientists both agree that animal tracks and trackways occur in the rock record (note: I use the term “rock record” to refer to the actual rocks and not a philosophical framework). Not surprisingly, the issue of age-dating the fossilized footprints has significance to proponents of Uniformitarian/Evolutionary philosophy and Young-Earth Creation theology. A diluvial geologic timescale has been constructed defining the rock record within biblical history (Froede, 1995, 2007a), and fossilized animal tracks and trackways are important components of such a timescale (Figure 1).

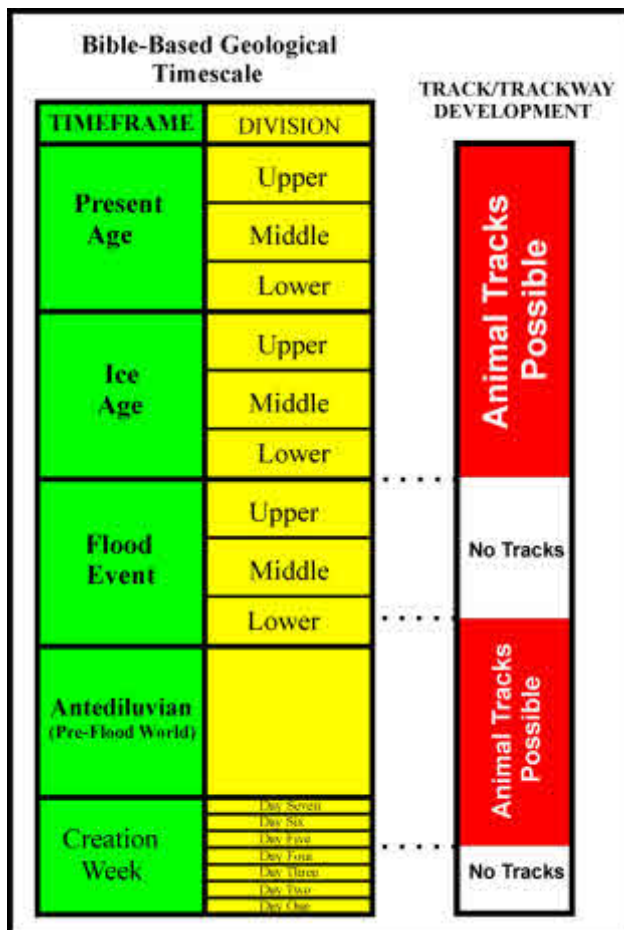


Figure 1. This Bible-based geological timescale can be used to define the rock record consistent with Scripture (Froede, 1995, 2007c). Note the two periods of time when animal tracks/trackways could have been created and preserved (shown in orange). These geological divisions do not correspond to the uniformitarian geological timescale.

### Constraining track and trackway formation in biblical history

The biblical chronology of Earth history indicates that winged fowl were created on Day 5 (Gen. 1:21) and that all of the remaining animals were created on Day 6

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## Clifford Burdick: Unjustly Expelled Twice (Part 1)

by Jerry Bergman, Ph.D.

**O**f all the creationist discrimination cases that I have researched, none has produced the level of controversy among both evolutionists and creationists as has that of Clifford L. Burdick (1894–1992). Burdick published 28 articles in the *CRS Quarterly* and was also on the board from its founding in 1963 until 1986. For these reasons the claims against his person need to be evaluated.

I had included his case in the original manuscript for my book *Slaughter of the Dissidents*, but removed it on the advice of two reviewers who opined that Burdick had not earned a single degree and that he was an embarrassment to the creation movement. Not able to let the matter rest, I obtained copies of all of Burdick’s official transcripts and other documents, including letters housed at the University of California, Berkeley. As a result of my research, I was able to support Burdick’s claims pertaining to the issues raised by his critics.

### An overview

In 1917 he earned a BA in chemistry from Milton College, Milton, Wisconsin, with excellent grades: all A’s and B’s except three classes including freshman English. He had difficulty with writing his entire life and may have been dyslexic. He also studied plant and animal biology, physiology, paleontology, astronomy, geology, logic, philosophy, algebra, trigonometry, Spanish, German, and ethics — earning a total of 128 semester hours at Milton.

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# God's Undertaker: Has Science Buried God?

by John C. Lennox  
 2009, Lion Books  
 210 pages, \$14.95  
 (paperback)  
 (new updated edition)

**D**r. John Lennox is well credentialed and cannot be easily dismissed by the main stream. He makes points and the mainstream at least listens. I recommend this book for your reading and use.

Lennox concludes thusly: "I submit that, far from science having buried God, not only do the results of science point towards his existence, but the scientific enterprise itself is validated by his existence. Inevitably, of course, not only those of us who do science, but all of us, have to choose the presuppositions with which we start. There are not many options — essentially just two. Either human intelligence owes its origin to mindless matter; or there is a creator. It is strange that some people claim that it is their intelligence that leads them to prefer the first to the second."

The author supports this conclusion well. Lennox's case is strong that Dawkins fails to convince us of mindless matter. In *Climbing Mount Improbable* Dawkins offers a variant upon "mindless matter." That variant

embraces intelligence, although it is masked as latent in matter. Dawkins agrees that Darwinism cannot work purely by chance, so instead he proposes a law-like process plus chance; but the law-like process selects from the chance process results according to a latent rule in matter. But what other rational explanation is there for such a law-like filter than intelligent origin?

Lennox makes the point that intelligence is prerequisite to life's origin — that intelligence cannot arise from a gradual chance process. DNA is necessary for life, but in order for DNA to replicate, proteins are required, which can come only from life. It thus becomes a "which came first, the chicken (life) or the egg (DNA)" question; the answer clearly is the life, and the life must come from a first-cause intelligence.

He also supports the idea that information is actually more primitive than energy or matter. Information may in fact be subject to a law of conservation just as is energy. His ideas on this form a good case that macroevolution is rather silly.

Clues in his book cause me to speculate that Lennox's views are similar to Hugh Ross or Francis Collins. However, there are also clues that Lennox could morph to a young-earth-creationist (YEC) position if the evidence were to lead him there. In any case, it is clear that creationism, identified

with the more "extreme" elements (e.g., YEC), is not his cup of tea, at least not according to his current thinking. The British surely know their cups of tea but perhaps not in this case.

Lennox's apologetics establish that science is much more in support of theism than of atheism. I interpret his apologetic storyline according to the following very high-level summary:

**Science is limited — it cannot address purpose.** The Methodological Reductionism of science is limiting because, as Gödel showed by his 1<sup>st</sup> and 2<sup>nd</sup> incompleteness theorems, in effect the whole is always greater than the sum of the parts. Life is a prime example of this by its information.

**There is ample evidence of design and intelligent origin.** The most incomprehensible characteristic of the Universe is that it is comprehensible; but beyond its intelligibility, it is even more astounding that the universe is mathematically intelligible. Science cannot explain this. It is an article of scientific faith; it is also an article of mathematical faith, as Gödel showed.

**The unfolding evidence of science shows an "edge" to evolution** — a limit to what a blind watchmaker can do, and this is becoming a greater and greater challenge to naturalism.

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**The origin of life is an even greater challenge to naturalism.** In life there is uniform complexity of the cell at all levels, from bacteria to humans. There is no evidence to show a primitive-to-complex trail. Advances continue to expose greater and greater complexity. But, it is more than just complexity; it is both irreducible and specified. DNA depends on life rather than life depending on DNA. Thus, prebiotic evolution is a contradiction in terms.

**The origin of life equals the origin of information.** What is information? Information reduces uncertainty. There is syntactic information, having to do with arrangement of the elements of words, messages, e.g., Shannon-type information; and there is semantic information, having to do with meaning of arranged letters or words; i.e., the meaning of the message. Information — is it a funda-

mental quantity, more primal than material? Is it perhaps that “In the beginning was the Word...” is telling us that the logos is primal; that God spoke the creation into existence? The word and information are primal, also, in that they are not created, while energy-mass is created.

Is there proof that, like energy, information is conserved? If it can be proven to be true, then it is reasonable to establish that the origin of life requires an external input of information, for the requisite information is certainly not contained in the non-living Universe. But, of the alternative, quoting philosopher Richard Swinburne, “To postulate a trillion-trillion other universes, rather than one God, in order to explain the orderliness of the universe, seems the height of irrationality.”

— Reviewed by Ken Caproni  
kacaproni@comcast.net

1. John C. Lennox MA PhD DPhil DSc is Professor in Mathematics at the University of Oxford, and Fellow in Mathematics and the Philosophy of Science at Green Templeton College. He has debated Richard Dawkins and Christopher Hitchens, and has lectured in many universities around the world. He is particularly interested in the interface of science, philosophy, and theology.
2. Dawkins, Richard. 1996. *Climbing Mount Improbable*. New York, Norton.
3. For example, *God's Undertaker*, pp. 11, 67.
4. *God's undertaker*, p. 38.
5. *God's undertaker*, p. 53.
6. *God's undertaker*, p. 75.

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## Burdick Expelled (Part 1)

...continued from page 1

In 1922 he earned an MA in ministerial studies from Andrews University in Michigan, completing 80 semester hours, mostly with A grades. As was true with his undergraduate work, his weak field again was English — he earned C's in journalism and public speaking. His degree was designed for missionaries and, for this reason, he studied “minor surgery” (first aid), farm management, husbandry, and poultry. He also studied history, the subject of his MA thesis.

Burdick then completed all graduate work required for an MS in geology at the University of Wisconsin. Although he earned a total of 34 semester hours in geology, botany, and genetics, all with good grades, he was denied his degree. Burdick claimed that his rejection of Darwinism was openly the reason. He later wrote that he had been an evolutionist during his early college training but while taking graduate classes at the University of Wisconsin became convinced that evolution had many scientific problems (Burdick, 1979). Burdick's beliefs about biological origins would create problems for him the rest of his career.

Burdick was later accepted into the geology Ph.D. program at the University of Arizona. He then completed all of the requirements (a total of 88 semester graduate hours in geology, paleontology, paleobotany, petrology, and stratigraphic geology),

again all with above-average grades. He thus earned a total of 330 semester hours, most in science. Although Arizona never did grant him a degree, Milton College, in recognition of the work he had accomplished toward a Ph.D., granted him an honorary doctorate of science in 1973.

The Burdick case is important because it illustrates the complex, adverse consequences that often accompany one's involvement in the creationist movement. It also illustrates the now well-documented fact that questioning orthodox Darwinism can be a career ender.

### Details of the Burdick case

At Arizona he was told that he “was one of the better students ... and one of the hardest workers” (Burdick, 1963b). Three days before his scheduled oral exams, a professor on his examination committee came across an article on “flood geology” that Burdick published in the Seventh-day Adventist magazine *Signs of the Times*. This professor then informed Burdick that he would not support awarding a “doctorate to the author of such a scientifically heretical work” (Burdick, 1979). Burdick recounted his experience (Burdick, 1979):

An admitted atheist on the staff, Dr. Miller found an article ... which I had written...and in it I had mentioned geological evidence that supported the creation concept. [After they read the article] Dr. Miller and another geology instructor, Dr. Mayo, voted against my candidacy,

giving as the reason that I did not believe in evolution. ...Dr. Miller stated that he voted against me because I interpreted the geology of Arizona from a creationist rather than evolutionary standpoint.

### Climate change

Burdick later explained that about this time the climate there changed drastically. Even though he had successfully completed all of the requirements for the Ph.D. degree, certain professors on his committee told him that they could not support awarding him the degree because of his belief in (Burdick, 1963b)

...all that “trash.” Of course, no one will admit that their refusal is based on my religious concepts, but on poor work. The truth was that until they got hold of that SIGNS article, I...was on the graduating list for that spring. That was before that atheist paleontologist got ahold of my article.

After completing all of the other requirements, including his thesis and written exams for a Ph.D., his committee delayed his oral exams with no explanation until the fall of 1960.

By then his health had worsened, and although the graduate school had approved a postponement until his health improved, the geology department refused to allow a delay. He was then almost 70 and was evidently suffering from hepatitis. He claimed he was still mentally sharp, but

could not (Burdick, 1963b)

...carry the physical load I once could. Even at that I have not been too robust since I picked up a tropical parasite while in [the military] service...I never have been quite as able as before. I have to have plenty of rest.

In view of their hostility toward what they assumed were Burdick's beliefs, not surprisingly the committee failed him and violated their own policy by refusing to grant another opportunity to pass his oral exams. Ronald Numbers wrote (Numbers, 2006, p. 288):

The committee, no doubt grateful that Burdick's poor performance spared them the embarrassment of passing a student who repudiated the very foundations of historical geology, refused to grant him a second chance.

The reason he failed soon became very evident. Burdick later wrote that he sensed the professors' hostility the moment he entered the examination room, and that, as a result, he "'browed out' several times during the exam, and could not answer even the most simple questions." (Burdick, 1963a, p. 3). Burdick later explained that when his professor informed him that he would not support awarding a degree to a creationist, he panicked. For many years he had (Numbers, 2006, pp. 287-288)

...carefully concealed his creationist leanings [due to] his earlier failure at the University of Wisconsin — and he reckoned the odds at a thousand to one that his professors might discover his true thoughts. "I might go thru a dozen more institutions without [their]... ever getting next to my inner feelings," he later said wistfully. "I saw the handwriting on the wall..." he wrote of the traumatic ordeal: "The emotional shock induced a severe case of acute indigestion, and I was unable to eat hardly anything for the three days prior to the test."

He added, "I was told I passed as far as knowledge of geology went, but...could not answer the reasoning questions, and being sick did not make too good an impression" (Numbers, 2006, p. 288).

Despite repeated appeals, he was blocked from completing his Ph.D. degree. He even attempted to file suit against the university, but to no avail. Professor Damon admitted that his own personal religious

theology was the reason for his opposition to Burdick, namely Damon's conclusion (Burdick, 1963a, pp. 2-3)

...that the Bible was not intended to be taken literally, that it was intended only for the spiritual lessons we could glean from it. In this letter he said I was not one of the better students...how fast their ideas change when they get an evil report of someone, and this atheist did me a lot of damage. Dr. Mayo turned against me,...although formerly he was very friendly and helpful. He is my main "fly in the ointment." He is an older man, but if I wait for him to retire all my credits will have eroded away from the time limit.

### Dr. Lammerts tried to help

Walter Lammerts was appalled at the way Burdick was treated, writing that he found it "very difficult to believe that such handcuffing of one's thinking" could occur in a university that supposedly prided itself on freedom of thought (Lammerts, 1963c, p. 1) Burdick especially regretted the fact that he had spent a large amount of money and time on his dissertation fieldwork when he could have been working for badly needed money to support himself.

In an effort to help Burdick, Lammerts wrote that he was looking into the possibility of having Burdick transfer to Texas Western College to work with Thomas G. Barnes and Harold Slusher, both active CRS supporters. If Burdick could be granted credit for the work that he had completed, Lammerts thought he could earn a Ph.D. with a minimum of effort in geophysics under Harold Slusher (Lammerts, 1963c).

The plan did not work out, so Burdick was forced to move on to other projects. In a letter to Frank Marsh, Lammerts wrote that Burdick, "was given a real bad time," adding that he wished he was wealthy enough to help him out (Lammerts, 1963b).

Burdick claimed that the university made many procedural mistakes, and that his problem was primarily due to one faculty member, Dr. Mayo, whom Burdick described as fanatically hostile to him (Burdick, 1963d). Burdick later wrote (Burdick, 1963c):

Dr. Lacy, my advisor here who seems to have my interests at heart advises me that I am just butting my head against a stone wall here. He says if I still want a degree, I should transfer to some other school...My whole trouble is Dr. Mayo, who sits

astride my committee with an unnatural, almost insane open hostility toward me, manifest every time we meet...Dr. Lacy says it takes but one opposed to block a candidate from a degree.

### The influence of Dr. Pye

Burdick hoped that sedimentologist Dr. Willard Pye could help him obtain his Ph.D. because Pye was a committed creationist, as shown by the fact that when (Burdick, 1963e)

...Dr. Whitcomb lectured here at Baptist church Dr. Pye was the only faculty representative present. When he sent his daughter to college, she did not go to the University of Arizona but ... to the [Christian] school where Dr. Howe teaches.

He also noted that Dr. Pye was "a top flight geologist," at the highest rank in the department, and a contributor to the *Dictionary of Geological Terms*, a nationally recognized geology reference (Trowbridge, 1962).

It was at this time that George Howe became acquainted with Dr. Pye. Burdick wrote that he [Burdick] had been "commissioned to take a geologist from the Colorado School of Mines to fly to Baja, California, to inspect and make a report on a mine. I used my influence to switch the job to Dr. Pye; so I spent the three days with him" (Burdick, 1963e). After noting that he and Pye often went on geological expeditions together, Burdick added that it was evidently partly (Burdick, 1963e)

...through his influence, and the fact we have a new head of the geology Dept., that they are now willing to give me the Ph.D. degree...All I would have to do is revise and bring up to date my dissertation. Dr. Hamara, [a] good friend from our church put the pressure on me to apply. Dr. Hamara teaches math at [the] University of Arizona and carries a little more weight.

Nothing, though, worked out. So determined was Dr. Mayo to deny Burdick his hard-earned Ph.D. in geology that he blocked every option open to Burdick. Part two of this paper will deal with Burdick's further attempts to earn a Ph.D.

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## Membership Matters

by Glen Wolfrom, Ph.D.

### Subscription Promotions

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## Math Matters

by  
Don DeYoung, Ph.D.

### Christianity and the History of Math and Science

**I**t is often assumed that science and religion are in direct conflict over the search for truth: facts versus faith, or science versus superstition. This may indeed be the case with *scientism* or *naturalism*, which rejects all supernatural elements including creation, the spirit world, and prayer. Historically, however, the scientific revolution and its accompanying mathematics development owe their existence to positive Christian influence.

Two basic truths promoted during the 1600–1700s led to great progress in under-

standing our world. First is the realization that there are fundamental, knowable laws in nature. These laws control gravity, matter, and energy. "Nature," observed Robert Boyle, "is nothing else but God acting according to certain laws he himself fixed." (Harrison, 2002) Without these laws, nature would not be predictable and the scientific method of discovery would be impossible.

The second historical truth is that the very language of nature is mathematics. Since Aristotle, math had been considered by some to be an arbitrary, purely human construct. However, a Renaissance realization was that mathematical understanding held the key to unlocking nature's secrets.

Descartes further supported this truth by quoting from the *Wisdom of Solomon* 11:20b, an apocryphal book: "But thou hast arranged all things by measure and number and weight." The constancy of nature and its mathematical laws remains today the foundation of all scientific research.

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(Gen. 1:24-25). Thus, we would not expect tracks/trackways to have formed any earlier than the fifth day of the Creation Week. These footprints could have formed through the first 40 days of the Flood (Gen. 7:4), or perhaps as late as the 150<sup>th</sup> day (Gen. 7:23-24).

In either case, the death of all land-dwelling animals would have ended the formation of terrestrial tracks/trackways (note: it is possible that tracks could have formed by a large dead animal bobbing in shallow water but this would be an exception rather than the rule). Amphibian tracks/trackways may have occurred even later during the Flood but not beyond the 150<sup>th</sup> day. The formation and preservation of tracks and trackways would have resumed after the Flood (i.e., Ice Age timeframe) and

continued into the present where conditions might have allowed (Figure 1).

### Constraining tectonic uplift in biblical history

A number of tracks and trackways have been identified adjacent to the Appalachian Mountains (Table 1; Figure 2). In addition to their usefulness in defining a biblical timescale, they can help in determining the timing of tectonic uplift. The uplift of the antediluvian land masses would have been initiated and completed on Day 3 (Gen. 1:9-10). Those land surfaces were not flat, as Genesis 7:19 records that the pre-Flood “high hills” were covered by floodwater. Were the Appalachian Mountains originally pre-Flood high hills?

Based on the thickness of clastic sediments adjacent to the Appalachians, this is not likely. Rather, the rock record suggests that the Appalachian Mountains were uplift-

ed during the Flood. Studies from areas defined as Large Igneous Provinces suggest that the crust can be uplifted in association with magmatic intrusion on the order of thousands of vertical feet and this can occur quite rapidly (Froede, 2007b). When did the uplift occur? This is where fossilized animal tracks and trackways can help solve the timing of tectonic uplift.

### Dating the Appalachian uplift using fossilized tracks and trackways

Fossilized animal tracks and trackways found adjacent to the Appalachian Mountains provide a means of dating the uplift of the Appalachian Mountains within the biblical chronology. Tracks/trackways of extinct animals and insects have been identified in clastic sediments both east and west of the Appalachians (Figure 2). It should be noted that the uniformitarian age of the strata

**Table 1.** The map identification codes listed in the left column of this table correspond to specific locations shown in Figure 2. While not exhaustive, this list demonstrates the many track/trackway locations found adjacent to the Appalachian Mountains. These ichnological features indicate that the uplifted mountains probably served as a temporary refuge for animals while the Floodwater rose to cover the Earth. Note that the uniformitarian age of the strata does not correspond to any specific time/rock units in the creationist geological column.

Map ID	State/Province	Uniformitarian Age	Geological Location	Stratigraphic Unit	Animal	Reference
CN-1	New Brunswick	Upper Mississippian	Maringouin Peninsula	Enragé Fm	Reptile (Pseudobradypus ichnosp.)	Wood and Miller, 2007
CT-1	Connecticut	Triassic/Jurassic	Hartford Basin, Deerfield Basin	Newark Supergroup	Reptiles and Dinosauria	Bervoets, 2010
NJ-1	New Jersey	Early Jurassic	Newark Basin	Passaic Fm, Newark Supergroup	Reptiles and Dinosauria	McCauley, 2009
KY-1	Kentucky	Middle Pennsylvanian	Appalachian Plateau	Breathitt Fm	Arthropod	Greb, 1994
MV-1	Maryland and Virginia	Lower Cretaceous	Atlantic Coastal Plain	Patuxent Fm	Dinosauria	Stanford et al., 2004
MD-1	Maryland	Lower Cretaceous	Atlantic Coastal Plain	Patuxent Fm	Dinosauria	Stanford et al., 2007
VA-1	Virginia	Late Triassic	Dan River Basin	Cow Branch Fm	Reptiles	Olsen et al., 1991
NC-1	North Carolina	Late Triassic	Deep River Basin	Pekin Fm	Reptiles	Olsen and Huber, 1998
GA-1	Georgia	Lower Pennsylvanian	Valley and Ridge	Crab Orchard Mountain Fm	Amphibian	Schneck, and Fritz, 1985
AL-1	Alabama	Lower Pennsylvanian	Appalachian Plateau – Black Warrior Basin	Pottsville Fm	Reptiles	Hunt, Lucas, and Lockley, 2003
AL-2	Alabama	Lower Pennsylvanian	Appalachian Plateau – Black Warrior Basin	Pottsville Formation	Reptiles and Amphibians	Buta, Rindsberg, and Kopaska-Merkel, 2005
AL-3	Alabama	Lower Pennsylvanian	Appalachian Plateau – Black Warrior Basin	Jagger bed - Pottsville Formation	Amphibians	Aldrich and Jones, 1930

containing the footprints is irrelevant based on biblical history. Instead, we must determine if the tracks were formed during the pre-Flood, early Flood, or post-Flood time periods. These are the only possibilities.

Along the Appalachian Mountains, the original casting sediments (i.e., sand and mud) have subsequently experienced compaction and cementation. Today, we find the tracks and trackways in well-indurated (i.e., lithified) sandstone or shale. The delicate impressions are typically found buried many feet below the surface and are usually discovered accidentally. Many of the animals that made the footprints are extinct, and fossil bones are not usually found in association with the tracks/trackways.

## Discussion and conclusions

The fossilized footprints of amphibians, reptiles, and dinosaurs, found at various locations adjacent to the Appalachian Mountains, are interpreted by naturalists as evidence for evolution and deep time. Some of these fossil prints have proven significant in extending the age range of some animals, especially the dinosauria, farther back in time.

However, creationists, operating within the biblical chronology, must interpret tracks/trackways as forming before the Flood, early during the Flood, or after the Flood. The numerous footprints found adjacent to the Appalachian Mountains suggest this area was undergoing uplift during the early stages of the Flood. Thus, the fossil prints would have formed before day 40 or perhaps as late as day 150 during the Flood. The well-indurated and compacted matrix containing the footprints suggests deep burial at some past point in time. While it is possible that some of these tracks/trackways may have formed in a post-Flood setting, it is not likely based on the stratigraphic position of the casting sediments and their state of lithification.

Therefore, based on the location of the tracks/trackways, it appears that the Appalachian Mountains were uplifted at the initiation or very early with the onset of the Flood (Froede, 2004, 2006, 2007a, 2009). This uplifted area would have been subjected to vigorous erosion with deposition of the sediments in adjacent basins. Terrestrial animals seeking refuge on the rising lands would have left footprints in the accumulating sediments. Footprints formed in the soft sediments would have been rapidly buried and preserved as additional sediments accumulated across broad areas adjacent to areas



**Figure 2.** The Appalachian Mountains (approximated in yellow) extend from Alabama (U.S.A.) to Newfoundland (Canada). Tracks and trackways are found adjacent to and on both sides of the mountains along this distance. I believe these impressions were formed at the onset or perhaps during the early stages of the Flood and reflect concomitant uplift of the Appalachian Mountains during this time in Earth history.

of uplift.

Estimating the age of the impressions can be done based on a combination of burial conditions (inferring a dynamic depositional setting), the depth at which they are encountered in the subsurface, and the type of animal that left the footprint. However, we know at a minimum that the tracks/trackways document tectonic uplift which was initiated at the onset or early during the global Flood. This information can help interpret the complex geology of the region in a diluvial framework.

## Acknowledgments

I am grateful for my wife's continuing support of my research and writing efforts. I thank Jerry Akridge and John Reed for their review and helpful comments. Any errors that may remain are my own. Glory to God in the highest! Proverbs 3:5-6.

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# Speaking of Science

*Editor's note: Unless otherwise noted, S.O.S. (Speaking of Science) items in this issue are kindly provided by David Coppedge. Opinions expressed herein are his own. Additional commentaries and reviews of news items by David, complete with hyperlinks to cited references, can be seen at: [www.creationsafaris.com/crevnews.htm](http://www.creationsafaris.com/crevnews.htm). Unless otherwise noted, emphasis is added in all quotes.*

## Dating of Impacts and Impacts of Dating

Earth and Neptune were both on stage this week with stories of impacts. How do scientists know when they occurred?

**Neptune:** A comet struck Neptune 200 years ago. That's what planetary scientists are claiming, according to *National Geographic*.<sup>1</sup> The data only "suggest" this explanation, according to *Space.com*.<sup>2</sup> Since nobody witnessed the impact in 1810 (Neptune had not even been discovered yet), how do they know? The data consist of elevated carbon monoxide levels in the outer atmospheric layers of Neptune compared with the lower layers, as measured by the Herschel spacecraft. According to one of the authors of a paper on the hypothesis, "The higher concentration of carbon monoxide in the stratosphere can only be explained by an external origin." Another author added, "From the distribution of carbon monoxide we can therefore derive the approximate time, when the impact took place."

According to the articles, similar techniques were used on Saturn to suspect an impact about 300 years ago. The only impacts on gas giants witnessed by humans have been on Jupiter. Scientists estimate the one that hit Neptune was twice as big as the first fragment of Comet Shoemaker-Levy 9 that struck Jupiter in 1994.

**Earth:** A new impact crater was found in the deserts of Egypt, according to *Space.com*<sup>3</sup> — one of the most pristine ever found. *National Geographic*<sup>4</sup> has a good picture of it. Because of its lack of erosion, they estimated the crater had formed within the last 2,000 years. Called Kamil Crater, it is 147 feet in diameter and 52 feet deep. This leads astrophysicists to estimate the characteristics of the impactor:

Based on their calculations, the team **thinks** that a 4.2-foot-wide (1.3-meter-wide) **solid iron meteor** weighing 11,023 to 22,046 pounds (5,000 to 10,000 kilograms) smashed into the desert — nearly intact — at speeds exceeding 2.1 miles (3.5 kilometers) a second.

Based on estimates of the number of impactors orbiting our region of the solar system, the scientists estimate that 1,000 to 10,000 such impactors should strike earth each million years. Why are more not

## Letters

### An Evolutionary Theory of Mathematics?

Permit me to make three observations on the recent *Math Matters* article by Dr. Don DeYoung, titled "Is There an Evolutionary Theory of Mathematics?" in the May/June 2010 issue of *Creation Matters*, since this is a topic close to my heart.

**First** — Dr. DeYoung cites an often referred-to 1960 article by Eugene Wigner. Wigner's work has an optimistic title, *The Unreasonable Effectiveness of Mathematics in the Natural Sciences*, but he is honest enough to acknowledge that he has no answer to the question of why mathematics seems so effective. Here are a couple of admissions by Wigner:

... the enormous usefulness of mathematics in the natural sciences is something bordering on the mysterious and that there is no rational explanation for it.

... fundamentally, we do not know why our theories work so well.

Wigner uses the words "miracle/s" 12 times in his attempts to grope for an answer to this complicated problem! His work is superficial and not authoritative. Several other writers have addressed this issue with more satisfactory answers, such as Hans

Hahn, Carl Hempel, Morris Kline, and George Lakoff. The following quote is very relevant to the issue at hand:

I shall not attempt to prove that mathematics is useful. I will admit it and so save myself the trouble that here is a great and respected discipline where all is impossible yet much is useful. The usefulness largely flows from the impossibility. Mathematical concepts have been simplified and generalized until they describe an imaginative world no part of which could possibly exist outside men's minds. [Billy E. Goetz, *The Usefulness of the Impossible* — 1963]

**Second** — Near the end of Dr. DeYoung's article, there is a quote by Einstein followed with "Wigner, 1960." That citation seems to imply that the Einstein quote is part of the Wigner publication. This must be an oversight or copyist error because that quote does not occur in the Wigner article. On the other hand ...

**Third** — The same Einstein quote in its full context has great relevance to the problem at hand:

How is it possible that mathematics, a product of human thought that is independent of experience, fits so excellently the objects of physical

reality?

One sentence later Einstein answers his own rhetorical question:

As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality. [Albert Einstein, *Sidelights on Relativity*, p28. Dover; 1983]

My attempt at an explanation is here: <http://truth-defined.com/80-Mathematics&Reality.htm>

Once this profound statement is understood, it becomes unnecessary to try and justify mathematics by trying to turn God into a mathematician.

— Berj Manoushagian  
CRS Life Member

### Reply

Thanks to Mr. Manoushagian for the reference correction and also for his website address. The title of the Wigner article says it all: Mathematics remains the clear, embedded language of Creation.

— Don DeYoung

—CM—



found? An Italian scientist explained, “The reason why they are rare, however, is that, on Earth, weathering rates are high — small craters are usually easily eroded or buried.”

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## Scratching Heads with Imaginary Stars

It was lurking out there, astronomers said. Our sun’s evil companion, invisible, dark, like a stealthy general of an enemy force, wandered silently in hiding, waiting for the next opportunity to order its agents of death into combat. Its name was Nemesis. Every 27 million years, using its gravity, it sent comets from the Oort Cloud, like special forces, toward the earth, bombarding the doomed planet’s helpless inhabitants into fiery cauldrons of mass death.

Cut. Wrong script. There never was a Nemesis. This tale now moves from documentary to fiction. Clara Moskowitz at *Space.com*<sup>1</sup> reported on a study by Adrian Melott at the University of Kansas that “**puts the final nail in the coffin of the Nemesis idea.**” No object at the presumed distance of Nemesis would have a regular orbit, he calculated; there’s no way it could account for regularly-spaced extinctions.

As for what caused the extinctions, he has no idea. “For me, **it’s a complete head-scratcher.**” he said. Others mentioned in the article added further unknowns. “Some in the field **question whether the fossil record is really accurate enough** to establish a **cycle going back that far,**” Moskowitz reported.

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## Electricity Forms Your Heart

Did you know your heart is an electrical appliance? That’s right. Currents of electrical ions are vital to its function as a contractile organ. Now, researchers at the University of California have found another thing electricity does for your heart: it guides the developing heart into the proper shape. This is a key study showing how *epigenetic* factors — factors above and beyond the genetic code — are essential for the formation of body parts.

The research team, publishing in *PNAS*,<sup>1</sup> explained the purpose of their investigation (Note: *morphogenesis* refers to the origin of shape, and *cardiomyocytes* are the specialized muscle cells that make the heart beat):

**Cardiac morphogenesis is a complex process** that is mediated by **a coordinated set of cellular and molecular as well as environmental factors.** Recent studies have shown that **epigenetic forces** such as cardiomyocyte **contractility** and **intracardiac hemodynamic flow** regulate this process. Furthermore, *in vitro* studies suggest that cardiomyocytes

can **realign themselves according to electrical conduction directionality.** However, because electrical cardiac conduction and mechanical contractile forces are intimately coupled in the intact heart, it is **difficult to assess the individual contribution** of these influences to overall heart organogenesis. Here, we make use of several zebrafish cardiac mutants to **uncouple these two influences, and find that electrical conduction exclusive of contractile influences can directly participate in remodeling and morphogenesis of the vertebrate heart.**

In other words, electrical conduction guides the individual heart cells into position during heart development and repair. They said in the discussion part of their paper that it is known that “**The direction of growth and orientation** of various cell types in tissue culture can be **influenced by externally applied electric fields.**” They added, “Furthermore, endogenous [inside organism] **electric currents exist** in a **variety of tissues** and have been **hypothesized** to influence cell migration and shape.” This paper announces confirmation of that hypothesis for heart formation: “Our **in vivo results** [using living zebrafish] indicate that physiologic **electric currents can indeed have an impact on cell morphology and overall cardiac organogenesis.**” The mutant fish without the electrical conduction working properly developed heart disease.

So how does this work? They explained,

These **electrical effects** might be **mediated** through intracellular **calcium fluxes** which can **affect cell polarization.** Furthermore, a number of **cell surface receptors...** can also be **redistributed** in the cell membrane by **electric fields.**

Does this finding provide hope for heart patients? Patients with electrical conduction disorders get better when the beats are re-synchronized. The researchers explained why that works:

Thus, **overall cardiac improvement** from the **resynchronization** of the ventricles in heart failure patients manifesting conduction disorders **may be due to beneficial realignment and improved remodeling** of the myocardium **primarily from proper and synchronized electrical signaling.**

Get the electricity right, and the heart shapes up. Now those defibrillation devices and electrical heart stimulators start to make more sense.

This means that stem cell therapy may need an electrical jumpstart to work properly:

Given that previous cardiac cell-based therapy has provided only a modest improvement in cardiac function, **electrical cell-cell communication and stimulation may be required for optimal integration and alignment** of engrafted embryonic cardiomyocytes and skeletal myoblasts in the injured myocardium **to improve overall myocardial performance.**

Live better electrically!

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— CM —

*Editor's note: You may submit your question to Dr. Jean Lightner at [jean@creationresearch.org](mailto:jean@creationresearch.org). It will not be possible to provide an answer for each question, but she will choose those which have a broad appeal and lend themselves to relatively short answers.*

In this article we'll be asking and answering several questions about natural selection, which can be defined as (Anonymous [1], n.d.):

A process in which some individuals have genetically-based traits that improve survival or reproduction and ... thus have more offspring surviving to reproductive age than other individuals. Because the offspring also carry the genes for these traits, this process causes the genes for advantageous traits to become more common in populations and the genes for disadvantageous traits to become less common in populations.

Sometimes natural selection is presented as a syllogism:

**IF** a population has:

- a. *variation* in traits with
- b. *fitness differences* (i.e., a consistent relationship between the trait and the ability to survive and reproduce, aka. *differential reproduction*), and
- c. *heritability* (implying that the trait is genetic)

**Then** the trait's distribution in the offspring will be predictably different from that of the parental generation (if the population is not in equilibrium; Endler, 1986).

These descriptions of natural selection are probably the most widely accepted. Sometimes natural selection can seem confusing. At least part of the confusion is attributable to the fact that evolutionists do not always agree on what it is.

For example, Endler comments that "[n]atural selection is a major part of the theory of evolution..., yet there is much argument and confusion as to what it is, what it is not, and even whether or not it exists." (Endler, 1986, p. 3)

He also states that "[a] major problem in this subject is that there is a multiplicity of meanings for the same terms, and the same terms mean different things to different people." (Endler, 1986, p. xii) Such issues may seem to be strangely familiar to readers of this publication [see *Creation Matters* 14(6):6-7, 2009 and 15(2):1,11, 2010].

### Is it the same as evolution?

The short answer is "no." If we use the common definition of evolution from population genetics, a change in allele frequencies in a population over time, they might seem almost the same. However, natural selection is not the only way to change allele frequency in a population; genetic drift and migration can affect it as well. Further, Endler (1986) criticizes this definition since evolution really involves more than just change in allele frequency; it must also account for the origin of variation. Therefore, while the two terms can overlap, it is a mistake to think they are synonymous.

### Is it the same as adaptation?

Again, "no." An adaptation can be defined as "a feature that is common in a population because it provides some improved function." (Anonymous [2], n.d.) Natural selection is *not* an explanation for the origin of the feature (trait). Unfortunately, otherwise fairly reasonable sources make the absurd claim that adaptation is "a feature produced by natural selection for its current function." (Anonymous [1], n.d.) Endler correctly points out that natural selection "is not an explanation for adaptation; it only explains why and how relatively better adaptations can increase in frequency." (Endler, 1986, p. 46)

It can also explain why certain traits are removed from a population. Since by definition natural selection assumes variation in traits exists (or it could not occur), it cannot explain the origin of a trait; it certainly does *not* produce adaptations. The word adaptation can also describe the process of adapting to something (like the environment), but while natural selection may play a role at times, it is not synonymous with adaptation.

### How do we know it has occurred?

It is very hard to demonstrate that natural selection has actually occurred, so it is most often assumed. Essentially, it needs to be demonstrated that all three conditions of the syllogism above are present. If we see a change in the traits of a population over time, does that mean natural selection has occurred? Not necessarily (this would be affirming the consequent; a logical fallacy). Not all traits are genetic; epigenetic factors may play a role in some cases (condition "c" in the syllogism). What if we have identified the actual alleles

and we can show that they changed over time? Still, it isn't necessarily natural selection; genetic drift and migration can also produce these results.

What if we also show that the trait is advantageous? Again, it is not necessarily natural selection, since the advantage must result in differential reproduction for natural selection to occur (condition "b" of the syllogism). This can be very difficult to demonstrate. Additionally, there are reasons to believe that genetic mechanisms influence allele frequency. For example, gene conversion changes one allele to match another, thus changing allele frequency.

### What is its role in the world?

This is an excellent question that creationists need to further address. Walter ReMine has written on the cost of substitution, which demonstrates a limit on how fast new alleles can be fixed in a population by natural selection (ReMine, 2006). John Sanford has done mathematical modeling which further confirms that natural selection is inefficient at removing harmful alleles (Sanford et al., 2007). These concepts have mostly been used to emphasize the fact that natural selection cannot account for the molecules-to-man scenarios of evolutionists. Kurt Wise pointed out that the expectations of natural selection are at odds with a number of observations in the world around us, suggesting that natural selection does not actually account for much of what we see (Wise, 2009). I had raised similar ideas after investigating a gene associated with pigmentation in mammals and humans (Lightner, 2008).

There certainly are times where natural selection occurs. It is appropriate to recognize that natural selection *may* account for changes in traits of populations over time. However, I suggest that creationists avoid automatically attributing these types of changes to natural selection for the following reasons: 1) it is only one possible known mechanism; 2) it assumes that no genetic mechanisms exist to adjust allele frequency; and 3) it fails to address the important question of where the trait comes from. The last two issues are important because sometimes these traits seem to arise at very "convenient" times and spread remarkably well, challenging the assumption that only naturalistic processes are involved. Thus, blindly crediting natural selection can obscure genetic and other mechanisms which clearly display God's provision for His creatures in this current fallen world.

... continued on p. 11

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# ...without excuse! THE TESTIMONY OF FALSE ASSUMPTIONS

by Timothy R. Stout

A few days before this article was due for publication in *Creation Matters*, I was distributing free pamphlets on creation science at a summer session of Michigan State University. The title of the pamphlet was “How science shows there MUST be a Creator” (Stout, 2010a). I offered one to an older man who subsequently identified himself as a professor of evolutionary biology. He disagreed with the title and we ended up talking about various issues discussed in the pamphlet.

We discussed issues such as chemical equilibrium, the statistical improbability of getting biological chemicals through random processes, and information theory. The professor was unwilling to acknowledge the relevance of anything I had to say. His problem was a biased interpretation of the issues because of *a priori* false assumptions. As we talked, it became obvious that he placed a higher priority on the validity of his assumptions than on any specific example of observed data. His response was typical of many evolutionists I speak with about these issues. Below are three of the many assumptions that affected our conversation.

**False Assumption 1.** “Human Reasoning is adequate to explain everything worth knowing.” This is a foundational premise of humanism, as evidenced by the Humanist Manifesto II (Kurtz and Wilson, 1973). The professor used this assumption to discount all of the arguments I presented. However, it is contradicted by passages in Scripture, such as Deuteronomy 29:29 — there are *secret things* that belong to God; and Isaiah 41:22, 43:9 — only God knows *the former things*, which includes origins.

By contrast, the professor’s basic attitude was that even if we can’t explain certain things now, that does not mean that we will never be able to explain them. He considered my arguments as meaningless because he believed it was only be a matter of time until we would learn their rebuttals. The fact that we were discussing fundamental, basic laws that were already well known, and that have been un-

derstood for a long time, was to him irrelevant.

For example, my first argument was that one needs to discard the laws of chemical equilibrium in order to believe in a natural origin of life. The chemicals of life spontaneously progress towards breaking apart, not increasing in size and complexity as natural origins would require. His response was that just because we do not understand the details of how molecules could have joined together, the fact that we are here shows that they did. Eventually, we will figure it out.

He was willing to discard everything we know and understand about chemical equilibrium, based on his assumption that anything that currently contradicts evolutionary theory will eventually be explainable through human reasoning. Such thinking is not science. I pointed out that if He were to acknowledge a Creator God who transcends His creation (is outside of it but can act within it), then and only then will the conflict between observation and theory disappear.

**False Assumption 2.** “Macro-evolution is the eventual result of many steps of micro-evolution.” Unfortunately, micro-evolution is typically the result of a *loss* of information. This is because natural selection is essentially a specialization process. Specialization between generations comes at the expense of a loss of information between generations. Believing that micro-evolution can produce macro-evolution is like believing that by ripping the pages out of a dictionary, one can convert it into an encyclopedia. To assume, further, that beneficial mutations are adequate to generate new information contradicts scientific observation (Sanford, 2005).

**False Assumption 3.** “Long periods of time are adequate to compensate for statistical improbabilities.” The professor acknowledged that the odds were against the formation of any specifically-needed, new enzyme within an emerging new form. However, he allowed for essentially unlimited time. So, I brought up the enzyme succinate dehydrogenase (SD). If a living cell burns oxygen in its metabolism, it uses SD. This applies to bacteria, plants, and

animals. Yet, every known form of SD molecule is comprised of over 1,100 amino acids. The odds against forming SD in a single effort are more than  $10^{1.100}$  (Stout, 2010b). A google of years would not be long enough to form a single molecule of SD, anywhere in the known universe, through random processes.

The professor then proposed an infinite amount of time in an infinite number of universes. He was willing to assume whatever amount of time it took, regardless of how ridiculous his argument became, simply to justify his rejection of the reality of a living Creator God. There is nothing *in science* to justify an infinite amount of time in an infinite number of universes as a means to work around well-understood scientific principles. His assumptions were counter to both observations and common sense.

In the course of our discussion, the professor clung to many other false assumptions. This is typical of evolutionists. They hold on to these assumptions even when they contradict principles of science that are well known and understood. It is God’s intention that science should lead a person to acknowledge Him as Creator (Romans 1:20-22). Certainly, God is justified when He declares that a person is *without excuse* when that person clings to false assumptions in order to reject the evidence He has provided of Himself.

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## All by Design

by Jonathan C. O'Quinn, D.P.M., M.S.

# Frozen Alive?

**T**he book of Genesis teaches that the Lord created all living things according to kinds. We may safely assume that He has given each kind of living thing exactly what it needs in order to survive. However, influenced by the constant bombardment of evolutionary ideas and teachings in society, many people tend to think of vertebrates as more highly evolved, and thus more specialized, than so-called “lower” organisms. The Siberian timberman beetle *Acanthocinus aedilis* teaches us otherwise.

Siberia is one of the coldest places on earth, yet the timberman beetle thrives there. Hibernating timberman adult beetles and their larvae have a high capacity for supercooling, tolerate freezing well, and are able to tolerate temperatures that would kill most other insects. During the winter months, these insects accumulate high concentrations of polyol, approximately 1,500 mmo-



lal. Polyols depress the supercooling point of these insects.

Timberman beetle larvae also have glycerol concentrations of 2,600 mM, providing the more fragile larvae with extra protection against freezing. These insects are able to tolerate cooling as low as  $-37^{\circ}\text{C}$  or colder. Timberman larvae also have extremely low cuticular water permeability,

allowing them to stay supercooled for long periods without great water loss.

These specializations for dealing with extreme cold had to work properly from day one in order for these insects to survive and could not have developed in stages. This argues strongly in favor of the biblical account of creation.

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### Figure caption:

Timberman beetle, *Acanthocinus aedilis*.  
Courtesy of Wikimedia Commons.

— CM —