Creation Matters

Volume 19 Number 5
September / October 2014

A publication of the Creation Research Society
50th Anniversary (1963 – 2013)

Carbon 14 Is Now the Creationist's Friend

by D. Russell Humphreys, Ph.D.

"Carbon dating—that shows the Earth is *billions* of years old!"

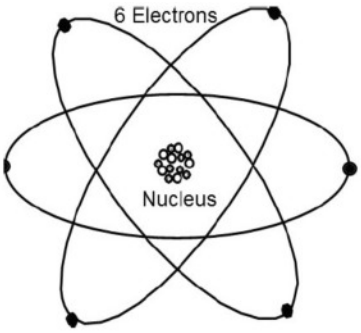
"Carbon dating—that shows the Earth is *billions* of years old!" droned anti-creationist Barry Lynn, listing his evidence for evolutionism in a nationally televised debate years ago.[1] When I heard that, I had to laugh. Carbon 14 dating cannot show that anything is even one million years old, much less "billions" of years. The short half-life of C-14 (5730 years) means that after 350,000 years, there would not be one single carbon 14 atom left in any fossil.

But now we have even more reason to laugh. Professional carbon-14 dating laboratories are reporting significant amounts of C-14 from even the deepest geologic strata.[2] Because all strata below the Pleistocene (Ice Age) are supposed to be millions of years old, the labs should have found no carbon 14 in them at all. The fact is that, even after much searching, they have not found any natural source of carbon that clearly does *not* contain carbon 14!

Even using uniformitarian[3] assumptions, these new data imply that *all* geologic strata are less than 75,000 years old. As I will explain , taking the effect of the Genesis Flood into account shrinks the ages down to 4000 to 5000 years. Now we can turn Barry Lynn's gaffe around and claim, "Carbon dating shows the Earth is only *thousands* of years old!" Here are the details.

How C-14 dating works

The story starts in the Earth's upper atmosphere. Fast cosmic-ray protons penetrate the Earth's magnetic field (which is a partial shield) and slam into atoms of the upper air. That starts a process which turns some nitrogen 14 atoms in the air into carbon 14. C-14, or "radiocarbon," is radioactive, but it is only a tiny fraction of all carbon. The rest is carbon 12 (99%) or carbon 13 (1%),



	Carbon 12	Carbon 13	Carbon 14
Protons	6	6	6
Neutrons	6	7	8
%Today	98.90	1.10	1.18×10^{-10}

FIGURE 1. Three kinds of carbon atoms.

which are not radioactive (Figure 1). Non-radioactive carbon atoms, the majority of carbon, are major constituents of living and dead creatures, both animals and plants. Some nearly pure forms of carbon are charcoal, graphite (as in pencil "leads"), and diamond.

A newborn C-14 atom quickly joins with two oxygen atoms and becomes a carbon dioxide molecule, CO_2. Then plants absorb this contaminated CO_2 and convert it into food, thus passing on the C-14 to animals which consume the plants. Eventually, everything in the *biosphere* (the sphere of living things) becomes contaminated with carbon 14. The air you breathe, the soil beneath you, the food you eat, even your own body—carbon 14 contaminates them all. Today about *one out of every trillion* carbon atoms is radioactive.

Those facts are the basis of the C-14 dating method. Let's take a tree, for example. Today's one-per-trillion ratio of C-14 atoms in the tree will stay the same as long as it lives, because the contaminated CO_2 it takes in continually replenishes C-14 that has decayed. But when it dies, the number of C-14 atoms in it will start to diminish (by decaying; i.e., turning into nitrogen-14 atoms), because they are no longer being replaced. A thousand years from now, a scientist finds the tree trunk and measures the ratio of C-14 to ordinary carbon in it. He finds that the ratio is less than one out of a trillion. *If* he knows the ratio at the time the tree was alive, he can then estimate, from the decrease in the ratio, when it died.

The Genesis Flood affected C-14 dates

The initial ratio turns out to be the "zinger" for carbon 14 dating. When a sample is thought to be too old for the C-14 method to be calibrated (say by historical data), uniformitarians simply assume that the creature started with today's one-per-trillion ratio. But according to the logical consequences of Genesis chapters 6 through 8, their assumption is drastically wrong. That is because the worldwide flood recorded there buried most of the biosphere (animals, plants, soil) deep underground, where it became fossil carbon (coal, oil, natural gas). The amount of buried fossil carbon is roughly 200 times more than the carbon in today's biosphere, according to one estimate.[4]

That means the pre-Flood biosphere was much richer in carbon than today's. The amount of CO_2 in the atmosphere was more than ten times greater than today, according to geological data.[5] The resulting "greenhouse" effect would have warmed up the Earth, particularly at high latitudes. The warmer oceans would make the climate

... *continued on p.2*

corrected version -- see errata Volume 19 No. 6

Our Friend

...continued from page 1

much wetter than is the case today. Plants—liking CO_2, water, warmth, and God's specially designed[6] soil—would grow faster, more abundantly, and have much more land area on which to grow. So the world of Noah before the Flood was lush and verdant, as the fossils attest.

The greater amount of total carbon in the pre-Flood biosphere did not mean a greater amount of carbon 14. If God did not make much C-14 during Creation, the 1656 years from then to the Flood[7] would, at today's C-14 production rate, have only allowed about 20% of today's amount of carbon 14 to come into existence. But the pre-Flood Earth had a stronger magnetic field,[8] more effectively shielding its atmosphere from cosmic rays. That would make the production rate of C-14 lower than today. Thus, the total amount of C-14 was probably less than the amount in today's biosphere. Most of the greater amount of carbon must have been non-radioactive carbon, mostly carbon 12.

With less C-14 and 200 times more C-12 than today, the pre-Flood C-14/C ratio would have been less than 0.5 percent of today's ratio. After the Flood, various factors (more intense cosmic rays than today, rapid re-growth of plants) would cause the ratio to rise rapidly toward today's ratio during the first millennium after the Flood, the Ice Age. Peculiarities in C-14 dates for ice-age fossils confirm this rapid rise.[9]

Uniformitarians, not acknowledging this drastic difference in C-14/C ratio, would assume too large an initial amount of C-14 in fossils. That, in turn, would make them overestimate the ages. The error gets bigger and bigger as we go back toward the time of the Flood (about 4350 years ago[10]), causing, for example, the "40,000 years" assigned to Australian aborigine artifacts. But correcting for the change in C-14/C ratio collapses such dates down to roughly 4000 years before the present. Objects formed after the ratio approached today's value, say about 3000 years ago, would give uniformitarians nearly the correct dates.[11]

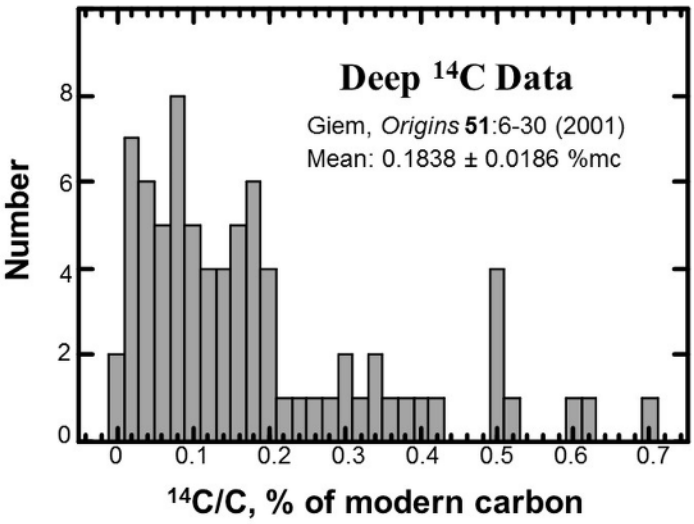


FIGURE 2. Carbon 14 in deep strata.

Deep carbon 14

Ever since Willard F. Libby invented C-14 dating a half-century ago, investigators have been reporting carbon 14 in fossils from deep geologic strata, such as coal, oil, and dinosaur bones. But because their methods were crude (counting C-14 decays), they attributed their results to either (1) contamination from modern carbon, or (2) background radiation.[12, 13] For several decades the literature accumulated many such entries, apparently bothering nobody but a few creationists.[14]

However, in the early 1980's, professionals at carbon 14-dating laboratories began to be troubled. At that time a new method, *accelerator mass spectrometry* (AMS), came into use. The method counts actual numbers of C-12, C-13, and C-14 atoms, very accurately. The researchers wanted to find a source of carbon containing zero C-14, so they could calibrate the "zero" of their equipment. "No problem," they thought, "any fossil older than a million years

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Creation Matters
ISSN 1094-6632
Volume 19, Number 5
September / October 2014

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should do just fine." But no matter how deep in the geologic strata they went, they could not find carbon that did not contain carbon 14!

This problem prompted a decades-long effort to eliminate all possible machine background or contamination, and to find radiocarbon-free carbon. Paul Giem, a creationist M.D., reviewed 51 technical articles addressing the problem, from 1980 to 1999.[15] Nine of them are by creationists, but the other 42 are in secular scientific publications, such as *Radiocarbon*, *Science*, *Nuclear Geophysics*, and *Nature*. These publications listed 77 occurrences of significant amounts of C-14 from strata (even pre-Cambrian) deep enough to be thought radiocarbon-free. The data ranged from 0.01 to 0.71 percent of the roughly one-per-trillion ratio in modern carbon (%mc, % of modern carbon), as Fig. 2 shows.[16] The average is 0.184 %mc, which uniformitarians would interpret as an age of about 52,000 years.

As Giem points out, all authors agree that machine background cannot explain these data. Giem also examines other hypotheses, such as (1) nuclear synthesis of C-14 *in situ*, (2) contamination *in situ*, and (3) contamination during sample processing. He finds all of them inadequate, as apparently do most C-14 professionals.

Contamination is particularly unlikely with the new method because of the carbon *thirteen* measurements. Different organisms process carbon differently so they absorb different amounts of C-13 relative to C-12. For example, the C-13/C ratio of wood is about 2.5% less than the standard, whereas that of fungi is quite different. If enough recent fungi to disturb the C-14/C ratio significantly had invaded fossil wood, it would show up as a disturbance in the C-13/C ratio. It hasn't. Thus contamination is becoming a forlorn hope for uniformitarians.

If you have not renewed your CRS membership, this will be your final issue of Creation Matters

RATE gets involved

In 1997, Andrew Snelling, a creationist geologist on the Radioisotopes and the Age of the Earth (RATE) project,[17] began collecting samples of fossil wood, sending them to professional radiocarbon labs, and publishing the data.[18, 19] The results showed quite significant amounts of C-14, even for strata allegedly as old as 220 million years.[20] He thoroughly documented a direct conflict (of a young C-14 date with an 'old' potassium-argon dating of the surrounding rock) in a creationist technical journal.[21] Dr. Snelling's success in this initiative encouraged the rest of us on the RATE project to pursue carbon 14 further.

John Baumgardner, a creationist geophysicist on the RATE committee, has been gathering well-documented samples and sending them to various radiocarbon labs for analysis. The results were very encouraging, including our discovery of C-14 in the (uncontaminatable) interior of diamonds. Dr. Baumgardner, Dr. Snelling and I submitted a technical paper to the 5th International Conference on Creationism.[22] We also reported our final C-14 results in a chapter of a 2005 book available at no charge online.[23]

Carbon 14 is our friend

Carbon 14 dating has been an icon of evolutionists, being the "flagship" of the radioisotope dating fleet. Many creationists who did not understand it well felt it was an embarrassment, something we had to explain away. But now the tables have been turned. By providing strong evidence that even the deepest geological strata are only thousands of years old, carbon 14 calls into question the basic assumptions behind such "long-age" radioisotope methods as potassium-argon, rubidium-strontium, etc. It supports the RATE project's main hypothesis, episodes of greatly accelerated nuclear decay rates during Creation and the Genesis flood.[24] It looks like carbon 14 is now becoming a friend of creationists and an embarrassment to evolutionists.[25]

Notes

Editor's note: An earlier version of this article was published in *Creation Science Fellowship Newsletter*, 14(1), Insert, pp. 1–4, January 2003. Creation Science Fellowship of New Mexico, P. O. Box 6212, Albuquerque, NM, 87197-6212. http://creationsciencenm.org/

1. "Resolved: the evolutionists should acknowledge creation," *Firing Line*, with William F. Buckley, Phillip Johnson, Michael Behe, and David Berlinsky advocating intelligent design against Barry Lynn, Eugenie Scott, Kenneth Miller, and Michael Ruse defending evolutionism. PBS, December 19, 1997. Lynn's gaffe is about 1 hour and 25 minutes after the beginning.
2. See review by Giem below.
3. Uniformitarians willfully ignore evidence for God's drastic interventions in nature, such as Creation and the Genesis Flood (2 Peter 3:3–6).
4. Robert H. Brown, The interpretation of C-14 dates, *Origins* **6**:30–44 (1979). www.grisda.org/origins/06030.htm
5. C. J. Yapp and H. Poths, *Nature* 355:342 (23 January 1992)
6. Though under the Edenic Curse, the pre-Flood soil had not, as far as we know, suffered any major catastrophe changing it drastically from its created form. Our soil today was formed by catastrophic erosion during the Flood and afterwards.
7. Genesis 5, Masoretic (Hebrew) Text.
8. D. Russell Humphreys, The Earth's magnetic field is still losing energy, *Creation Research Society Quarterly* **39**(1):3–13 (June 2002), and Humphreys references therein. www.creationresearch.org/crsq/articles/39/39_1/GeoMag.htm
9. Robert E. Lee, Radiocarbon: ages in error, *Creation Research Society Quarterly* **19**(2):117–127 (September 1982). Abstract (HTML format) at: www.creationresearch.org/crsq/abstracts/sum19_2.html
10. Hebrew text chronology, Genesis 5, 11, and elsewhere.
11. David M. Rohl, *Pharaohs and Kings*, Crown Publishers (1995) New York. Appendix C, "Radiocarbon Dating," discusses the problems in calibrating C-14 dates with historical dates.
12. W. F. Libby, *Radiocarbon Dating*, University of Chicago Press, 1st edition (1952), as cited in Whitelaw below, provides a typical example: "[Sample] C-631: Crude oil. 1100' deep in Tulare form[ation] Kern Co. Calif … >24,000 [years before present]." That meant their radiation detectors recorded counts corresponding to 5% of the amount of C-14 in modern carbon. In the uniformitarian interpretation, that would correspond to an age of 24,000 years. The "greater than" (>) symbol means they thought the counts were mostly from contamination or background.
13. Robert L. Whitlaw, Time, life and history in the light of 15,000 radiocarbon dates, *Creation Research Society Quarterly* **7**(1):56–71, 83 (June 1970). Abstract at www.creationresearch.org/crsq/abstracts/sum7_1.html
14. Whitlaw points out that of the 15,000 C-14 dates published by 1970, only three were listed as "infinite."
15. Paul Giem, Carbon-14 content of fossil carbon, *Origins* **51**:6–30 (2001). www.grisda.org/origins/51006.htm
16. One measurement is listed as "0.000," but it turns out that its authors had re-interpreted raw data which were not zero.
17. Carl Wieland, RATE group reveals exciting breakthroughs! Creation Ministries International website feature article, 21 August 2003, archived at:

http://creation.com/rate-group-reveals-exciting-break-throughs

18. Andrew Snelling, Radioactive 'dating' in conflict, *Creation* **20**(1):24–27 (December 1997). http://creation.com/radioactive-dating-in-conflict
19. Andrew Snelling, Young radiocarbon date for ancient fossil wood challenges fossil dating, *Creation* **22**(2):44–47 (March 2000). http://creation.com/geological-conflict
20. Andrew Snelling, Dating dilemma: Fossil wood in 'ancient' sandstone, *Creation* **21**(3):39–41 (June 1999). http://creation.com/dating-dilemma-fossil-wood-in-ancient-sandstone
21. Andrew Snelling, Conflicting 'ages' of Tertiary basalt and contained fossilised wood, Crinum, Central Queensland, Australia, *Journal of Creation* **14**(2):99–122 (August 2000). http://creation.com/images/pdfs/tj/j14_2/j14_2_99-122.pdf
22. Fifth International Conference on Creationism, August 4–9, Geneva College, near Pittsburgh, PA, proceedings archived at www.creationicc.org/
23. John R. Baumgardner, 14C evidence for a recent global flood and a young earth, chapter 8, pp. 587-630, of *Radioisotopes and the Age of the Earth, Volume II: Results of a Young-earth Creationist Research Initiative*, L. Vardiman, A. A. Snelling, and E. F. Chaffin, eds., Institute for Creation Research, El Cajon, CA, and Creation Research Society, Chino Valley, AZ, 2005. Chapter 8 archived at: www.icr.org/i/pdf/technical/Carbon-14-Evidence-for-a-Recent-Global-Flood-and-a-Young-Earth.pdf
24. D. Russell Humphreys, Nuclear decay: evidence for a young world, *ICR Impact* No. 352 (October 2002). www.icr.org/i/pdf/imp/imp-352.pdf
25. A skeptic in Albuquerque, NM, Dave Thomas, vociferously and publicly criticized my presentations on C-14 for many years. Finally in February 2001, I figured out what he was misunderstanding and asked him about it by e-mail. He sent me an e-mail (3/2/01) acknowledging his misunderstanding (but to my knowledge, he has not withdrawn that criticism in public). I then sent him a tiny sample of the newer C-14 data, namely Dr. Snelling's articles, with website references. Mr. Thomas promised me in March to reply soon. He didn't. I prompted him again in May, and again he promised a reply. And again he failed to do so. In July he told me he hadn't forgotten, but no reply came after that. In 2003 I tried prompting him through a mutual friend. Still no reply. As of 2014, I know of no reply from him. It looks like the newer C-14 data has permanently silenced an anti-creationist on the topic.

Math Matters

by Don DeYoung, PhD

How Rapidly Did Dinosaurs Move?

There are at least three ways to explore dinosaur motion. First, one can measure the actual speeds of somewhat similar animals living today. Second, anatomical studies of dinosaur fossils give theoretical limits on their possible speed. Computer modeling of dinosaur movement based on fossils is also helpful. And third, dinosaur footprints preserved in sedimentary strata give a permanent record of their locomotion.

Dinosaur *stride* is defined as the distance between two prints made by the same foot. *Pace* is the distance between successive footprints of two rear or front feet. Scientists have constructed dinosaur speed formulas based on the stride measurements combined with size estimates for the animal (Farlow, 1981). Fossil footprints cannot reveal whether the creature was moving at maximum speed; however, some of the calculated values of speed are surprisingly high. Table 1 lists the top estimated speeds for several creatures, including people (DeYoung, 2000). No fossil footprints found to date show the large elephant-like sauropod dinosaurs moving rapidly. Instead, their typical speeds are estimated to have been similar to our own walking speed, 2–3 feet per second.

It appears that the *Tyrannosaurus* was especially careful in its movements. Its small forearms would have provided little protection in a sudden fall. Severe head injury could have easily resulted if the creature tripped while running. The *T. rex* may have moved slowly, choosing its steps with caution. The same hazard applies today, to giraffes for example, which will likely break bones in a fall. Sensing this, giraffes display a slow, graceful movement.

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DeYoung, D. 2000. *Dinosaurs and Creation.* Grand Rapids: Baker Books (Kindle edition).

Farlow, J.O. 1981. Estimates of dinosaur speeds from a new trackway site in Texas. *Nature* 294:747.

TABLE 1.
Estimated top speeds of various creatures, including several dinosaurs and humans, in order of increasing values.

Organism	meters/second	miles/hour
Stegosaurus	2-17	4-38
Apatosaurus	3-12	27-75
Brachiosaurus	5-12	11-27
Tyrannosaurus	6-20	14-43
Triceratops	7-12.5	16-28
Penguin, swimming	7	17
Human	10-12	25
Kangaroo	14	31
Killer whale	15	35
Deinonychus	12-25	26-55
Dromiceiomimus	14-31	32-68
Ostrich	14-18	36
Greyhound; Horse	20	45
Lion	22	48-50
Pronghorn antelope	24	55
Cheetah	30	70

Two Books?

I am troubled that the premier professional creationist society has given voice to an erroneous tenet that is contrary to the fundamental precepts of the reformed orthodox faith. I refer to Dr. Jerry Bergman's article, "Neglecting God's Other Book?" in the *Creation Matters* newsletter of July/August 2014.

It is true that many prominent men have based their philosophy of science on the belief that nature is able to communicate truth to those who approach it eagerly, but this is a completely unfounded and unorthodox belief. The two-book metaphor is based upon a serious confusion between what is **written revelation** and what is in fact an attempt by man **to read into nature** his own fallible thoughts. Revelation is knowledge that we acquire through **faith in God**; science is the result of **faith in fallen men and nature**.

A book must contain words of communication from one mind to another mind. Nature does not contain words, and it does not have a mind with which to construct propositions. In addition, "laws" of science are not inerrant, are not immutable, and thus are not authoritative. As Christians though, we are to accept the Scriptures (and nothing else) as inerrant, immutable, and authoritative; contrary to the axioms of the two-book fallacy.

Leegwater (2009) has asked several important questions that need to be answered by those advocating the two-book metaphor.

> Do we have two books that are independent of each other, with the one book revealing to us that God created, and the other book telling us how he did it? Is it that straightforward? Do the books parallel or complement each other? Do they stand in a hierarchical relationship?

There simply is no comparison, and there simply is no possibility of a two-book principle being the foundation of an orthodox Christian epistemology.

We need not fear neglecting God's other book because "God's Other Book" does not exist. It is a fabrication of the human imagination so that fallible men could ascribe to God the errant ideas that they contrive in their flawed minds, to try and maintain an aura of piety over their myths, and to appease the concerns of the Christian community.

Reference

Leegwater, A. 2009. The two-book metaphor: What questions do we need to ask? *Perspectives on Science and Christian Faith* 61(1):1.

— Berj Manoushagian

Bergman's Reply

My conclusions are derived from numerous scriptures, such as Psalm 19:1, "The heavens are telling of the glory of God; And their expanse is declaring the work of His hands." (NASB) And under the heading "Wisdom Can Be Found in God's Creation," Job 12:7–9 says,

> Ask the wild animals, and they'll teach you; the birds of the sky will tell you. Or ask the green plants of the earth and they'll teach you; let the fish in the sea tell you. Who among all of these doesn't know that the LORD's hand made them all. (ISV)

Romans 1:18–21 adds,

> …since the creation of the world God's invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made, so that people are without excuse. (NIV)

Thus, just as one learns about an artist by studying his paintings, or learns about a writer by studying his writings, one learns about the Creator by studying His creation.

Survey research has consistently found that the major reason most people believe in God is the design and wonder of creation. When I was involved in the atheist movement, knowing that evolution is the doorway to atheism, we thus stressed the evidence for evolution in our written and oral proselytizing.

In the two books of personal testimonies which I co-edited (Sharp and Bergman, 2008; 2014), a major theme is the importance of a study of the evidence against evolution and for creation, in one's going first from atheism to creationism, and then to Christianity; or in going from theistic evolution, which often leads to major compromises to the faith, to creationism. This was also true of myself.

The pattern is clear from my reading of hundreds of testimonies. Evolutionists, both the theistic and atheistic kind, first must be convinced that the facts of science do not support evolution. Then they are motivated to look at the creation explanation, and last, become a creationist. Thus, for these people it is critical to document that evolution is false, or at least has major problems, before they seriously consider the creation models. I know of no evolutionist who has become convinced of creation by first studying creation models.

Unless one is already a believer, this goal is not achieved by scriptural evidence, but through a study of creation. This typifies the approaches used by CMI, CRS, AiG and other creation organizations. My experience with higher education confirms that this is the only approach that works. Walter ReMine (1993), in my opinion, persuasively documented the position that God gave us a biotic message that proves His existence by the clear evidence in a universe that was designed to convey to humans that life did not evolve, but rather was designed.

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Remine, W.J. 1993. *The Biotic Message: Evolution Versus Message Theory*. St. Paul Science: Saint Paul, MN.

Sharp, D. and J. Bergman (editors). 2008. *Persuaded by the Evidence*. Green Forest, AR: Master Books.

Sharp, D. and J. Bergman (editors). 2014. *Transformed by the Evidence*. Southworth,WA: Leafcutter Press.

— Jerry Bergman

Matters of Fact

by
Jean K. Lightner, DVM, MS

Adaptation by Galapagos Finches

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 Have the finches on the Galapagos adapted by natural selection?

A While natural selection may have played some role, numerous other factors have been essential in allowing the finches to survive and adapt on these Ecuadorian islands.

The finches on the Galapagos Islands have been studied extensively. The best known and most comprehensive study was conducted by Peter and Rosemary Grant over a period of 40 years (Grant and Grant, 2014). They chose to study these birds because they had variation in several traits including overall size, beak size, and beak shape. Natural selection can only take place if there is variation that already exists in the population, so these birds seemed like good candidates.

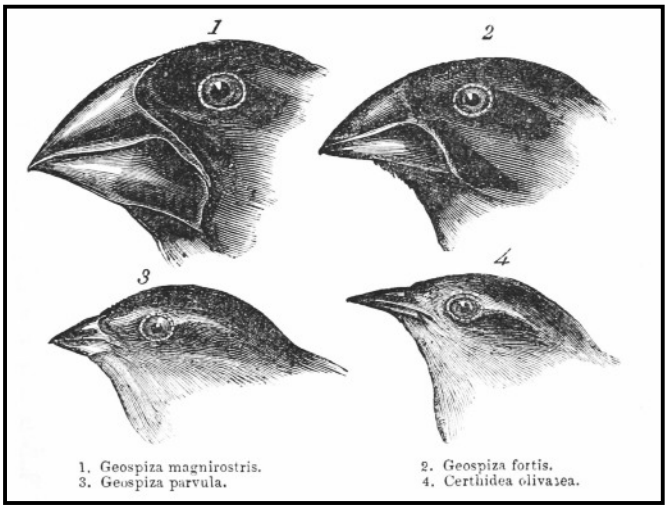
Natural selection eliminates useful variety

Beak dimensions were found to be highly heritable and correlated with diet. Birds with larger beaks were able to crack and consume the larger and harder seeds. Those with smaller beaks fed on the smaller and softer seeds. Natural selection was documented in years when environmental conditions were unusually harsh. For example, after a severe drought in 1977, when the small and soft seeds were depleted fairly early in the dry season, only 15% of the adult medium ground finches (*Geospiza fortis*) survived. The average beak size in the population increased since birds with smaller beaks disappeared from the population; many were found dead with empty crops, indicating that they had starved.

Prior to another severe drought, there were very wet conditions which greatly increased the abundance of small and soft seeds. This time when the drought hit, it was the larger and harder seeds that became depleted first. The average beak size shifted in the opposite direction. In both instances, what was termed natural selection could probably be better described as catastrophic elimination. Important variety, which was useful long-term for the finches to exploit the various food sources, was eliminated. So how did the finches recover variability so that multiple episodes of natural selection in opposite directions didn't wipe them out entirely?

Hybridization can restore some variety

One means by which lost variability was restored was through hybridization with similar species of finches that also inhabited the island. It was common for a few of the medium ground finches to mate with the small ground finch (*G. fuliginosa*) or the cactus finch (*G. scandens*). When appropriate food was available, the hybrids tended to do very well. Thus they were able to restore some of the valuable variation that was lost due to natural selection.



From *Voyage of the Beagle* by John Gould, as found on http://darwin-online.org.uk/converted/published/1845_Beagle_F14/1845_Beagle_F14_fig07.jpg (public domain)

This brings out an important point related to diversification within kinds. As members of the finch kind spread out after the Flood, they diversified to fill a variety of different niches (Lightner, 2010). Sometimes, as on the island of Daphne Major, populations exist which are identified as different species. They may be closely related and have some overlap in diet, but generally they remain distinct populations. They usually do not interbreed because of differences in appearance and/or song. However, under some circumstances these birds may be able to interbreed, which in the case of those on Daphne Island, helped them overcome an environmental setback. Thus, species can diverge, or sometimes even merge as creatures reproduce and fill the earth (Genesis 1:21–22; 8:17).

Beak design allows for variety

Beak design points to an awesome Creator. It has been determined that the timing and intensity of expression of certain genes influence beak size and shape (reviewed in Lightner, 2012a; 2012b). Beak formation is a complex process with many critical steps that must be accomplished to form a suitable beak. The fact that the design is robust enough to allow for modification of the beak—enabling the finches to adapt to a variety of environments — should inspire even more awe for the Creator.

Evolutionists have postulated that random mutation and natural selection are the primary mechanisms by which populations adapt to different environmental conditions. In light of what was actually observed in the finches, it would seem that natural selection is a force which threatens otherwise well-adapted populations. Although the basis for differences in the size and shape of beaks has generally been assumed to be heritable mutations, specific alleles underlying these traits have yet to be clearly identified.

What have been identified are some heritable epigenetic modifications that are associated with genes in one pathway that is important in beak development (Skinner et al., 2014). Species-specific patterns in DNA methylation were observed in different finch species in genes related to the bone morphogenic protein pathway. Surprisingly, the pattern of epigenetic changes fit better with the inferred ancestry of the finches than did the measure of genetic change (copy number variation) that the researchers used.

This is quite a shocking shift from the standard evolutionary thinking about adap-

tation. Epigenetic modifications have been shown to result from environmental influences. It had been thought that these could not be transmitted to the next generation, but now there is an increasing number of examples where such epigenetic modifications have been shown to be stable for many generations. So, rather than the environment's "selecting" from the variation that exists, it would seem that the environment can provide cues to which the birds epigenetically respond.

Adaptation is evidence of a Creator who provides for His creatures

There is a lot we don't know about adaptation. Scientific research indicates that adaptation is far more complex than we had previously thought. There could be significantly more interaction between the environment and the genome than we have yet identified. What is clear is that the accumulating evidence points all the more clearly to a Creator who provides for His creatures, even in this fallen world (Matthew 6:25–26).

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...without excuse!

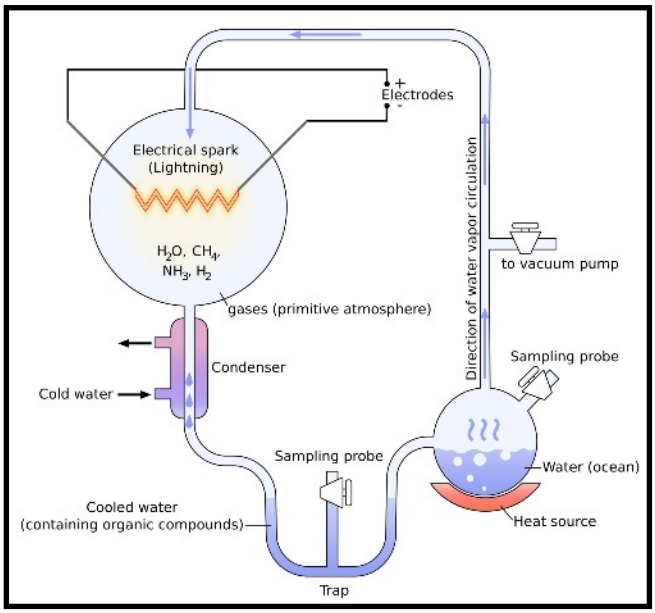
by Timothy R. Stout

The Testimony of "Orgel's Gap," Part 1

Leslie Orgel, a giant in the abiogenesis field, wrote journal articles in chemistry for over 50 years before passing away in 2007. His unique understanding of chemical evolution was that of one who had lived it from its beginnings. He was head of the Chemical Evolution Laboratory at Scripps Institute in San Diego, California, one of the world's premier abiogenesis laboratories. For many years he shared an office with Francis Crick with whom he developed the RNA world hypothesis. At the time of his death, Orgel was not impressed with the current state of chemical evolution.

The final paragraph of Orgel's final journal article is significant. Basically, he acknowledges the validity and seriousness of a certain problem potentially fatal to a natural, mindless origin of life. This does not mean that he was giving up the theory; to the contrary, he remained a true believer to his death. He merely points out problems serious enough to make a natural origin impossible if they are not resolved. He says in a somewhat cryptic statement,

> The prebiotic syntheses that have been investigated experimentally almost always lead to complex mixtures. Proposed polymer replication schemes are unlikely to succeed except with reasonably pure input polymers. No solution to the origin-of-life problem will be possible until the gap between the two kinds of chemistry is closed. … However, solutions offered by supporters of geneticist or metabolist scenarios that are dependent upon "if pigs could fly hypothetical chemistry" are unlikely to help.



Miller-Urey experiment (1953).
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http://commons.wikimedia.org/wiki/File:Miller-Urey_experiment-en.svg

Prebiotic syntheses

The "prebiotic syntheses" he is talking about include the initial, first-stage, prebiotic processes needed to convert raw, natural chemicals into amino acids or nucleic acids. Miller's experiment would be such a prebiotic synthesis, as would variations on it using different energy sources and different raw chemicals. The "complex mixtures" are the broad variety of products naturally resulting from these processes. Typically, these mixtures contain more contaminants than products useful for life. For instance, Miller's experiment produced four times as many contaminants as amino acids (Stout, 2014). Amino acids could never assemble into protein in a mixture such as was made by Miller.

"Prebiotic syntheses" also include the outputs of the next stage, where the amino acids or nucleotides produced in the first stage assemble into reasonably pure, useful polymers. Again, cross-linking and compounds formed with impurities prevent this step from successfully taking place. Natural processes are capable of forming products not suitable for life as well as suitable. Those not suitable characteristical-

ly form in larger numbers than do those suitable.

Polymer replication schemes

"Proposed polymer replication schemes" would be the processes at work in a proposed subsequent stage of abiogenesis, where polymers become capable of replication. "Reasonably pure input polymers" are required for this. Realistically, it is implausible that the complex output of Miller's and similar early stage processes could provide input products of required purity for this stage to be successful.

Orgel's next comment, about "No solution to the problem…," is particularly significant. First, he acknowledges that abiogenists have a problem in trying to propose a realistic scenario describing how a materialistic origin of life could have taken place. If nature truly favors the appearance of life, as claimed by many, the field should be characterized by successes instead of the problems so readily apparent.

A major statement

Beyond this, Orgel significantly acknowledges that **abiogenesis is impossible** unless the gap is closed between the complex output of early processes, starting with a process such as that represented by Miller's experiment, and the "reasonably pure input polymers" required to form replicating polymers. **This is a major statement**. One of the most qualified abiogenists in history has thus acknowledged that abiogenesis, as it currently stands in the light of experimental evidence, is not possible. In the article he mentions a few things people are attempting in order to purify the stage 1 products. However, these have been tried for many decades without success.

This statement doesn't say much for 60 years of effort. Miller's experiment, performed over 60 years ago, was the first experiment to produce amino acids starting with raw, non-biological chemicals. Yet, the problems revealed by Miller's experiment still prove fatal to abiogenesis.

Let's consider how Miller's experiment works. It uses methane, ammonia, water, and hydrogen in a spark chamber. A spark acts like a "bomb" and randomly rips apart any molecule it contacts. The fragments produced will have a random assortment of electrical charge, plus or minus. Fragments of opposite charge will join to each other, making random new compounds. Uncharged covalent and hydrogen bonds will also randomly form as appropriate, joining uncharged fragments. As this process is repeated, any newly formed molecules contacting a spark can be ripped apart again.

An unchanged process

All pre-life first-stage processes are equivalent. Changing the energy source from a spark, to a high-energy, ultra-violet light photon, or even to a hot water source, does not change the underlying process—random ripping apart followed by random recombination. Changing the raw source chemicals does not change the process. Changing the operating temperature or the acidity of the solution does not change the process. The kinds of chemical reactions available under pre-life conditions will always produce a complex mix of products, with too many contaminants for successful abiogenesis.

From this perspective, it is easy to understand why Miller's experiment produced the products it did. There is no principle to constrain the wild mix of products naturally produced to become the precise subset needed for successful abiogenesis. There is no scientific basis to expect "Orgel's gap" to be closed. Nature does not favor a natural, spontaneous appearance of life, but works against it. Abiogenesis is impossible.

Truly, God has designed the creation to reveal the necessity of an intelligent, powerful Creator. The evidence is so clear that a person is *without excuse* for not receiving it.

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Speaking of Science

Editor's note: Unless otherwise noted, S.O.S. (Speaking of Science) items in this issue are kindly provided by David Coppedge, editor of "Creation-Evolution Headlines" at http://crev.info. Opinions expressed herein are his. Unless otherwise noted, emphasis is added in all quotes.

Whale Pelvis Is Not Vestigial

The old Darwinian idea of "vestigial organs" has proven to be a hindrance to science once again, this time in the case of whale pelvic bones. Are the shrunken pelvic bones in whales vestigial legs? That's been common understanding for years. Scientists and students in Los Angeles decided to investigate, according to *PhysOrg*[1]:

> Both whales and dolphins have pelvic (hip) bones, **evolutionary remnants from when their ancestors walked on land** more than 40 million years ago. **Common wisdom has long held that those bones are simply vestigial**, slowly withering away like tailbones on humans.
>
> New research from USC and the Natural History Museum of Los Angeles County (NHM) **flies directly in the face of that assumption**, finding that not only do those pelvic bones **serve a purpose** — but their size and **possibly** shape are **influenced** by the **forces of sexual selection.**
>
> **"Everyone's always assumed that if you gave whales and dolphins a few more million years of evolution, the pelvic bones would disappear. But it appears that's not the case,"** said Matthew Dean, assistant professor at the USC Dornsife College of Letters, Arts and Sciences, and co-corresponding author of a paper on the research that was published online by *Evolution* on Sept. 3.

Over a period of four years, Dean and a grad student studied hundreds of whale pelvic bones from the Smithsonian and the Natural History Museum in Los Angeles, the two largest collections of whale fossils in North America. They believe that the bones have been subject to sexual selection, because the pelvic bones do not bear a size relationship to the ribs. They infer from this that

more "promiscuous" species are endowed with bigger organs. Whether or not that is so, they deny that the "vestigial organs" theory has any explanatory value:

> "Our research **really changes the way we think about the evolution of whale pelvic bones in particular, but more generally about structures we call 'vestigial.'** As a parallel, we are now learning that our **appendix** is **actually quite important** in several immune processes, **not a functionally useless structure**," Dean said.

Whale pelvic bones thus are only a particular instance of a principle: things thought useless in evolutionary theory might be "actually quite important" for animal function.

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Scientific Claims Are Reversible

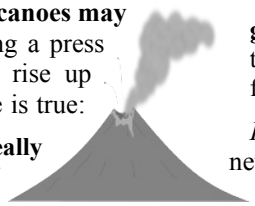
How much confidence can the public put in scientific claims today, given that some long-lived dogmas have been reversed?

Sodium reversal: Jesus said, "Salt is good" (Mark 9:50), referring to spiritual seasoning. Scientists, speaking of dietary seasoning, have long proclaimed "Salt is bad," urging people to reduce sodium intake drastically. For instance, *Medical Xpress* continues to warn that "9 out of 10 American kids eat too much salt,"[1] based on government guidelines. But just the previous day, *Medical Xpress* reported that sodium's influence on blood pressure (one of the chief worries) is negligible.[2]

In a large study, sodium intake had an insignificant effect on systolic blood pressure among 8,670 French adults monitored for body mass index, fruit and vegetable consumption, exercise, and sodium intake. None of the participants were taking blood pressure medicine during the experiment. This contra-consensus finding is important, the researchers felt, because

> …though the **lifestyle factors measured** in the study are **often targeted by physicians** as areas for adjustment in patients with hypertension, **there is surprisingly little data on their individual effects on blood pressure** within pharmacologically untreated populations.

In other words, salt's risk to blood pressure appears to be a commonly-accepted truism with little evidential support, leaving open the possibility that some people may be getting too little of the mineral.

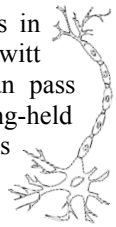


Volcano reversal: The "**textbook theory of volcanoes may be wrong**," *ScienceDaily*[3] announced, publishing a press release from Caltech. Mantle plumes do not rise up through narrow jets to the surface. The opposite is true:

> The new measurements suggest that **what is really happening is just the opposite**: Instead of narrow jets, there are **broad upwellings**, which are balanced by narrow channels of sinking material called slabs. **What is driving this motion is not heat from the core, but cooling at Earth's surface.** In fact, Anderson says, the behavior is the **regular mantle convection first proposed more than a century ago by Lord Kelvin**. When material in the planet's crust cools, it sinks, displacing material deeper in the mantle and forcing it upward.

Caltech geophysicist Don Anderson is calling this "top-down tectonics." He says it is "**based on Kelvin's initial principles of mantle convection.**" But then, how and why did the mantle plume hypothesis gain such traction for so many decades? Anderson's answer sounds disgustingly familiar:

> "Mantle plumes have **never had a sound physical or logical basis**," Anderson says. "**They are akin to Rudyard Kipling's 'Just So Stories' about how giraffes got their long necks.**"



Neuroscience reversal: A potential paradigm shift is in progress in neuroscience. On *Medical Xpress*, John Hewitt discusses recent findings that show neural pulses can pass through each other and continue on, contrary to a long-held belief that they will annihilate on collision.[4] That sounds minor, but Hewitt claims it is "**shaking the foundations of neuroscience.**" Since 1949, neuroscience has accepted the results of Ichiji Tasaki's experiments that seemed to show annihilation. "In other words, **he was the man with the plan**," Hewitt says, showing the power of authority in science. "If Tasaki found that spikes failed to penetrate each other, **then that would be good enough for me**, and in fact it was **good enough for neuroscience for the next half a century.**" The old view also comported well with existing theory. New experiments by Thomas Heimburg may bring that dogma crashing down.

Mammal reversal: Heard the one about mammals being small, shrew-like animals scampering in the underbrush to escape dinosaur feet? Three new fossils described on *National Geographic News*[5] are "**revising our image** of the **first furry beasts**," the article says, showing squirrel-like mammals with long toes and prehensile tails happily living in the trees. "Three newly described species suggest that **mammals evolved earlier, and faster, than previously thought.**"

The old picture of mammal evolution "**needs to be repainted**," now that we can see they lived in various habitats. "They **walked** on the ground; they also **swam**, **dug** to burrow, and **glided** in the forests," the article says. This paradigm shift also shows that mammals were diverse and well adapted at their first known appearance in the fossil record. How long before the museum displays are updated to include a variety of mammals? Some scientists are likely to be unhappy with the "**shifting picture of mammal evolution**":

> "**I expect this will be contentious**," [Anne] Weil [of Oklahoma State] says, but the study is an important addition to investigations of **where mammals came from.**
>
> "I think it's **going to be part of an argument that will be going on for some time**," Weil says, "and I expect paleontology as a whole will learn a lot from questions gleaned from these animals about **the antiquity of Mammalia.**"

PhysOrg[6], reporting on the three new fossils, adds that these new species (1–10 oz. in weight) had complex teeth and the typical mammalian middle ear with three ossicles. Their advanced state requires proposing a much earlier date for the first mammal common ancestor, at least 25 million years earlier, or as much as 74 million:

> However, the placement of the new species within Mammalia **poses another issue**: Based on the age of the Euharamiyida species and their kin, **the divergence of mammals from reptiles had to have happened much earlier than**

some research has estimated. Instead of originating in the middle Jurassic (between 176 and 161 million years ago), **mammals likely first appeared in the late Triassic** (between 235 and 201 million years ago). This finding corresponds with some studies that used DNA data.

Genetics reversal: In "Biology's Quiet Revolution" on *Evolution News & Views*[7], Dr. Jonathan Wells recounts the major reversal in molecular biology since 1980. Prior to that, scientists were confident they understood the "Central Dogma" of genetics, "DNA makes RNA makes protein makes us" — a concept amenable to genetic determinism and neo-Darwinism. In a verbal victory dance, Jacques Monod proclaimed in 1970, "the mechanism of Darwinism is at last securely founded, and man has to realize that he is a mere accident."

That was then. Now, Wells shows with links to major papers, geneticists have repeatedly been astonished at major finds that have undermined much of the 1980s consensus, showing that the level of information in cells is much vaster than previously realized. The Central Dogma has become "discredited myth," Wells says, that must be discarded to answer the "huge questions" that remain.

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Moon News

Still a hot core: Japanese scientists have determined that a soft, hot core remains in the center of the moon, contrary to expectations. A question resulting from a new model of the lunar interior made by scientists at the National Astronomical Observatory of Japan is, "how can the bottom of the lunar mantle maintain its softer state for a long time?"[1] The researchers used measurements from their Selene orbiter to infer a hot core that should not be there.

> Another investigator, Prof. Junichi Haruyama of Institute of Space and Aeronautical Science, Japan Aerospace Exploration Agency, mentioned the **significance** of this research, saying, "**A smaller celestial body like the Moon cools faster than a larger one like the Earth does. In fact, we had thought that volcanic activities on the Moon had already come to a halt.** Therefore, the **Moon had been believed to be cool and hard, even in its deeper parts.** However, this research tells us that the **Moon has not yet cooled and hardened, but is still warm**. It even **implies that we have to reconsider the question** as follows: How have the Earth and the Moon influenced each other since their births? That means this research not only shows us the **actual state of the deep interior of the Moon**, but also gives us **a clue for learning about the history of the system** including both the Earth and the Moon."

Another article on tidal heating and lunar history was published by the University of California, Santa Cruz[2], but the press release doesn't mention whether the heat should have lasted for billions of years. Presumably, tidal heating can preserve some of the primordial heat from the moon's formation for a time, but heat is lost more rapidly from a small body than a large one. The problem is explained in the opening paragraph of the paper in Nature:

> The theory of equilibrium figures of rotating fluid bodies is **a classic problem in geophysics**, and it has been helpful in understanding the shapes of the Sun and planets. **However, the origin of the Moon's shape has remained an open problem in the past century**, and the body's **deviations** from any **simple** tidal–rotational (spherical harmonic degree-2) figure are **large**. **This difficulty is surprising given the Moon's presumably simple early thermal history**: born hot and **quickly cooled**, one might **expect** the Moon to be described by a simple figure of equilibrium.

The authors found a way to model the "surprising" observations (see Sid Perkins' summary on *Science Magazine*[3]). It remains true, nevertheless, that what they found was not what they expected.

Lunar lightning: Another surprising finding was announced by the University of New Hampshire[4]: there may be lightning in the soil of the moon. Because the lunar surface is dry, there is no way to dissipate the buildup of electrostatic charges from the solar wind except by sparking. The discharges in the top levels of soil would have the effect of breaking up rock particles and creating lunar regolith, or soil.

> The study, published recently in the Journal of Geophysical Research-Planets, proposes that high-energy particles from uncommon, **large solar storms penetrate the moon's frigid, polar regions and electrically charge the soil**. The charging **may create sparking**, or electrostatic breakdown, and this **"breakdown weathering" process** has possibly **changed the very nature of the moon's polar soil**, suggesting that **permanently shadowed regions, which hold clues to our solar system's past, may be more active than previously thought.**

Assuming similar processes occur on other bodies, this finding "**could change our understanding of the evolution of planetary surfaces** in the solar system," the article says.

Life on the moon: *New Scientist*[5] published a hypothesis that rocks launched from earth could carry certain microbes to the moon, where they might survive as fossils. Meanwhile, the Russians are wondering how sea plankton found its way onto the exterior of the Space Station: did the station get contaminated by human transport, or did the organisms get launched upwards naturally somehow? See breaking news on Space.com.[6]

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Birds Surprise Evolutionists

Peacock tails are not a sexual-selection trade-off: Popular opinion about peacock evolution is that the males traded flying ability for extravagant sexual displays. Wrong, *Science Magazine*[1] now tells us: "**Peacocks need not sacrifice flying skills for sexiness.**" Experiments with clipped birds showed that "there was no statistically significant difference in **flight performance** of peacocks with intact tail feathers and those without." This result "**complicates the common assumption in evolutionary biology** that elaborate sexual ornaments must come at a cost to the animal." *PhysOrg*[2] indicates that the team was surprised when they found that the take-off penalty for the heavy tail is negligible:

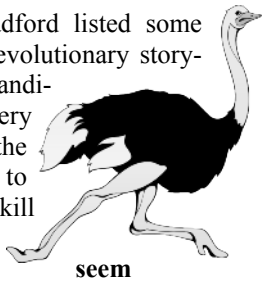
> "**Intuitively** you expect that the train would **detrimentally affect flight performance** and so **not finding a detectable effect was a bit surprising**," Dr Askew said. "**These birds do not seem to be making quite the sacrifices to look attractive we thought they were.**"

He added: "The train of the peacock is one of the most **iconic examples of sexual selection** in the animal kingdom. It has **been thought** that such elaborate ornamentation carries a **functional cost** for the bearer. These results therefore have **broader ramifications for evolutionary biology's understanding of sexual selection.**"

How the hummingbird got its sweet tooth: Charles Darwin was "spot-on" when he speculated about how birds acquired their tastes, Hannah Rowland says in *The Conversation*.[3] "Real taste [in] the mouth, according to my theory **must be acquired** by certain foods being **habitual** — hence become **hereditary**," he had scribbled in his notes—a seeming Lamarckian suggestion. Rowland, a Lecturer in Ecology and Evolution at University of Cambridge, pointed to mutations in taste genes that she says gave hummingbirds a sweet tooth, or rather sweet tongue: "Hummingbirds have **co-opted genes that originally allowed dinosaurs to savour the taste of flesh**, and **transformed them into the sugar detectors** most modern birds live without." A just-so story was sure to follow:

> Baldwin's results show that **Darwin was spot-on**. **Perhaps** ancestral hummingbirds that lacked the sweet receptor frequented flowers to catch insects. On occasion they **accidentally consumed some nectar**. Small **mutations** in T1R1 and T1R3 would have **allowed them to taste** this sugary liquid, giving them access to a vital source of energy. This **could** have given nectar-sipping individuals the **evolutionary upper hand** compared to insect-eaters.

How did other nectar-loving birds get their sweet tastes? "Future research" will be required to confirm the just-so story for lorikeets, sunbirds, and tanagers. Rowland failed to mention if mutations also "allowed" the hummingbirds to evolve their unique rotating shoulder, new flapping behaviors, vibrant optical feathers, nectar-trapping tongues, and other designs highlighted in *Flight: The Genius of Birds*.[4]



Ostrich fun: On *Live Science*,[5] Alina Bradford listed some interesting facts about ostriches without any evolutionary storytelling. Though the giant birds may seem handicapped because they can't fly, they are very successful in their hot, dry habitat, getting the water they need from food. They can live up to 75 years, run a sustained 40 miles an hour, and kill a lion with one kick. They also have the largest eyes (2 inches) of any land animal. "It **may seem amazing** that an ostrich's **thin legs can keep their large bodies upright**," Bradford says. "Their legs **are perfectly placed so that the body's center of gravity balances on top of its legs**," giving them speed and maneuverability. A male is called a rooster; a female a hen. Incidentally, ostriches are listed in Job 39:13–18 as examples of the Creator's handiwork. Though not endowed with sense enough to care about her large eggs left on the ground, she has no fear: "When she rouses herself to flee, she laughs at the horse and his rider." (The horse gets its comeuppance in the next few verses.)

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Creation Matters
September / October 2014
Vol. 19 No. 5

All by Design

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

Skeletons in the Closet

Nature is full of examples of plants and animals that possess abilities, even cleverness, which defy any attempt to explain their existence apart from the act of a purposeful Creator.

There are many species of wasps that hunt arthropods such as spiders, paralyzing them by stinging them before placing them as a food source into nesting cavities where the wasps lay eggs. A newly discovered species of spider-hunting wasp has been discovered in China that does all this and more.

Not only does it build nesting cavities for its eggs and their stores of food, but it protects its eggs in an amazing, intelligent way. Named the bone-house wasp, it hunts a local species of very aggressive, stinging ant. After the nesting cavities are constructed, the wasp builds a final, outer vestibular cavity and packs it with the dead bodies of these freshly harvested ants.

Other animals that might be tempted to break open the nesting cavities to eat the paralyzed spiders are discouraged from doing so by the smell of the ants. It turns out that this species of stinging ant aggressively defends its colonies, and the smell of the ants in the wasp's nest is a strong warning to stay clear of these wasp nests.

Adult female of *Deuteragenia ossarium* (bone-house wasp). Scale bar: 10 mm. Photograph: Michael Staab. From Staab, et al. (2014).

From where did such wisdom come? Who taught the wasp this strategy? How could the newly developed wasps automatically possess such knowledge, since they have no contact with their parents to learn from them? The answer, friends, is the Lord God Almighty.

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