Creation Matters

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Why Geology Matters, Part 3

by
Michael J. Oard, MS

What about Those Slow Geological Processes?

Editor's note: This series of articles emphasizes the unique role that geology plays in establishing a creation model of origins. Our goal is to encourage the study of geology, especially by those who are beginning their careers in creation science.

Ever since the advent of deep time and the anti-Flood agenda of secular intellectuals, by far the most common argument against a young earth has been "process X would take too long," where X represents valleys, sedimentary layers, volcanism, tectonism, erosion, fossilization, or many other processes. In our more sophisticated day, "X" is often a combination of these, and many others, under the standard of the geologic column. Even Christians parrot the same arguments (e.g., Hill et al., 2016; Young and Stearley, 2008). Creationists have shown that these cases are typically products of circular reasoning that begin with the assumption of uniformitarianism, and underestimate the radical nature of the paradigm shift of modern Flood geology.

FIGURE 1. *The Woyak coal seam, northeast Powder River Basin,*

This article will briefly examine several common examples (such as the formation of coal, the many "ice ages," and the presence of dinosaur tracks and eggs in Mesozoic strata) and show how the Flood framework provides not just "an answer," but more credible answers.

Coal formed rapidly in the Flood

Coal has been a significant resource throughout human history (Figure 1). It is formed from compressed and metamorphosed plant matter, a process which stores significant energy that is released when coal is burned. Coal is not uncommon at or near the surface, and is often found in thin layers called "seams." Some coal seams reach about 60 m (200 ft) thick, like those in the early Cenozoic Powder River Basin in northeast Wyoming. Uniformitar-

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Is Dry Land Really Dry?

by Glenn V. Wilson, PhD and Jessica L. Locke

Ham and Hodge (2016) raised the question: "at creation, was the land under the surface of the water or was it made uniquely on Day 3?" The question arises from Genesis 1:9–10 which states:

> Then God said, "Let the waters below the heavens be gathered into one place, and let the dry land appear"; and it was so. God called the dry land earth and the gathering of the waters He called seas and God saw that it was good.

Two competing theories regarding the creation of the land were proposed by Ham and Hodge (2016). One theory was that the land, or the materials for the land, were under the surface of the waters at Gen 1:1. For this case, these authors stated that the land was "raised through the waters and then the land dried out" on Day 3. The second theory was that the earth was comprised completely of pure water on Days 1 and 2. For the second case, they stated that the "dry land was made separately and uniquely, or that some of the water transformed into dry land directly." Can we draw any inferences about which theory is correct based upon the land's being called "dry" on Day 3?

How dry is dry?

First, let us consider the scientific properties of soil with respect to water retention. As stated by Gardner (1986), "the key problem in water content determination in porous materials has to do with the definition of the dry state." The question could be asked: is dry land (i.e., soil) really "dry," or can we even define when soil is "dry"? The **water retention curve (WRC)** is a fundamental property of soil that describes the relationship between the water content and the energy status of the water; i.e., soil water pressure (Figure 1).

The WRC describes the change in "dryness" from saturation to field capacity, to plant wilting point, and to a residual water content in response to decreasing soil water pressure (or rather, increasing water tension). At saturation, water freely drains from large soil pores under the influence of gravity for one to two days. After the free drainage ceases, the soil still holds water (called

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Math Matters

by
Don DeYoung, PhD

Plants in Motion

A dull, boring event is sometimes likened to watching grass grow. Many plants, however, do in fact display remarkable activity. For example, the tropical touch-me-not plant (*Mimosa pudica*) folds and droops its compound leaves within seconds of a touch. And underwater bladderworts (genus *Ultricularia*) close a tissue trapdoor on mosquito lava in just milliseconds.

In spring 2018, I monitored the growth of a Midwest clementis flower vine. During 12 hours of daylight the vines grew an average of 3.5 cm in length, which is nearly three millimeters per hour. Assuming a plant cell size of 50 microns, and a vine diameter of two millimeters, each clementis vine builds complex cells at the rate of twelve cells per second. With more than a trillion atoms in each cell, there is frenzied activity in plant growth on the nano scale.

The Venus flytrap (*Dionaea muscipula*) capture mechanism is also a standout for plant motion. Its leaves capture prey in a process called snap-buckling, similar to the "rubber popper" toys that launch themselves into the air. The flytrap leaves close by flexing themselves quickly from a convex shape to concave in a fraction of a second.

The current plant speed record may be held by the dwarf mistletoe (*Arceuthobium americanum*). This plant explosively releases seeds through the air on a microsecond timescale.

Those of us who mow lawns can appreciate the slow growth of grass. However, the botanical world has a host of plants that rapidly catapult, kick, jump, and snap.

Reference

Forterre, Y., P. Marmottant, C. Quilliet, and X. Noblin. (2016, Feb. 10) Physics of rapid movements in plants. *Europhysics News.* 47(1):27–30. Retrieved Oct. 24, 2018 from www.europhysicsnews.org/articles/epn/pdf/2016/01/epn2016471p27.pdf.

See also Garisto, D. (2018, May 26) The secrets of plant speed. *Science News,* pp.16–19. Retrieved Oct. 25, 2018 from www.sciencenewsdigital.org/sciencenews/may_26_2018?pg=18#pg18

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Adam and the Genome: Reading Scripture after Genetic Science

by Dennis Venema and Scot McKnight. 2017. Brazos Press, Grand Rapids, MI

Reviewed by Kevin Anderson, PhD

The first half of *Adam and the Genome* was written by Dr. Dennis Venema. Dr. Venema has training in genetics, and is an avid writer for the evolution website, *Biologos.com*. The second half of the book was penned by his coauthor, Dr. Scot McKnight,who is a popular lecturer and Bible professor at Northern Seminary. In *Adam and the Genome,* these authors attempt to present a combination of scientific information and biblical exegesis. Unfortunately, what they actually accomplish is the promotion of evolutionary materialism and a marginalization of the Apostle Paul's writings.

A new perspective?

As part of his chapters, Dr. McKnight offers a "new" perspective of the Apostle Paul. This teaching has been gaining in popularity within theological circles over the past several years. As part of this so-called "new" perspective, Dr. McKnight devotes a number of pages to identifying factors that he thinks heavily influenced Paul's thinking, including ancient near east stories, traditions, customs, and culture. What he does not mention is any reference to Paul's influence by the Holy Spirit.

Readers are certainly left with the impression that Paul's writings were merely the thoughts of a man, no more inspired or Godly than those of any other man. In fact, if Paul was so heavily influenced by ancient stories and traditions, readers may ponder how relevant and useful his writings are for 21st century society.

I challenge that this is a very secular and worldly perspective of Paul's writings. This is certainly not consistent with Paul's own claim that "all scripture is God breathed" and valuable for teaching, rebuking, and correcting (2 Tim. 3:16). Such a perspective serves to diminish Paul's theological contributions to Christianity, especially his theological connections between creation, sin, death, and salvation (a principal theme of Paul's letter to the Church in Rome). Perhaps that is a primary intention of this "new" perspective — to sever the connection of creation and the fall from New Testament teachings. I doubt that it is coincidental that the major advocates of this "new" perspective are evolutionists (e.g., John Walton, N.T. Wright, and Scot McKnight).

Historical or metaphor?

McKnight also struggles with the idea of a historical Adam and Eve, primarily because evolutionary teachings have no place for a historical Adam, or a historical Genesis for that matter. In *Adam and the Genome*, Dr. McKnight writes that there is "no sign of a historical or biological or genetic Adam and Eve" (p. 136). He views the account of Adam and Eve primarily as a metaphor or a literary device. Yet, it is uncertain what type of literary device they are intended to represent, especially in light of Paul's continual reference to Adam as a historical figure (e.g., Rom. 5:12–14, 1 Cor. 15:45, 1 Tim. 2:13–14).

As a tool, science offers no opinion; rather, it simply provides data that must be interpreted by fallible humans.

Paul's statements make no theological sense if Adam were merely a fictitious caricature. Literary devices do not sin, and allegories are not responsible for introducing transgression into a perfect creation. Nor does a metaphor have dominion over the earth, eat vegetation, be "formed first, before Eve," be "the first man," or be a "living soul" — all biblical descriptions of Adam.

In addition, Genesis includes Adam in the genealogical lineage from Adam to Noah to Abraham. Luke lists Adam as part of the genealogical lineage of Jesus, and Jude lists Adam as part of the genealogical lineage of Enoch. Literary devices do not have children and cannot appropriately be part of any genealogical lineage. Clearly, both the Old and New Testament writers viewed Adam (and Eve) as historical people who actually lived and had children. Any alternate views come strictly from extra-biblical teachings, which are then imposed on scripture.

McKnight even acknowledges that Genesis presents Adam and Eve as "genealogical" (p. 145). Yet, he fails to grasp that such a "genealogical" Adam and Eve are clearly presented in Genesis as living, breathing humans. Or, possibly he does recognize that this was the intended view of Genesis, but concludes that we now know this view is wrong. Perhaps McKnight is following the assertions of Denis Lamoureux (who endorsed *Adam and the Genome* and is offered as an authority in the book).

Dr. Lamoureux has repeatedly stated that the Bible offers claims about creation "that in fact never happened" (Lamoureux, 2013, p. 54). This contests the very foundation of biblical inspiration and inerrancy. Why would Christians ever abandon this foundation, and why should we be attracted to such vain human teachings?

Ultimately, Dr. McKnight's position is founded on secularism, not the Bible. He even admits this with his opening query, "what happens when the church, or in my case, a Bible college professor, encounters the kind of science found in the first part of this book?" (p. 93). What should happen is a recognition of the materialism being promoted under the disguise of "science."

Instead, Dr. McKnight's statement is an admission that it was not biblical teachings that led him to his current thinking on Paul, Adam, and Genesis. Rather, he allowed the teachings of humans to trump the teachings of the Bible (Scriptura sub scientia). The subtitle of the book, *Reading Scripture after Genetic Science,* even admits that certain interpretations of genetic studies are given authority over scripture. This is the very act that Paul warned against (Col. 2:8).

Overlooking the evidence

The "science" that so impresses Dr. McKnight is presented by his coauthor, Dennis Venema. Unfortunately, Dr. Venema consistently over-plays his hand, making broad, sweeping statements regarding the certainty of evolution and the lack of any genetic evidence for creation. He presents a faulty and often misleading view of the scientific data, specifically the genetic data. He even emphatically states that finding evidence that humans "were created independently of other animals or that we descended from

only two people just isn't going to happen" (p. 55).

Contrary to Venema's claim, there are several lines of genetic evidence indicating that humans were created independently and that all humans have descended from a single couple. For example, mitochondrial DNA (mtDNA) provides strong evidence for a recent, single mother of all contemporary people (Carter and Lightner, 2016). This is fully consistent with the Bible's claim that Eve is the mother of all living (Genesis 3:20). However, Dr. Venema attempts to dismiss this genetic evidence by arguing that there still might have been other women besides Eve (p. 64). In other words, the DNA data do not absolutely exclude the possibility of other women. Yet, this is simply a handwaving exercise. Scientific thinking is hardly driven forward by "might have been."

The mtDNA data firmly point to a *single* woman as the mother of *everyone* alive today. The existence of other women, before or alongside Eve, is merely a supposition. There is no supporting mtDNA evidence. But, evolution requires these other women, so Dr. Venema just assures us that they existed. He then uses this assertion to chastise creationists, accusing us of perhaps misunderstanding the DNA data (p. 65). Thus, he does a poor job of separating evolution-biased conjecture from his interpretation of the genetic information.

As additional support for his claims, Dr. Venema offers "pseudogenes" (e.g., p. 38–41). He concludes that pseudogenes are defective remnants of ancient genes that have been discarded over eons of evolutionary transformations. As such, he sees pseudogenes as "genetic fossils," demonstrating that these genes have a long evolutionary history. However, Dr. Venema fails to acknowledge that a number of pseudogenes have been found to serve vital cellular functions (e.g., Chiang et al., 2018; Milligan and Lipovich, 2015; Xiao-Jie et al., 2015). RNA from pseudogenes can interact with their parent gene or even other genes. They can alter transcriptional sequences or serve in post-transcriptional regulation.

Why would defective gene remnants serve vital functions? Most pseudogenes have not been extensively studied, so it is extremely premature to simply assume that they are functionless gene fragments. In fact, it is reasonable to expect that functions will continue to be found for an ever-increasing number of pseudogenes. Yet, readers of *Adam and the Genome* are given no hint that current research is routinely overturning the "genetic fossil" assumption.

Dr. Venema also seems completely unaware of (or uninterested in?) the many genetic conflicts with his claims. These conflicts include what are known as the Waiting Time Problem, Genetic Entropy, orphan genes, Haldane's Dilemma, lack of Junk DNA, and the overall lack of genetic mechanisms for building new genes. Plus, he fails to mention epigenetics, a growing field of study revealing additional layers of biological information beyond the DNA sequence. These are all strong genetic challenges to standard evolutionary teaching, and are strong challenges to the claims that Dr. Venema attempts to make in his portion of the book.[1]

Rather than squarely dealing with these challenges, Dr. Venema dismisses any counter views by arrogantly proclaiming that "there does not appear to be anyone in the antievolutionary camp at present with the necessary training to properly understand the [genetics] evidence" (p. 65). Apparently, disagreement shows you lack sufficient training

On the contrary, there are many creationists who are highly trained geneticists with credentials and professional records equal to, and often well beyond, those of Dr. Venema. For example, several creation geneticists have training from schools such as Harvard, have notable post-doctoral experience, have served on the faculty of Ivy League and other Division I Universities, were directors of research for biotech companies, and have formidable publication records in genetics and biology journals. Dr. Venema has *none* of these credentials. Therefore, more humility and searching of God's word would seem appropriate; not haughty statements inferring how much more knowledgeable he is than are his "country bumkin" critics.

Dr. Venema's condescending reference to creationists' lack of genetic knowledge appears to be mostly a smear-tactic, hand-waving device to avoid directly addressing our challenges. He shows no interest in engaging creation geneticists or opening any type of productive dialogue. Rather, he generally ignores our criticisms while insinuating that our views are based on nothing more than ignorant misunderstandings. Perhaps it is Dr. Venema who lacks the necessary training to properly understand the genetics evidence. Perhaps he is fearful of an honest dialogue with creationists, so he resorts to demeaning those that disagree with him.

Swept away by human teaching

Swayed by Dr. Venema's weak arguments, Dr. McKnight jumps to the conclusion that a historical Adam and Eve "run contrary to what science now teaches with considerable evidence" (p. 145). What McKnight apparently fails to remember is that science is not an oracle, dispensing an absolute truth. It is an investigative tool. As a tool, science offers no opinion; rather, it simply provides data that must be interpreted by fallible humans. Thus, it is not that a historical Adam and Eve run contrary to what science teaches — instead, they run contrary to popular human opinion.

If McKnight polled the scientific community, he would also find that their popular opinion denies the deity of Jesus, the inspiration of scripture, the creation of the world, the global flood, and the resurrection and return of Christ — denials that Peter warned about 2,000 years ago (2 Peter 3:3–7). So, it should not come as any great surprise to Christians that the popular view of a fallen world seeks to deny its Creator, or at the very least, to marginalize Him (Rom. 1:18–23). Would we seriously expect otherwise? The vast majority of people do not seek God's truth (e.g., Prov. 14:12; Matt. 7:13–14; John 15:18–25). Interpretations and opinions of the scientific community are not somehow immune. The authors of this book seem to have forgotten this.

Contrary to McKnight's claim, there is actually considerable scientific evidence of biblical creation and a historical Adam and Eve (such as the mtDNA mentioned above) — evidence that his coauthor either dismisses with a hand-wave, or poorly interprets. In point of fact, rather than shy away from the data provided by the Human Genome Project (as this book would falsely lead its readers to believe), we biblical creationists have fully embraced the data and have found it offers a very powerful support for creation and a historical Adam and Eve. If the genomic data are interpreted apart from an evolutionary mindset, the lucidity of its biblical support becomes very clear.

I fear that Dr. McKnight has not even taken the time to seriously consider this evidence. Instead, he has simply allowed himself to be swept along by every wind

of human teaching; swallowing the evolutionist community's interpretations without much resistance. He is also guilty of failing to distinguish between science as an investigative tool and the human interpretation of scientific data. He acknowledges his own journey from a creationist to an evolutionist, but offers no indication that he has sought any insight from trained creation scientists (p. 101).

I see this as a significant failure on his part. This reveals either a lack of scholarly investigation or a desire to simply conform to this world's teachings. Dr. McKnight even fumbles the easily-answered question of the origin of Cain's wife (p. 145). This leads me to ponder how seriously he has studied these issues, causing me to question why I should view his conclusions as serious scholarship.

Ill-informed about creation evidence

McKnight compounds his error by referring to our position as "so-called scientific," and claiming that our main motive is a "fear" of the consequences of evolution (p. 101), as if we could not possibly have strong scientific justification for our position. This is both belittling and deceitful. Neither Dr. McKnight nor Dr. Venema appears sufficiently versed in the creation literature to even begin to know what motivates us, let alone understand our genetic arguments. What is more, there have been many members of the Creation Research Society who were once evolutionists, or even atheists, but realized that the scientific data firmly support creation. The fear that McKnight refers to could hardly be considered as these creationists' primary motive.

Sadly, *Adam and the Genome* is an attempt to popularize evolution within the more conservative Christian community. While such efforts are not new, this book presents itself as the thoughtful insights of sincere scholars who have wrestled with the subject and finally realized an undeniable truth. From this they strongly posture a tone that acceptance of evolution is the only rational recourse. Rejection of evolution comes at the risk of intellectual suicide. Biblical interpretations *must* bend to this evolutionary view.

Christians continually need to be fully aware of the ever-growing influence of books such as *Adam and the Genome* within their Bible colleges and local congregations. Unlike Scot McKnight, it is vital that theologians and Bible college professors make the effort to learn and understand the strengths of a creation model, and not just assume that creationists have no legitimate scientific basis for their claims.

Unlike Dennis Venema, Christians with scientific training need to understand the godless bias at the heart of evolutionary teaching. They need to use their training to disseminate the scientific evidence, sorting through what is evidentiary-based and what is merely supposition — not just play "follow the leader" behind an increasingly pagan world.

References

Basener, W.F. and J.C. Sanford. 2018. The fundamental theorem of natural selection with mutations. *J. Math. Biol.* 76:1589–1622.

Carter, R. and J. Lightner. 2016. Human genetic data affirms biblical history on many levels and is an excellent resource for creation-based research. *Creat. Res. Soc. Quart.* 52:249–255.

Chiang, J.J., K.M.J. Sparrer, M. van Gent, C. Lässig, T. Huang, N. Osterrieder, K.-P. Hopfner, and M.U. Gack. 2018. Viral unmasking of cellular 5S rRNA pseudogene transcripts induces RIG-I-mediated immunity. *Nat. Immun.* 19:53–62.

Ewert, W. 2018. The dependency graph of life. *Biocomplex* (3):1–27.

Lamoureux, D. 2013. No historical Adam: Evolutionary creation view. In Barrett, M., and A.B. Caneday (editors), *Four Views on the Historical Adam,* pp. 37–65. Zondervan, Grand Rapids, MI.

Milligan, M.J. and L. Lipovich. 2015. Pseudogene-derived lncRNAs: emerging regulators of gene expression. *Front. Genet.* 5: Article 476.

Xiao-Jie, L., G. Ai-Mei, J. Li-Juan, and X. Jiang. 2015. Pseudogene in cancer: real functions and promising signature. *J. Med. Genet.* 52: 17–24.

[1] Two recent studies (Ewert, 2018; Basener and Sanford, 2018) literally "double down" on the genetic conflicts with evolution. It will be interesting to see what response, if any, Dr. Venema ultimately offers.

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Dry Land?

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field capacity) under the forces of adhesion and cohesion. Soil consists of sand, silt, and clay-sized particles, with pore spaces between that are completely filled with water at saturation. At field capacity, water is retained as films surrounding soil particles of large pores. However, small pores remain water filled because the forces of capillary attraction to soil particles exceed the force of gravity. Further drying occurs according to the hydraulic gradient, largely in response to extraction by plants for transpiration and evaporation from the surface, called evapotranspiration.

The land would be considered dry at field capacity—dry enough for most agricultural operations and other weight-bearing activities. Yet, at field capacity the soil is close to saturation, having only drained for one to two days. As the soil continues to dry, more and more pores (progressively smaller) lose water. Eventually, all pores empty and only water films around particles remain. These decrease until plants can no longer extract the water, called the permanent wilting point. At the residual water content, the water is under such extreme force of attraction to soil that water loss essentially stops. However, the soil still holds water and is not literally dry, but typically contains 5–20% water by volume. In fact, a person can spread soil out on a table, expose it to dry air for several days (air-dried water content), and the soil will still not be dry but will contain 1–5% water depending upon the soil texture and mineralogy.

We tend to think of the dryness of soil as pertaining to the presence or absence of water in the pore space. However, soil water may be segregated into four components which are briefly described below:

1. **Interstitial or structural water:** Water that is a constituent part of the soil minerals.
2. **Adsorbed water:** Typically, about a 0.1μm-thick water film. This water is fixed and is not available for plant uptake.
3. **Immobile water:** A transition zone between ≈0.1 and 0.5μm-thick water films containing water molecules so tightly attracted that they are immobile.
4. **Mobile water:** Past the slipping plane, the forces of attraction are negligible and the water is mobile in response to gravity, water pressure, or tension forces.

At the residual water content, water is present as thin, adsorbed water films and structural water in clay minerals. At air-dry and oven-dry conditions, water remains

within clay minerals as structural water, within and between layered lattices of secondary minerals (colloids and clay-sized particles). Thus, soil is not truly "dry" under air-dry conditions, and even when soil is dried in an oven it is not clear when soil is dry. Nutting (1943) proved this point by exposing pure minerals to 60% humidity at room temperature before heating the soil to progressively greater temperatures. He developed graphs of the ratio of wet mass to dry mass, as a function of drying temperature for essentially all clay minerals.

His graphs showed a continuous decrease in soil moisture with temperature, as opposed to reaching a temperature at which moisture was no longer lost. As Gardner (1986) pointed out, "it is not clear from the curves what part of [soil] water is adsorbed water and what part is structural." The main point being that it is not easy, maybe not possible, to determine when soil is "dry." What Nutting (1943) demonstrated was that there is no clear temperature at which soil is dry. Soil scientists picked 105ºC as the standard temperature for representing soil as being "dry." Gardner (1986) goes on to say that "the problem of defining 'dry conditions' in the organic fraction of the soil is even more difficult than defining such conditions for the colloidal mineral fraction."

Based upon the first law of thermodynamics, the relationship between relative humidity, h_r, in the soil pore space and the soil water pressure potential, ψ, can be determined by

$$\mathrm{hr} = \exp\left(\frac{\psi M w}{RT}\right) = \exp(7.3x10^{-6}\,\psi)$$

where M_w is the molecular mass of water, R is the gas constant, and T is the soil temperature. Campbell (2016) used this well-established relationship to show that even under extremely dry desert conditions (≈25,000 cm pressure potential), the relative humidity within the soil will be >98%, which is well beyond the permanent wilting point of most plants, yet clearly not dry.

Given that on Day 3, the "earth sprouted vegetation" and "the earth brought forth vegetation, plants yielding seed after their kind, and trees bearing fruit with seed in them," the earth would have to have been well above the permanent wilting point. The optimum moisture content would be close to the field capacity, and thus a relative humidity of the pore space would be close to 100%. Regardless of the degree of dryness, it is scientifically and biblically clear that for vegetation to thrive, the earth was not dry on Day 3.

Land appeared, was not created, on Day 3

It may be correct that God created the "dry land" directly from nothing on Day 3, but to base this assertion on the scripture's describing it as "dry land" is not scientifically defensible. Nor is it biblically consistent with the context of Gen 8:13–14, which uses the same description of "dry land" following the flood. The Hebrew word used for "dry land" in Gen 1:9 and Gen 8:13-14 is *yabbashah*. This is the same Hebrew word used in Exodus 14 to describe the bottom of the Red Sea that the Israelites crossed after God parted the waters. It is also the same word used in Joshua 3 and 4 to describe "dry land" when the Jordan River was parted. The author of Genesis (Moses) described the land as dry, just as anyone stepping from a boat onto land would say they are now on "dry land," although, being within one step of the water, the soil would be near saturation. Such is the case in Joshua 4:18 when the priest carrying the Ark stepped out of the Jordan onto "dry land."

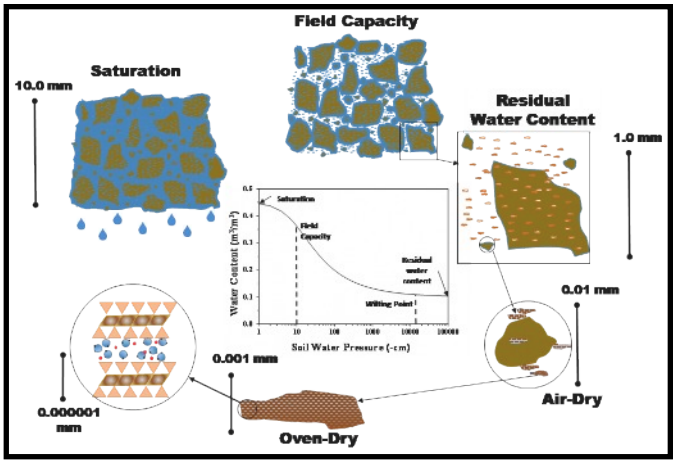

FIGURE 1. *The water retention curve (WRC) in the center represents the stages of soil drying, from saturation to residual water content. The surrounding illustrations represent sand, silt, and clay particles retaining water at each stage of the WRC, down to oven-dry conditions in which water is retained within the layered lattices of a single clay particle. Note: mm = millimeter.*

One can be on "dry" land that is not dry. This is the case in which Moses described the conditions when Noah disembarked, in Gen 8:14, as "the earth was dry," an obvious figure of speech. After a year of being flooded, and only draining for a short time, the soil was certainly not "dry." The "dry" land that Noah observed appeared as the flood waters receded by drainage, as opposed to being directly created on the surface of the waters. God could certainly have created new "dry land" to provide those on the ark new land on which to dwell. However, Gen 8:13 explicitly states that the land was dry because "the surface of the ground dried up."

So can the question of whether, at creation, the land on Day 3 was under the surface of the water, or made uniquely be answered from scriptures? Note that the scriptures do not say that God created the land on Day 3, but instead say "let the dry land appear" implying that the land was present but not visible. The Hebrew word *yabbashah* is used not to describe land devoid of any water, but land that had dried up. The portrayal of the dry land's "appear(ing)" in Gen 1:9 is thus analogous to the post-flood conditions in Gen 8:5 which says "the mountains became visible." During the flood, the land was clearly there, under the water but not visible, and had not appeared until the flood waters receded

Hydrogeologic implications

If indeed the land was under the "surface of the waters" on Days 1 and 2, and "appear(ed)" on Day 3, as stated in Gen 1:9, it would explain God's conclusion on Day 3 that "it was good." Erosion, however, is a very destructive process, not only degrading the soil but also resulting in sediment in streams, which is not pleasing to the eye and which impairs the water quality and aquatic ecosystems. If the "dry land" on Day 3 were the result of its appearing after being submerged, then it would reflect this formation environment. Given that the sun and moon had not yet been created, there would be no gravity shifts, no resulting tidal flows, and only minor temperature gradients — essentially no wind or waves. The result would have been land below the "surface of the deep" which was nearly level and, therefore, not susceptible to erosion.

If the waters following Day 3 were stored predominately below the land surface, the result would be hydrologically-connected (spatially-continuous) shallow water tables. Gen 2:5–6 and 10, describes the hydrologic conditions after creation week as the "Lord God had not sent rain upon the earth, …but a mist used to rise from the earth and water the whole surface of the ground… a river flowed out of Eden

to water the garden."

Shallow water tables could amply supply vegetation with water without the need for rain, and would explain how a "mist used to rise from the earth and water the whole surface of the ground." Note that the Bible does not say that the mist came down from the waters above, but that the "mist used to rise from the earth." Such a condition is distinctly different from that portrayed in the "Canopy Theory" of Whitcomb and Morris (1961). Rather, it describes a daily cycle in which a mist rose up from the soil, and was taken up by plants and/or evaporated. This is a perfect description of the soil hydrologic processes that are involved with a shallow water table.

Conditions of a shallow water table and a surface dried daily by evapotranspiration would provide diurnal cycles of upward movement, sufficient to create a mist of moisture rising daily from the earth. Additionally, a shallow water table would explain how there could be a river without rain. Hydrologically-connected water tables can provide significant interflow (shallow lateral flow) to streams and riparian areas (Wilson et al., 2017). Interflow is an important source of streamflow today (Jencso et al., 2009) even with the drastically altered hydrologic conditions in which we have significant topography, rainfall, and daily temperature changes (2 Pet 3:3–5).

The USLE (Wischmeier and Smith, 1978) is the most widely used model for predicting soil erosion, and is the basis of many of the soil erosion models used today (see equation below). It is comprised of six factors to predict the long-term, average annual soil loss (A). The equation includes the rainfall erosivity factor (R), the soil erodibility factor (K), the topographic factors (L and S), and the cropping management factors (C and P). The equation takes the simple product form:

$$A = R\ K\ L\ S\ C\ P$$

It was developed from decades of observations of soil loss from standardized plots. Simply stated, it shows that soil loss, A, is directly related to rainfall rate and landscape topography, in particular the slope. If there was no rainfall, essentially no slope, and land covered by lush vegetation as implied in the Genesis account, then there would be no erosion. However, if the land were sloping with mountains and hills, and rainfall occurring as some creationists propose, then the opposite would be true, and erosion would most certainly have occurred as predicted by the USLE. Erosion, while it has created many beautiful landscapes, is not good. A nearly level land surface without rainfall, but supplied by shallow groundwater, is more than "good." It is an ideal environment for terrestrial life, supplying water both for plant and animal life, and easily accessible groundwater for human consumption.

Summary and conclusion

It is possible that God created the "dry land" on Day 3 out of nothing, or transformed pure water into "dry land" because He is God and has no limitations. But to assume such is the case because the land was called "dry" is not consistent with either scripture or soil hydrologic principles. The term "dry land" in Gen 1:9 does not mean that the soil was dry, as secondary clay minerals contain structural water that remains, even after oven drying. The nature of the "dry land" on Day 3 is consistent with the land's being called "dry" following the flood, as well as when the Red Sea and the Jordan River were parted.

In addition, scriptures say that the "dry land appear(ed)" on Day 3, and that the land "became visible" at the end of the flood. The analogy between Days 1–3 of creation and the flood/post-flood appearance of "dry" land strongly suggests that the waters of Days 1–2 contained the land under the "surface of the deep" on Day 3. This is consistent with the Hebrew word *yabbashah* for "dry land," which is more accurately applied to land previously under water that had dried up.

This discussion of "dry land" "appearing" on Day 3 has serious implications as to the hydrogeologic processes which existed prior to the flood. Such conditions would result in almost level land, with shallow water tables that would amply supply surface vegetation with water, and would provide interflow to the river(s) mentioned in the Genesis account. Furthermore, the application of the leading soil erosion model showed why God would deem the earth "good" since the lack of rain and essentially no slope would mean no erosion.

References

Campbell, G. (2016, February 11) Estimating relative humidity in soil: How to stop doing it wrong. *Environmental Biophysics.* Retrieved September 3, 2018 from www.environmentalbiophysics.org/what-is-the-relative-humidity-in-soil/

Gardner, W.H. 1986. Water Content. In: *Methods of Soil Analysis, Part 1. Physical and Mineralogical Methods—Agronomy Monograph no.9* (2nd edition), A. Klute (editor). Soil Sci. Soc. Am., Madison WI.

Ham, K. and B. Hodge. 2016. *A Flood of Evidence: 40 Reasons Noah and the Ark Still Matter*. Master Books, Green Forest AR.

Jencso, K.G., B.L. McGlynn, M.N. Goosef, S.M. Wondzell, K.E. Bencala, and L.A. Marshall. 2009. Hydrologic connectivity between landscapes and streams: Transferring reach- and plot-scale understanding to the catchment scale. *Water Resourc. Res.* 45, W04428. doi:10.1029/2008WR007225

Nutting, P.G. 1943. Some standard thermal dehydration curves of minerals. *U.S. Geol. Surv. Prof. Pap. 197-E*.

Whitcomb J.C. and H.M. Morris. 1961. *The Genesis Flood: The Biblical Record and its Scientific Implications*. Baker Book House, Grand Rapids, MI.

Wilson, G.V., J. L. Nieber, G.A. Fox, S.M. Dabney, M. Ursic, and J.R. Rigby. 2017. Threshold behavior of catchments with duplex hillslope soils feeding soil pipe networks. *Hydrol. Proc*. 31:2477–2496.

Wischmeier, W. H. and D. D. Smith. 1978. Predicting rainfall erosion losses: A guide to conservation planning. *Agric. Handb. No. 537*. USDA, Washington, D.C.

Slow Geological Processes

...continued from page 1

ian geologists have long claimed that it would take millions of years to form coal — based on the slow deposition of plant material and its decomposition in a swamp, forming peat. This "coal swamp" has long been an icon of uniformitarianism.

However, research has shown that this theory of coal formation is wholly inadequate (Oard, 2014; Oard, in press). Too many factors must mesh in a detailed way for far too long. For example, the peat must remain in an acidic, anoxic environment to prevent rapid decay (which is why you don't find deep layers of leaves in forests). To accumulate peat, the whole swamp would also have to subside, but jut fast enough to maintain the fragile balance of the preserving waters, as plant material was preserved and changed to peat.

Once enough peat accumulates, there must be a convenient marine transgression to cover it with sediment. This transgression must be fast enough to preserve the peat from degrading, yet slow enough to not erode it away. And if that were not enough drama, it would have to cycle again and again, until the peat and layers of sediment were thick enough (thousands of meters) to have buried the peat layers so deeply that pressure and heat would convert the peat into coal — brown or black, depending on the grade of metamorphism. If this magical swamp ever existed, the perfect conditions would indeed take many millions of years.

In addition to all of these secular miracles, uniformitarians are in a bind because coal is often thick and pure. If these seams are formed over long periods of time, why do we not find coal heavily contaminated by other sediments (sand, volcanic ash, etc.)? This is especially problematic because a 60-m (200-ft) thick coal seam would require 600 m (2,000 ft) of peat, which would represent a very long period of time. This is highly unrealistic, given that it must all happen near coastlines (which change significantly over time), since marine sediments and fossils are often associated with coal and the related sediments. The thickest example of modern peat accumulation is only 20 m (65 ft), and that peat is not being transformed into coal (Shearer et al., 1994). Coal formation *contradicts* the doctrine of uniformitarianism.

Noah's Flood actually provides a more credible explanation of the data. Since wood floats, the early Flood's ripping up vegetation would have formed large, thick log and vegetation mats that would float, and be carried by currents. These mats would have been deposited as thick layers. The wood need not be compressed as much as peat, requiring a compression factor of only two instead of ten (Nadon, 1998). Rapid burial of the plant material, and the accumulation of thick sediments on top, would be more likely in the Flood, causing rapid coal formation.

The Flood would provide an explanation for the relative purity of coal seams, as well as the association of marine sediments and fossils. Deeply buried coal would be moved relatively close to the surface by erosion during the Recessional Stage of the Flood (Walker, 1994), which would remove much of the sedimentary overburden. Coal formation is not a problem for the Flood. Like many other aspects of geology, the *right conditions* are required, not deep time.

TABLE 1. *The four main pre-Pleistocene or ancient ice ages of uniformitarian geohistory and their inferred age range before the Pleistocene Ice Age (from Crowell, 1999, p. 3).*

Geological Period	Secular Approximate Age Range (m.y. ago)
Late Paleozoic	256–338
Late Ordovician	429–445
Late Proterozoic/Cambrian	520–950
Early Proterozoic	2200–2400

Rapid "ice ages"

In total, there are five major "ice age" periods in uniformitarian earth history, with four having occurred prior to the familiar Pleistocene Ice Age (Table 1). These are said to have begun more than 2 billion years ago, and several are supposed to have lasted for hundreds of millions of years. These "ancient ice ages" are deduced from characteristics of the rocks, similar to features identified with the Pleistocene Ice Age.

However, the key features are much more enigmatic than recent phenomena. There are also problems with questionable theories, such as the "snowball earth" idea in which the earth becomes totally glaciated. If true, it would be virtually impossible for the ice to melt, thanks to the high reflectivity of snow and low global temperatures (~ -80°C or -112°F). The features thought to point to ancient glaciations can be better explained by large submarine mass flows (Oard, 1997; 2009; 2016).

The Pleistocene Ice Age was the only real ice age, showing abundant evidence, such as moraines, scratched bedrock, scratched boulders, etc. The Ice Age covered 30% of the continents in the mid and high latitudes. The required cooling was drastic, on the order of 12–28°C (20–50°F) lower average temperatures during the summer along its periphery. The onset of glaciation also required significantly more moisture to overcome the drying tendency of cooler air.

Because uniformitarianism cannot account for these differences, the Ice Age is a powerful evidence of the preceding Flood. Uniformitarians cannot explain one glaciation, but claim there were 50 such glaciations of various intensities during the past 2.6 million years (Walker and Lowe, 2007). This is why there are over *60 theories* to account for them, including the most popular astronomical or Milankovitch theory (Hebert, 2018; Oard and Reed, in press).

The Flood helps us understand how one ice age could have occurred (Oard, 2004; 2013). Evidence shows increased volcanism during the Flood, which would have both heated the seas and added significant particles to the upper atmosphere, partially blocking the sunlight for years, resulting in cool summers. Although volcanic particles generally fall out of the upper atmosphere in about three to ten years, eruptions continued after the Flood, but at a declining rate, recharging the upper atmosphere and sustaining cooler summers for many years.

The oceans were warmer after the Flood, thanks to heat from the "fountains of the great deep" and underwater volcanism. Warm post-Flood oceans, especially at the mid and high latitudes, added more water vapor to the atmosphere, resulting in greater snowfall on adjacent continents. These special conditions persisted for a time, but waned as volcanism decreased and the oceans cooled. Calculations of the time needed to cool the ocean suggest the

Ice Age lasted about seven centuries after the Flood.

Dinosaur tracks and eggs during the Flood

Another "evidence" against the Flood is the occurrence of millions of dinosaur tracks in sedimentary layers across the world, and the presence of fossilized dinosaur eggs and possible nests. At first, it might seem improbable that tracks would be preserved in the catastrophe of the Flood, especially since most occur in layers underlain by thousands of feet of other layers. Even some creationists see this as a powerful argument for the dinosaurs being post-Flood, rather than the power of the early Flood.

However, when examined more closely, the vast majority of dinosaur trackways (two or more tracks of the same animal) are either straight or gently curved. They do not take sharp turns or meander as animals do today during their daily activities. Instead, the tracks give the appearance of purposeful flight. Also, tracks and eggs are almost always found on flat bedding planes, not in fossil nests, like those of crocodiles. Furthermore, these eggs were very porous and would have dried out quickly unless buried rapidly. Evidence suggests that the dinosaurs laid these eggs in haste (Oard, 2018).

This dilemma can be solved when we realize the Flood was not chaotic at all times and in all areas, and that the level of the floodwater probably oscillated as it rose and fell (Oard, 2011). In areas of rapid deposition, a local drop in base level would expose the bottom sediments. Dinosaurs floating in the water or isolated on high ground could embark on these briefly exposed layers, quickly making tracks and laying eggs while trying to flee.

We have answers

The Bible tells us to "…examine everything carefully; hold fast to that which is good" (1 Thessalonians 5:21 NASB). Over many years, as I have examined numerous challenges to the Flood, I have found that the problems are more difficult for uniformitarians, but the engrained faith in their dogma over more than two centuries inoculates them from serious questions. They typically paper-over difficulties with secondary, ad hoc hypotheses. For example, the "coal swamp" legend is untenable from any logical analysis, but it is too ingrained to be abandoned.

I have also noticed that "old earth creationists" fail to adequately examine creation science technical literature before they write about some challenge to young earth scenarios. For instance, Hill et al (2016) think they have brought up many contradictions to the creation-science origin of Grand Canyon. However, they have read very little of the relevant literature, and most of their "rebuttal" was to straw-man arguments (Woodmorappe, 2016).

Biblical history, including the Flood, provides reasonable answers to secular challenges. In most cases, Christians play defense against secularists, and neglect to challenge uniformitarianism. This provides a built-in advantage, which is of course bolstered by their monopoly of academia and culture. But a few creation scientists have discovered answers to many challenges, from how the Flood covered Mount Everest to alleged mercury toxicity during the Flood, the origin of karst, the origin of soils and paleosols, the origin of the Joggins polystrate fossils, and evidence of rapid fossilization (Oard and Reed, 2009).

That is because the Flood provides a reasonable framework for addressing geological phenomena. I have also seen the same result in my research into the origin of vertical, polystrate trees; the Yellowstone fossil "forests"; warm climate plant and animal fossils at high latitudes; the origin of amber, insects, and insects in amber; and a mechanism for post-Flood dispersal by log mats (Oard, 2014).

There are still many challenges, and each one represents a unique opportunity for creationists to apply the biblical paradigm and to define new and exciting research problems. We need more researchers. Operating as we do, we cannot expect to address every challenge, but the work of a few has shown that the possibilities are great. I hope many join us in the coming years.

Acknowledgements

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References

Crowell, J.C. 1999. *Pre-Mesozoic Ice Ages: Their Bearing on Understanding the Climate System.* Geological society of America Memoir 192, Boulder, CO.

Hebert, J. 2018. The "Pacemaker of the Ice Ages" paper revisited: closing a loophole in the refutation of a key argument for Milankovitch climate forcing. *Creation Res. Soc. Quart.* 54:133–154.

Hill, C., G. Davidson, T. Helble, and W. Ranney (Eds.). 2016. *The Grand Canyon Monument to an Ancient Earth: Can Noah's Flood Explain the Grand Canyon?* Kregel, Grand Rapids, MI.

Nadon, G.C. 1998. Magnitude and timing of peat-to-coal compaction. Geology 26:727–730.

Oard, M.J. 1997. Ancient Ice Ages or Gigantic Submarine Landslides? CRS Books, Chino Valley, AZ.

Oard, M.J. 2004. *Frozen in Time: Woolly Mammoths, the Ice Age, and the Biblical Key to Their Secrets*. Master Books, Green Forest, AR.

Oard, M.J. 2009. Landslides win in a landslide over ancient "ice ages." In Oard, M.J. and J.K. Reed (Eds.). *Rock Solid Answers: The Biblical Truth Behind 14 Geological Questions*. Master Books and CRS Books, Green Forest, AR and Chino Valley, AZ.

Oard, M.J. 2011. Dinosaur Challenges and Mysteries: How the Genesis Flood Makes Sense of Dinosaur Evidence — Including Tracks, Nests, Eggs, and Scavenged Bonebeds. Creation Book Publishers, Powder Springs, GA.

Oard, M.J. 2013. The Great Ice Age: Evidence from the Flood for Its Quick Formation and Melting. Awesome Science Media, Canby, OR.

Oard, M.J. 2014 The Genesis Flood and Floating Log Mats: Solving Geological Riddles. (ebook) Creation Book Publishers, Powder Springs, GA.

Oard, M.J. 2016. The challenge of ancient ice ages answered. *Creation* 38(1):48–50.

Oard, M.J. 2018. Dinosaur eggs point to the global Genesis Flood. *Creation* 40(3):52–54.

Oard, M.J. (in press). *The Deep Time Deception: Examining the Alleged Millions of Years*. Creation Book Publishers, Powder Springs, GA.

Oard, M.J. and J.K. Reed. (Eds.). 2009. *Rock Solid Answers: The Biblical Truth Behind 14 Geological Questions*. Master Books and CRS Books, Green Forest, AR and Chino Valley, AZ.

Oard, M.J. and J.K. Reed. (in press) Cyclostratigraphy, Part III: critique of the Milankovitch mechanism. *Creation Res. Soc. Quart.*

Shearer, J.C., J.R. Staub, and T.A. Moore. 1994. The conundrum of coal bed thickness: a theory for stacked mire sequences. *J. Geol.* 102:611–617.

Walker, M. and J. Lowe. 2007. Quaternary science 2007: a 50-year retrospective. *J. Geol. Soc. London* 164:1,073–1,092.

Walker, T. 1994. A biblical geological model. In Walsh, R.E. (Editor), Proceedings of the Third International Conference on Creationism, technical symposium sessions. Creation Science Fellowship, Pittsburgh, PA, pp. 581–592. http://biblicalgeology.net/Model/A-biblical-geological-model-ICC-paper.html

Woodmorappe, J. 2016. The Grand Canyon in the thralls of shallow, doctrinaire uniformitarianism, *J. Creation* 30(3):17–21.

Young, D.A. and R.F. Stearley. 2008. *The Bible, Rocks and Time: Geological Evidence for the Age of the Earth*. Intervarsity Press, Downers Grove, IL.

Matters of Fact

by
Jean K. Lightner, DVM, MS

Same Data, Different Conclusions?

Editor's note: You may submit your question to Dr. Jean Lightner at 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.

Q Can you provide an example of the same data being used to draw two opposing conclusions?

A Yes, a fascinating and instructive example of the same data yielding opposing conclusions is summarized in a recent *PLoS* article (Mitchell, 2018). It involves the Philadelphian physician and naturalist Samuel George Morton (1799–1851), whose work was foundational in the so-called scientific racism that once permeated our culture.

Morton's measurements

Morton collected hundreds of skulls and divided them into five racial groupings. He measured the cranial capacities by filling the skulls with seeds, and then pouring them back out to measure the volumes. Sometime later, he switched to using lead shot, which he felt gave more reliable estimates. He published his results, emphasizing the mean (average) skull capacities of different races. Caucasian skulls had the highest average capacities, and Ethiopians (Africans) were the lowest.

Years later, Stephen Jay Gould (see Mitchell, 2018) accused Morton of biased measurements, suggesting that in his cranial capacity data, Morton (unconsciously) packed the seeds more tightly in Caucasian skulls, and less tightly for the African skulls. However, based on the recovery and evaluation of Morton's lost notes, Mitchell (2018) shows that there is no basis for claiming bias in Morton's actual measurements.

In contrast, there is ample evidence for bias in Morton's interpretation of his data.

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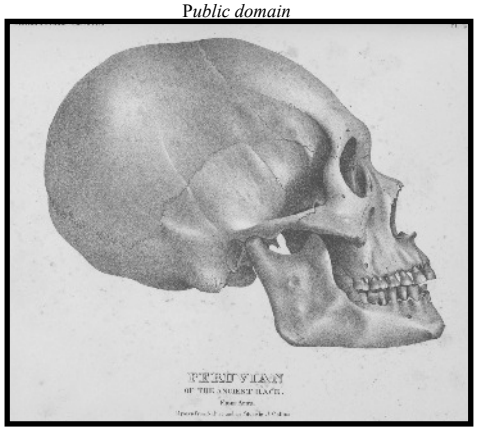

Morton, 1839.
(Supplied Caption: Skull. Depiction from Samuel Morton's 19th century phrenological study of North and South American aboriginals.)

The terms he uses when describing various races are consistent with his view that Caucasians, and especially Teutonic (Germanic) people, such as the English, were superior to other races in intelligence and virtuous qualities. He assumed that larger cranial capacity was a valid proxy for intelligence, using his data to argue that there was a hierarchy of races, that the differences were fixed, and that each race had a separate origin (a concept known as polygenism).

Tiedemann's assessment

Meanwhile, there were other anthropologists and craniologists at the time who held very different views. Mitchell (2018) highlights the German anatomist and physiologist Friedrich Tiedemann (1781–1861). Tiedemann measured the capacities of hundreds of crania from five racial groups, and reported results which were very similar to Morton's. Tiedemann, however, noticed the strong overlap in cranial sizes. He concluded that neither anatomy nor physiology provided any justification for considering Africans inferior to Europeans, either intellectually or morally.

Why didn't Morton see this? He had reported the range in sizes (which for Caucasians was 34 cubic inches in one of his published works), but he gravitated to the difference in averages (9 cubic inches between Caucasians and "Ethiopians") because it seemed to fit better with his preconceived biases.

Foundations matter

It is fascinating that the measurements by Morton and Tiedemann were so similar, but that their conclusions were so different. Morton's conclusions defy a biblical perspective because he rejected that all humans share a common ancestry, and have equal value. Tiedemann's conclusions were compatible with Scripture which tells us that all humans descended from Adam and Eve, and were created with dignity and worth (i.e., in God's image). Mitchell (2018) concludes his article by stating:

> As science is a historically, culturally, and socially situated endeavor, bias is an abiding factor in framing inquiry, forming concepts, generating questions, and designing and implementing methods, as well as interpreting results…. cautioning us to remember that "unbiased data" cannot be equated with unbiased science.

References

Mitchell, P.W. 2018. The fault in his seeds: Lost notes to the case of bias in Samuel George Morton's cranial race science. *PLoSBiology*16(10):e2007008.

Morton, S.G. 1839. Crania americana or, A comparative view of the skulls of various aboriginal nations of North and South America. To which is prefixed an essay on the varieties of the human species. Illustrated by seventy-eight plates and a colored map., Philadelphia : J. Dobson; London : Simpkin.Marshall & co. https://library.si.edu/image-gallery/75542

Speaking of Science

from the Creation-Evolution Headlines

by David F. Coppedge

This feature will return in the next issue. In the mean time, you are invited to visit "Creation-Evolution Headlines" by David F. Coppedge at http://crev.info to see his latest commentaries.

Quarterly Research Matters

Summaries of Cutting-edge Research from the Creation Research Society Quarterly*

Creation research that engages the current scientific literature and builds the creation model is crucial; CRS exists to support and publish such research. Only through high quality research can we equip others with strong, sound apologetics arguments that show the robustness of the creation model over that of evolution.

Investigating Rock Layers to Determine the Flood/Post-Flood Boundary

Understanding which rock layers resulted from the Flood is critical for a robust Flood model. Currently, there is not a consensus among creationists on where the Flood/post-Flood boundary is located in the rock record. Many geologists favor the end of the Cretaceous, which has been called the K-T (Cretaceous-Tertiary), or now K-Pg (Cretaceous-Paleogene) boundary. However, work by geologist Dr. Tim Clarey of the Institute for Creation Research (ICR) calls this into question.

In the Fall 2017 issue of the *Creation Research Society Quarterly* (*CRSQ*), Clarey presents five lines of evidence that Tertiary (Paleogene and Neogene) strata were formed during the receding phase of the Flood. These lines of evidence demonstrate the global nature of the catastrophic events that formed these layers, which is more consistent with the global Flood than are multiple, local, post-Flood catastrophes.

Clarey, T.L. 2017. Local catastrophes or receding floodwater? Global geologic data that refute a K-Pg (K-T) Flood/post-Flood boundary. *CRSQ* 54:100–120.

Erosion of Groundwater Sapping Hypothesis Undermines Long-age Arguments

Groundwater sapping is a natural process of erosion along the base of a cliff. Groundwater wears away the softer layers, undermining support for the upper mass of the cliff, which eventually breaks into large blocks that fall into the canyon. The process is slow and is not expected to be able to form large canyons within a biblical timeframe.

In the Fall 2017 issue of the *CRSQ*, Michael J. Oard takes a closer look at several large canyons believed to have formed by sapping. In his well-illustrated article, Oard exposes evidence that this conclusion was hastily reached, based on the amphitheater-headed shape of the canyon and belief in an old earth. If the major cause of the erosion was sapping, other features should be present, but they are lacking. Instead, there is clear field evidence that overland flow played a major role in the erosion that formed these canyons. This is readily explained within a biblical timeframe.

Oard, M.J. 2017. Groundwater sapping does not support millions of years. *CRSQ* 54:125–132.

Continued creation research is made possible by the generous gifts (time, money, and prayers) of our many supporters.
Thanks to all who have contributed!

*Summaries compiled by J. Lightner.

Reanalysis of the Evidence Reveals the Old Earth "Pacemaker of the Ice Ages" Argument Is Broken Beyond Repair

Based on geologic evidence, creationists accept a single ice age, and posit that it was initiated by the aftermath of the global flood recorded in Genesis. Obviously, secular scientists seek other explanations. A 1976 paper titled "Variations in the Earth's orbit: Pacemaker of the Ice Ages" convinced most of the secular community that Earth's rotational and orbital motions affect climate, and are the cause of the fifty or so proposed Pleistocene ice ages.

This argument, also known as the astronomical or Milankovitch hypothesis, assumes deep time. Since the initial results of the paper showed the climate and astronomical cycles to be well-correlated, this argument often is used to promote an old earth.

Measurements of three variables from two deep-sea sediment cores formed the basis of the conclusion that climate cycles correspond with astronomical cycles. The problem for those who have embraced these conclusions is that the results were invalidated when uniformitarian scientists significantly revised a key age assignment in the early 1990s. In the Fall 2017 issue of the *CRSQ*, Dr. Jake Hebert reanalyzes the original data in light of the current age assignment, using the Pacemaker author's own methodology, to demonstrate conclusively that modern revisions by secular scientists invalidate the results of the famous 1976 paper.

Hebert, J. 2017. The "Pacemaker of the Ice Ages" paper revisited: closing a loophole in the refutation of a key argument for Milankovitch climate forcing. *CRSQ* 54: 133–148.

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All by Design

by Glen W. Wolfrom, Ph.D.

Birds are among God's most fascinating creations, certainly worthy of study — from their annual migrations to nest-building, colorful plumage, communication, and more. One important aspect of these wonderments is the unique and varied design of their feet, used in many ways, including walking, catching prey, preening, and even defense.[1]

The American Coot (Figure 1) has feet that are so odd-looking that Shweta Karikehalli, the author of an online Audubon article, [2] described the bird's appearance as "wacky." Each of its oversized toes has two or three greenish-to-yellowish "fleshy lobes" that are connected to its long legs. When in water, these lobes function much like the webbing on ducks' feet. But on land, walking is assisted by the lobes' folding out of the way. According to Karikehalli, the coot's uniquely-designed foot thus makes the bird more adept than most other waterfowl at getting around on both land and water. A few other water birds (some grebes and phalaropes) also have lobed toes, but none have lobes that are as large as those of the coot.

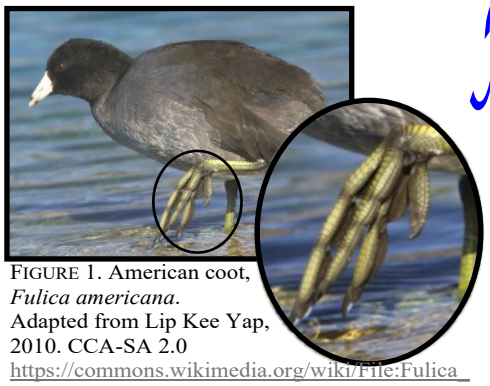

FIGURE 1. American coot, *Fulica americana*. Adapted from Lip Kee Yap, 2010. CCA-SA 2.0 https://commons.wikimedia.org/wiki/File:Fulica_americana_1.jpg

The coot also uses its lobed feet for other purposes.[3] They assist the bird in becoming airborne — which requires the bird to run across the water's surface. Also, the feet are used in battles among the male coots. One professor indicated that coots are more prone to hostility than is suggested by their "goofy appearance."[4]

Here is an example of a unique design for birds' feet that, unlike those of ducks, render coots capable of efficient transportation, whether on land or water. Unless the lobes appeared suddenly, fully formed and retractable, their evolution in stages would have offered no advantage. We maintain that the "sudden appearance" occurred at creation.

Amazing "Feats"

[1] Anonymous. 2018. Adaptations — Feet. *Project BEAK*. Retrieved October 19, 2018 from http://projectbeak.org/adaptations/feet.htm

[2] Karikehalli, S. (2018. August 13) Better know a bird: The American coot and its wonderfully weird feet. *Audubon*. Retrieved October 19, 2018 from www.audubon.org/news/better-know-bird-american-coot-and-its-wonderfully-weird-feet?ms=digital-eng-email-ea-x-20180829_cootfeet_engagement_medium&utm_source=ea&utm_medium=email&utm_campaign=20180829_cootfeet_engagement&utm_content=medium

[3] Ibid.

[4] Ibid.