# Creation Matters

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## Matters of Fact... Evolving Definitions

**by Jean K. Lightner, DVM, M.S.**

*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** Sometimes I hear evolution defined as change over time. What does this have to do with how life originated?

**A** As with many words, the word *evolution* has a variety of meanings. Within biology it can refer to a change in gene frequency in a population over time, or to the idea that all life descended from a common ancestor over a long period of time (Anonymous, n.d.). High school biology texts often start with the first definition, show examples of populations that have changed over time, and then expect students to naturally conclude that this is evidence for universal common descent. In reality, modification in an existing structure (such as the beak on a finch) does not tell us how the structure originated. In fact, when examined on a molecular basis, many adaptive genetic changes are degenerative; none have been observed to truly build *new* structures or complex molecular circuits (Anderson, 2005; Lightner, 2009)

Since textbooks and some evolutionists often engage in equivocation, or switching between definitions, when discussing evolution, many creationists add qualifying words or phrases to distinguish between these definitions. For example, words such as *molecules-to-man* or *goo-to-you* may be used to qualify evolution when it refers to the idea of universal common descent. This can be helpful for two reasons. First, it emphasizes the fact that the word has several definitions. This may help people recognize when bait-and-switch tactics are used to promote an evolutionary origin of life. Second, it makes it clear which definition is intended.

Another method of dealing with the confusion over the word evolution is to say that (presumably genetically-based) "change in a population over time" is not *evolution*, but *adaptation*. This is problematic for a number of reasons. First, it ignores the fact that such changes do fit one definition of the word evolution. Thus, it is essentially dishonest, a mere word game. Second, it substitutes an even more ambiguous term — *adaptation*. Not all such changes in a population are necessarily adaptive.

Also, although the word adaptation may apply in this context, the word can also be used in many other contexts because it, too, has multiple definitions. Third, it tends to foster the naïve view that scientific terms have a single, clear, well-defined meaning. It would be very nice if this were true, but it often is not. Finally, and most importantly, this argument is likely to cause serious misunderstanding between lay people and scientists or teachers with whom they might interact. When two people use different definitions in a discussion, it tends to pro-

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## Lunar Madness: Integrating the Biblical and Naturalistic Accounts of the Moon's Origin

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

The Moon is an intriguing object in space (Figure 1) and it plays an important role in biblical history. Many creationist articles and books have been written on the subject — too many to reference herein. The interested reader can pursue additional information using the keyword "Moon" at: http://bryancore.org/celd/index.html. This article asks the question: "Can young-Earth creationists credibly integrate the scriptural and naturalistic accounts of the Moon's origin?"

### Naturalistic origin

Naturalists believe that the Moon likely formed from more than one process — depending upon one's particular cosmology. Various theories have been proposed including: the fission hypothesis, the capture hypothesis, the co-formation (condensation) hypothesis, and today's most popular theory, the giant impact hypothesis. This discussion and overview will be limited to the giant impact hypothesis (Figure 2).

*Figure 1. The Moon has always fascinated mankind. Its perfect orbital relationship to planet Earth speaks of a Creator.*

The giant impact theory was first presented by Cameron and Ward (1976). Since that time, astrophysicists have worked on many different problems with this theory in an attempt to explain the Earth-Moon sys-

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## Lunar Madness

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tem. Only recently have they claimed to have resolved the complex mechanics of a collision, creation of the moon, and the orbital relationship between the Earth and Moon (Canup and Asphaug, 2001).

This hypothesis is presently taught in most secular colleges and universities as the best explanation for the origin of the Earth-Moon system (e.g., Spudis, 1999; Pasachoff and Filippenko, 2007). A concise description of this concept is given by Pasachoff and Filippenko, (2007, p. 127):

> A planet-like body perhaps twice the size of Mars hit the young Earth, ejecting matter in gaseous (and perhaps some in liquid or solid) form. Although some of the matter fell back to Earth, and a part escaped entirely, a significant fraction started orbiting the Earth, probably in the same direction as the initial incoming body. The orbiting material eventually coalesced to form the Moon.

As a result of the collision, the Earth-Moon system is viewed as being of the same age — approximately 4.55 billion years, based on radiometric age-dates of various rocks collected from the surface of the Moon. Despite the popularity of this theory, it still remains open to question (Ringwood, 1989).

### Lunar origin: the young-Earth Creationist account

The Moon is first referenced in Genesis, Chapter One (NKJV):

*Figure 2. This is a naturalistic model showing the initial impact of the space object identified as "Theia" with the young Earth. This collision was violent and caused Earth to melt along with the molten mass that would eventually become our Moon. As a result, Earth and the Moon are viewed as being the same age. From a display at the Arizona-Sonora Desert Museum, Tucson, AZ.*

> 14 Then God said, "Let there be lights in the firmament of the heavens to divide the day from the night; and let them be for signs and seasons, and for days and years; 15 and let them be for lights in the firmament of the heavens to give light on the earth;" and it was so. 16 Then God made two great lights: the greater light to rule the day, and the lesser light to rule the night. He made the stars also. 17 God set them in the firmament of the heavens to give light on the earth, 18 and to rule over the day and over the night, and to divide the light from the darkness. And God saw that it was good. 19 So the evening and the morning were the fourth day.

Here we are told that God simply spoke the Sun, Moon, and stars into existence, creating the Moon to provide mankind with a means of marking the passage of time on Earth and serving as a light in the night.

### Discussion / conclusions

Some young-Earth creationists might wish to merge the naturalistic interpretation with the biblical account. However, it is important to note that **before** God created the Sun, Moon, and stars, He created land and plant life across the Earth (NKJV):

> 9 Then God said, "Let the waters under the heavens be gathered together into one place, and let the dry land appear;" and it was so. 10 And God called the dry land Earth, and the gathering together of the waters He called Seas. And God saw that it was good.
> 11 Then God said, "Let the earth bring forth grass, the herb that yields seed, and the fruit tree that yields fruit according to its kind, whose seed is in itself, on the earth"; and it was so. 12 And the earth brought forth grass, the herb that yields seed according to its kind, and the tree that yields fruit, whose seed is in itself according to its kind. And God saw that it was good. 13 So the evening and the morning were the third day.

From these verses, it should be obvious to the reader that the naturalistic scenario

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conflicts with the scriptural account. To invoke a passing space object (i.e., Theia — Figure 2) that violently extracted material from a young Earth would have disrupted/destroyed the entire planet during the fourth day of creation. Even naturalists recognize this effect (Anderson, 1999, p. 112):

> If the Moon really came into being when a Mars-size object struck the Earth, the energy from that collision would have melted much of the Earth itself.

Thus, the two competing theories for the origin of the Moon are irreconcilable. Young-Earth creationism should not adapt or adopt the naturalistic explanation for the origin of the Moon. Additionally, we should question their conclusion that the Moon and Earth are the same age based on radiometric age dating, because this method is inconsistent with the Genesis account of Creation. Even in a relative and compressed form, the use of radiometric age-dating will not provide credible evidence for use in creation science (Woodmorappe, 1999).


### Acknowledgments

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—CM—

# Math Matters

by
Don DeYoung, Ph.D.

## Mathematics Quotations

Quotations give deep insight into personal worldviews. The following seven entries on the topic of mathematics cover several centuries.

> Geometry, being part of the divine mind from time immemorial, from before the origin of things, being God Himself, has supplied God with the models for the creation of the world. {Johann Kepler (1571-1630), *Harmony of the World,* 1619}

> In the pure mathematics we contemplate absolute truths, which existed in the Divine Mind before the morning stars sang together, and which will continue to exist there when the last of their radiant host shall have fallen from heaven. They existed not merely in metaphysical possibility, but in the actual contemplation of the supreme reason. {Edward Everett (1794-1865), *Orations and Speeches,* 1870}

> There exists … an entire world which is the totality of mathematical truths, to which we have access only with our minds, just as a world of physical reality exists, the one like the other independent of ourselves, both of divine creation. {Charles Hermite (1822-1901), quoted in *The Mathematical Intelligencer,* 1988}

> [Whether a mathematician's] interest is focused on the golden cuboid, or the dodecahedron, or the logarithmic spiral or the genealogy of the drone bee, [he] should realize that, in the act of appreciation, he is re-enacting the creative act and, attracted by beauty, is experiencing himself the joy of creative activity. He is in fact, in Kepler's phrase, "thinking God thoughts after Him." {H.E. Huntley, *The Divine Proportion*, 1970}

> In exploring mathematics one is exploring the nature of God's rule over the universe; i.e., one is exploring the nature of God himself. {Vern S. Poythress, "A Biblical View of Mathematics" *Foundations of Christian Scholarship* 1976}

> We must … explain the phenomenon that the world seems to be organized in a logical pattern that parallels much of mathematics. {R.W. Hamming, "The Unreasonable Effectiveness of Mathematics," *American Mathematical Monthly* 87, 1980}

> What's the best part of being a mathematician? I'm not a religious man, but it's almost like being in touch with God when you're thinking about mathematics. God is keeping secrets from us, and it's fun to try to learn some of the secrets. {Paul Halmos (1916-2006), "Interview," *College Mathematics Journal,* January 2004}

As these quotations make clear, any science or mathematical endeavor which denies the Creator is impoverished.

—CM—

# ...without excuse!

# The Testimony of Darwin's Imaginary Evidence

**by Timothy R. Stout**

While reading Charles Darwin's book, *The Origin of Species,* I was surprised to find a consistent methodology which he used to develop his ideas. Whenever observed evidence contradicted his theory, he would invent an explanation for the discrepancy and then, without offering any form of experimental justification, assume his explanations were valid.

In effect, Darwin gave a higher priority to his imagined evidence than he did to observed evidence. Yet, if one reads *Origin* carefully, he will see that Darwin was forced either to do this or to acknowledge that the large-scale evolutionary progressions he was trying to explain were contradicted by scientific observation. He chose to compromise his methodology.

It is frequently said that today people, including scientists, believe evolution because that is what they have been taught. However, I believe that in this age of increased knowledge, scientists especially face the same predicament as Darwin. They, too, are forced either to explain away the observed evidence or acknowledge that it teaches against the large-scale evolutionary progressions they want to believe. In my opinion, those who choose to follow Darwin in believing evolutionary theory also need to adopt his false methodology.

Let's look at a few representative samples of Darwin's practice in *Origin.*

## Limits of variation

In chapter 1, Darwin discussed observed limits of variation. By the time he wrote *Origin,* he had become fully convinced that fishes became amphibians, which became reptiles, which became birds and mammals. In order for this to take place, he postulated that there were no innate limits or boundaries to the degrees of variation possible for an organism

However, there was an evidentiary problem. Plant and animal breeders reported that they quite rapidly reached limits of variation whenever they would breed for any specific trait. Unfortunately, this observation conflicted with the requirements of evolutionary theory. So, Darwin reduced the well-known, consistent observations of experienced breeders to nothing more than an assumption:

> On the other hand, the ordinary belief that the amount of possible variation is a strictly limited quantity is likewise a simple assumption. (Darwin, 1872, p. 31)

Of course, today we understand the genetic limitations of variation and know that the breeders were right. Once the breeders had reduced the various possible alleles (alternatives) for a specific gene to a single possibility, normally no further variation would be possible for the trait or traits controlled by that gene. The possible exception would be for an occasional mutation which might benefit a particularly sought-after trait. However, even this would typically be at the cost of an overall loss of fitness. Thus, even occasional mutations would not give breeders the unlimited potential for variation Darwin wanted. Darwin imagined an explanation in order to discount what we now know to have been a valid observation.

The discussion above centers on Darwin's rejection of what breeders could observe, not what evolutionists might claim could be possible over millions of years. The impact of mutations on variation potential for a breeder even from an evolutionary perspective would be minimal.

## The fossil record

Darwin was bothered about what he called "imperfections" in the fossil record. Fossils appear in groups which are exemplified by similar characteristics, but with systematic gaps between the groups. Thus, we read,

> …so must the number of intermediate varieties, which have formerly existed, be truly enormous. Why then is not every geological formation and every stratum full of such intermediate links? Geology assuredly does not reveal any such finely-graduated organic chain; and this, perhaps, is the most obvious and serious objection which can be urged against the theory. The explanation lies, as I believe, in the extreme imperfection of the geological record. (Darwin, 1859, p. 230)

> From these several considerations, it cannot be doubted that the geological record, viewed as a whole, is extremely imperfect…. (Darwin, 1859, p. 240)

> The case at present must remain inexplicable; and may be truly urged as a valid argument against the views here entertained. (Darwin, 1859, p. 252)

Darwin's theory required an abundance of intermediate links, but notice that the observed evidence in Darwin's time demonstrated the existence of systematic gaps. It still does. But rather than accept the evidence, he explained it away. Imaginary evidence was given priority over observed evidence.

## The eye

Darwin was disturbed about the complexity of the eye. In fact, in *Origin* he admitted that he could not imagine a scheme which could truly account for such complexity. Of course, by this time he had become a true believer in evolution, so this did not faze him. Thus, he wrote,

> To suppose that the eye with all its inimitable contrivances…could have been formed by natural selection seems, I freely confess, absurd in the highest degree.... Reason tells me…the difficulty of believing that a perfect and complex eye could be formed by natural selection, though insuperable by our imagination, should not be considered as subversive of the theory. (Darwin, 1859, pp. 155–156)

Darwin could not imagine how to get around the problems posed by the eye. However, reason told him that he *should* be able to imagine it and that was sufficient. Darwin was now stooping to "imagined" imaginary evidence to get around observed problems.

This situation reminds me of Romans 1:22, "Professing to be wise, they became fools." Truly, from a biblical perspective, a scientist is without excuse when he professes evolution despite its inconsistencies with respect to the observed evidence.

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*Author's note:* Searchable text and photocopies of all editions of Darwin's *Origin* are available free online at: www.darwin-online.org.uk/contents.html#origin

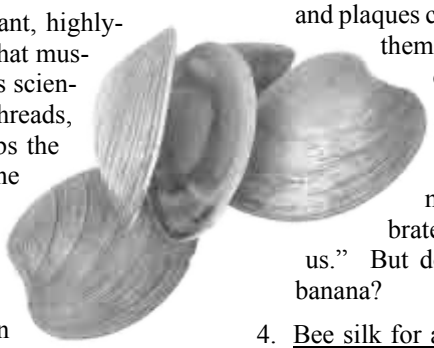
# Speaking of Science

*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. Unless otherwise noted, emphasis is added in all quotes.*

## Natural Wonders Can Be Useful

To find great ideas, look to nature. Many plants and animals are as useful as they are ornamental. They can show the way to solve problems of great interest to humans.

1. Mussel power: Want an abrasion-resistant, highly-extensible coating? *PhysOrg*[1] reported that mussels are providing inspiration to materials scientists. They build a byssus, or network of threads, that attaches to hard surfaces and absorbs the energy of crashing waves. A cuticle on the outer surfaces of these stretchy, flexible fibers is "a biological polymer, which exhibits **epoxy-like hardness, while straining up to 100% without cracking**." The cuticle's success depends on its careful tailoring of protein-metal chemistry and organization of cross-links at the submicron level. All human inventors need to do is study and copy what the mussel has achieved. "**Nature has evolved an elegant solution** to a problem that **engineers are still struggling with**; namely, how to combine the properties of abrasion resistance and high extensibility in the same material," said Peter Fratzl, director of the biomaterials department at the Max Planck Institute for Colloids and Interfaces. "Conceivably, this same strategy could be applied in engineered polymers and composites." *ScienceNow*[2] has a close-up picture of the mussel fibers.



2. Insect glue: The caddis fly is well known to fishermen. They are accustomed to hunting for the tube-shaped larva shelters, made of grains of sand and rock. The larva glues those grains together with silk made of a wet adhesive that is attracting the attention of inventors. *ScienceDaily*[3] reported on research into the characteristics of this glue. It could be extremely useful to invent a glue that works when wet. Imagine trying to put on a bandage in a shower. Surgeons often have to attach sutures to wet biological tissue.

Scientists have found that the caddis fly can work its magic with glass beads replacing sand. The silk, they found, resembles tape more than anything else. It fastens the beads together from the inside. They are studying this mechanism "**for the purpose of trying to copy it**," the article said. The material properties of the silk that allow it to work under water have something to do with the way electrical charges are arranged on the molecules.

The article ended by speculating about how these abilities evolved. The ability to make underwater adhesives has been identified in four phyla — members of which include caddis flies, sandcastle worms, mussels, and sea cucumbers. What does that mean? To Russell Stewart (U of Utah) it can only mean one thing: "They **came to this underwater adhesion solution completely independently**," he said. The press release[4] added, "showing that **it repeatedly evolved** because of its value in helping the creatures live and thrive, Stewart says."

3. Sea squirt lab rat: *ScienceDaily*[5] said that hope for those suffering from Alzheimer's disease may come from the lowly sea squirt. Scientists have found that they produce the tangles and plaques characteristic of Alzheimer's quickly. This makes them suitable as a model organism on which new drugs can be tested in a shorter time. The article said, for whatever it means, "**as long ago as Darwin**, it has been recognized that **sea squirts may be our closest invertebrate relatives**; in their immature, tadpole form, they resemble proper vertebrates, and they share about 80% of their genes with us." But does this imply we are 80% sea squirt, or 60% banana?

4. Bee silk for aviation: *ScienceDaily*[6] reported on progress to imitate bee silk. Maybe you didn't realize that bees make silk. Maybe you also didn't realize that silk is useful. Indeed they do, and indeed it is: "Possible **practical uses for these silks** would be **tough, lightweight textiles, high-strength applications such as advanced composites for use in aviation and marine environments, and medical applications** such as sutures, artificial tendons and ligaments." A team in Australia is working on recombining the ingredients by producing them with the genes of other organisms, so that silk fibers can be hand-drawn without the need for the bee's silk-producing glands. Those glands are probably as hard to work with as bee's knees.

5. Pitcher plant medicine: Some day, your cabinet may not just have pitchers, but medicines inspired by the pitcher plant. Researchers at Tel Aviv University are producing anti-fungal drugs, said *ScienceDaily*,[7] based on the carnivorous plant's technology. Pitcher plants need more than just the ability to digest animal products to gain carbon and nitrogen from poor soils; "Carnivorous plants also possess a **highly developed set of compounds and secondary metabolites** to aid in their survival." It's in those compounds, produced in special glands by the plant, where anti-fungal medicines are waiting to be discovered.

The plant has to protect itself from fungi that would steal its meal. "To avoid sharing precious food resources with other micro-organisms such as fungi, the carnivorous plant **has developed a host of agents** that act as natural anti-fungal agents," said Prof. Aviah Zilberstein of the university. Some of these compounds, if isolated for medicine, "may avoid the evolution of new resistant infective strains." Secondary infections from fungi are a serious problem in hospitals. "**There is a lot of room for developing compounds from nature** into new drugs," Zilberstein said. "The one we are working

*... continued on p. 8*

# How could there be days before God made the Sun?

**by D. Russell Humphreys, Ph.D.**

*"A reading of Genesis 1:14 also indicates that there were no 'days' as we know them until Day Four, when lights in the firmament were created to give us Day and Night."*
— Big-bang believer[1]

This comment comes up very often at creation seminars. Here are some resources for answering it. Usually people bring this up as a way of getting the first three days to be long periods of time,[2] or at least they are having some worries along that line. They almost always are assuming that daylight has to come from the Sun only, not from any other source. I then point them to Genesis 1:5 (NAS), saying that this appears to be God's *definition* of what He meant by a day.[3]

> And God called the light day, and the darkness He called night. And there was evening and morning, one day,

I then ask, "So where in this definition does God say the light source has to be the Sun?" The inquirer gets that point right away. "Okay," he says, "so it could be some other source. But what was that source?"

"I don't know," I say, "but take a look at Psalm 104:2 (NAS)," explaining that this part of that Psalm appears to be reprising the first day:

> Covering thyself with light as with a cloak ...

It doesn't say what generated the light in which God covered Himself, but of course, Revelation 21:23, 24 (NAS) implies

*Earth illuminated by light source.*
*Photo by NASA*

that God Himself will be a light source in the new universe:

> And the city has no need of the sun or the moon to shine upon it, for the glory of God has illumined it, and its lamp is the Lamb. And the nations shall walk by its light ...

The mentions of "city ... sun ... moon ... shine ... illumined ... lamp ... light" make it appear that this light from God will be as physical as anything else in the new cosmos. All physical things are God's tools, so it is quite conceivable that He chose to be the source of physical light for the earth on the first three days. As long as the light was coming from just one direction (Gen 1:4, NAS, "God separated the light from the darkness ..."), the earth would have a light side and a dark side, so its rotation ("... evening ... morning ...") in the light of God's presence would mark off a day just as clearly as sunlight would.

Bottom line: There is no need to devise complicated rationalizations for the absence of the sun on the first three days.

## Notes:

1. Anonymous, Big Bang, Knowledgerush Internet encyclopedia article at www.knowledgerush.com/kr/encyclopedia/Big_Bang/, in section called "Big Bang theory and religion".
2. Long-agers use this ploy (no days before the sun) to have the days be billions of years and the sun and stars made on the first such "day." They then claim that the stars were only "revealed" on earth during the fourth day, allegedly billions of years after their creation. Several Biblical facts run counter to this view: (A) God's use of the word "made" in Genesis 1:16, and (B) His total lack of use of the Hebrew word for "appear" in the fourth-day verses, contrasting with His use of that word in connection with the dry land in Genesis 1:9 on the third day.
3. The most literal reading of the Hebrew of Genesis 1:5 is "one day," not "first day," in contrast to the correct translations "second day ... third day ..." etc. in the rest of the chapter. A Hebrew scholar, Andrew Steinman, argues that this difference means God was intending the fifth verse as a *definition* of what He meant by a day. See http://creation.com/images/pdfs/other/45-4-pp577-584_jets.pdf Others have made similar points, such as Jonathan Sarfati at http://creation.com/the-numbering-pattern-of-genesis , and Francis Humphrey (no relation) at http://creation.com/the-meaning-of-yom-in-genesis-1

—CM—

# Venomous Dragons

**by Andrew V. Ste. Marie**

Snakes and lizards are not the only venomous reptiles — you can now add at least one type of dinosaur to the list as well. Research by a team of scientists, published in the *Proceedings of the National Academy of Sciences (PNAS)*,[1] reports that venomous morphology similar to that of lizards was found in a dromaeosaur from China.

The dinosaur, *Sinornithosaurus*, is not a new discovery. The first skeleton was described in 1999 from the famous Liaoning Province in China. It was not complete, but the skull, shoulders, hip, and limbs were well preserved. It was touted as a dinosaur with "a dense covering of downlike filaments over most of its body."[2] (It has now been shown that these were probably not protofeathers or "downlike filaments," but rather connective tissue fibers in the skin.[3]) The 3½-foot-long creature was said to have probably hunted "large insects, lizards, primitive birds, and small mammals…"

The *PNAS* article's abstract reads, in part,

> We suggest that some … dromaeosaurs, such as *Sinornithosaurus*, were venomous, and propose an ecological model for that taxon based on its unusual dentition and other cranial features including grooved teeth, a possible pocket for venom glands, and a groove leading from that pocket to the exposed bases of the teeth. These features are all analogous to the venomous morphology of lizards. *Sinornithosaurus* and related dromaeosaurs probably fed on the abundant birds of the Jehol forests…in northeastern China.

And the introduction states,

> *Sinornithosaurus*…has unusually long maxillary teeth that are morphologically similar to those of 'rear-fanged' snakes specialized to carry poison…This type of fang discharges venom along a groove on the outer surface of the tooth that enters the wound of the bitten animal by capillary action…Supporting this interpretation in *Sinornithosaurus* is an additional space on the lateral surface of the maxillary bone that we interpret on the basis of analogy with venomous squamates [lizards and snakes] as having housed a venom gland. This previously undescribed fossa…could have housed an elongate…venom gland similar to that found in rear-fanged…snakes…We suggest that the venom traveled in ducts to the bases of the teeth and mixed with the saliva in a manner also similar to extant venomous squamates…The position of the venom collecting duct was probably along the oblique ventral surface of the maxilla, where there is a supradental groove (i.e., longitudinal depression running along the base of the tooth row). This groove bears small pits that seem to be related to tooth sites and may represent the location of small venom reservoirs…We believe *Sinornithosaurus* was a venomous predator that fed on birds by using its long fangs to penetrate through the plumage and into the skin, and the toxins would induce shock and permit the victim to be subdued rapidly.

*Cast of the fossil dromaeosaur specimen NGMC 91 (cf* Sinornithosaurus*) at the American Museum of Natural History in New York. Photo from* Wikimedia Commons*, http://en.wikipedia.org/wiki/File:Sinornithosaurus_Dave_NGMC91.jpg*

*Sinornithosaurus*'s venom-delivery system seems to have been a low-pressure one similar to *Heloderma*, the modern Beaded Lizard. However, *Sinornithosaurus* had longer teeth, interpreted as a feature enabling the animal to break through the layers of feathers on its presumed prey.

How convincing is the evidence that this dinosaur was poisonous? The authors of the paper state that "Pocketing within the maxilla in conjunction with grooved fangs is considered well-supported evidence for venom delivery systems in fossil taxa…" What was found in *Sinornithosaurus*? Not only does the maxilla (upper jaw bone) have a pocket, possibly for the venom glands, and the fangs were grooved, it also had a canal leading down from the pocket to the jaw, a canal over the teeth, and peculiar pockets near the teeth that are thought to have stored venom. (All of this evidence was found in all known specimens of *Sinornithosaurus millenii* and in one specimen — which may be the only known specimen — of *S. haoiana*.) This is very convincing evidence indeed! The authors also think that not only was venom delivered to the teeth in the upper jaw, it was also delivered to the teeth in the lower jaw.

This is highly interesting to anyone fascinated by dinosaurs, but especially to those who believe in the Bible because it agrees with what the Bible says. "Their wine *is* the poison of dragons, and the cruel venom of asps" (Deuteronomy 32:33 KJV). The Bible says that (at least some) dragons were poisonous, and scientists have just found out that at least one dinosaur probably was as well! The people writing the reports even compare the venomous morphology of *Sinornithosaurus* to that of lizards and snakes, and the Bible compares the dragon's poison to the venom of asps. Coincidence? Staunch believers in evolution will probably insist that it is, but those who believe in God's wisdom above man's certainly see His design in this dinosaur and wisdom in putting this detail about dragons in the Bible.

The scientific paper detailing these finds only twice mentioned evolution and hardly ever used words denoting evolutionary presumptions. Once again, legitimate research with fascinating conclusions does not need to rely on evolutionary presuppositions. This study could have been conducted just fine without even the few passing references to evolution. This legitimate scientific research again supports what the Bible has said all along.

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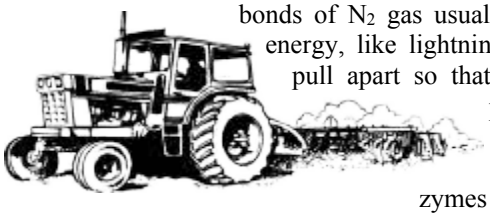
## SOS

*...continued from page 5*

on is not toxic to humans. Now we hope to show how **this very natural product** can be further developed as a means **to overcome some basic problems in hospitals all over the world**." The article noted that drinking pitcher plant liquid as an elixir has been documented in the folk medicine of India.

6. Green fertilizer: Nitrogen is a tough nut to crack. The triple bonds of $N_2$ gas usually require high amounts of energy, like lightning or the Haber process, to pull apart so that ammonia and other compounds can be produced (this is called "fixing" nitrogen). Somehow, nitrogenase enzymes in bacteria that live in nodules attached to the roots of some plants do it with ease at room temperature. "**It sounds simple, but it is a complicated and poorly understood process**," the article said.



For thousands of years, farmers have known that legumes (including peas, beans, alfalfa, and clover) can increase productivity when alternated with other crops. That's a major reason George Washington Carver urged southern farmers, whose fields were being depleted by cotton and boll weevil infestations, to grow peanuts. Until recently, no one understood why legumes were so effective in boosting the productivity of the soil. *ScienceDaily*[8] reported on a discovery at Stanford that helps explain their potential. The finding might reduce fertilizer use and help the environment. "We have discovered a new biological process, by which leguminous plants control behavior of symbiotic bacteria," said Stanford molecular biologist Sharon Long. "These plants have a **specialized protein processing system** that **generates specific protein signals**."

The scientists have identified the gene responsible for the signal. If scientists can generate that signal in other plants, perhaps through genetic engineering or selective breeding, they might trigger more nitrogen fixation in crops without fertilizer. World farmlands could remain more productive as population grows while simultaneously reducing pollution by nitrous oxide (a highly potent greenhouse gas) and other fertilizer byproducts. "When you deal with a natural soil, **you are dealing with a lot of complexity**. Everything we learn about what makes symbiosis work gives us a tool to understand why, sometimes, symbiosis fails," said Long. "Plant breeders who are trying to help develop better-adapted plants can now analyze traits such as this. We've given them a new tool" — a tool that was there all along, but needs a little prying and coaxing.

7. Energy the way plants make it: There's no more effective solar power plant than a plant, so why not plan to imitate plants? *PhysOrg*[9] said that's just what scientists in France are trying to do. Photosynthesis may become the next new source of electrical energy. The team has found a way to convert the chemical energy from photosynthesis into electrical energy in biofuel cells. "They thus propose a new strategy to convert solar energy into electrical energy in an environmentally-friendly and renewable manner."

This kind of biomimetics actually employs a real plant — in this case, a cactus. By implanting special enzyme-modified electrodes sensitive to the products of photosynthesis, the French scientists were able to generate 9 watts per square centimeter. They could see more juice when the light was turned up. They envision not only more efficient solar cells, but medical applications. Similar biofuel electrodes in human skin, sensitive to glucose and oxygen in biological fluids, could power implanted medical devices autonomously, without batteries or external power sources.

[*Editor's note (JKL):* There is no question that there is awesome design in nature. How sad that many scientists are so quick to avoid crediting the Designer and thanking Him for our ability to learn, understand, and apply these design principles to other useful purposes. We don't have to fall into the same trap. "How many are your works, O LORD! In wisdom you made them all; the earth is full of your creatures. Psalm 104:24]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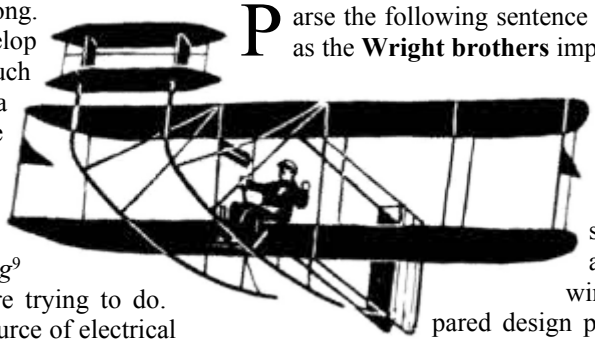
## Flight Design: Flies and Birds Get it Wright

Parse the following sentence for logical consistency: "Just as the **Wright brothers** implemented controls **to achieve** stable airplane flight, **flying insects have evolved** behavioral strategies that ensure recovery from flight disturbances." That is the first sentence from a paper in *PNAS* about the stabilizers in fly wings.[1] Ristroph *et al* just compared design principles employed purposefully by inventors to the trial-and-error process of evolution.



The authors studied how fruit flies recover from disturbances. They made them stumble while flying, and watched how they responded. They continued the invention motif all the way up to modern times:

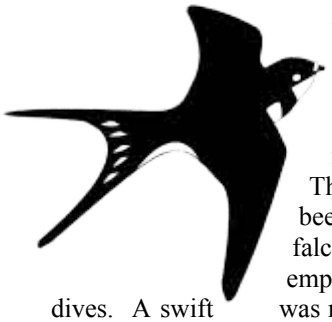
> Thus, **like early man-made aircraft** and **modern fighter jets**, the fruit fly **employs** an **automatic stabilization scheme** that **reacts to short time-scale disturbances**.

It only takes them 60 milliseconds to recover to within 2 degrees of their original heading. They do this because they are equipped with "a pair of small vibrating organs called halteres that **act as gyroscopic sensors**." More aerodynamic engineering lingo ensues forthwith:

> These findings suggest that these insects drive their corrective response using an **autostabilizing feedback loop** in which the sensed angular velocity serves as the **input to the flight controller**.

The word "control" was one of the most prominent in the paper, used 27 times. Later, their transition from biology to human engineering was seamless:

> **Flight control principles** uncovered in this **model organism** may also **apply more broadly**, and this work provides a template for future studies aimed at **determining if other animals employ flight autostabilization.** The **control strategies** across different animals are **likely to share common features**, because the **physics** of body rotation is similar across many animals during flapping-wing flight. Additionally, animals that lack halteres may use **functionally equivalent mechanosensory structures** such as antennae. Finally, the control architecture of the fruit fly offers a **blueprint for stabilization of highly maneuverable flapping-wing flying machines.**
>
> For fixed-wing machines, the need to overcome instabilities spurred the **invention** of autostabilizing systems by 1912, only 9 years after the **Wright brothers** first manually controlled airplane flight. The development of such **automatic steering systems** also led to the **first formal description** of proportional-integral-derivative **control schemes** and advanced **gyroscopic sensor technology.** The **fruit fly's autostabilization response is well-modeled** by a simple PD scheme that receives input from **gyroscopic halteres**, and, **like airplanes**, uses **fine adjustment of wing orientation** to generate **corrective torques**. Roughly **350 million years after insects took flight, man converged to this solution** for the **problem of flight control** and **joined animals in the skies.**



Want to see what animal flight technology has achieved? Look no further than the aptly-named swift. The common swift (*Apus apus*) is the speed champ in the category of sustained level flight. The *BBC News*[2] reported that swifts have been measured flying faster than peregrine falcons in level flight, though the falcon, employing gravity, sets the record in free-fall dives. A swift was recently measured going 69.3 mph, "the highest confirmed speed achieved by a bird in level flight," said Swedish researchers publishing in the *Journal of Avian Biology*. This is nearly triple their normal fast flying rate of 22–26 mph. Apparently males do it to show off in "screaming parties" when flocks of swifts come together in jubilant displays of prowess.

Dr. Per Henningsson said, "It is remarkable that a bird that otherwise appears to be '**finely tuned**' to perform at a narrow range of flight speeds at the same time is **able to fly more than twice as fast when it needs to**." The reporter added, "That means **the birds need to be able to radically alter their aerodynamic performance**, by **altering their wing profile and physiology**, depending on whether they are flying normally or in a screaming party." The article includes a short video of swifts in flight. They go by in a blink of an eye, so a slow-motion sequence follows the real-time blip. Reporter Jody Bourton called them "supercharged swifts."

The fruit fly experimenters only slipped on the E-word banana once, but then they got back up and talked design engineering the rest of the time. But the cognitive dissonance of hearing them use evolution in the same sentence as the Wright brothers, engineering and flight control principles was jarring. Maybe they did it on purpose. It could have been to raise awareness of the logical inconsistency. Or it could have been to ensure their intelligent-design paper got past the censors. Hopefully that was the case; otherwise, it betrays endemic mental illness in the halls of academia.

Next time you see a fruit fly or gnat, watch it for a while. Think about how much technology is built into that tiny, tiny body. It does things that our best aerospace engineers would like to imitate. Become aware, also, of the birds in your area. Watch some swifts in flight if you can. [*Editor's note (JKL):* Then take a moment to praise God for the marvelous creatures He created.]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## Spider Hair: The Perfect Water Repellant Surface

To keep dry, make like a spider. "Engineering researchers have crafted a **flat surface that refuses to get wet**," began a press release from University of Florida.[1] "**Water droplets skitter across it like ball bearings tossed on ice**. The **inspiration**? Not wax. Not glass. Not even Teflon." The audience waits breathlessly for the answer.

> Instead, University of Florida engineers have achieved what they label in a new paper a '**nearly perfect hydrophobic interface**' by reproducing, on small bits of flat plastic, the **shape and patterns of the minute hairs that grow on the bodies of spiders**.

How does the spider do it? The researchers expected to find a regular pattern on a small scale, but instead, "learned that spider hairs are both long and short and variously curved and straight, forming a surface that is anything but uniform." This apparently chaotic surface is key to its effectiveness. When Wolfgang Sigmund at U of Florida imitated that, the results were perfect. Unlike other hydrophobic materials, this one repelled the microscopic spheres of water without distorting them. "**The results came as a great surprise.**" It's something that had to be discovered in the lab instead of by theory, he said. "Most people that publish in this field always go for these perfect structures, and we are the first to show that the bad ones are the better ones," Sigmund said.

Another benefit of this finding is that it can be made from any material. Because the trick is done with physics instead of chem-

istry, the hydrophobic surface manufactured to spider specification does not have to slough off any dangerous chemicals. Sigmund is now working on similar surface tricks that can repel oil. If engineers can figure out economical ways to manufacture these surfaces with enough durability for a range of temperatures, industry will beat a path to the spider's web. The spider, of course, already knows how to manufacture the material durably and flexibly, and even repair it. Ever seen a wet spider?

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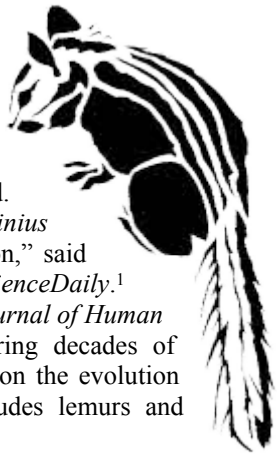
## Ida Not a Human Ancestor



If Ida known then what I know now: the media-frenzied presentation of Ida (*Darwinius masillae*) as a distant relative of human beings last year has been debunked. "Many lines of evidence indicate that *Darwinius* has nothing at all to do with human evolution," said Chris Kirk (U of Texas) in an article on *ScienceDaily*.[1] Researchers publishing their analysis in the *Journal of Human Evolution* accused the presentation of ignoring decades of research and an enormous body of literature on the evolution of strepsirrhines, a primate group that includes lemurs and lorises.

Ida's discoverer claimed it had characteristics suggesting a linkage to haplorhines. "However, Kirk, Williams and their colleagues point out that short snouts and deep jaws are **known to have evolved multiple times** among primates, including several times within the lemur/loris lineage," the article claimed. "They further argue that *Darwinius* lacks most of the key anatomical features that could demonstrate a close **evolutionary relationship** with living haplorhines (apes, monkeys, humans, and tarsiers)."

The original announcement about Ida included a book, a History Channel documentary, and an exhibit at the American Museum of Natural History. Mayor Michael Bloomberg unveiled the specimen at a news conference in New York city. The lead author of the new paper remarked, "Just because it's a complete and well-preserved fossil doesn't mean it's going to overthrow all our ideas."

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## Oldest Hebrew Text Deciphered

Finally, some news from the ancient Hebrew pottery inscription that was found in 2008. The inscription from Khirbet Qeiyafa, dating from the time of David and Solomon, has been deciphered and announced on *Yahoo News*,[1] *PhysOrg*,[2] and *EurekAlert*,[3] which has a copy of the script and the translation. *ScienceDaily*[4] posted a more extensive report on Jan 8.

Prof. Gershon Galil of the University of Haifa, who deciphered the inscription, explained its significance: "It **indicates that the Kingdom of Israel already existed in the 10th century BCE** and that **at least some of the biblical texts were written hundreds of years before the dates presented in current research.**" This evidence appears to debunk the minimalist interpretation of biblical history that asserts there was no kingdom of David and Solomon. EurekAlert said, "This **stands opposed to the dating of the composition of the Bible in current research**, which would not have recognized the possibility that the Bible or parts of it could have been written during this ancient period." Even more significant inferences can be drawn, according to the EurekAlert article:

> Prof. Galil also notes that the inscription was discovered in a provincial town in Judea. He explains that **if there were scribes in the periphery, it can be assumed that those inhabiting the central region and Jerusalem were even more proficient writers.** "It can now be maintained that it was **highly reasonable** that during the 10th century BCE, during the reign of **King David**, there were **scribes in Israel who were able to write literary texts and complex historiographies such as the books of Judges and Samuel.**" He adds that the complexity of the text discovered in Khirbet Qeiyafa, along with the impressive fortifications revealed at the site, **refute the claims denying the existence of the Kingdom of Israel at that time.**

The text of the inscription relates to the care for the disadvantaged in society. The inscription is not drawn verbatim from any biblical passage, but sounds similar to those that express concern for widows, orphans, and the poor. The English translation is, "you shall not do [it], but worship the [Lord]. Judge the sla[ve] and the wid[ow]. Judge the orph[an] [and] the stranger. [Pl]ead for the infant; plead for the po[or and] the widow. Rehabilitate [the poor] at the hands of the king. Protect the po[or and] the slave; [supp]ort the stranger." This expresses a moral tone right out of the Bible. And could "the king" be King David?

This is very exciting and significant, and lends weight to the conservative view of the historicity of Scripture.

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## Definitions

*...continued from page 1*

duce frustration, and can contribute to undermining the relationship if neither is perceptive enough to recognize the problem. Thus, I believe the strategy of substituting the word adaptation for evolution in this context should be avoided, because it is deceptive, and can easily promote misunderstanding.

**Q** What about the terms macroevolution and microevolution? Don't they distinguish between the two different definitions used by biologists?

**A** The terms *microevolution* and *macroevolution* were coined by Goldschmidt in 1940. Microevolution describes changes that can be observed on the species level. Paleontologists generally use *macroevolution* to describe the assumed evolutionary origin of new traits such as feathers, limbs, or teeth. The sudden appearance of major lineages in the fossil record and the significant gaps between major groups led evolutionists such as Goldschmidt and Gould to conclude that different processes were at work in macroevolution than in microevolution (Carroll, 1997).

This terminology has been picked up by some creationists because it seems to distinguish between changes we observe (within a created kind) and those we reject because they are inferred based on the idea of universal common ancestry (i.e., from one kind into another). Again, a problem can arise here too because the term *macroevolution* is not always used consistently.

For example, the *Understanding Evolution* website states (Anonymous, n.d.) that macroevolution is "evolution on a grand scale — what we see when we look at the over-arching history of life …" On the following page (Anonymous, n.d.) it is defined as "evolution above the species level." Thus, speciation is given as a classic example of macroevolution. If a student challenges a teacher saying that macroevolution has never been observed, the teacher can point to Darwin's finches or cichlid fish as examples that it has indeed been observed. One might feel a bit cheated at this point because the origin of new traits has not been addressed. However, because of how macroevolution is sometimes defined, the teacher is technically correct. For this reason organizations such as AiG and CMI advise against using the terms *micro-* and *macroevolution*.

**Q** Aren't evolutionists just being deceptive in the way they define things?

**A** There is no question that deception does occur in the creation/evolution debate. Unfortunately, it is not always on the evolutionary side. It tends to be more prevalent among people who feel a need to "win the argument." However, there is much more to the issue than this.

First, despite the best attempts of people to create concise definitions for terms, most words have multiple meanings or shades of meaning that can confuse communication at times. This remains true in scientific fields. For example, I was shocked when I heard *Mycoplasma genitalium* called a free living organism. It is a parasite, and in my field a parasite is the opposite of a free living organism. Eventually I had to acknowledge the fact that some scientists use the term free living to apply to an organism that can reproduce without taking over the host's machinery (like viruses do). So, we need to be aware of the ambiguities of language before we automatically assume the worst in others.

Second, most people who believe in evolution believe in it because that is what they were taught. When questioned, they generally repeat back what they have learned. Many of these people don't recognize that the word *evolution* is ambiguous or that the pattern of changes we observe in organisms does not explain the origin of new structures or complex biological circuitry. Thus, discussions which expose the ambiguity of terms and clearly identify observed patterns of change can be helpful in clarifying this confusion.

Finally, Darwin framed his argument for universal common descent by contrasting it to the non-biblical view of species fixity [see *Creation Matters* 14(6):6–7, 2009]. Therefore, it is understandable that evolutionists have a tendency to see speciation as vindication for his theory. Unfortunately, some creationists fail to realize that speciation is necessary in a coherent creation model and they may end up arguing that speciation does not occur. In fact, speciation is a real phenomenon that does absolutely nothing to distinguish between the creationary and evolutionary models of origins.

**Q** Doesn't using the word *evolution* at all to describe observed changes play into the hands of the evolutionary propaganda?

**A** Perhaps at times. I personally think that unrealistic views of language (i.e., failure to recognize ambiguities of words) and science (i.e., the belief that science is powerful enough to adequately address historical issues, particularly origins [see *Creation Matters* 14(4):6, 11, 2009]) are more serious issues. We need to consider our audience and communicate as clearly as possible. This will affect word choices at times, but we should not redefine things or play word games. As Christians, we should sharply contrast deceptive practices sometimes used by evolutionists (and remember that *not all* evolutionists act this way). I consider Ephesians 4:15 very instructive here:

> Instead, speaking the truth in love, we will in all things grow up into him who is the Head, that is, Christ.

First, we must be honest, even if we feel it makes us look bad. Second, we need to care about others, not our reputation. Then, as we continue speaking the truth in love, both we and our listeners can grow in our understanding. It is a process that requires us to seek the truth and learn patience, but well worth the effort as it brings glory to God.

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## All by Design

# Warming Up to Sharks

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

Most people have the notion that plants and animals are rather simple things, excepting of course the "higher" vertebrates such as primates, which we are trained to view as distant relatives. ***Nothing*** could be further from the truth! Nature abounds with evolutionarily "simple" creatures whose designs and complexity simply defy description, being vastly more intricate in many respects than are humans.

One such wonder is the great white shark, one of a very few genuinely warm-blooded fish! The white shark's metabolically generated heat is conserved by counter-current vascular heat exchange. At certain sites of its body, arteries delivering warm blood run close to and in parallel to veins that return cooler blood from the extremities and skin surface, warming it before it returns to the body core.

The white shark can also automatically divert blood flow through different areas of its body core when necessary, altering its temperature. This allows the white shark to regulate its body temperature within a narrow range, even in widely fluctuating water temperatures. This amazing creature can maintain a core body temperature of up to 57°F (14°C) above that of the water, allowing it to compete with the Orca in colder water for their favorite prey: seals, sea lions, and walruses.

The intricate design of the white shark's vascular system, especially in light of its need to hunt prey that live in colder waters, cannot be explained by the random forces of evolution. It is far more reasonable and logical to acknowledge the Creator's handiworks for what they are.

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*Figure caption:*
Photograph courtesy of Shark Shield Pty Ltd, www.sharkshield.com/Database/UserFiles/Image/GreatWhiteGapingJaws300.jpg