

# Creation Matters

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## The Paradox of *Urtica dioica* L., “Stinging Nettle”: A Blessing and a Curse

by Stephen B. Austin

**S**tinging Nettle, *Urtica dioica* L., is a paradox, providing an abundance of benefits, both for humanity and wildlife, while at the same time being a purveyor of pain and suffering. One may ask, “How does this plant show evidence of a loving Creator, and why is there the curse of the stinging hairs?”

### Biological classification

To address these questions we will first discuss how the plant is classified within the botanical nomenclature of today. The most common species of stinging nettle is *Urtica gracilis* Aiton. It is included in the family of plants known as the Urticaceae, or nettle family. There are about 45 genera and 800 species worldwide in the nettle family, according to the *Flora of North America* (Boufford, 2007).

Other sources broaden the number of genera and species. For example, the *Flora of China* (Chen et al., 2007) lists the Urticaceae as being composed of 47 genera and 1,300 species worldwide. According to Baumgardt (1982), European authorities include the genus *Humulus* in the Urticaceae, while American botanists have created a new family, Cannabinaceae. The latter includes the infamous *Cannabis sativa* L., otherwise known as marijuana!

The genus *Urtica*, according to the *Flora of North America* (Boufford, 2007), contains 45 species, of which four are found in the United States: *Urtica chamaedryoides* Pursh, *U. dioica* Linnaeus, *U. gracilenta* Greene, and *U. urens* Linnaeus (see sidebar, page 3).

For the sake of this paper, we will focus on the more common species, *Urtica dioica* (Figure 1), but at times we will mention some things about the other three species in America, as well as selected members of the genus from other parts of the world.



The stinging nettle plant, *Urtica dioica* L., in flower. Image No. 1558013 by John Cardina, The Ohio State University, Bugwood.org.

The plants of the genus *Urtica* include both annual and perennial herbs. *U. dioica* is a perennial, reproducing not only by seed, but also through rhizomes. The other three species in the United States are annuals, having only a taproot.

*Urtica dioica* has three subspecies in this country. Subspecies *dioica* is unisexual, with the male and female flowers occurring on different plants. Subspecies *gracilis* (Aiton) Selander and subspecies *holosericea* (Nuttall) Thorne are also unisexual, but the male and female flowers appear on the same plant. The differences between the last two subspecies have to do with the presence or absence of pubescence (hairs) on the stems and leaves. All, however, have the stinging

... continued on p. 2

## What the ASA Doesn't Want Its Readers To Know

by D. Russell Humphreys, Ph.D.

**T**he American Scientific Affiliation (ASA) began many decades ago as an organization of science-minded Christians interested in defending Scripture against the onslaughts of evolutionism. At first many, perhaps most of them, were young-earth creationists, such as Dr. Henry M. Morris, Jr. But the doctrinal statement of the organization was loose enough to admit theistic evolutionists and other types of long-age believers. When such people became a majority of the ASA membership, they took over and began excluding young-earthers from having influence in the organization.

In response, many young-earthers left the ASA and formed the Creation Research Society (CRS) in 1963. Learning from their ASA experience, they wrote a doctrinal statement tight enough to exclude people who do not take Genesis as “a factual presentation of simple historical truths.”

As CRS grew and prospered, the ASA continued its drift to the “left” side of the origins controversy. They are still that way today. Recently its executive director, a physicist, took it on himself to use ASA’s journal to criticize the Radioisotopes and the Age of the Earth (RATE) research initiative, of which CRS was a co-sponsor (Isaac, 2007). RATE sent a polite rebuttal, which ASA published early the next year (Vardiman et al., 2008). Isaac replied in the same issue (Isaac, 2008a).

Apparently ASA wanted to leave Isaac with the last word on the issue, because the journal’s editor refused to publish my prompt rejoinder to Isaac’s

... continued on p. 4

## Stinging Nettle

...continued from page 1

hairs. This fits well within the creationist concept of variation within the Genesis kind, not only among the subspecies, but the species as well.

### Physical description

The species *U. dioica* is 5 to 30 dm (roughly 2-10 feet) in height. The leaves are opposite each other on the stem, are elliptic, lanceolate, or narrowly to broadly ovate in shape, and have margins that are coarsely toothed. These leaves superficially resemble elm leaves, but we shall soon see they have a feature that no elm leaf possesses. The stems are square, and because of the square stems and opposite leaves, one might mistake this plant for a mint. However, the flowers are quite inconspicuous, being greenish in color and appearing in tassel-like clusters. The staminate, or male, flowers are ascending, and the pistillate, or female flowers are lax; that is, they are spreading or even hang down, especially as the seeds approach maturity.

One unique feature which immediately distinguishes these plants from the mint family is the presence of tiny inconspicuous stinging hairs (Figure 2). These hairs are also hollow, and the bulbous or cylindric base of each of these hollow hairs contains a tiny droplet of formic acid. This is the *curse* with which this amazingly useful plant is plagued. When human skin makes contact with these hairs, the stiff translucent tip



Figure 2. Urticating hairs on the foliage of *Urtica dioica* L., the stinging nettle. Urticating means "producing a stinging or itching sensation" (*The American Heritage Dictionary*, 2008). Image No. 1558012 by Theodore Webster, USDA Agricultural Research Service, Bugwood.org.

breaks off, leaving a sharp point that readily pierces the skin and allows the acidic fluid to enter. Thus, each hair is somewhat like a tiny hypodermic needle!

### Amazing properties

And yet, nettles have amazing properties, provided by our Creator God for our use. Angier (1974, p. 152) writes, regarding the genus in general:

In some parts of the world you can sleep between nettle sheets, eat off a nettle tablecloth, dine on nettle-enriched steaks and eggs ordered from a nettle-paper menu, in an emergency fish with a nettle line, and in the springtime especially revel with delectable nettle dishes washed down with nettle beer.

Coon (1979) writes about its many uses

in the recent past, such as various people groups using the plants to weave a cloth similar to linen, but even stronger. During World War I the Germans were cut off from their normal supply of cotton, so in their resourcefulness they utilized the plant for this purpose. Harrington (1967) quotes Thomas Campbell, the British poet, who once said, "In Scotland I have eaten nettle, I have slept on nettle sheets, I have dined off a nettle tablecloth." Kershaw (1998) reports that nettle fibers were used for many years to make cording, rope, and cloth. The fibers are considered superior to cotton and were said to be more durable than linen.

The plant is also quite edible in many ways. The young greens can be cooked in the manner of spinach and served with salt, pepper, a little vinegar, or lemon juice. It can be added to soups or made into a tea or even a beer or wine. Seebeck (1998) proclaims that nettle can be added to omelets, casseroles, stuffing, egg rolls, quiche, crepes, and a nettle-onion soup. Willard (1992) touts the plant as having Vitamins A, C, and D, and that they contain iron, sodium, potassium, phosphorous, calcium, and other beneficial ingredients.

The plant also has numerous medicinal qualities. According to Coon (1979), the seeds have been given as an infusion for coughs and shortness of breath, and for many years were used to treat consumption, which we now call tuberculosis. Moore (1979) suggests that the seeds make a good scalp conditioner and growth stimulant to the hair. He also writes that a tea made from its leaves can be used to stem excessive bleeding, but he also warns that excessive use can be somewhat irritating for the kidneys.

## Contents

The Paradox of <i>Urtica dioica</i> L., "Stinging Nettle".....	1
What the ASA Doesn't Want Its Readers To Know.....	1
<b>Letters:</b>	
The pre-Flood/Flood Boundary in the Grand Canyon: Further Notes.....	4
The pre-Flood/Flood Boundary in the Grand Canyon: A Reply to Barnhart.....	5
Radiocarbon in Mid-Atlantic Hydrothermal Vent Fluids....	6
<b>Speaking of Science</b>	
Peacocks Don't Dress for Success.....	7
Tuatara Genes Are Running in Place.....	7
Neanderthals: Random Drift, Not Natural Selection.....	7
The Gecko in the Flight Simulator.....	8
Animal Feats Inspire Imitation.....	9
Were Hobbits Pygmies?.....	9
Why Blood Clots Are Stretchy.....	9
Migrating Birds Measure Longitude.....	10
Squid Beak: "A Truly Fascinating Design".....	10
All by Design: Sink or Swim.....	12

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The Four Species of the Genus <i>Urtica</i> in the United States	
<i>Urtica chamaedryoides</i>	Found primarily in the South, although it does extend west into parts of Oklahoma, and north into parts of Kansas, Missouri, Illinois, and Ohio. It is also found in northern Mexico.
<i>Urtica dioica</i>	Perhaps the most widespread species, occurring in all of the lower 48 states, as well as Alaska, Canada, and Greenland. It is said to be found worldwide (Boufford, 2007).
<i>Urtica gracilentia</i>	Is only found in southeastern Arizona, New Mexico, the southwestern corner of Texas, and northern Mexico.
<i>Urtica urens</i>	Is found in scattered locations throughout the United States, but it is most abundant in California and eastern Canada.

As if this were not enough, Kirk (1975) reports that the roots may be boiled to produce a yellow dye.

## Up close and personal

Stinging Nettle is a plant with which the author is quite familiar, not because of personally experiencing its painful injections, but because we have heard of the suffering of innocent children. Each summer, usually during the July 4<sup>th</sup> week, Alpha Omega Institute, a small but effective creation ministry headquartered in Grand Junction, Colorado, conducts a week-long family camp on Grand Mesa. The 40-acre site of the facility where this is held contains an aspen forest, among other habitats, where the melting snow has left a damp, moist area, a habitat where the nettle plant can flourish. Children tend to explore and play, being children, and their summer garb seldom provides much protection to the pesky stinging hairs. Before too long, a few of them inevitably experience the plant's ravages first hand, despite any warnings.

When we arrive at the camp for a wildflower walk or two, tales of some painful encounters reach our ears, and there are many, both children and adults, who are eager to learn what exactly this plant looks like up close and why it inflicts the pain it does. When they finally see the tiny but sharp hairs that line its stems and leaves, they are amazed to learn that one can actually eat this plant. The thought is immediately repulsive to them, but then they are told how the poison is neutralized by cooking for human consumption, or by drying for hay for domestic livestock.

The plant is said to have very little forage value for wildlife, no doubt due to the presence of the stinging hairs. Even so, the dried leaves make an excellent hay, for

the drying neutralizes the acid of the stinging hairs over time. Basset (1977), according to a federal database, reports that stinging nettle hay contains 21–23% crude protein, 3–5% crude fat, 35–39% non-nitrogen extract, 9–21% crude fiber, and 19–29% ash. It goes on to report that the amino acids in dehydrated stinging nettle meal are nutritionally superior to those of dehydrated alfalfa (*Medicago sativa*) meal.

This is a paradox. A plant which has so many uses has a notable and seeming curse upon it. Why is that?

## The paradox

Our loving Creator God, the Lord Jesus Christ, created this plant to be a benefit for His creation — the people He loves and the animals of His creation. The stinging hairs obviously are a result of Adam's sin (Genesis 3). To us they are a reminder of the sin in our lives that needs to be covered by the blood of His Son, Jesus Christ. Meanwhile, the Creation groans as it awaits its eventual deliverance: "We know that the whole creation has been groaning as in the pains of childbirth right up to the present time." (Romans 8:22 NIV). We look forward to the time when nature will be delivered from its bondage, and when such things as thorns and poisonous plants and stinging nettle will be a thing of the past.

Our loving Creator has provided a remedy, in the meantime, for the poison found in those stinging hairs. The poison is an acid, and it can be neutralized by applying a paste of baking soda, or by rubbing the leaves of dock (*Rumex* species). Even human spit is said to be enough to counteract the effects of the acid, although we haven't tried that remedy. At the very least, calamine lotion can bring relief for the blisters that stinging nettle leaves in the skin.

So, despite the disobedience and sin of Adam, as recorded in the Book of Genesis, our loving Creator has provided a suitable remedy for the ravages of this plant, just as He has provided a remedy for sin through the sacrifice of His Son, the Lord Jesus Christ.

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*Having studied plants for 29 years, Mr. Austin has led wildflower walks, taught beginning plant identification, and participated in plant counts for various agencies. He has collected and prepared specimens for herbaria, including the herbarium at the CRS Van Andel Creation Research Center.*



## What the ASA Doesn't Want

...continued from page 1

assertions about my part of the RATE research. Here is the brief letter that the ASA, for whatever reasons, decided not to allow its members to see.

### Isaac's Loophole for Helium Isn't Big Enough

I thank ASA Executive Director Randy Isaac for again calling attention to the Radioisotopes and the Age of the Earth (RATE) research initiative (Institute for Creation Research, n.d.). In his latest critique, he devoted a paragraph (Isaac, 2008b) to my part of the initiative, which resulted in the 6,000 ( $\pm 2,000$ ) year helium-leak age of radioactive zirconium silicate crystals in allegedly 1.5-billion-year-old granitic rock. The essence of his criticism was:

.... age information cannot be extracted directly from a steady-state condition since [such] values are not changing with time.

Unfortunately for Dr. Isaac, that's not the important point. One can always set *bounds* on the age by assuming a best-case,

steady-state scenario for the other side. That's what I did with temperature in my analysis (Humphreys, 2005). I granted the other side *lower* temperatures (meaning slower helium leaking and longer helium-leak ages) than the ones that uniformitarian geoscientists claim occurred in the rock unit, roughly a million years ago by their reckoning (Harrison, 1986). If the past temperatures had really been as high and long-lasting as they claim, there would be no helium at all left in the zircons today. That is contrary to the observations, which show very high amounts of helium retention in the zircons.

But, Dr. Isaac, if you find it hard to accept the bounding calculations, you could go ahead and solve the time-dependent problem yourself. You will find that the results fall within the steady-state bounds. For example, I solved the diffusion equation for time-dependent diffusivity in the case of a 100% pure zircon that steadily acquires radiation defects during the alleged 1.5 billion years, thus slowly becoming as helium-leaky as the zircons are today. The bottom line was that such a scenario would help the uniformitarians by a factor of only two — far short of the factor of 100,000 that they need to make their billions of years agree with the experimental data.

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## Letters

### The pre-Flood/Flood Boundary in the Grand Canyon: Further Notes

It was good to see Froede and Oard (2007) reopen the discussion of the Pre-Flood/Flood Boundary within the Grand Canyon. They ably reviewed existing boundary proposals and criteria for placing them (Austin and Wise, 1994). Supporting those five criteria, Froede and Oard suggest “that the pre-Flood/Flood boundary should be located at or near the basement contact [Greatest Unconformity]” (p. 4; brackets added). I would like to speak of some additional evidence, both biblical and physical, for placing the boundary at the Greatest Unconformity.

An impediment to clear thinking about the boundary is found in the common assumption of the existence of Pre-Flood sedimentary rocks (PFSR). Austin and Wise (1994) strongly imply PFSR in their “sedimentary disconformity” criterion. Bib-

lical descriptions of Earth prior to the Flood make me question PFSR. DeRemer *et al.* (2007) describes the Creation event beginning with an amorphous liquid-like mass that God brought into existence at the beginning of the Creation Week. Part of it was then developed into a planetary mass ready for life. This view leaves no mechanism (i.e., erosion) to produce widespread PFSR during creation. Therefore, if rain did not fall prior to the Flood (Genesis 2:5), PFSR would not have formed in significant amounts. Why do diluvialists assume PFSR?

Instead of erosion and sedimentation, crystallization seems to be the natural organizational pattern for rocks and minerals at Creation. What if the massive quantity of sand grains later incorporated into sandstones and quartzites were not eroded from granite, but rather naturally crystallized as individual grains at or near the surface? The metamorphic basement would have been the

deeper rocks of the original crust, although some may have changed during crustal upheavals of the Flood.

Diluvialists who accept PFSR commonly cite Genesis 1:9–10, and interpret it to mean that stony continents emerged from the primordial ocean. But if the Creation events followed DeRemer *et al.*'s (2007) model, then the Bible may be describing a process of energized particles moving from an amorphous (“water”) state to an organized (“dry,” the word “land” is supplied by the translator) state. This is a process more likely to have consisted of crystallization, which is a constructive process, rather than the destructive processes of erosion and sedimentation.

The next most popular evidence for PFSR is Psalm 104:6–8. Many interpreters think vv. 2–5 refer to Creation and vv. 9–15 the Flood/post-Flood period. What about vv. 6–8? If the Creation event ends with the later part of verse five, and the assurance

that whatever devastation was to be visited on the earth, “its foundation can never be moved.” God would sustain the foundations through any judgment. However, v. 7 speaks of the waters moving off the land “at thy rebuke.” While the idea of rebuke is here intimately associated with God’s assurance that the Earth’s foundations would never be moved, it does not appear to be connected with any of the Creation Week events, for God does not indicate that any of them are to rebuke the Creation. Instead, He pronounced it good. It is not until Genesis 6:13 that we have an account of great judgment.

Looking at the physical evidence in the Grand Canyon, what are the characteristics of the Unkar Group, the lowest part of the Grand Canyon Supergroup, that might support Froede and Oard’s designation of it as the basal Flood deposit?

Briefly, the lowest part of the Bass Limestone in much of Grand Canyon National Park is the Hotauta Conglomerate. That unit is a thin (1–2 m), easily recognized layer composed of pebble- to near-meter-sized clasts suspended in the carbonate matrix of the lowermost Bass Limestone. The conglomerate can be observed along the North Kaibab and many other areas of the eastern Grand Canyon. The clasts include “chert, granite, quartz, plagioclase crystals, and micropegmatites in a quartz sandstone” (Hendricks and Stevenson, 2003, p. 44). Atop the Bass Limestone, deposition appears to be continuous upwards through the Hakatai Shale, Shinumo Quartzite, and Dox Sandstone, broken only by tectonic deformation at the Hakatai/Shinumo contact and again near the top of the Shinumo Formation (Hendricks and Stevenson, 2003, pp. 45–46). At the top of the Unkar Group, the Cardenas Lava intertongues with the Dox Sandstone and the “lower most Cardenas lava suggest[s] the outpouring of the basalt onto wet, probably shallow water Dox sediments” (p. 51, brackets added). The Cardenas lava extrusion was followed by considerable tectonism (p. 49).

A relatively high energy contact at the Greatest Unconformity, the Hotauta Conglomerate, is followed by continuous deposition interrupted regularly by tectonic activity and terminated by subaqueous basalt flows. These suggest not the quiescent environment of an inhabited environment that God had labeled “good” at the end of the Creation Week, but the early signs of a rebuke by God as He begins the judgment of His creation through the Flood. In addition, any effort to place the Pre-Flood/Flood

boundary above the lowest Unkar Group would be frustrated by the lack of a discontinuity at any of the upper locations that would extend even as far as Death Valley, CA. There the equivalent of the Tapeats Sandstone (lowest Cambrian strata in the Grand Canyon) rests conformably on the Pahrump Group, the lower part of which correlates with the Unkar Group and the closely correlated and geographically associated Apache Group of Central Arizona (Ford and Dehler, 2003).

Finally, if sedimentary rocks are a product of the Flood, might not the Flood’s destruction extend even deeper? The Vishnu Schist, a deeply metamorphosed rock which I have suggested may be part of Earth’s original crystalline mass, is generally considered to have crystallized at a pressure consistent with a depth of 10–20 miles, based on the presence of certain crystals. But reported variations in the temperature of final crystallization are curious. In some areas, within 5–10 km of intrusive granites, the crystals show a temperature gradient of >200° C that cross over areas of crust that were presumed to have been stitched together (Karlstrom et al., 2003). This suggests that the intrusion of the Zoroaster Granite was a later event and secondary to the formation of the Vishnu Schist itself. The intrusion of the Zoroaster Granite may have been late enough to qualify as the very first event of the onset of the Flood. This possibility still requires much more study, but if it were true, this would push the Pre-Flood/Flood boundary close to the mantle (c.f., Hunter, 1992).

— W.R. Barnhart

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## The pre-Flood/Flood Boundary in the Grand Canyon: A reply to Barnhart

Working from multiple hypotheses allows creation scientists to formulate many different ideas in defining the pre-Flood/Flood boundary at the Grand Canyon. Traditional stratigraphic analysis has focused on the paleontological content of the various strata (e.g., Austin, 1994; Hoesch, 2007). However, this approach has largely been abandoned and emphasis has shifted to five discontinuity criteria (Austin and Wise, 1994; Wise and Snelling, 2005). Our own analysis of the sedimentary/metasedimentary strata in the Grand Canyon identified the pre-Flood/Flood boundary deep in the canyon at the Greatest Unconformity (Froede and Oard, 2007).

Hunter (2008) proposed that the pre-Flood/Flood boundary should be located at the 660 km discontinuity in the mantle. Barnhart (2008) has raised a similar proposal. We have serious concerns with defining the boundary down in the mantle (see Froede and Oard, 2008). While we acknowledge that there is no official definition of the pre-Flood/Flood boundary, we do not believe that it should be defined in the mantle or possibly even lower at the core/mantle boundary. This would then be an arbitrary boundary defined by a change in seismic velocity. This boundary would not serve any purpose in defining any/all overlying geological materials, be they igneous, metamorphic, or sedimentary. Perhaps diluvial seismologists, like Hunter, can define specific seismic parameters for the pre-Flood/Flood contact deep within the Earth, but this boundary is irrelevant for the sedimentary rock record found across Earth’s continental crust.

Barnhart (2008) suggests that focusing on pre-Flood sedimentary strata in defining the pre-Flood/Flood boundary in the Grand

Canyon is “an impediment to clear thinking.” We find this perspective difficult to understand. The geochemical changes necessary to deposit clastic and then carbonate sediments consistent with the stratigraphic sequence observed in the Grand Canyon seems geochemically complex compared to simply drawing from preexisting sediments. While the Bible does not supply enough information about what soils/sediments might have been created either *ex nihilo* or through erosion (Day Three), it is no violation of Scripture to suppose that many of the sedimentary environments that we observe today also existed (fully formed) before the Flood.

Barnhart (2008) identifies the Hotauta Conglomerate at the contact with the Greatest Unconformity. This sedimentary unit was likely derived from exposed basement rocks, and only serves to reinforce our belief that the Greatest Unconformity is the proper

place to draw a pre-Flood/Flood boundary in the Grand Canyon stratigraphic section. We stated in our article that we believe the Flood eroded away the preexisting sedimentary overburden, thus exposing basement rocks to erosive Floodwater. The nature and composition of the Hotauta Conglomerate supports this idea. However, we do not claim to have the only explanation in defining a possible pre-Flood/Flood boundary within the Grand Canyon stratigraphic section, and further work is encouraged.

— Carl R. Froede, Jr.  
Michael J. Oard

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## Commentary

# Radiocarbon in Mid-Atlantic Hydrothermal Vent Fluids

by John R. Doughty, Ph.D.

**R**ecently Proskurowski *et al.* (2008) authored an excellent paper in which they reported finding radiocarbon ( $^{14}\text{C}$ ) in Mid Atlantic Ridge hydrothermal vent fluids. The fluids had methane ( $\text{CH}_4$ ) contents ranging from 1.07 to 1.84 mmol/kg. Other smaller amounts of  $\text{C}_2$  to  $\text{C}_4$  alkanes were also present. The theme of the paper was that the hydrocarbons were produced by abiogenic, Fischer-Tropsch type (FTT) reactions.

They reported results for eight sites, five of which had measurable radiocarbon. For one site (site 7), two results were reported, making a total of six sample results. The authors stated that the Accelerator Mass Spectrometer (AMS) measurements of these aqueous  $\text{CH}_4$  samples consistently yielded  $^{14}\text{C}$  contents which were near the detectable limit of the AMS device. Of the six data points, only one had a reasonable error bound, a problem due to small sample sizes.

Their radiocarbon data are reproduced in the accompanying table. The radiocarbon values are given as percent of modern carbon (pMC). AMS radiocarbon labs usually subtract a small amount, commonly called the laboratory standard, from the measured amount and report the resultant pMC value.

Sample No.	Site	$^{14}\text{C}/\text{C}$ ( $\text{CH}_4$ ), pMC	Error bound
3879-GT10	H	0.27	0.23
3864-GT10	IF	0.34	0.11
3871-GT7	8	0.56	0.62
3866-GT14	7	0.30	0.50
3866-GT11	7	0.62	0.54
3871-GT9	C	0.17	0.40

However, in the work reported, no laboratory correction factor (other than the usual stable isotope,  $\delta^{13}\text{C}$ , correction factor) was applied to the  $^{14}\text{C}/\text{C}$  values.

Because of the wide error bounds, the authors were skeptical of their results and chose to refer to them as “near radiocarbon dead.” The authors were also likely expecting zero radiocarbon values because their FTT hypothesis called for the carbon source having originated in the underlying ancient ultramafic rocks, as opposed to the more recent porous carbonate hydrothermal vents.

For the reader unfamiliar with radiocarbon dating, the range of values shown in the table (0.17 to 0.62 pMC) is equivalent to a corresponding conventional age range of 51,200 to 40,800 years; i.e.; the lower

the pMC value, the older the carbon containing material.

What is interesting is that the reported radiocarbon results are indicative of a young earth. They are within the same range of radiocarbon values for flood-deposited, carbon-containing materials as are those compiled by Giem (2001), and shown later along with coal and diamond data reported by Baumgardner *et al.* (2005). Thus, the values shown above are not anomalous, but are in fact expected when they are approached from a young-earth creationist viewpoint.

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# Speaking of Science

Commentaries on recent news from science

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

## Peacocks Don't Dress for Success

The male peacock's fancy feather show: An icon of Darwin's theory of sexual selection, right? Then why did Japanese scientists tell *Discovery News*<sup>1</sup> that the females pay them little attention?

The article claims that the male's appearance fails to interest, much less excite, the females, who seem to pay more attention to his singing. "The determination throws a wrench in the long-held belief that male peacock feathers evolved in response to female mate choice," the article says. "It could also indicate that certain other elaborate features in galliformes, a group that includes turkeys, chickens, grouse, quails and pheasants, as well as peacocks, are not necessarily linked to fitness and mating success."

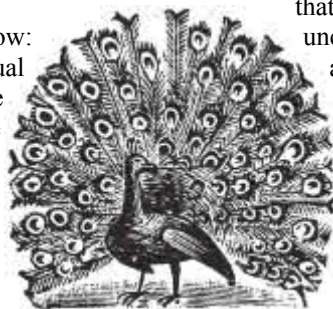
What's more, the scientists, who observed peacock mating displays for six years, could not find a correlation between the attractive males and their fitness. Females were seen to run around males they preferred and get them to shiver their feathers. These were not the ones with the most elaborate displays. They speculated that maybe the fancy feathers are obsolete mating signals, and that vocalizations are now more important.

They realize this is controversial and more testing will need to be done. A UK scientist added that the feathering display, which is a function of hormone levels, is a poor indicator of fitness, both at the gene level and in the mature bird.

How, then, can a scientist say female dinosaurs were attracted to a male's frill? A Reuters report at *MSNBC News*<sup>2</sup> quoted Terry Gates at the University of Utah Museum saying this: "That whole section of the head was for sexual display, it was all ornamentation. The females liked it." The article proclaimed the line: "Ladies lured by dinosaur's giant horns." But if we cannot be sure living birds are attracted to one of the most elaborate and beautiful examples of sexual dimorphism, how could anyone understand what an extinct dinosaur found attractive?

It's impossible to get into the mind of a peahen or dinosaur and see what is affecting her choice of mate. Still, this is a big blow to a major speculation that made Darwin famous. He has had orders of magnitude more fame than the usual fifteen minutes, and most of his ideas have been defrocked like a plucked turkey. Can we move on?

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2. Quiros, E. 2008. Ladies lured by dinosaur's giant horns. *MSNBC News* (Reuters, 24 March). [www.msnbc.msn.com/id/23784154/](http://www.msnbc.msn.com/id/23784154/)



## Tuatara Genes Are Running in Place

One would expect a living fossil to show extreme stasis at the genetic level. Not so for the tuatara, a New Zealand reptile, reported *EurekAlert*<sup>1</sup>: researchers found that "although tuatara have remained largely physically unchanged over very long periods of evolution, they are evolving — at a DNA level — faster than any other animal yet examined."

The tuatara is said to be the lone survivor of a class of beak-headed reptiles that co-existed with the dinosaurs 200 million years ago (see *LiveScience* for picture<sup>2</sup>). The rate of molecular evolution of this lizard-like animal, the researchers said, is much faster than that of cave bears, lions, oxen, and horses, which supposedly evolved from primitive mammals in far less time.

Based on this study, the authors are claiming that molecular evolution and morphological evolution have nothing to do with each other: "Many scientists have thought that molecular evolution would be fastest in animals whose physical form, or morphology, also evolved swiftly," the article says. "The tuatara finding suggests otherwise, that there is no relationship between the two rates." But if evolution does not cause fitness changes at the genetic level that translate into body changes, from where did elephants and giraffes come?

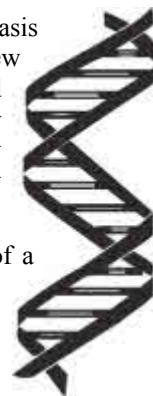
See also the discussion of this paper by David Tyler on *Access Research Network*.<sup>3</sup>

Molecular change is not evolution in the sense of creating new organs and functions. That is clear from the fact that the tuatara is unchanged from its fossil counterparts. The tuatara was already a complete embarrassment for the Darwinists — as are all living fossils. This counter-intuitive result should make them consider the possibility that something is completely wrong with their assumptions. The first one that should go on the chopping block is the assumption of millions of years.

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## Neanderthals: Random Drift, Not Natural Selection

The differences between Neanderthals and modern humans were not due to evolution for bigger brains or anything of the sort. They were due to genetic drift, says an article on *LiveScience*. The article states up front,



A team of anthropologists has compared measurements of Neanderthal skulls to modern human skulls, and argues that most variations among them are the result of random changes that occur over time, and not of adaptations driven by natural selection.

Don't chalk up the differences in modern humans to bigger brains, better eyesight, better noses, or better ability to survive and reproduce. That's the assertion of Tim Weaver and a team from University of California, Davis. The article says, "**This finding may contradict a common belief** that humans won out over Neanderthals because they acquired helpful physical changes in their skulls."

Erik Trinkaus, anthropologist at Washington University in St. Louis, agrees.

"When we look at the archaeology, there's **essentially no difference in their implied social sophistication**," he said. "They use the same kinds of **tools**, they're all **burying their dead**, they're all using body **decorations** of some form or another. They were equally **effective at hunting** animals. In anything that we can measure, **there's very little difference** between Neanderthal and modern humans 50,000 to 100,000 years ago."

Trinkaus said the reason modern humans flourished and Neanderthals didn't may have just been **luck**.

Trinkaus explained that it's like football. One team wins one year, another team the next. "Why, in more recent time periods, do you have some groups of humans with certain cultural advances who displace others? It's **happened many times**. There's **nothing biologically superior about one group versus the other**."

If modern humans and Neanderthals diverged from a common ancestor 370,000 years ago, as the article claims, this would have to mean that two independent lines of humans converged on the same intelligence, culture and physical capabilities without natural selection — only by random genetic changes.

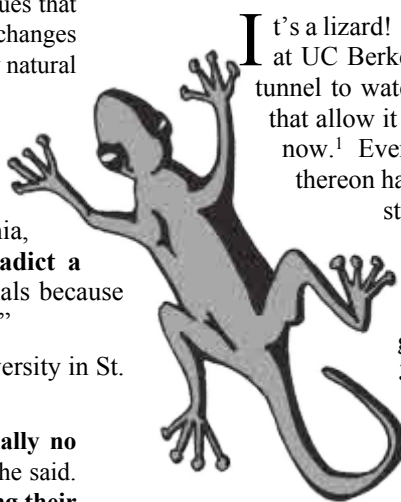
We need to keep repeating that the Neanderthal myth is dead. Neanderthals were *Homo sapiens*, wise, intelligent, capable hunters who made art, buried their dead, survived, and flourished. Their traits overlap with those of other humans. There is no reason to believe they were not fully human, capable of interbreeding with other *Homo sapiens* and talking and communicating with them. They were members of the ONE human race.

The article dubs this a "counterintuitive hypothesis." It's not counterintuitive at all, making perfect sense. Neanderthals and modern humans were brethren; they were both descendants of the original *created* human beings.

The new evolutionary myth, that Neanderthals and "modern humans" (note the embedded evolutionary assumption) diverged from some mythical common ancestor 370,000 years ago, but never learned how to ride a horse in all that time, is no better than the old one. Evolutionary myths are tales told about bones that have been sacrificed in homage to darwinism. There's no meat on them.

1. Moskowitz, C. 2008. Culture, not Skulls, gave humans edge over Neanderthals *LiveScience* (17 March). [www.livescience.com/history/080317-neanderthal-skulls.html](http://www.livescience.com/history/080317-neanderthal-skulls.html)

## The Gecko in the Flight Simulator



It's a lizard! It's a plane! It's Supergecko! Researchers at UC Berkeley (where else) put a gecko into a wind tunnel to watch it fly. News about gecko's magic feet that allow it to run vertically up glass is almost old hat now.<sup>1</sup> Even a gecko can lose its footing, though, and thereon hangs a tail. Publishing in *PNAS*,<sup>2</sup> (the cover story of the March 18 issue), the team had some superlatives to share about these critters that skitter:

In a **single second** of vertical running, geckos travel **15 body lengths** and take **30 steps**. During **rapid climbing**, their toes **attach in 5 ms** [milliseconds, or thousandths of a second] and **detach in only 15 ms**.... During our initial explorations of climbing on realistic

surfaces and upsidedown locomotion, we noticed that a **gecko's agility involved far more than just secure footholds**. Here, we pursue our observations by testing the hypothesis that the **gecko's tail enhances its scansorial and arboreal performance**.

The speed translates into 3 feet per second. Taking advantage of atomic van der Waals forces, they attach and detach their feet 30 times per second while running straight up. Amazing as the feat are, the tail is the key to this tale.

The active tails of the gecko function as stabilizers and gliders. When the gecko finds itself in a rapid free-fall, unlike Wiley E. Coyote, it can flip right over. The tail twists and puts him right-side-up in mere milliseconds. Then, the tail provides pitch control as the gecko assumes Superman position, allowing him to land on all fours almost every time. Unlike cats, which can right themselves during a drop by twisting the spine, geckos keep their spine rigid. They flip upright by doing the twist with their active tails.

Why the flight simulator? The wind tunnel experiments showed that the broad area of the tail helps slow and control the descent, like a glider. During the glide, they control pitch and yaw and can actually steer themselves a bit toward safety.

In addition, the tail acts as a stabilizer when climbing on a vertical surface. The tail adds pressure and balance if the gecko finds itself leaning backward — even as much as 60 degrees. If a foot falters on a slippery patch, the gecko shifts its tail to the side like a bicycle kickstand. The tail, then, serves both as a fifth leg and a glider. The authors did not say whether a gecko can grab a branch with its tail on the way down.

Several news reports (see, for example, *ScienceDaily*<sup>3</sup>) summarized the paper with a picture of a gecko in free-fall. (The researchers, incidentally, abode by all the rules of the U.S. Animal Welfare Act.) After watching these tricks, the light bulb went on: "The discovery is already helping engineers design better climbing robots and may aid in the design of unmanned gliding vehicles or spacecraft," the press release said. "Perhaps, the researchers say, an 'active' tail could help astronauts maneuver in space."

The article did not mention evolution. The paper was listed under the category Evolution, but has design written all over it.

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## Animal Feats Inspire Imitation

Imagine carrying 850 times your own weight. Step aside, Hercules, and meet the Hercules beetle: the strongest creature in the world. *ScienceDaily*<sup>1</sup> said that researchers in Belgium are not just impressed with its show of strength. They are finding inspiration for “intelligent materials.”

The Hercules beetle has a shell that is able to change colors when the humidity changes. The normally green shell turns black as water enters microscopic pores that interfere with light. Scientists are not sure why the beetle has this feature, but they want to imitate it. “The sort of structural behaviour displayed by the Hercules Beetle could be an important property for ‘intelligent materials,’” one researcher said. These materials could work as passive humidity detectors without the need for electronics – useful, for instance, in food processing plants to monitor moisture conditions.

Switch your attention from feats to feet. In a story on *ScienceDaily* last month, MIT wizards have learned from mighty lizards.<sup>2</sup> They have produced a dissolving bandage, inspired by gecko feet. “Drawing on some of the principles that make gecko paws unique, the surface of the bandage has the same kind of nanoscale hills and valleys that allow the lizards to cling to walls and ceilings” the article explains. “Layered over this landscape is a thin coating of glue that helps the bandage stick in wet environments, such as to heart, bladder or lung tissue.”

Finding materials that can stick in a wet environment would be very useful for surgeons working on blood vessels, heart tissue, ulcers, and intestines. The MIT inventors took inspiration from tissues of other creatures besides the gecko. They invented a kind of bio-rubber that is flexible, adhesive to wet surfaces, and biocompatible (non-inflammatory). Because the bandage is also biodegradable, the doctor can put it on, and let it dissolve away when its work is done.

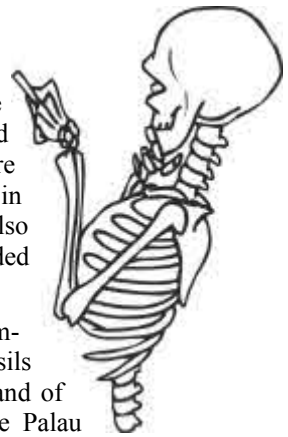
The bandage's work is done, of course, because of a highly sophisticated repair mechanism in the body that can re-grow damaged tissue if the rupture is sealed for a period of time.

This is the way science should be done. No metaphysical incursions, no ethical excursions — not even storytelling diversions or anticreationist aspersions. Just look at nature to understand it, with the goal of helping mankind.

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## Were Hobbits Pygmies?

More miniature human skeletons have been discovered in Micronesia. Found at Palau and reported in *PLoS One*,<sup>1</sup> these are unquestionably modern human, but small in stature — less than four feet tall. They are also recent. Radiocarbon dates on the bones yielded dates between 1400 and 3000 years old.



The discovery is casting doubt on the primitive designation for the famous “hobbit” fossils (dubbed *Homo floresiensis* found on the island of Flores in 2004 that caused a big stir. The Palau skeletons have human proportions and share features with the Flores skeletons, but have larger brains. The discoverers, who call the specimens *Homo sapiens*, think the individuals were products of dwarfism — a population that becomes diminished in size, as occurs with some species on islands with restricted resources, and sometimes (as with pygmies in Africa) on mainland continents.

*NatureNews*<sup>2</sup> was not ready to relate these specimens to the so-called Hobbits. They could be skeletons of normal human children buried together, their report said. The authors considered that hypothesis, but gave anatomical reasons for rejecting it. The work is still preliminary and will require additional samples. “Under any circumstances,” they drew as a conclusion, “the Palauan sample supports at least the possibility that the Flores hominins are simply an island adapted population of *H. sapiens*, perhaps with some individuals expressing congenital abnormalities.”

The plot thickens in middle earth. Were these children of Gondor? More hobbitses evolving into Gollum-like creatures? The bones are real but the stories about them often become imaginative. Tolkien developed fiction out of real-world experiences in his life. Some scientists do the same.

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## Why Blood Clots Are Stretchy

A team of biophysicists at University of Illinois ran a computation for six months to find out why blood clots are stretchy. The primary protein in the clot, fibrinogen, can stretch two to three times its resting size. By studying the force on every atom in the protein, *ScienceDaily*<sup>1</sup> said, they produced a force curve that matches the force measured on actual fibrinogen.

Understanding clotting is important, because “Blood clots can save lives, staunching blood loss after injury, but they can also kill,” the article began. “Let loose in the bloodstream, a clot can cause a heart attack, stroke or pulmonary embolism.” It is important for clots to be elastic because “they have a mechanical function to withstand blood pressure.”

Tots learn from their mummies that their scratches will heal,

so they don't need to worry about being scarred for life. We grew up accepting that as a given. Imagine, though, having every scratch or cut from our youth a permanent disfigurement or point of blood leakage. We would be covered head to toe in bandages as adults. The life of hemophiliacs illustrates the point: when the blood clotting process breaks down, even a small cut is life-threatening.

Imagine, furthermore, that clots were as hard as bone. You would have to sit quietly for weeks till the wound was entirely healed, or else risk having changes in blood pressure rip it away from the surrounding tissue. Instead, fibrinogen is constructed with coiled coils of amino acids to give it both strength and flexibility. The network of fibers and proteins that form at a wound site involves multiple rounds of signaling, aggregating ingredients in the right order, and applying patches that won't break off and cause a heart attack or stroke.

Michael Behe argued in his classic book *Darwin's Black Box* that the blood clotting cascade is irreducibly complex. His argument didn't take much convincing. All he had to do was show a flowchart of the 25 or so components that interoperate with feedback and feed-forward procedures to ensure that the flow of blood is stopped quickly and safely. If any one of these ingredients is missing, the system breaks. Any question why this article here did not mention evolution?

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## Migrating Birds Measure Longitude

Migrating birds are able to get back on course, even when released 1000 km east of their normal migration path. This shows that long-distance migrating birds are capable of true bicoordinate navigation: the ability to make course corrections both in latitude and longitude. The results of experiments, published in *Current Biology*,<sup>1</sup> left the researchers baffled: how do they do it?

Measuring latitude is easy: just judge the height of the sun in the sky. Longitude (east-west orientation), however, is much more challenging because it requires accurate timekeeping. [The difficulties sailors throughout history had in determining longitude has been described in Dava Sobel's historical novel *Longitude*.<sup>2</sup>] Somehow, a team of Russian and German scientists found, birds know the trick. A flock of migrating Eurasian reed warblers was flown 1000 km to the east of their usual take-off point. They found their way to their normal nesting ground by shifting their bearing northwest instead of the usual northeast. "**This finding is surprising and presents a new intellectual challenge to bird migration researchers, namely, which cues enable birds to determine their east-west position,**" they said.

However it is accomplished, the skill must be learned, because a previous study by Princeton scientists showed that juvenile birds did not correct for longitude when flown off course.<sup>3</sup> Still, it is unclear how the birds in this new study pulled it off. Do they read the stars? Do they gauge the earth's magnetic field? Did they measure their jet lag? "To show **what cues the birds use to determine their east-west location,**" they said, "will be a **big challenge for researchers in this field in the years to come.**"

Many wonderful and intriguing science projects remain to be

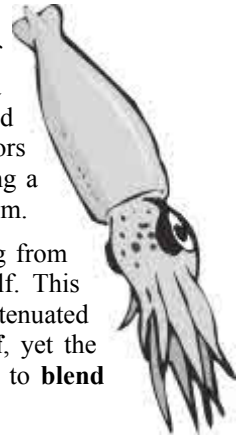
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## Squid Beak: "A Truly Fascinating Design"

A new class of flexible yet tough materials may be in our future, thanks to a study of squid beaks. Scientists at University of Santa Barbara, reported *National Geographic News*<sup>1</sup> and *ScienceDaily*,<sup>2</sup> were curious how the squid anchors its tough, hard beak in soft tissue. Try anchoring a knife in Jell-o and you get a picture of the problem.

The squid's secret is a progressive stiffening from the soft tissue where it is anchored to the beak itself. This allows the force from the beak to be gradually attenuated down the structure. "**The tip is extremely stiff, yet the base is 100 times more compliant, allowing it to blend with surrounding tissue,**" the article states.



If engineers could imitate this graduated stiffness technique, "This could really **revolutionize the way engineers think about attaching materials together.**" Ali Miserez, the lead author, noted another benefit. "**Biological materials are 'made' by animals at the temperature of oceans and using naturally occurring chemicals,**" he said. "If we can **fully understand the chemistry and copy it,** then that could **lead to a generation of synthetic materials that are less harsh to the environment and made at a lower energetic cost.**"

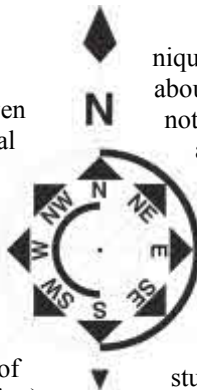
Frank Zok, a materials scientist at UCSB and co-author of the study, was fascinated with the squid solution to an engineering problem.

You can imagine the problems you'd encounter if you attached a knife blade to a block of Jell-o and tried to use that blade for cutting. The blade would cut through the Jell-o at least as much as the targeted object. In the case of the squid beak, **nature takes care of the problem** by changing the beak composition progressively, rather than abruptly, so that its tip can pierce prey without harming the squid in the process. **It's a truly fascinating design!**<sup>2</sup>

The original paper in *Science* also used the word "design."<sup>3</sup> The abstract stated:

These findings may serve as a foundation for **identifying design principles** for attaching mechanically mismatched materials in engineering and biological applications. ... We found that the squid's task is **facilitated by a beak design** that incorporates large gradients in mechanical properties, **intricately linked** with local macromolecular composition, from the hard, stiff tip to the soft, compliant base.

In a commentary on the paper in the same issue,<sup>4</sup> Phillip Messersmith, a biomedical engineer at Northwestern University, compared human engineering to animal design:



**Current synthetic biomimetic materials** remain **primitive** in **comparison** to their **natural counterparts**. Our ability to incorporate elements of **biological inspiration** into the **design** of **synthetic materials** will be further enhanced through **studies** such as that by Miserez *et al.* that **advance our understanding** of the composition, structure, and processing of **complex biological tissues**.

Thank you, reporters and scientists, for sparing us any evolution talk in these reports. An ability to tell fables is not a requirement for understanding — or for science-advancing inspiration.

1. Minard, A. 2008. Squid beaks use chemical trick to keep from tearing off. *National Geographic News* (27 March). <http://news.nationalgeographic.com/news/2008/03/080327-squid-beaks.html>

2. Anonymous. 2008. Squid beak is both hard and soft, a material that engineers want to copy. *ScienceDaily* (31 March). [www.sciencedaily.com/releases/2008/03/080327172330.htm](http://www.sciencedaily.com/releases/2008/03/080327172330.htm)
3. Miserez, A., T. Schneberk, C. Sun, F.W. Zok, and J.H. Waite. 2008. The transition from stiff to compliant materials in squid beaks. *Science* 319(5871):1816–1819.
4. Messersmith, P.B. 2008. Multitasking in tissues and materials. *Science* 319(5871):1767–1768.



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## All by Design

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

## SINK OR SWIM

Northern Borneo is home to *Nepenthes rafflesiana*, a pitcher plant that testifies to an intelligent Creator. This carnivorous plant lives in nutrient-poor soil, attracting insects to nectar along its pitcher rim, and then digesting any insects that fall into the amazing digestive fluid inside its pitcher.

While flies and ants can easily escape from water, if they begin to struggle they cannot escape from this fluid. The fluid is shear-thinning; i.e., the more an insect struggles and “shears” through the fluid, the more the viscosity decreases, making it hard to stay afloat. This complex fluid also has high extensional viscosity. This means that as an insect moves, the fluid actually stretches, forming sticky filaments that hold it in the fluid and prevent escape. In fact, at the typical rate of insect motion during struggling, the extensional viscosity is about 10,000 times greater than its shear viscosity. Insects typically panic if they fall into this fluid and exhibit quick movements, making



*N. rafflesiana* ‘red squat’  
Photo courtesy of pitcher-plants.com

escape impossible. Their only chance of survival would be to move slowly. Furthermore, the digestive fluid of this plant retains high extensional viscosity even when rain water dilutes the fluid by up to 95%, which is important in its high-rainfall environment.

Evolutionary biology teaches that such specialized properties of living things arose by random chance over vast periods of time. However, the specialized features of such living things must function perfectly from day one for the species to survive, making accidental and piecemeal development impossible.

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