

JESUS THE CREATOR

OUT OF SEQUENCE FOSSILS

THE Z FACTOR

CREATION

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NEWLY DISCOVERED COMPLEXITY

Complex molecule
discovered in
'simple' seaweed

'LIKE NO OTHER WORLD'

Pluto's unique
and 'young' terrain
revealed

SURVIVING AND THRIVING

A symbiotic plant/animal
relationship has evolutionists
going batty searching for
an explanation

PICTURE PERFECT WINGS

Insect images
defy evolutionary
explanations

AMAZING ARGONAUTS

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Speedy vegetation

Why plants had to grow quickly in creation week.

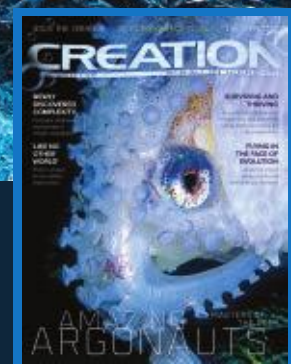
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Unusual faith journey

A young scientist indoctrinated in atheistic philosophy in China came to America and was dramatically converted to Christianity.

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The female argonaut (aka 'paper nautilus') uses a simple but brilliant ruse to maintain her position in the oceanic 'water column'.

See pp. 34-37

Photo: © Gary Bell/OceanwideImages.com



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HAVE A UNIVERSAL PROBLEM

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POURING
COLD WATER ON
ICY IDEAS

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FEEDBACK

PIONEER TRIBUTE

Full marks to Dr Carl Wieland for his monumental contribution to the creation movement ("Creation pioneer looks back", *Creation* 37(4):43–45. Not only did he skillfully edit a world-class magazine for more than 20 years, but he gathered and held together a team of respected Ph.D. scientists in the cause of Creation/Flood truth. That he did this despite more than 50 medical operations following a horrendous car accident is further tribute to his courage and faith. Well done, Carl. Seeing the powerful evidence for God as Creator has rekindled my trust and faith in God and His word. Thank you so much; I would not have that privilege if it was not for the work of your organization. I have bought two books now, *Christianity for Skeptics* and *Evolution's Achilles' Heels*, and have cherished them both. God bless!



BRENTON MINGE
AUSTRALIA

DIDN'T THEY LEAVE ANYTHING BEHIND?

Your article, "Why did God give us a book?" in the latest *Creation* magazine (37(4):16–17) had a profound effect on me. As a girl I was brought up in India (during WW2) in Bombay (now Mumbai). When I was seven my mother sent me to the other side of India to a little Convent school (we were not Catholic however). Before I went I remember her telling me about God, Jesus, Jesus' death, resurrection, and return to heaven. I clearly remember wailing and saying, "Didn't they leave anything behind?" My mother said, "Yes, the Bible." At that moment, it was like a phosphorescent light squirrelled up inside me. Thank you for your enriching article.

PENNY M-C (Full name and address supplied)

LOCAL LIBRARY

Thank you for sending me the back numbers of your magazines. For a number of years I have been dropping them off at the local library. I did check with the staff and they told me that they are used on a regular basis.

DERK GANS
AUSTRALIA

THE MOUNTAINS ROSE

What a blessing and help the article "How did the waters of Noah's Flood drain off the continents?" was in *Creation* 37(3):28–30. Years ago, as a young Christian in the 1960s, I wrestled with the global Flood concept but still accepted it in faith because the Bible clearly stated its global nature (Genesis 7:19). Years later God showed me Psalm 104:6–9 (especially v.8: "The mountains rose, the valleys sank down") which explains what happened to the water at the end of the Flood.

RICHARD TOMLINSON
UNITED KINGDOM

DATING DANIEL

I agree with Keaton Halley on Belshazzar (*Creation* 37(3):12–15). I just want to add an argument that puts the Book of Daniel older than 332 BC. Josephus tells of how the priests in Jerusalem show the Book of Daniel to Alexander as he comes to Jerusalem (*Antiquities of the Jews* Book 11, Ch. 8.).

PER WIKSTROEM
SWITZERLAND

Keaton Halley responds: Critics would argue that Josephus is merely reporting a non-historical legend. But some of the references in the original article explore many other good reasons to date the book of Daniel early, so it's certainly possible that Alexander really was shown the book.

ACCURATE T-SHIRT

I was walking through the shop one day and spied this T-shirt. I'm sure the designers meant it as a joke, but "truer words said in jest"! Our son Jordan (4) loves his pet dinosaur shirt. Thanks for your great magazine!

BETHANY ASHTON
NEW ZEALAND



Letters may be edited for clarity and brevity. If emailing letters (to: Editors@creation.info) please include street address and phone number.

CONFIDENT TO OFFER COPIES

Thank you for including the Hebrew language and the Israeli flag in your *Creation for Kids* article (*Creation* **37**(3):32–35). Many people here in the UK take an anti-Israeli stance and often, an anti-Jewish one as well. Sometimes Israel just gets left out, as if people prefer not to acknowledge her existence. Alarming, this is also increasingly true among some Bible-believing Christians and Christian organizations, including missionary societies. Where there was once interest and sympathy towards Israel and the Jewish people, we now often find indifference or even hostility. Because of your positive stance we are confident to offer copies of your magazine to Jewish friends, as and when the opportunity arises.

JOHN F. (Full name and address supplied)
UNITED KINGDOM

HUMANS UNIQUE

This August, my wife, who is a linguistic researcher on African languages, attended the World Congress of African Linguistics in Kyoto, Japan. One plenary session was given by Japanese Professor Tetsuro Matsuzawa entitled, "Evolutionary origin of human language viewed from the study of chimpanzees."

The professor admitted that humans are unique, and chimpanzees (though intelligent in their own way) demonstrate little in common with humans in the way they think or their linguistic capabilities. Though the talk may have revealed some useful insights and comparisons, this shows to me how effort can be wasted when we are starting off on the wrong foot, with wayward assumptions.

MICHAEL V. (Full name and address supplied)
CAMEROON

NOW TREASURES DINOSAUR ISSUE

A big thank you to the *Creation* team. Whenever an issue pops up I can always type it into the search engine on your site and find lots of articles to help. If there is a hard question the Lord provides the answers through your ministry. All it took to get my family thinking was one *Creation* magazine containing the article "Dinosaur disarray" (*Creation* **34**(2):28–31). My father now treasures that issue greatly. *Creation* is important concerning understanding Scripture, especially for a young adult as myself.

LEANIE D. (Full name and address supplied)
AUSTRALIA

SURPRISING BRAIN

Concerning the latest *Creation* magazine (awesome as usual!) I want to bring to your attention a relevant new discovery. The article "Sleep rejuvenates the Brain" (News and Views, in *Creation* **37**(4):9) states, "However, the brain *does not have* a lymphatic system." Your reference of Iliff's TED talk is dated Oct. 2014, preceding the June 15, 2015 publication of "A dural lymphatic vascular system that drains brain interstitial fluid and macromolecules" in the *Journal of Experimental Medicine* (<http://jem.rupress.org/content/212/7/991.abstract>). From the abstract: "Here we report the surprising finding of a lymphatic vessel network in the dura mater of the mouse brain. We show that dural lymphatic vessels absorb CSF from the adjacent subarachnoid space and brain interstitial fluid (ISF) via the glymphatic system. Dural lymphatic vessels transport fluid into deep cervical LNs (dCLNs) via foramina at the base of the skull."

SHARON GOODENOUGH
UNITED STATES OF AMERICA

FACEBOOK FEEDBACK



On the creation.com/creation-damage-credibility thread:

Gavin David Drogemuller:

I'd been to a few CMI church events and dismissed them as nonsense. It wasn't until a theological argument was presented to me that I was able to actually look at the science with fresh eyes, unhindered by 30+ years of indoctrination (to then discover long age and evolution theory does not fit the definition of science, but rather it fits the definition of a religion).



On the creation.com/re4 thread:

John Mountford:

Excellent point on bird lung impossible evolution. Great science.

On the creation.com/calvin thread:

Frank Smoak: *Evolution's Achilles' Heels* is a really good DVD. It is so well produced, so compelling the evidence, that it can draw the most intelligent, as well as the common citizen.

On the video *Dieting Dinosaurs* creation.com/media-search?q=dieting+dinosaurs thread:

John Allcott: *creation.com* is an amazing source of scientific information.

Len Holmes: First web site I look at each morning!



JESUS THE CREATOR?

JESUS CLEARLY believed Genesis as history. For example, He referred to marriage at “the beginning of creation” (Mark 10:6), and to the global flood of Noah (Luke 17:26–27). This is a problem for those who profess to be Christian (to follow Christ) yet do not believe Genesis as Jesus did.

One errant ‘solution’ put forward is that Jesus was mistaken; that He did not have the benefit of modern evolutionary ‘science’ and so was ignorant of the reality that we now ‘know’; that ‘creation’ began billions of years ago and there was never a global Flood. That is, Jesus was just reflecting His limited knowledge of the past events and the cultural ignorance of His day.

This view is sometimes justified by referring to Jesus saying that He did not know when certain future events would happen (only the Father knew; Matthew 24:36). That is, they generalize Jesus’ stated voluntary, specific limitation regarding future events to knowledge of past events that Jesus witnessed.

This deficient view of Jesus often comes with the ‘kenotic heresy’, which teaches that Jesus emptied himself of his divinity, which is clearly wrong.¹

The Bible clearly tells us that Jesus was present at creation; that creation

happened through/by Him (John 1:1–3; 1 Corinthians 8:6; Colossians 1:16–17; Hebrews 1:2), so He can hardly have been ignorant of the details, including the timeframe.

Furthermore, in His earthly ministry, Jesus said that He only spoke what the Father told him to speak:

The one who rejects me and does not receive my words has a judge; the word that I have spoken will judge him on the last day. For I have not spoken on my own authority, but the Father who sent me has himself given me a commandment—what to say and what to speak. And I know that his commandment is eternal life. What I say, therefore, I say as the Father has told me. (John 12:48–50).

So if Jesus only spoke what the Father told him to speak, and if Jesus was mistaken about anything, then so was the Heavenly Father. This reveals the seriousness of this heresy. Note also that these people are rejecting the words of Jesus, but Jesus says in doing this they will be judged on the last day by these same words of His. This is not some little matter.

Creation magazine upholds Jesus as the Creator of all, and upholds His word as trustworthy. Thus, He was correct about the timeframe of Creation and the global Flood of Noah. Stories about how the universe came to be by natural processes are not science because no repeatable experiments are possible (see p. 20 in this issue). Evolution is really atheism’s creation myth, as a geneticist and pediatrician testify (p. 26). There is abundant evidence that living things were created—see the articles on argonauts (p. 34), potters’ hands (p. 56), charged-up spiders (p. 38), and lignin in seaweed (p. 24). There is *also* plenty of evidence for Noah’s Flood—z-shaped coal seams (p. 51), and out-of-sequence fossils (p. 40), as well as for the following Ice Age (p. 48). We also present evidence that things are much younger than is commonly claimed (e.g., Pluto, p. 12). And more!

Please share this encouraging information with others. ■

References and notes

1. Sarfati, J.D., The Incarnation: Why did God become Man? *Creation* 35(1):34–37, 2013; creation.com/god-man.

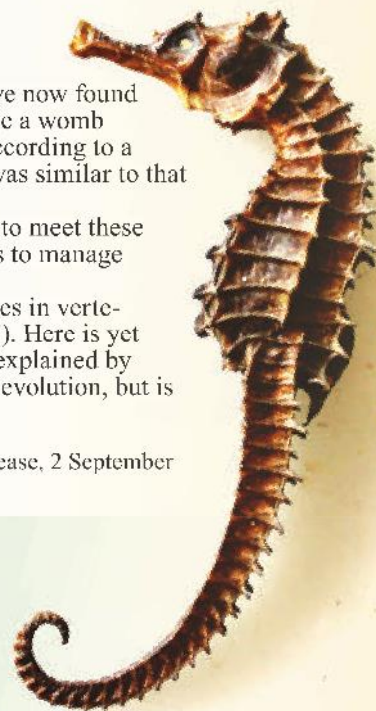
SEAHORSE MALES HAVE THE BABIES

The male seahorse is renowned for nurturing seahorse babies in a pouch. Researchers have now found that the processes involved parallel human female reproduction, with the pouch acting like a womb in providing nutrients, gas exchange, protection from diseases, and removal of wastes. According to a University of Sydney press release, “male seahorses’ gene expression during pregnancy was similar to that of humans.” It also indicated that similar genes were involved.”

The researchers paid the usual homage to evolution: “We have evolved independently to meet these challenges, but our research suggests that even distantly related animals use similar genes to manage pregnancy and produce healthy offspring.”

Indeed, they acknowledge that, “Viviparity (live birth) has evolved more than 150 times in vertebrates” (from their paper in *Molecular Biology and Evolution* | doi:0.1093/molbev/msv177). Here is yet another example of extreme ‘homoplasy’, a term that refers to similarities that cannot be explained by common ancestry (evolution). The widespread pattern of such similarities speaks against evolution, but is consistent with creation by a super-intelligent Creator, as the Bible reveals.

Prasad, J., Male seahorse and human pregnancies remarkably alike, University of Sydney news release, 2 September 2015; goo.gl/NXJdE7.



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ALIEN BAPTISMS?

A Jesuit, representing the Vatican, commenting on the ‘Earth 2.0’ discovery said: “It is probable there was life and perhaps a form of intelligent life.” A colleague went a step further by saying he would be happy to baptize an alien. “Any entity—no matter how many tentacles it has—has a soul,” he said.

The Bible is clear that it is the descendants of Adam who need salvation (1 Corinthians 15:21–22). Therefore, this does not work because the aliens could not be descendants of Adam.

It would also not make sense that Adam’s sin on Earth could affect aliens ‘out there’. The Bible is clear that God created life on Earth, and directly implies the lack of sentient life or soul-life elsewhere (see creation.com/life-on-earth-2). And life certainly did not evolve anywhere (see creation.com/origin-of-life).

Dunn, M., The Vatican believes finding alien life would have no impact on the teachings of the Bible, news.com.au, 6 Aug 2015.



©iStockphoto.com/goktug

COMETS AREN’T WATERY ENOUGH!

For many years, naturalist scientists said that comets were ‘dirty iceballs’ that provided earth’s water over billions of years of accumulated impacts. This includes not just the water in the world’s oceans but also the vast amounts of water held within its rocks.

However, careful observation has finally revealed that comets are actually composed mainly of rock and dust, with only a small amount of water ice. This means that comets have far less water than has been assumed by secular science—throwing an already unlikely explanation completely into the realms of impossibility. The naturalistic explanations for the source of earth’s water have all but dried up, yet the idea that comets provided the earth’s water remains popular.

A European space probe has just arrived at its destination, economist.com, 9 August 2014.

DNA reveals how migrations shaped Europe

After investigating the DNA of ancient individuals, a University of Copenhagen study has concluded that massive population migrations shaped modern Eurasian people groups who are, genetically speaking, not more than a couple of thousand years old.

The lead author, Assistant Professor Morten Allentoft, said the study of skeletons excavated across large areas of Europe and Central Asia confirmed that migrations had brought on the economic and social changes that happened at the beginning of the third millennium BC.

The migrations resulted in huge changes to the European gene-pool, so that—genetically speaking—ancient Europeans from the time after these migrations are much more similar to modern Europeans. It also accounts for the origin of northern European language families.

While the study discusses scenarios for the migration, including the possibility that “re-writing of the genetic map began in the early Bronze Age, about 5,000 years ago”, biblical creationists immediately think of the Tower of Babel and the dispersal of people groups as in Genesis 11:7–8: “Come, let us go down and confuse their language, that they may not understand one another’s speech. So the LORD scattered them abroad from there over the face of all the earth, and they ceased building the city.”

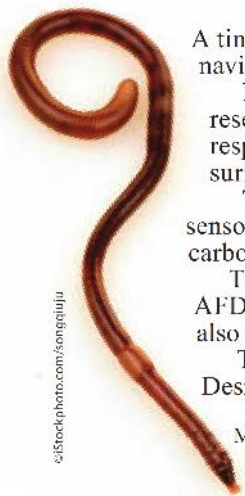
The ‘discovery’ seems to be a matter of ‘modern’ science catching up with the Bible.



When modern Eurasia was born, sciencedaily.com, June 2015.

Allentoft, M.E. et al., Population genomics of Bronze Age Eurasia, *Nature* 522(7555):167, 2015 | doi:10.1038/nature14507.

Making sense of a sense of direction



A tiny antenna-like structure in a worm’s brain may hold the key to how animals use the earth’s magnetic field to navigate.

Researchers from the University of Texas made the chance discovery while using soil worms for Alzheimer’s research. When looking for food, worms from different parts of the world moved “down” based on the corresponding magnetic field in their place of origin; but that changed when the magnetic field in their enclosure was surrounded by a magnetic coil system.

The researchers also discovered that genetically engineered worms—in which what is known as an AFD sensory neuron had been switched off—did not react to magnetic field changes. Worms use the neuron to sense carbon dioxide levels and temperature.

The team used an imaging technique on “normal” worms to show that changes in the magnetic field caused the AFD neuron to light up and concluded the neuron may be the key to not only the worm’s ability to navigate but also other creatures’.

The navigational feats of various creatures have long been observed and point to perfect design by the perfect Designer rather than the blind chance of directionless evolution.

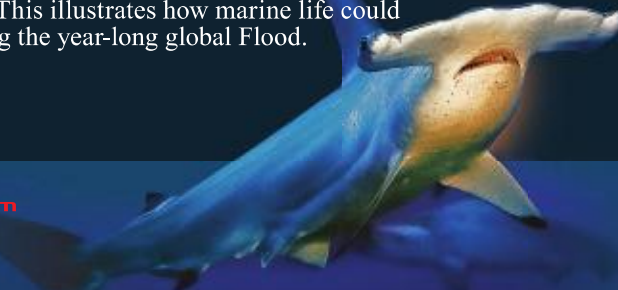
MacDonald, F., We may have finally found the structure that lets animals detect Earth’s magnetic field, sciencealert.com, 18 June 2015.

Sharks thrive in underwater volcano

Oceanographers recently filmed hammerhead and other sharks swimming inside an undersea volcano off the Solomon Islands in the South Pacific Ocean. The scientists were astonished to find large numbers of animals such as sharks and stingrays living comfortably in waters too hot and acidic for people to swim in. The volcano occasionally erupts, spewing hot ash and lava into the surrounding ocean.

Water in the caldera—a basin-like ‘cauldron’ from a collapsed volcano—can reach high temperatures. A video from the expedition shows sharks and stingrays swimming in murky water inside the sunken caldera, indicating that marine animals can survive in warm, polluted, acidic waters during volcanic activity. This illustrates how marine life could have survived in areas of the ocean affected by volcanic activity during the year-long global Flood.

Oceanographer finds hammerhead sharks living inside the scalding hot waters of the Kavachi volcano, news.com.au, 14 July 2015.



Is this evidence for Mormonism?

The Mormon church made headlines recently with the publication of a small rock which they call a “seer stone”. They believe that Joseph Smith translated a set of golden tablets from ancient Egyptian to English using it. Previously hidden in a vault, the Mormon church has released photos in the interest of ‘transparency’.

This seer stone is one of the most ancient artifacts of the Mormon religion—and its history of use is less than 200 years. This highlights the difference between Christianity, with a rich, 2,000-year history with artifacts going back nearly that far, and the much-newer religion.

Novelty in and of itself does not mean that something is inferior—a second-century Jew might have used an argument from novelty against Christianity. But when we examine the foundational documents of Mormonism, they are filled with historical and geographical errors. There is absolutely no evidence for the people, places, and events of the majority of the Book of Mormon. This is in contrast to the New Testament, which accurately reflects the geographical, political, and social realities of the first century world.

Revealed: the stone that ‘translated’ the Book of Mormon, Associated Press, 4 August 2015.

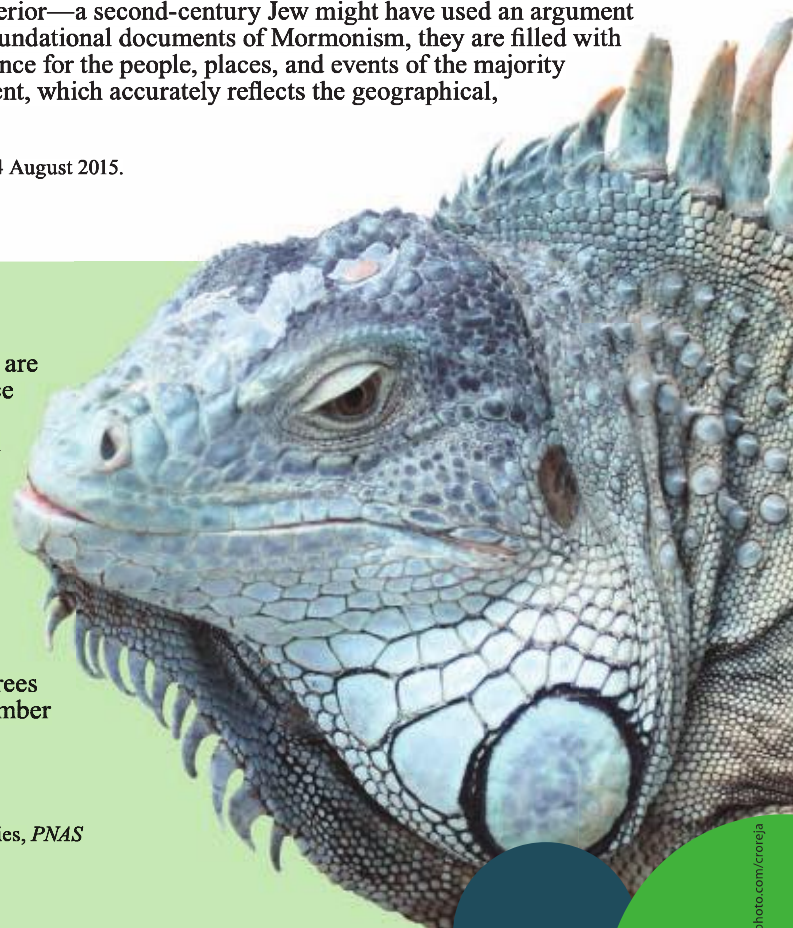
Lizards identical after ‘20 million years’

Fossil lizards perfectly preserved in amber from the Caribbean are said to be 20 million years old but show absolutely no difference from their modern-day counterparts, even down to the finest details such as their tiny scales. Secular scientists are surprised to learn that so many millions of years of supposed history have resulted in no discernible evolution. Also, it means that no significant change in the lizard’s ecological environment has occurred in all that (alleged) time.

However, Bible history makes perfect sense of these discoveries. The lizards preserved in amber are really only a few thousand years old, and were trapped in tree resin (sap) during the immense upheavals that occurred during the global Flood. Resin from untold numbers of uprooted and damaged trees trapped many small animals. The resin subsequently became amber after being buried by sediments.

Ancient lizards in amber amaze scientists, abc.net.au, 28 July 2015.

Amber fossils demonstrate deep-time stability of Caribbean lizard communities, *PNAS* 112(32):9961–9966, 2015.



Evolutionists pour money, teaching into seminaries

The American Association for the Advancement of Science—publisher of *Science* magazine—is providing financial support for pilot programs that will integrate science into core theological curricula at 10 US seminaries.

As part of the grants scheme, which also has the backing of the John Templeton Foundation, AAAS will offer “science-education videos” and will “recruit scientist-advisers from nearby science research institutions”.

The AAAS says the aim is to help future pastors talk science with parishioners. But given its track record of hostility to creation, and the stated theistic evolutionary syncretistic aims of the Templeton Foundation (creation.com/templeton), the videos and advice will certainly be evolution-focused and will hardly be sympathetic to the idea that the God of the Bible created life as per the history given in Genesis.

Despite claims of wanting the ‘separation’ of religion and science, when it comes to the evolutionary belief system, it is obvious that this is one religious viewpoint intolerant of any opposition. Such efforts, especially with the attached ‘carrot’ of funding, are unfortunately likely to accelerate the abandonment by Christian institutions of the plain teaching of Genesis, so crucial to the logic of the Gospel.

AAAS Awards 10 ‘Science for Seminaries’ Grants, 8 October 2014, aaas.org.

MEGA-TSUNAMI WITH 800 FT WAVE

A team of researchers say that when the slopes of a volcano gave way off West Africa thousands of years ago, the sudden collapse caused a tsunami that created a wave up to 240 m (800 ft) high.

The team estimated that 167 km³ (40 cubic miles) of rock fell into the ocean which caused a wave that engulfed an island about 50 km (30 miles) away and deposited huge boulders weighing up to 770 tonnes (850 tons).

One researcher said such ‘mega-tsunamis’ happened about every 10,000 years. Of course, the Bible tells us of the one-off, global, catastrophic Noah’s Flood about 4,500 years ago which more likely caused the event that the researchers examined.

Volcano’s collapse caused mega-tsunami 240 metres high—study, theguardian.com, October 2015.

GUPPY EVOLUTION? REALLY?

University of California biologist David Reznick claims his team has observed “evolution as it happens”. The researchers studied how variations in male guppies, such as their colour pattern, were affecting their ability to survive/reproduce.

This is the classic definition of natural selection. But it can easily be shown (search creation.com) that this logical, observable process is *not* evolution; for one thing, it eliminates genetic information. The professor should thus not imply that what they are seeing happen is something that transformed fish into fishermen.

Evolution shown in real time, sciencedaily.com, September 2015.

SEABED FOSSILS TELL OF SARDINE SURPRISE

At some point in the past a stemmed beaked whale was quickly fossilized—along with its meal of sardines—in seabed rocks off Peru.

A team of researchers was surprised to find that the whale’s prey were surface fish and not those from great depths for which ‘modern’ such whales forage. For example, Cuvier’s beaked whales are known to dive as deep as 2,900 m (9500 ft) for their prey.

One report said: “The fossils were all in remarkably good shape—the team could make out scales on the fish, which is why they believe that they had not had much time to be digested before the whale that ate them died.”

Lambert, O. *et al.*, No deep diving: evidence of predation on epipelagic fish for a stemmed beaked whale from the Late Miocene of Peru, *Proc. R. Soc B* **282**(1815):1530, September 2015 | doi: 10.1098/rspb.2015.1530.

Fossil find shows ancient beaked whale hunted fish in shallow waters, phys.org/news, September 2015.

GOLIATH'S CITY GATE FOUND

Archaeologists have unearthed the gate and fortified wall of Gath, an ancient Philistine city in Israel. This was the home of Goliath (1 Samuel 17:24). Later, David fled to Gath to escape Saul, and, feigning madness, made marks on the gates of the city (1 Samuel 21:12–13).

Other recent discoveries at the site include the earliest decipherable Philistine inscriptions, containing two names similar to the original form of the name Goliath, plus clear evidence of an earthquake—an event mentioned in Amos 1:1. Ongoing archaeological discoveries continue to support biblical history.

Archaeologists uncover entrance gate and fortification of biblical city, phys.org/news, 3 August 2015.



David and Goliath, a colour lithograph by Osmar Schindler (c. 1888)

NATURE EXPOSES SCIENTISTS AS JUST-SO STORYTELLERS

The influential magazine *Nature* has acknowledged what biblical creationists have been saying for decades—that scientists make mistakes and resort to just-so storytelling.

A lengthy article discussed how glaring errors in data analysis were being exposed and cited a large project that attempted to replicate 100 psychology studies but managed to reproduce only slightly more than one-third. In another assessment, only two out of 18 gene-expression studies could be confirmed.

One statistician said it was impossible to “document how often researchers fool themselves in data analysis” and that “findings of irreproducibility beg for an explanation”.

Nature made the frank admission: “As data-analysis results are being compiled and interpreted, researchers often fall prey to just-so storytelling. The problem is that post-hoc stories can be concocted to justify anything and everything—and so end up truly explaining nothing.”

However, *Nature* showed blatant storytelling in the article:

“Our brains evolved long ago on the African savannah, where jumping to plausible conclusions about the location of ripe fruit or the presence of a predator was a matter of survival.”

Nuzzo, R., How scientists fool themselves—and how they can stop, *Nature* 526(7572):182–185, October 2015 |

WebWatch

Type the words in **bold** into the search box on:

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- **Dark Energy**: fudge factor
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- Does God **repent**?
- Refuting **BBC** on **evolution**
- **Bahá'í** (Mis-)Behaviour
- **Septuagint** chronology is inflated

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THE NEW PLUTO

With the recent flyby of Pluto now in the history books, it's time to compare what scientists predicted with what they found.

David Coppedge

IT'S BEEN very fulfilling for senior citizens who watched the birth of the space program in 1957 to see the final leg of space reconnaissance of our solar system. Sure, Pluto has been demoted to a 'dwarf planet', but for most old-school students, it was the Ninth Planet—the only one never visited by spacecraft. That all changed on 14 July, 2015 with the phenomenally successful flyby of Pluto and its moons by the New Horizons spacecraft.

We should take this opportunity to thank the many engineers and scientists who took the world along vicariously on this great adventure to the far reaches of our solar system. It took copious amounts of intelligent design to outfit a spacecraft, 'fly' it for 9½ years, and operate it with just one shot at success.

Data from the encounter will continue trickling down to earth for months to come, but enough has arrived to take stock of the big news. Interpreting data is very different from obtaining it. What did they expect to find? And why were they so surprised with the "real" Pluto, its large moon Charon, and the subsequently-discovered small satellites Nix, Styx, Hydra, and Kerberos?

We can measure the 'surprise effect' by comparing it to writings from the 1990s. The last great

textbook on planetary science, *The New Solar System*,¹ authored by leading planetologists, had a chapter on "Triton, Pluto and Charon" by Dale P. Cruikshank. Triton (the large moon of Neptune) had been visited in 1989 by Voyager 2. Scientists had reason to suspect Pluto might share some of its characteristics, since both were classified as Kuiper Belt objects.

Triton, however, had shocked scientists with its evidence of recent activity and 'water volcanism'. To account for the activity, they invoked a potential heat source: tidal pulls from Neptune over millions of years (though Triton has a nearly perfect circular orbit now, and is the only large moon that orbits retrograde). At Pluto—except for small interactions with Charon—no such heat source exists.

In 1998, scientists knew of light and dark regions on Pluto from Hubble images. They had detected an atmosphere around Pluto containing nitrogen, methane, carbon dioxide; and some hydrocarbons. They knew about Charon, but were surprised that its surface was quite different than Pluto's, composed mostly of water ice. Knowing that Pluto had passed perihelion in 1990 and was moving away from the sun, Cruikshank speculated that the atmosphere might collapse within a couple of decades: "Maybe the entire

planet will turn uniformly white as the entire, already pitifully thin, atmosphere collapses in a global freeze-out!" Seventeen years into that prediction, as we shall see, the atmosphere remains surprisingly dynamic.

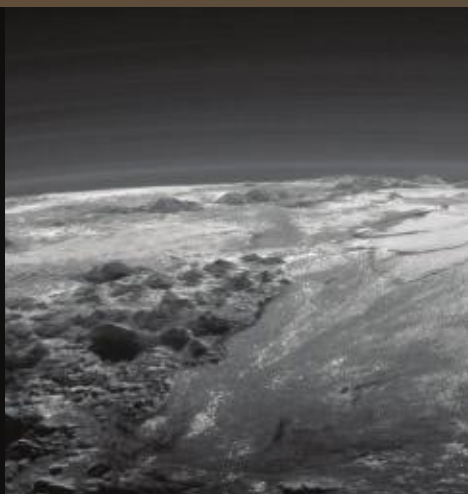
How did Pluto form? Cruikshank cited opinions of theorists who later became lead scientists for New Horizons. Here was the "most likely" scenario:

Alan Stern, William McKinnon, and Jonathan Lunine have proposed that Pluto formed in a near-circular, low-inclination heliocentric orbit, probably beyond Neptune's position. A great many other icy planetesimals also accreted in the solar nebula beyond Neptune, becoming the original population of the Kuiper belt. The gravity of Neptune perturbed these bodies as they accumulated, resulting in frequent collisions among them. Eventually Pluto managed to garner considerable mass. Later, the powerful impact of a fairly large planetesimal with Pluto resulted in the formation of Charon. This hypothetical impact may also explain why Pluto's rotational axis is tipped so extremely.²

Now, thanks to New Horizons, we can see the real Pluto system. And we can hear the reactions of these same scientists after their long wait for ground truth. "Who would have expected



NASA's New Horizons spacecraft captured this high-resolution enhanced colour view of Pluto on July 14, 2015.



Area including the informally named icy plain Sputnik Planum, which is part of Tombaugh Regio.



'False colour': The image combines blue, red and infrared views to best highlight surface features.

this kind of complexity?"³ principal scientist Alan Stern remarked after the first images came in. Pluto's surface is "every bit as complex as that of Mars,"⁴ one said. Some commented on how earth-like some surface features appear. And one thing stands out to everyone: Pluto looks young!

National Geographic reported that surface images stunned scientists with evidence of glaciers, geysers, and mountains of ice 3,350 m (11,000 feet) high, rivalling the Rockies.⁵ The landscape "looks relatively young—so young, in fact, that it suggests the planet is still geologically active." Large areas devoid of craters are seen, implying recent resurfacing. The geologist for New Horizons remarked, "The discovery of vast, craterless, very young plains on Pluto exceeds all pre-flyby expectations."⁶

According to the secular scientists, Pluto has been bombarded⁷ by other objects in the Kuiper Belt for billions of years. The "most stunning thing" about the initial image of Pluto's southeast quadrant is that not a single impact crater was found. "This means this is a very young surface," team member John Spencer said. How young? He guessed it is "less than a hundred million years old, which is a small fraction of the 4-and-a-half billion year age of the solar system" (in fact, 1/45 that time span). Actually,

"It might be active right now," he added. "With no craters, you just can't put a lower limit on how active it might be."⁸

The atmosphere is also young. Scientists measured the escape rate of nitrogen at 500 tons per hour. That's 500 times the rate at Mars. All of Pluto's nitrogen should have been depleted eons ago. This is such a problem that scientists propose that comets resupplied the nitrogen, but all the proposed sources together appear inadequate.⁹

Charon is young, too! It shows signs of resurfacing and sports canyons⁹ five to ten kilometres (three to six miles) deep. How could this small body, 1/4 the diameter of Pluto, be active? "This was unexpected because many thought that the internal heat sources within Pluto and Charon, leftover from their formation in a giant impact billions of years ago, would have dissipated long ago," Eric Hand wrote for *Science*.¹⁰ "[O]riginally I thought Charon might be an ancient terrain covered in craters," Deputy Project Scientist Cathy Olkin said at a press conference¹¹ the day after encounter. "Many on the team thought that might be the case." They were wrong.

Dropping the assumption of billions of years resolves these problems. Creationists are pleased, but not surprised, to see young surfaces on the planets, because they trust the Word of God, Jesus Christ, the agent of creation

(Hebrews 1:2), said, "Have you not read that He who created them from the beginning made them male and female" (Matthew 19:4), two normal-length days after He made the solar system (Genesis 1:14–27). New Horizons provides evidence that the solar system cannot be billions of years old—only thousands, as the Bible says. ■

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DOCTOR REALIZES

Dr Lainna Callentine received her bachelor's degree at Northwestern University. She received a Masters in Education from Widener University, Pennsylvania, and an MD from the Illinois School of Medicine. She has been married for 22 years, and is a homeschool mom with three children.

Lainna Callentine grew up as part of a large family of eight. Though she had a good upbringing, her parents were not churchgoing people. However, at one point, her parents would drop the children off at a local church to expose them to religion and to supplement their education. At six years of age, she prayed to receive Christ as her

Saviour. "I began dialoguing with my pastor about faith issues, and he found that adorable! I stepped forward at an altar call, and wanted to be baptized, however my parents declined to allow it because they felt I was not old enough at the time. When I went to college I was able to make my commitment public by being baptized."

Early love for science

As the fifth of six children, Lainna always wanted to learn, and found educational opportunities even before going to school. "My favourite activity in the summer months was to go down streams, turn over rocks, and look at all the critters. I also loved looking at my

IMPORTANCE OF CREATION EDUCATION

Lita Cosner chats with Dr Lainna Callentine

father's old medical textbooks. Even at five, before I could read, I would look at all the pictures. My family was worried it would give me nightmares, but it just fuelled my curiosity."

When Lainna entered college, she was "on fire", being new in the faith. However, her faith and her scientific studies were very compartmentalized, so she did not see a conflict at the time with believing evolution. "It wasn't an issue to me, I just believed what I was told. I didn't care—God was God; if He wanted to create in 6 days or 6 billion years, it didn't matter."

Seeking answers

Lainna says that she is a fairly recent 'convert' to biblical creation, in the last five years. It was her writing that drove her to finally resolve these questions. She felt that if she was writing a curriculum, she needed to know where she stood on these issues. She started asking genuine questions about creation, but unfortunately the responses she received were less than encouraging. "I was met with a lot of prejudice from young-earth creationists. I had just never thought about this issue, and people were criticizing me, even questioning whether I was really a Christian!"

She advises, "When someone is asking you questions about creation, don't assume anything about their faith. A lot of people simply haven't been exposed to this teaching. Instead of attacking, start with finding out what that person really believes. Listen first to understand where they are, and then you have a basis for discussion."

These initial negative experiences could have turned Lainna in the other direction, but instead, she turned to Scripture. "I was intellectually dissatisfied with what I had found so far, but God promises, 'If you seek, you will find.' All wisdom comes from God, so I

started really studying what I had been told, looking in the Bible, and at all the research and literature."

Lainna found creation information, including information from CMI, which Lainna praised as being hardcore, in-depth research that was instrumental in equipping her as a creationist.

From education, to medicine, to homeschooling

Lainna's passion was for medicine, but after college, she wasn't sure if she could be a doctor. She loved children and teaching, and pursued a Masters in Education which allowed her to teach in the public school system.

However, she still felt compelled to pursue medicine and pediatrics. "I had wanted to be a doctor since I was four. I was very sick with asthma, and I spent a lot of time in the hospital. I was fascinated by how the doctors

"Medicine had taken a lot out of me. I had been pregnant every year during my residency, and the long hours meant that I lost time with my family. Once I earned my degrees, I felt God was calling me to go home."

Wonderful design in the human body

When asked for an evidence of creation from the field of medicine, she said, "As a doctor, the goal is to protect life and honour it. But dealing with sick and dying children in the Intensive Care Unit, often we are helpless as human beings to deal with the complexities of the body, and often we are just putting our finger in the dyke. I've come to appreciate the complexity of the body, because of the magnitude of what we have to do when someone is critically ill to try to balance the systems—and healthy bodies do it on their own." God



helped me to feel better, and I wanted to do that, too." She feels that her medical and educational training really complement each other and help to teach and empower people.

However, her medical training took her in an unexpected direction.

has clearly designed the human body as an intricately balanced system, which could not have evolved.

Teaching children

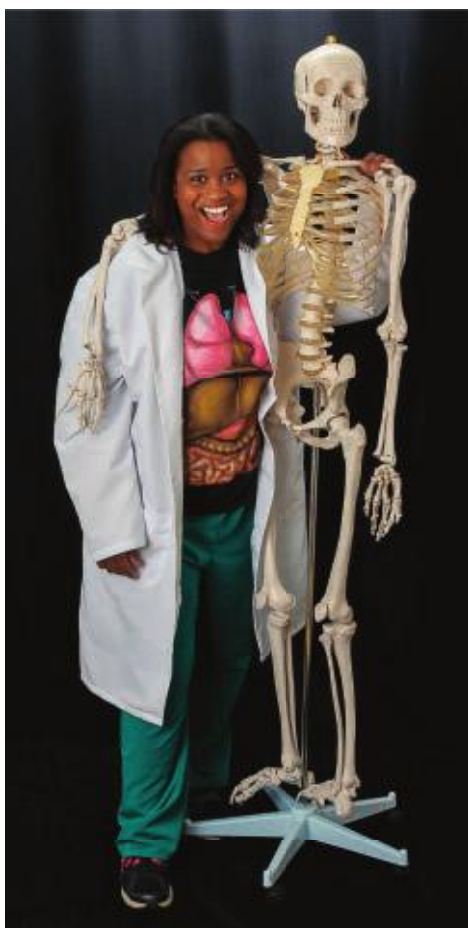
With her various experiences as a public school teacher and a homeschool

mom, and informed by her Masters in Education degree, Lainna has a unique perspective on education. “No matter how old the learner is, whether child or adult, we’re all the same in that every learner wants to be valued and has an interest in learning practical things.”

Lainna notes that a lot of homeschoolers are really uncomfortable with high school science in particular, and she saw a need that she was equipped to fill. “I began offering classes with children in homeschool co-ops, and was invited to my first homeschool convention about seven years ago to speak and do hands-on science. And it just grew from there, until it became another full-time job!” She felt called to write a series of science books to help Christian homeschooling parents, and was able to find a Christian publisher to make that happen. The first book in the series, *The Electrifying Nervous System*, and the second, *The Breathtaking Respiratory System*, are available through CMI’s bookstore, as well as through other Christian retailers. She explains, “When I look at homeschool curriculum, this book is unique, because it takes into account the different ways people learn. For instance, being a very visual learner, I learned best that way. I also needed real stories to tie in to my

learning. By approaching the subject from different angles, you can engage kids and stretch them.”

Lainna encourages Christian



parents, “Don’t just expose your children to the creationist worldview, but help them to understand the evolutionist’s worldview, too. If we want to witness to others, we have to defend our faith and to do that we need to know the other side of the argument—otherwise it is hard to share the Gospel.”

For instance, when Lainna teaches biology, she uses a creationist biology book, but then also supplements with a secular book, so her children can understand how secular science interweaves evolution throughout their whole worldview. “When they understand how pervasive it is, and how indoctrinated people are, they can understand where the other side is coming from.”

Science shows God’s glory

Asked if there was anything she wanted to tell *Creation* magazine readers in particular, Lainna said, “Sometimes in Christian circles people are afraid of science, and feel there’s a conflict between science and Scripture. But the more you keep peering into it, the more God’s glory is revealed. With our finite knowledge, the more you understand, the more you realize that you don’t understand. And only our wonderful Creator could explain this complexity.” ■

From Dr Lainna Callentine’s God’s Wondrous Machine series:

The Electrifying Nervous System

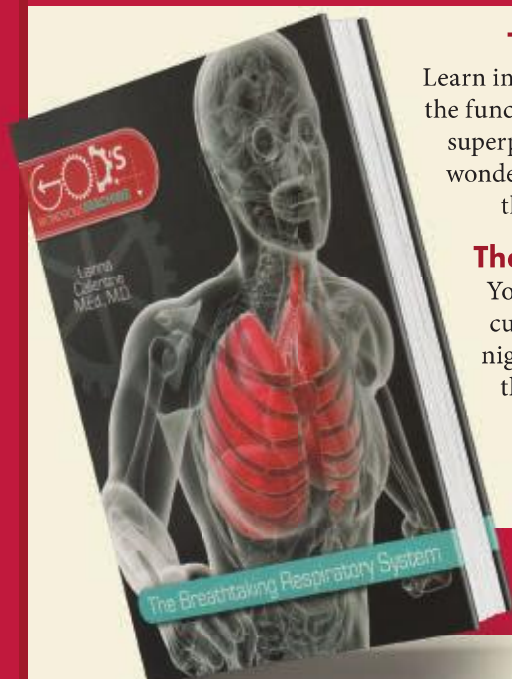
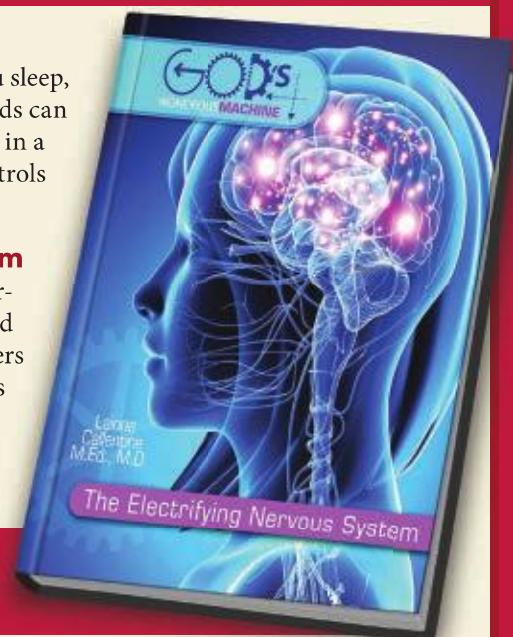
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EVOLUTIONISTS SUCH as Richard Dawkins have long claimed that our eyes are wired ‘backwardly’, allegedly something which no intelligent designer would do. That is, the light receptor cells are behind the nerves, which supposedly obstruct the light path.

In reality, in the last few years, researchers have shown that light doesn’t go through the nerves, but is instead funnelled through *Müller glial cells*.¹

These act like a fibre optic plate that increases image sharpness, so “The retina is revealed as an optimal structure designed for improving the sharpness of images.”^{2,3} Furthermore, they help to separate out the three primary colours, so that red and green light is funnelled to the colour-sensitive cones. The other type of light receptor, rods, are good for night vision, but weaker at detecting green and especially red light, so the Müller cells scatter blue light on to them.^{4,5}

Much of this new research comes from Technion, the Israel Institute of Technology, in the lab of Dr Erez Ribak, an astrophysicist who turned from studying stars to studying eyes. He has now shown that the Müller cells must be just the right height and width to filter the different colours correctly: “If the retina is too thick or too thin, it’s not effective.” He proved this by shining light of different colours into human and

guinea pig retinas, showing how the light was guided.⁶ Ribak says:

“[T]he retina of the eye has been optimised so that the sizes and densities of glial cells match the colours to which the eye is sensitive (which is in itself an optimisation process suited to our needs). This optimisation is such that colour vision during the day is enhanced, while night-time vision suffers very little.”⁶

Mark Hankins, a professor of visual neuroscience at the University of Oxford, pointed out even another reason for the backward wiring: “clearing of worn-out cell components and having access to a fuel supply of light-sensitive molecules.” These functions are

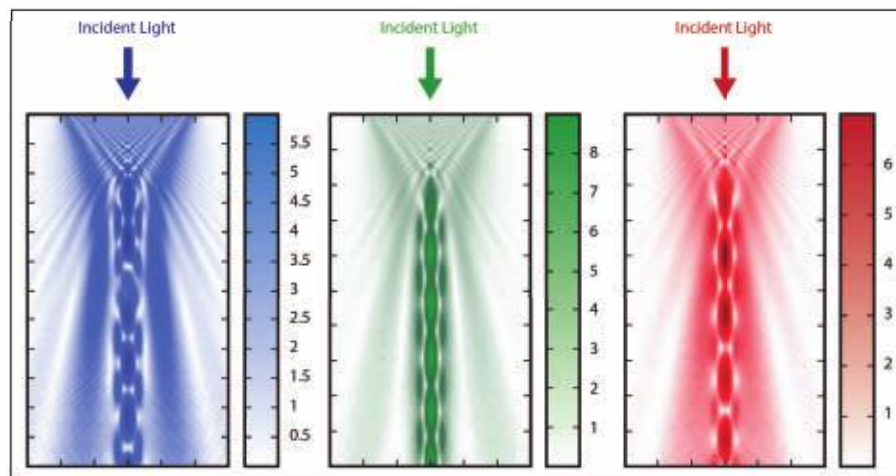
provided by a layer behind the light receptors, called the retinal pigment epithelium (RPE), which means that the nerves can’t also be behind the receptors. Of course, long ago, creationist ophthalmologist Dr George Marshall pointed out this very thing in the pages of this magazine.⁷ ■

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Red and green light are funnelled through the cells, while blue scatters much more

RATS, BATS AND PITCHER PLANTS



***Rattus baluensis* visiting a *Nepenthes rajah* pitcher at night.**

■ **Brian Thomas**

ALTHOUGH THE pitchers on tropical pitcher plants mostly attract and digest insects, some pitcher plants actually use nectar to attract—but not digest—rats and treeshrews.^{1,2}

These small mammals fit just right atop the pitcher's openings, and they use the pitcher as a toilet. The plant collects nutritious nitrogen at the bottom of its pitcher from the animal waste. Some pitcher plants actually provide a home for bats in trade for fertilizer. Pretty clever setups. New results clarify just how this setup works, and how it is unexplainable by evolution.

South and Central American pitcher plants were already known to have flowers that attract bats for pollination. Now pitcher plants in Borneo have been

shown to attract bats for their excrement, which adds 34% more nitrogen when bats roost in the pitcher.³ In return, the pitcher plant supplies the bats a daytime roost with no parasites, and with bat-friendly temperature and humidity. This is just the right size to accommodate one or two bats at the top of the pitcher while the shape prevents them from reaching the digestive liquid at the bottom of the pitcher.

How do the bats find these homes amidst myriad jungle greenery? First, they emit “broadband and high pitched” sonar frequencies. Researchers wrote that “such a call design” helps them navigate through dense forest foliage.³ But these bats’ sound frequencies can also target sonar reflectors on the pitcher plants.

Second, a lid-like extension rises above each pitcher's opening. It displays a reflector with four precisely tuned qualities:

1. Its concave shape sounds louder to the bat than the surroundings—recall echoes made by yelling into a radar dish.
2. The hollow tube below the loud reflector absorbs sound, creating a distinct volume contrast for bats to recognize.
3. The extension is larger than that of other pitcher plants (which don't have a bat reflector there), increasing its sonic ‘visibility.’
4. It reflects distinct patterns on either side enabling the bats to detect it from many angles.

Together, these features make it as easy for these bats to find their pitcher plant hovels as a driver using a GPS device to locate home.

Creation-deniers now face the challenging task of describing how mere

Image credit: Vincent Bazile



natural processes could have evolved the features that enable this mutualism. Mutualism refers to interactions between totally different organisms that benefit one another. *Current Biology* study authors discussing this wrote, “How mutualisms evolve ... is still not sufficiently understood.”⁴ Could these interdependent, mutualism-generating designs ever have evolved? Bat squeaks do not program reflector-building instructions into plant DNA.

In the end, the researchers merely kicked this question down the road, saying, “further studies will be necessary” to understand how “such complex plant-animal interactions ... evolved.”³ I’d like to pitch them my ‘batty’ idea: Since natural causes like wind or predators never construct functional features like sonar

emitters, reflectors or detectors, maybe a supernatural cause like the Creator God best explains them.

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Brian is Science Writer at the Institute for Creation Research in Dallas, Texas. *Creation* magazine was instrumental in moving Brian from evolution to creation, which in turn led him to pursue teaching the creation message in Christian schools and as a university professor. For more: creation.com/brian-thomas.



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HERE'S GOOD NEWS FOR THE WORLD

Creation Ministries International seeks to give glory and honour to the triune God of the Bible as Creator, and to affirm the truth of the biblical record of the real origin and history of the world and mankind.

Part of this real history is the bad news that the rebellion of the first man, Adam, against God's command, brought death, suffering, and separation from God into this world. We see the results all around us. All of Adam's descendants are sinful from conception (Psalm 51:5) and have themselves entered into this rebellion (sin). They therefore cannot live with a holy God, but are condemned to separation from God. The Bible says that “all have sinned, and come short of the glory of God” (Romans 3:23) and that all are therefore subject to “everlasting destruction from the presence of the Lord and from the glory of His power” (2 Thessalonians 1:9).

But the good news is that God has done something about it. “For God so loved the world, that He gave His only begotten Son, that whoever believes in Him should not perish, but have everlasting life” (John 3:16).

Jesus Christ the Creator, God the Son, though totally sinless, took on human nature, so He could become our Redeemer. Then He suffered, on behalf of mankind, the penalty of mankind's sin, which is death and separation from God. He did this to satisfy the righteous demands of the holiness and justice of God, His Father. Jesus was the perfect sacrifice; He died on a cross, but on the third day, He rose again, conquering death, so that all who truly believe in Him, repent (repentance = a change of mind) of their sin and trust in Him (rather than their own merit), are able to come back to God and live for eternity with their Creator.

Therefore: “He who believes on Him is not condemned, but he who does not believe is condemned already, because he has not believed in the name of the only-begotten Son of God” (John 3:18).

What a wonderful Saviour—and what a wonderful salvation in Christ our Creator!

If you want to know more of what the Bible says about how you can receive eternal life, please email, write or call the office near you ... see p.2.

THERE'S COSMOLOGY AND THEN THERE'S REAL SCIENCE

John G. Hartnett

IN MY realm of professional interest (physics) there are really only two types of scientists: experimental physicists carrying out experiments in laboratories, and astrophysicists (or cosmologists) who use the universe as their 'laboratory'. Both construct mathematical models to describe their observations. Both test their models against those observations.

However the experimentalists (type 1) can interact with their experiments in a way the astrophysicists cannot. For example, they can send in a light signal and measure the response in the system, i.e. see what comes out. But the astrophysicists (type 2) cannot interact with what they are observing in the universe.

Historical science in astronomy

Within our solar system we have been able to send probes to make observations. For example, NASA's Deep Impact probe¹ shot a 370 kg copper bullet into a comet² and measured the spectra³ of the ejected material. And the European Space Agency (ESA)'s Rosetta spacecraft landed a robotic

lander, Philae, on a comet⁴ and made, for the first time, direct measurements of the surface constituents. These types of measurements, you could say, are very similar to what the experimentalists do in their laboratories. But the Rosetta mission's objectives, excerpted from the ESA website, highlight the type of science involved (emphases added):

Rosetta's prime objective is to help understand *the origin and evolution of the Solar System*. The comet's composition reflects the composition of the *pre-solar nebula out of which the Sun and the planets of the Solar System formed, more than 4.6 billion years ago*. Therefore, an in-depth analysis of comet 67P/Churyumov-Gerasimenko by Rosetta and its lander will provide essential information to *understand how the Solar System formed*.⁵

These are their basic underlying assumptions. This statement makes it clear that the scientists who carried out the mission believe that the solar system evolved out of a solar nebula originating more than 4.6 billion years ago. That is their untestable primary assumption. It is not testable by what they dig out of the surface of the comet, but rather they

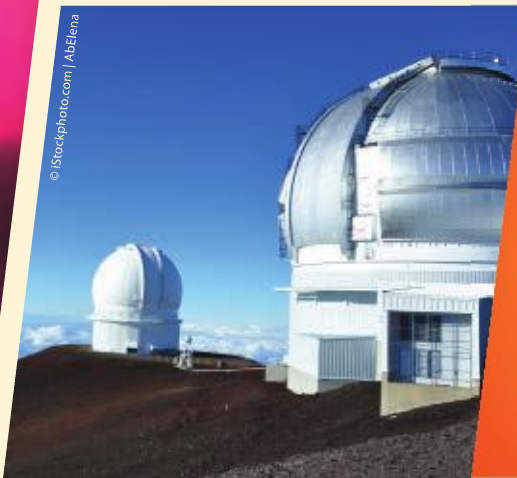
believe the measurements of that comet material will help them understand the origin of the solar system *within their original assumption*.

No matter how much evidence they accumulate they cannot directly observe the past; certainly not without assumptions. The material they dig out of those comets is evidence to which they always need to apply interpretations.

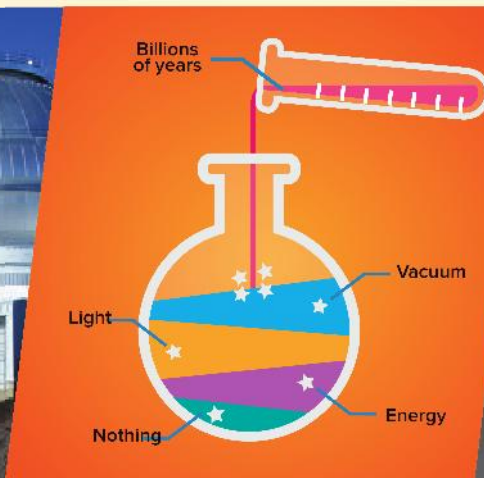
Even in the case of astrophysics, you might think that the astronomer is observing the past, because the light entering his telescope supposedly took millions or billions of years to traverse the vast universe to earth. But even this has its limits to what we can know.

Uniformitarian assumptions

The secular astronomer receives light into his telescope on earth and makes *the uniformitarian assumption* that the light has been travelling at a constant speed (of about 300,000 km/s) for the past millions or billions of years to reach earth, and with no relativistic time dilation effects (where clocks run at different speeds in different parts of the universe).⁶ Only after making that assumption can he *make the further assumption*, not know, that what he



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Credit: ESA - C. Carreau/ATG media lab

The secular astronomer (astrophysicist) makes uniformitarian assumptions to interpret the evidence of the light received with his telescopes.

The astrophysicists (type 2) cannot interact with what they are observing in the universe. Billions of years is an essential ingredient for an explanation of what they observe where the Creator is excluded *a priori*.

The European Space Agency (ESA) spacecraft, Rosetta, landed a probe on the comet 67P/Churyumov–Gerasimenko.

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observes is coming from some past epoch millions or billions of years earlier. But how could you test that assumption? You can't! And for that reason this aspect of astrophysics/cosmology is not directly provable by any empirical test.

In the case of all observations beyond the solar system the problem is beyond dispute. You cannot go there. The sizes, distances and assumed ages of galaxies and other cosmic radiation/light sources, are so great that even what we measure is as though we are taking a single still photograph; it is just a moment in time.

Astronomers only *observe*, they cannot interact with their experiment as the experimental physicist in the laboratory can do. And what makes matters even more difficult for the astrophysicist or cosmologist is that there are many possible explanations for the same observations. But because they cannot interact with the sources under investigation (which might even be the whole universe) their science is very weak indeed. For this very reason James Gunn, co-founder of the Sloan survey, said:

"Cosmology may look like a science, but it isn't a science. ... A basic tenet

of science is that you can do repeatable experiments, and you can't do that in cosmology."⁷

Conclusion

Astrophysics and cosmology are by their very nature loaded with philosophical underpinnings. In principle there is nothing wrong with that. You could not do any sort of science without a basis to build your model. The set of unprovable philosophical underpinnings (also called presuppositions or axioms) comprise one's worldview. And we all have a worldview. We form that based on what we believe about the world around us and how it all began.

The difference here is that my worldview is based on the biblical truth that God, the Creator, created the universe about 6,000 years ago. It was not the result of an accident or a quantum fluctuation of some imagined/postulated vacuum or a big bang of any sort. Rather it was the result of plan and purpose as God told us in the Bible.

However, the worldview that underlies modern secular/mainstream cosmology, and cosmogony (on the origin of the universe) is an atheistic one. It has no place for a Creator, and only relies on what man can discover for

himself. As a result he has had to resort to all sorts of fudge factors⁸ to make his model fit the observational data, the evidence from the cosmos. ■

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WHY RAPID PLANT GROWTH DURING CREATION WEEK

■ **Keaton Halley**

ONE EXCUSE that some Christians have used for disbelieving in 24-hour creation days has to do with the way God created plants on Day 3. They point out that God didn't simply cause plant life to pop into being out of nothing, fully formed. Rather, in Genesis 1, God's command was: "Let the earth sprout vegetation" (v. 11). Thus, "The earth brought forth vegetation" (v. 12). It is true that these lines indicate a *process* of growth—and, by the end of that process, the trees were mature enough to bear fruit (v. 12). In today's world, this would ordinarily take years. So, does the fact that the plants grew from the ground up to maturity prove that this activity could not have been accomplished in an ordinary day?

One critic of 24-hour creation days has argued, "if the author were thinking here of 24-hour periods of time, what he would have to be

imagining would be something like time lapse photography where the little seed bursts out of the ground and then erupts into this tree, grows up and pops out blossoms all over and then bam! bam! bam! all the apples pop out on the tree. I just can't persuade myself that this is what the author was thinking of—that he imagined this looking like a film being run on fast forward."¹

No ordinary week

However, we must remember that the Creation Week involved supernatural events. Genesis 1 describes the miraculous origin of the entire universe, so why think that God was limited to ordinary rates of plant growth?

Plus, Genesis 1:24 says the earth brought forth the animals as well—but animals don't normally spring out of the ground, so the fact that the plants came from the ground need not indicate that they developed by ordinary biological means.

The creation days of Genesis 1

clearly must be the 24-hour kind, since the context constrains the meaning—each day consists of an 'evening' and a 'morning', for example, and the days are listed in a numbered sequence.² So the plants made on Day 3 must have developed within a single day's timeframe—they did indeed blossom and bloom with supernatural speed.

More examples of speedy sprouting

There is nothing far-fetched about this understanding of the passage, especially given the fact that numerous miracles in Scripture involve the rapid accomplishment of what natural processes today only achieve slowly. In fact, the Bible contains several examples of accelerated plant growth in particular and accelerated withering to boot. For example, God transformed Aaron's staff overnight so that it "sprouted and put forth buds and produced blossoms, and it bore ripe almonds" (Numbers 17:8). Jesus cursed a fig tree and, in short



POSES NO THREAT TO THE BIBLICAL TIMEFRAME

order, it withered down “to its roots” (Mark 11:20, cf. Matthew 21:19). God rapidly produced a source of shade for Jonah, but in the morning made it shrivel just as fast—the plant “came into being in a night and perished in a night” (Jonah 4:10). So, if God supernaturally hastened the advance and retreat of botanical objects on all these occasions, He certainly could have done the same during Creation Week, when “He spoke, and it came to be; He commanded, and it stood firm” (Psalm 33:9).

How the early church read Genesis

Many of the Church Fathers also recognized that, when God created the plants on Day 3, He caused them to spring up essentially instantaneously—even though these men lived long before time lapse photography and never saw a video in fast forward. Ephraim the Syrian (306–373), for example, commented that, “Although the grasses were only a moment old at their creation, they appeared as if they were months

old. Likewise, the trees, although only a day old when they sprouted forth, were nevertheless ... fully grown and fruits were already budding on their branches.”^{3,4} In addition, Basil the Great (329–379) remarked, “In a moment earth began by germination to obey the laws of the Creator, completed every stage of growth, and brought germs to perfection. ... This short command was in a moment a vast nature, an elaborate system. Swifter than thought it produced the countless qualities of plants.”⁵ Furthermore, John Chrysostom (349–407) proclaimed, “everything heard the command, and at once sprang from the earth into view ... In an instant you could see the earth, which just before had been shapeless and unkempt, take on such beauty as almost to defy comparison with heaven.”⁶

God meant what He said

We are in good company, then, when we take Genesis at face value. We serve a supernatural God who isn’t limited by

the laws He established to regularly govern nature today. He can speed up the rate at which plants grow, and that is what the Bible indicates He did on Day 3. In the beginning—the Bible says—God made every green thing, and it was all in a day’s work. ■

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OVERTURNIN' THE LEARNIN' ABOUT LIGNIN

David Catchpoole

LIGNIN IS a primary structural (strengthening) component of wood.¹ It enables land plants to support themselves as they grow upward through the air, and is crucial to transporting water from roots up to the leaves. It has long been thought, and taught, that this feature is unique to land plants because aquatic plants, nicely bathed and supported by the surrounding water medium, do not have any lignin.

That textbook teaching is overturned now, however, by the discovery of lignin in marine algae.

Not a big deal, you might think, except that this discovery “has major evolutionary implications”.² As the lead researcher, University of British Columbia Assistant Professor Patrick Martone, explained:

All land plants evolved from aquatic green algae and scientists have long believed that lignin evolved *after* plants took to land as a mechanical adaptation for

stabilizing upright growth and transporting water from the root.³

Hitherto, according to evolutionary theory, lignin evolved on land about 475 million years ago, so this discovery pushes its mooted evolutionary origin earlier than that. In fact, *much* earlier, because the aquatic lignin wasn't discovered in green marine algae, but red—specifically, the intertidal red alga seaweed *Calliarthron cheilosporioides*—i.e. on a completely different branch of the ‘evolutionary tree’:

Because red and green algae likely diverged more than a billion years ago, the discovery of lignin in red algae suggests that the basic machinery for producing lignin may have existed long before algae moved to land.³

So, this discovery is forcing a dramatic “billion-year revision”³ of the plant evolution timeline in textbooks. But the

story isn't set in concrete yet, because some evolutionary researchers, no doubt aware of the flow-on ramifications of pushing the origin of lignin back to more than a billion years ago, are leaving open the possibility that lignin arose in marine red algae and land plants *independently* (what they refer to as ‘convergent evolution’). They note that windy weather stimulates lignin production in land plants, and that a similar phenomenon seems to be at work in red algae (“As articulated fronds bend back and forth under breaking waves ... lignin biosynthesis ... may be mechanically stimulated by bending stresses”).² And so they suggest the selection pressure from surging surf favoured the evolution of the machinery for lignin production in seaweed:

Selective pressures in the marine environment differ from those on land, but the wind-induced drag forces that presumably contributed to the evolution of wood in terrestrial plants

Evolution Harbour

are mirrored by flow-induced drag forces on aquatic algae.²

However, proposing independent evolutionary origins of lignin production raises another problem. That's because "the basic machinery for producing lignin" is no small matter, as study co-author Mark Denny, Professor of Biology at Stanford's Hopkins Marine Station, bluntly pointed out in a news release:

The pathways, enzymes and genes that go into making this stuff are pretty complicated, so to come up with all those separately would be really, really amazing. Anything is possible, but that would be one hell of a coincidence.³

In fact, in their scientific paper, Martone, Denny and colleagues didn't just use the phrase "pretty complicated" but rather "*exceptionally complex*"!² Therefore they stated in their paper's

1. Lignin is the second most abundant natural polymer in the world, surpassed only by cellulose, that also is a key structural component of plant cell walls. Of the polymers found in plant cell walls, lignin is the only non-polysaccharide, being an irregular polymer of cross-linked phenols. Lignin also bonds with the polysaccharides which strengthens the wood even further.
2. Martone, P. and 6 others, Discovery of lignin in seaweed reveals convergent evolution of cell-wall architecture, *Current Biology* **19**:169–175, 27 January 2009 | doi:10.1016/j.cub.2008.12.031.
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4. In fact, it could be worse than that, as the study authors mention that lignin production in red algae "may reflect a *third* convergent pathway" (emphasis added) in light of other workers' previous suggestions that distinctly different lignin synthesis pathways in flowering plants compared with lycopods (plants whose leaves have only a single vein) suggest that each of those evolved independently: Weng, J., Li, X., Stout, J., and Chapple, C., Independent origins of syringyl lignin in vascular plants, *Proc. Natl. Acad. Sci. USA* **105**(22):7887–7892, 2008.
5. Note that natural selection is not evidence of evolution, as natural selection can only *remove* existing information, it can never generate *new* genetic information such as required for plants to have acquired the ability to produce lignin. See, e.g.

conclusion that it "seems unlikely" that marine red algae and land plants evolved the lignin-producing machinery completely independently (i.e. the researchers instead leaning toward a single evolutionary origin over a billion years ago). One might reasonably paraphrase them thus: It's hard enough that lignin production evolved once, let alone *twice*.⁴

Actually, one of the words used by the researchers themselves in their paper holds the key to unlocking what's really at issue here—the word *innovation*:

Lignified cell walls are widely considered to be key innovations in the evolution of terrestrial plants from aquatic ancestors ...²

An *innovation* is something *new*, that didn't previously exist. Winds, waves

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- Evolutionists might respond to this by saying that lignin-containing algae would have an obvious advantage over lignin-lacking algae in being able to withstand surf and thus passing on their genes—but that is not an issue of dispute. Rather, one must wonder whether a mooted *evolutionary-transitional* form would get any benefit at all from having only *incomplete* (i.e. a transitional form of) lignin.
- The Bible says clearly that land plants were created on Day 3, ready for consumption by flying creatures from Day 5, and land animals from Day 6. Probably sea plants were created on Day 3 also, ready for consumption by aquatic creatures, created on Day 5.
- Note that evolutionists often invoke 'convergent evolution' in a handwaving attempt to deflect attention from the challenge of how complex design features arose across diverse life forms. But a common Designer, not common ancestry, makes more sense—see creation.com/lookalikes.

and currents might well act as agents of natural selection⁵ to favour plants that *already* have the machinery to produce lignin, but they will *never produce* such "exceptionally complex" machinery. You can't get machinery, no matter how basic, out of 'thin air', no matter how strongly the wind blows, and no matter how long you might wait (even billions of years!).⁶ Nor from surf, either—as shipwreck survivors would testify; breaking waves *smash* things, and the longer the buffeting, the worse the damage.⁷

In short, innovation requires an *innovator*—and the Bible tells us who that was: the Master Innovator, our Creator, who made the heavens, the earth, the seas, and *all* that is in them in just six days (Exodus 20:11),⁸ only about 6,000 years ago.⁹ ■

**Dr Robert Carter interviews
molecular virologist
Dr Yingguang Liu**

Dr Yingguang Liu is an associate professor at Liberty University in Lynchburg, Virginia, USA. Born in China, he graduated from medical school there and then earned a Master's degree in microbiology. After practising medicine as an infectious disease specialist for several years, he came to the United States for further education and obtained a Ph.D. in molecular virology. For the last 13 years, he has taught at Christian colleges, first at Maranatha Baptist Bible College in Wisconsin, and now Liberty University.

FROM ATHEISM TO CHRIST



YINGGUANG LIU was born in rural northern China during the politically stormy years of the 1960s. He was taught atheistic philosophy from an early age, then worked hard to pass the highly competitive national college entrance exam in 1984. After graduating from a premier medical school, he went on to earn a Master's degree in microbiology in 1993. Motivated by a desire to do 'tangible work' he left research to work as a physician in his home province, specializing in infectious diseases.

Atheism from day one

Since he and I grew up at about the same time but under very different circumstances, I was intrigued by his story. I asked Dr Liu what it was like to grow up in a rural Chinese village at that time, and he described a life of poverty where nobody took care of the community goods, theft was rampant, begging was common, and most children were malnourished. Despite living in these conditions, he did not question the basic philosophy



Dr Yingguang Liu as a child

of life he was being taught. The school system, the media, and the government all united in authoritatively preaching atheism as the only rational, scientific view of the world.

Dr Liu has happy memories of his grandfather, who was a school teacher and a devoted Confucianist. Despite being supportive of the Chinese government, “during the ‘Cultural Revolution’, he was labelled an enemy of the people. He was forced to walk from village to village to confess his ‘sins’ to the farmers he met, and accept the harsh ridicule that came from the darkest corner of sinful men. But when he returned home at dusk, I always joyfully ran to his arms, which was the only comfort to his wounded heart.”

No thought of God

The idea that there might be a God never entered Yingguang’s mind while growing up and the only philosophical beliefs he knew anyone held were those of atheism. “Confucianism was mentioned in textbooks only to show how wrong it was. Yet, atheism gives very little guidance for morality. A local official took the last few silver dollars on my grandma’s table, and did much evil to my family, and my grandma cursed him.”

Yet, despite this harshness of life, surprising acts of kindness also occasionally occurred. “When I was six years old, I slipped into a pond

of water while playing by the edge. I could not crawl out because the mud was slippery. Water got into my mouth, and it got harder and harder to keep my head above water. The same official who had stolen my grandma’s money was walking by with a bag of flour on his back. He heard my desperate cry, put down his bag, walked to the pond, and reached both of his hands to pull me out of the water. Grandma learned of it, and thereafter never failed to mention who saved her one and only grandson. Yes, atheism has turned people into offspring of the devil, but there still remained something good in this man’s heart.” This is a reflection on the Bible verses that say we are made in the image of God (Genesis 1:26–27), with a God-given conscience that, even after much indoctrination and evil practice, still occasionally triumphs (Romans 2:15).¹

Darwinism the basis for atheism

There is a relationship between atheism and Darwinism, Dr Liu explains, “We were taught that atheistic historical materialism was built on the three major scientific discoveries of the 19th century, namely, the First Law of Thermodynamics, the cell theory in biology, and Darwin’s theory of evolution. It was said of Darwin’s *Origin of Species*: ‘Although it is developed in the crude English style, this is a book which contains the basis of natural history for our views.’”²

Note that the first two items on this list (the First Law of Thermodynamics

and cell theory) are good science. The third (Darwinism) is a philosophy, not hard science, and is in fact scientifically impossible.³

Moral impact of atheism

Upon graduation from high school in 1984, Dr Liu passed the highly competitive national exam and was admitted to a premier medical college in Shandong for a six-year program in medicine. He notes, “Darwinism was the guiding philosophy as I learned the biomedical sciences.”

Dr Liu had seen the devastation caused by endemic hepatitis and wanted to find a cure. Motivated by that desire, he went on to pursue graduate studies in microbiology. “During those years, I learned something about the negative side of science. The equation for a scientific career was: Science + politics = grants = fame + fortune. I was disillusioned by the monopoly and hypocrisy of the scientific community. Although at that time I wasn’t a Christian, I wanted to do something more concrete for my people than getting ahead in the circle of scientists. I began working as a physician in 1993, specializing in infectious diseases.”

Dr Liu found that decades of enforced evolutionary atheism had taken a toll on society. “With people considering themselves to be evolved animals, morality in the Chinese society had deteriorated to an unprecedented situation. The most popular idol in China



Dr Liu and sisters (left to right—Haiching (6), Haishia (4), Yingguang (9), and Haiying (7)) in 1976. In fourth grade, he was already indoctrinated in Dialectical Materialism.



in the 1990s was ‘Brother Square-Holed Metal’. (This is a reference to the ancient Chinese coins that had a square hole in the middle, and the word for ‘hole’ was also the family name of Confucius.) Rebates from drug companies, which were essentially bribes to encourage physicians to prescribe unnecessary and expensive medication, had become a significant part of the physician’s income. Most of my patients suffered from chronic viral hepatitis B and were at the mercy of the virus all their life. How long should I go on making a living through this dirty medical practice without doing much about the actual virus?”

First ever encounter with Christians

Coming to the United States in 1997 to pursue a Ph.D., Yingguang was introduced to Christianity through other students of Chinese descent at Ohio University. He says, “There were leaflets in the library of the university written in the Chinese language: ‘New students are invited to a free dinner on the College Green.’ I went to the picnic without thinking who would provide the food. There I encountered Christians for the first time in my life. I shall never forget those lovely people and their welcoming smiles. They identified themselves as the Chinese Bible Study Group. At first I thought it was a program of the university! I asked, ‘So which department does the group belong to?’ They told me they met in the house

of a professor from Taiwan. The pastor of a local Bible Church taught the class. Attracted by the friendly Christians and motivated by an interest to study the ‘core values of Western culture’, I attended the weekly Bible studies.

“We surveyed the Scriptures from Genesis to Revelation in three months. What impressed me most were the many prophecies and their fulfillment. I did some research to prove to myself that the books of the Bible were indeed written by authors who lived hundreds of years apart, and I became convinced of the existence of a supernatural God. If the God of the Bible exists and inspired the prophets, the gospel documentation of Christ must be true. In addition, the unique love of the Christians was a demonstration to me of the Holy Spirit. I had never experienced such love before. We were taught by our parents to be on guard against others.”

Conversion

“During the first winter break, the Bible Study group took me to a Chinese Christian conference in Chicago. There, God used an evangelist with experiences similar to mine. After a message in the evening of 27 December 1997, as the evangelist gave the invitation, my heart was burning and my body was shivering, but I refused to raise my hand. Didn’t I claim to be a scientific atheist just three months ago? How can I become an ‘apostate’ so quickly? The evangelist invited the converts to come to the front,

I could resist no longer. I stood up and went down the aisle. On that day, the God of the Bible became my God and heavenly Father. Jesus Christ was now my Saviour, Master, and Friend, who is always with me.

“Back in Ohio, I was invited to join the prayer meeting of the Chinese Bible Study Group. The group kept a record of prayer lists in a notebook. When I curiously thumbed through it, I found that my name had been on the prayer list for several months!”

Dr Liu’s advice for young Christian students

Dr Liu was awarded his doctorate in molecular virology from Ohio University in 2002. Currently an Associate Professor at Liberty University, he lives in Lynchburg, Virginia, with his wife, daughter, and two sons. Knowing the path that took him from atheism to Christ, I asked how young Christians can best protect themselves from atheistic philosophy. He waxed eloquent, “Our faith can be strengthened by studying science from a Christian perspective. Ideally, they should attend uncompromising Christian colleges, read the works of Christian scientists and creation ministries, or communicate with such ministries in person. Among alumni of Maranatha Baptist University, where I taught for 11½ years, I found that ministers who took science courses are stronger creationists than those who did not. I myself initially tried to stay away from the debate on the age of the earth until I gained insight into the scientific evidences.”

Did that mean an appreciation for God the Creator had affected his understanding of science? “As the founding fathers of modern science emphasized, the world can make sense only in the light of benevolent divine design. I cannot comprehend, let alone teach biology, without referring to design and purpose.”

Has belief in a Creator led to any



A very unusual picnic—and Dr Liu’s first encounter with Christians.



new scientific discoveries? “My students and I proposed some hypotheses that evolutionists are not particularly interested in, and God granted some interesting findings. There are elements in the human genome that evolutionists believe to be remnants of accidental viral infections of a common ancestor of humans and animals (therefore they are termed ‘selfish’ junk DNA), but we

found these elements respond to female sex hormones, implying a role in human reproduction.”

Although Dr Liu grew up with no knowledge of heavenly things, our faithful God did not forget him—reminiscent of the Parable of the Lost Sheep (Luke 15:3–7). ■



Dr Liu's baptism in September 1998.

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TECHNICAL

Some of Dr Liu's research

Evolutionists commonly invoke ‘duplication’ as a way to create brand new genes. A copying error can lead to an extra copy of a gene, which supposedly can then go on to evolve into something else (‘neofunctionalization’) without compromising the original gene. Dr Liu discussed what happens *after* a theoretical duplication, and the picture was not pretty for evolution.¹ First of all, degeneration is expected, because a non-important (‘neutral’) gene can freely mutate or even be deleted with no threat to the organism. With no selection pressure to maintain the gene, the opportunity for neofunctionalization is quite limited. Also, the main difference between the various forms of life is how genes are regulated, not the number of genes. Gene duplication does not help evolutionary theory.

Dr Liu also studied the human immunoglobulin genes involved in making antibodies.² They occur in families, with several similar genes in each family. The genes in this system would seem to be ripe for originating by duplication. However the immunological system could never have functioned as a single gene because multiple genes functioning together

are needed. The proteins that regulate this gene family do not exist in lower organisms (thus brand new functions *still* have to arise, but this time from non-related proteins); *degeneration* happens faster than the supposed diversification.

Dr Liu also researched Endogenous Retro Viruses (ERVs),³ which evolutionists claim are accidental leftovers of retrovirus infections in the genomes of humans, chimps, etc. Even though they are supposed to be ‘junk DNA’, and ‘proof’ of evolution, scientists are finding many essential functions for ERVs. This includes important roles during reproduction, thoroughly undermining the evolutionary story. Dr Liu proposes that retroviruses came out of genomes, not vice versa.

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Life in the ICE AGE!



Erin Hughes and Lita Cosner

Simon peered out the frosty window. “Yay, snow! Can we go out, please?” Mom was ready with coats and mittens for everyone. Dad came downstairs, “Because the roads are blocked with snow, the office isn’t opening today! It looks like we all get a snow day!” Isabella added, “If we lived during the Ice Age you would never have to go to the office.” Dad replied, “Well, we know people lived through the Ice Age and I would imagine they had a lot of work to do.”

Was there really an Ice Age?

Evolutionists say that there have been many Ice Ages throughout history. Actually there was only one Ice

Age, and it was caused by Noah’s Flood. Though the Flood lasted only a year, its effects on the climate lasted centuries! Hot underground water was a major source of Flood waters, so even after they retreated back into the oceans, the water stayed warm. Also, massive volcanic eruptions would have poured ash into the air, which blocked out much sunlight over the land. So the land would have been much colder. Then some of the warm water evaporated into clouds, which then dropped much snow over the cold land. Over centuries, this packed into huge ice sheets covering a third of earth’s land. We can even see the effects the snow and ice had on the earth today; the ice at the North and South Poles is left over from this. The Ice Age lasted for about 700 years.



That means if we use the Bible as our timeline, Israel went down to Egypt close to the end of the Ice Age!

Is the Ice Age in the Bible?

'Ice Age' is a modern term, so that phrase is not in Scripture. However, there is an indication that Job lived during the Ice Age. Some of the things he mentions indicate that he was familiar with ice and snow—in a place that doesn't have a lot of ice and snow today. He said, "My brothers are as treacherous as a torrent-bed, as torrential streams that pass away, which are dark with ice, and where the snow hides itself". And God asked Job, "Have you entered the storehouses of the snow, or have you seen the storehouses of the hail?"



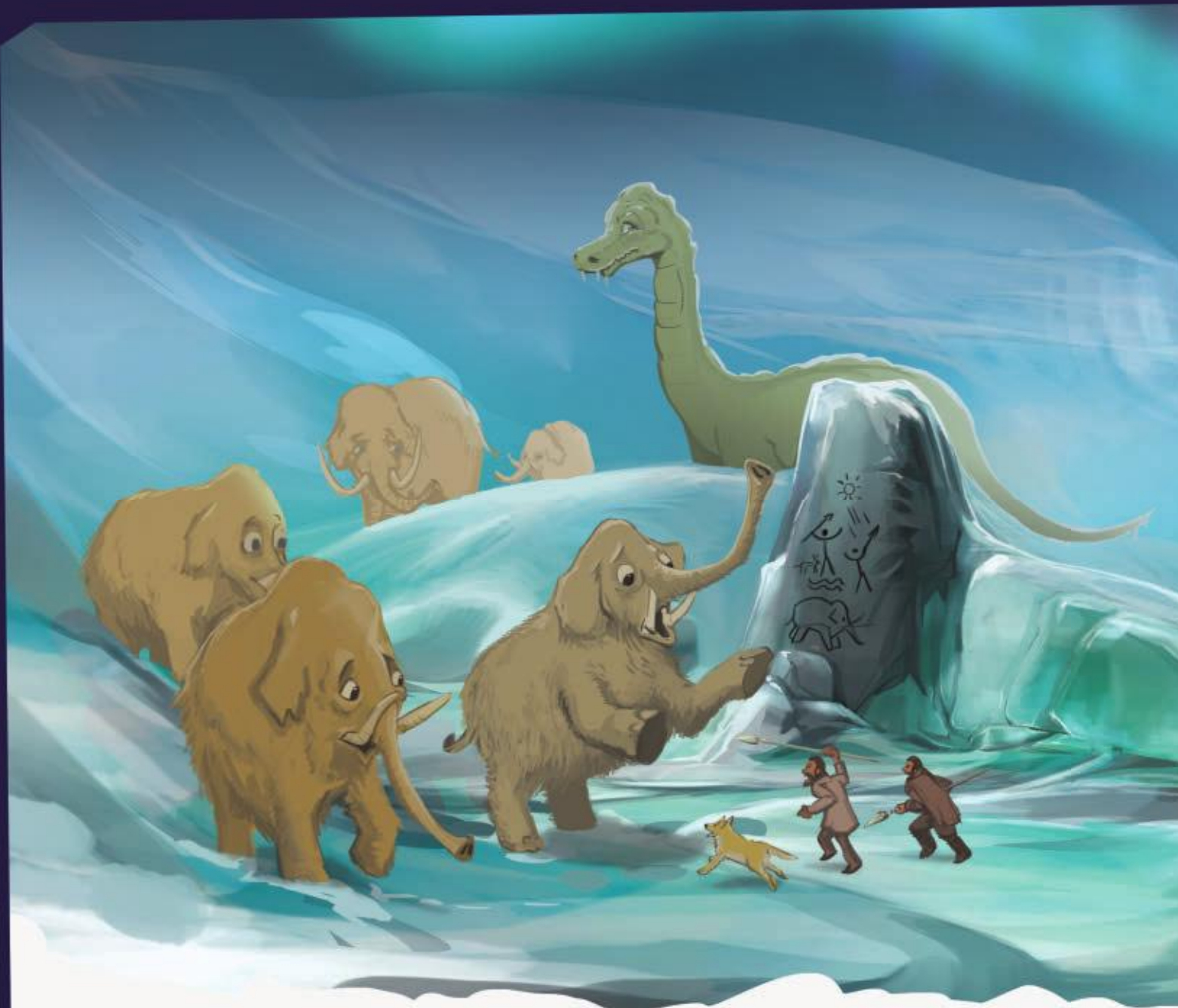
Dig a bit deeper: Job 6:15-16, Job 38:22

What did the Ice Age do?

While the earth we see today was mostly shaped by Noah's Flood, the Ice Age did its part, too! Glaciers, huge accumulations of ice, shaped the landscape. Ice formed dams for huge rivers, extremely deep lakes, and fjords (glacial valleys that were later submerged by the ocean). Another huge Ice Age flood caused a flood plain in Australia.

How did animals survive the Ice Age?

Different sorts of animals were able to survive because the whole earth wasn't affected in the same way by the Ice Age. There were places around the equator that were warm enough to support tropical life, like we see today. In



North America and Europe, many animals survived that had thick fur, or that were otherwise equipped for life in a cold climate. However, many animals did die as a result of the Ice Age. Some creationists think that the Ice Age might be why dinosaurs were never very common after the Flood—they seem to have been more suited to a warmer environment.

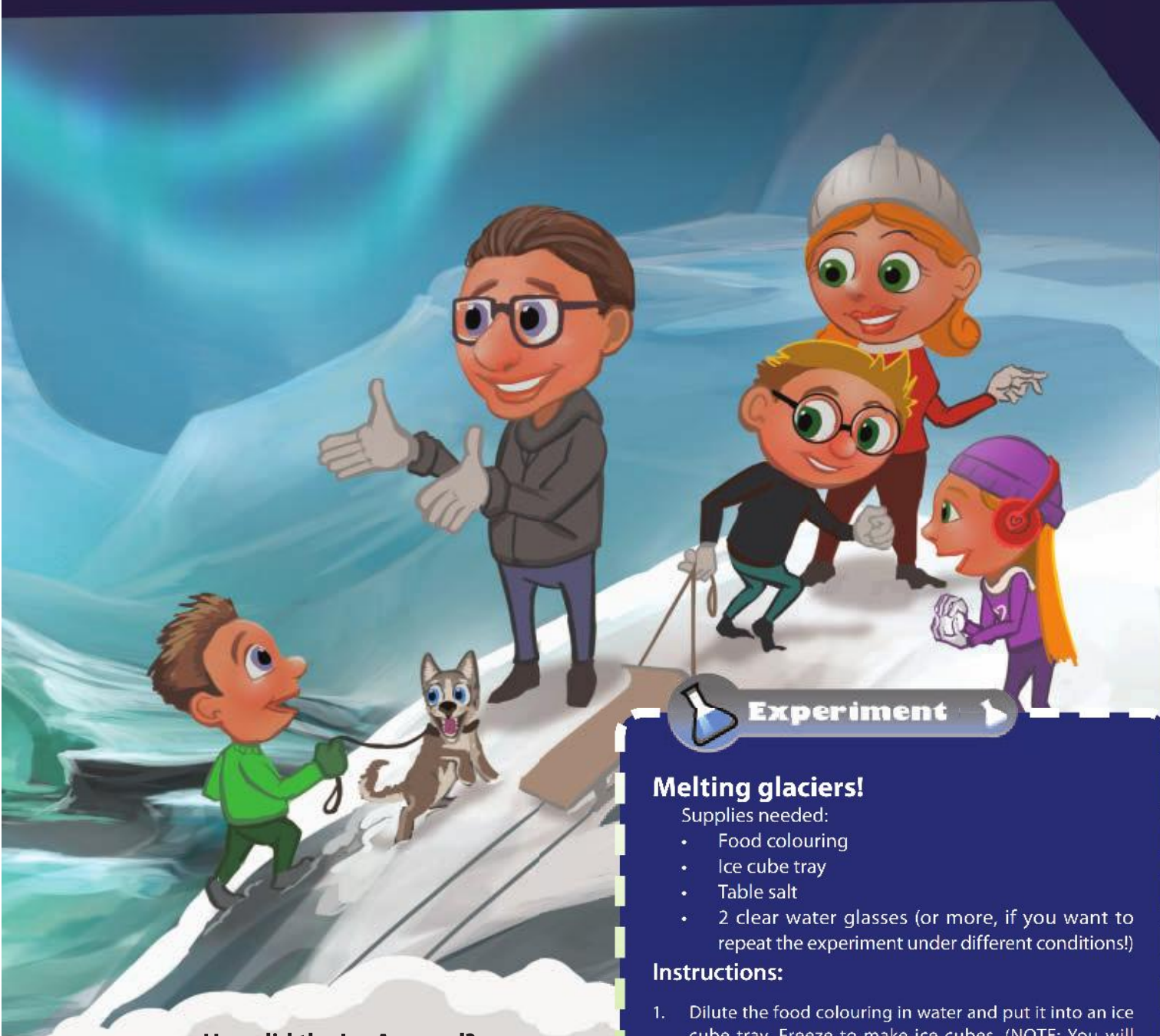
What did people do during the Ice Age?

We know that people lived in areas affected by the Ice Age, and some even thrived there. That's because God created humans to be very creative and able to adapt to

many different situations. Even today, people can live in places that become very cold, like Alaska and Greenland, or other places that become very hot.

We know that people hunted Woolly Mammoths and other animals for food during the Ice Age—in the cold, frozen parts of the world, it would have been hard to find enough plants to live on. Perhaps that is one reason God gave people permission to eat meat after the Flood! Caves made convenient homes for these people, and sometimes they painted on the walls, showing the types of animals they encountered.

 Dig a bit deeper: Genesis 1:29 & Genesis 9:3



How did the Ice Age end?

The imbalance that caused the Ice Age—the cold continents and the warm oceans—eventually corrected itself, and the snow and ice retreated from the continents. Today, only the extreme north and south of the earth is permanently covered by ice, reminding us today of one of the great events in the aftermath of the Flood.

Some animals that became specialized for living in the cold conditions of the Ice Age, like the Woolly Mammoth, seem to have gone extinct after the Ice Age. They may have been so specialized for the cold weather that they could not survive in a warmer climate.

"Thanks Dad, we sure did learn a lot this morning even though it is a snow day. Hopefully we don't run into any sabre tooth tigers while sledding."



Experiment

Melting glaciers!

Supplies needed:

- Food colouring
- Ice cube tray
- Table salt
- 2 clear water glasses (or more, if you want to repeat the experiment under different conditions!)

Instructions:

1. Dilute the food colouring in water and put it into an ice cube tray. Freeze to make ice cubes. (NOTE: You will notice that the colour may concentrate in the centre of the ice cube. That's because ice forms by water molecules making connections with each other, not the molecules that coloured the water. As the ice started to form from the outside, the dye got forced to the centre!)
2. Fill two glasses with water. Pour salt into one glass while stirring until no more will dissolve, and wait until the water is still. Drop an ice cube into each glass, and see what happens as the ice melts. Do the two glasses look different?

The food colouring distributed evenly through the freshwater glass because the water used to make the ice and the water in the glass have the same density. But salt water is denser than fresh water, so rather than mixing, the coloured fresh water from the ice rose to the top of the glass.

What happens if you stir the saltwater cup?

AM AR



shell might be for.

Aristotle proposed that the shell functioned as a boat, allowing the argonaut to sail on the water surface. 'Argonaut' means sailor (Greek 'nautilus', ναυτίλος) on the *Argo* (the ship of Greek mythology). The idea that argonauts raise their flanged dorsal tentacles as sails to catch the wind was widely accepted for over 2,000 years. But no-one ever observed them doing it.

Another wrong idea believed by many was that argonauts found inside shells washed up on beaches had stolen the shell from some other creature.

Note that only *female* argonauts were found in shells. It wasn't until the late 19th century that *male* argonauts were discovered and described. The argonaut sexes are very different, displaying what biologists refer to as 'extreme sexual dimorphism'. Lacking a shell, males are only about as big as the eye of a female, and one six-hundredth of their body weight. Only the females have the distinctive pair of dorsal arms¹ with web flanges. The webs secrete the mineral calcite (a form of calcium

THE DELICATE SHELL of the argonaut, also known as the 'paper nautilus', has long featured in art, architecture, pottery and jewellery. Finding them washed up on the shore, sometimes with the octopus-like resident still inside, people since the ancient Greeks have speculated about what the

AZING GONAUTS

SCIENTISTS FINALLY DISCOVER HOW THE FEMALE ARGONAUT REALLY USES ITS SHELL

DAVID CATCHPOOLE

carbonate) to produce the shell, from very early in life, when the female's mantle (i.e. the main part of her body behind the head) is only 7 mm long. As she grows bigger (up to 40 cm long), so her calcite-secreting webs enlarge the shell (up to 50 cm across).

The shell is now also known as an 'eggcase', where the female argonaut lays her eggs, protecting them there until they hatch.

Air in the shell: a calamity, or by design?

During the past 200 years, scientists debated whether air getting into the argonaut shell was beneficial or detrimental to survival. In various parts of the world, e.g. Japan, southern Australia, and the American west coast, argonauts are periodically found beached in large numbers after storms. The dominant theory was that air got caught in the shells when the argonauts went close to the sea surface, trapping them up there, then winds and waves would cast them ashore.

Biologists had certainly observed pockets of air trapped in the apex of female argonaut shells, especially in captivity. Aquarium-kept argonauts were reportedly often found 'stranded' at the water surface, because of air trapped in their shell.

However, researchers Drs Julian Finn and Mark Norman, from Museum Victoria (Melbourne, Australia), have

recently shown not only that the female argonaut *deliberately* puts the air in her shell, and how she uses her shell to do it, but they also note a very important *purpose* for doing so.^{2,3}

Diving with the argonauts

Armed with scuba gear and underwater video equipment and going down as far as seven metres below the sea surface, Finn and Norman manipulated captured argonauts so as to completely expel air from their shells, then released them. It was soon obvious that air-less argonauts were 'negatively buoyant', i.e. they would have sunk but for the action of their jets propelling them upward. Also, they "appeared to have difficulty in maintaining the vertical orientation of the shell, which flailed from side-to-side as the animal jetted."³

But not for long. In every case the argonauts ...

1. Immediately jetted up to the sea surface, then ...

2. Aimed their funnel backwards while jetting so as to cause the shell to bob above the water and rock forward, 'gulping' the maximum possible volume of air into the shell and sealing it off using the second pair of arms, then ...

3. Aimed the funnel jet forwards, causing the shell to roll away from the water surface, and ...

4. Forcibly jetted the now-buoyant shell downwards, until ...

5. They levelled out at the depth

where buoyancy from the trapped (and now compressed) air volume counter-balanced their own weight, and they jetted away.

As Julian Finn further explained in a video, achieving 'neutral buoyancy' is of critical importance to the argonauts' free-swimming existence in the 'water column':

"A problem that all animals have that live in open ocean, that live away from the sea floor up in the water column, is that they need to maintain their position. For the female argonaut the way that we found that she is attaining neutral buoyancy is that she's going up and gathering air. And the air is extremely buoyant—it's a large volume, but as you push the air down, the pressure of the water shrinks that air, and it becomes more compressed, and the buoyancy changes. And she pushes the air down to the point where the buoyant, the flotation nature of the air, and her weight, cancel out, so that she becomes neutrally buoyant, she becomes perfectly balanced between the upward pull and the downward pull, and then she's able to swim effortlessly."⁴

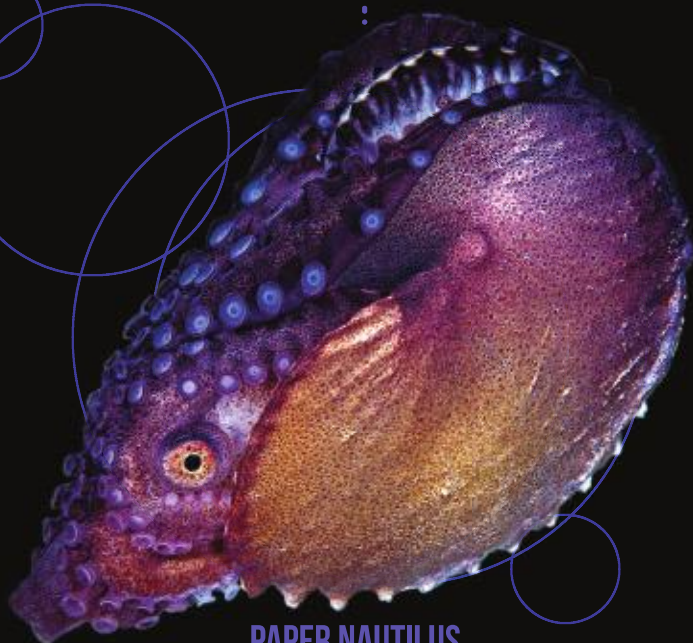
Indeed, as the researchers ruefully pointed out in their paper, "Once neutrally buoyant, the argonaut was capable of rapid swimming parallel to the water surface, at a speed that exceeded that of a swimming diver."³

By design, not evolution

Finn and Norman write presuming an evolutionary framework, e.g.: "Evolution of this air-capture strategy enables this negatively buoyant octopus to survive free of the sea floor."³ But is it *reasonable* to credit evolution with having conferred a 'strategy' that in the researchers' own words is "a complex, multi-phase behavioural sequence"?³ And it is highly finessed, e.g. during the argonauts' jetted descent from the sea surface the creatures changed

NAUTILOID LOOKALIKES

Argonauts (paper nautilus) are often confused with chambered nautilus because of the similarity in their shell shape. However, there are many differences, summarized below.¹⁰



PAPER NAUTILUS

Argonauta spp. in the Class Cephalopoda—
Order Octopoda

Shell made only by females

Shell is thin, papery, lightweight—made
of calcite

Shell is single-chambered

The animal holds on to the shell using
its suckers

The animal has eight arms

Three hearts

Two gills

Pelagic lifestyle—i.e. lives in the 'water
column' of the open ocean

Eats free-swimming molluscs and shrimp



CHAMBERED NAUTILUS

Nautilus spp., *Allonautilus* spp. in the Class
Cephalopoda—Order Nautilida

Shell made by both sexes

Shell is extremely strong—made of aragonite¹¹

Shell has multiple internal chambers

The animal is permanently bound to the shell in
the final chamber

The animal has around a hundred
sucker-less arms

One heart

Four gills

Benthic lifestyle—i.e. lives on the ocean floor,
on deep coral reef faces

Eats hermit crabs and scavenges dead animals
on the sea bed

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11. Another crystal form of calcium carbonate. See Sarfati, J., Super shells, *Creation* 27(3):19, 2005; creation.com/conch.

the orientation of their shells as depth increased. In shallower waters (2–3 m) the shell was held vertically and away from the body so that the larger volume of air could not escape. When descending to greater depths (7–8 m),⁵ the argonaut gradually rotated the shell towards horizontal and settled further into the shell as the air was compressed into the top of the shell by the increasing pressure.

Note also that by actively rocking the shell at the surface to capture air, the female can capture a larger volume of air than would be possible with a merely passive shell at the surface. This larger volume of air enables argonauts to maximize the depth at which they attain neutral buoyancy.

Where an argonaut cannot dive to sufficient depth—e.g. a shallow aquarium in a research laboratory—the large air volume within the shell draws the animal back to the water surface. But in normal circumstances, argonauts are master swimmers in their domain, with their shell functioning as “a hydrostatic structure ... to precisely control buoyancy at varying depths”.³ As Julian Finn mused:

“I’ve studied argonauts for many years, and I’ve looked at thousands of shells in museums, and I’ve gone through old texts, and read up on the old writings. But it wasn’t until I actually got an argonaut in the water that I really saw the true marvel of these animals. I mean, this female argonaut knows exactly what she is doing. We as scientists thought, ‘Oh, the poor argonaut is getting air caught in its shell, or it doesn’t know how to get rid of it.’ Underwater, she was *completely in control*. She went straight to the surface, got the air she wanted, and swam out of sight.”⁴

Surely, she was *designed* to do what she does do, and what she does do, she does do well! In contrast, an evolutionary story of argonaut origins is up against formidable challenges. E.g. as Finn and Norman themselves point out, the mooted bottom-dwelling octopus/cephalopod ancestor of argonauts cannot have initiated the ‘air-gulping’

shell buoyancy control strategy at depth as the critical air is obtained from the sea surface.³ And what of the nautiloid ‘lookalikes’ (see p.36), distinctly different yet sharing some common design principles?—a *common designer* makes much more sense than evolutionary claims of ‘common ancestry’ and/or ‘convergent evolution’.⁶

Also, evolutionists must face the challenge of the argonauts’ unique mode of reproduction. The minute male’s 3rd left arm, called a ‘hectocotylus’, carries spermatophores⁷ to the female argonaut in the most incredible fashion. When the hectocotylus explosively bursts out of a pouch just below the male’s eye, the male dies, but his hectocotylus ‘lives’ on,⁸ swimming to the female and attaching itself by means of suckers, then entering her mantle. It remains there until the female is ready to use it for fertilization. She can actually store several males’ hectocotyluses simultaneously, in advance of laying her eggs. In the early 19th century the zoologist Georges Cuvier discovered these in female argonauts and mistakenly thought they must be a type of parasitic worm, naming them after their ‘hundred suckers’, *Hectocotylus octopodis*.

Possibly evolutionists will come up with a believable-sounding story about the origins of argonaut reproduction,⁹ at least as creative and intelligently conceived as the notions that argonauts parasitize other creatures’ shells, hoist their flanged tentacles as sails, and suffer from air trapped in the shells and from hundred-sucker parasitic worms. The basic problem with all such stories is that they were expounded from *incomplete* eyewitness evidence or *none at all* (cf. Deuteronomy 19:15, 2 Corinthians 13:1). In contrast, the Bible’s reliable eyewitness account of key events in history leaves no room for evolution—rather, the seas teeming with life, filled from ocean surface to seabed with diverse kinds of sea creatures all reproducing according to their kinds, were created by God Almighty as His Word states (Genesis 1:20–21). ■

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6. ‘Convergent evolution’ is the notion that similar biological features evolved independently multiple times across diverse classes of organisms. What faith is this, believing that complex design attributes could have evolved not just *once* but *twice* or even *more* times?! See: Batten, D., Are look-alikes related? *Creation* 19(2):39–41, 1997; creation.com/lookalikes.
7. Capsules containing the male’s sperm.
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CHARGED-UP SPIDERS

ON THE MOVE

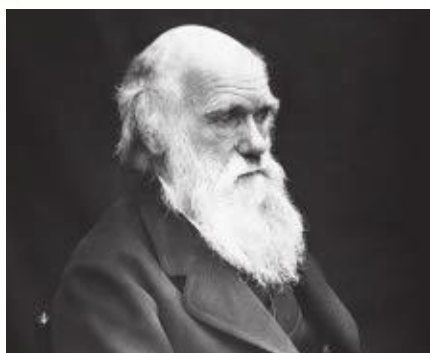
Warren Nunn

IT COULD be a scene from a Hollywood horror movie—millions of spiders descending from the sky on to a ship being tossed about on the ocean miles from land. While Hollywood would make them huge, man-eating spiders (and the crew would have to battle to survive the infestation), the real event isn't scary. Instead, it is incredibly fascinating. It even happened to Charles Darwin on board *HMS Beagle*, about 100 km (60 miles) off the coast of Argentina in 1832. And it was Darwin's observations of the spiders' action that caused a modern-day scientist to consider the possibility that arachnids harness electrostatic energy to 'balloon' from point to point. Who hasn't been 'zapped' by static electricity?

University of Hawaii physics professor Peter Gorham challenged existing aerodynamic theories to make the case for electrostatic flight in ballooning spiders by looking at the physics of such actions.¹

GOSSAMER THREADS

Some spiders (mainly hatchlings) have been observed producing silk threads (called gossamer) and 'ballooning' away on a kind of parachute for various distances, usually on the wind. They have also been recorded at great heights (up to 4,000 m [13,000 ft]) and are known to travel considerable distances.



After Mount St Helens erupted in 1980, millions of air-borne spiders descended on the area as it regenerated.² When the island of Surtsey was born of a huge undersea volcanic eruption off Iceland in 1963, the first people to set foot on it in early 1964 saw spiders 'ballooning' on silken threads.³ More recently, millions of spiders 'ballooned' into the rural city of Goulburn about 200 km (120 miles) south-west of Sydney, Australia.⁴ They can even 'sail' the seas.⁵



Gorham considered Charles Darwin's notes of an extraordinary influx of ballooning spiders on to the *Beagle*, about which the world's most revered evolutionist wrote:

"While watching some that were suspended by a single thread, I several times observed that the slightest breath of air bore them away out of sight, in a horizontal line. On another occasion (25th) under similar circumstances, I repeatedly observed the same kind of small spider, either when placed, or having crawled, on some little eminence,

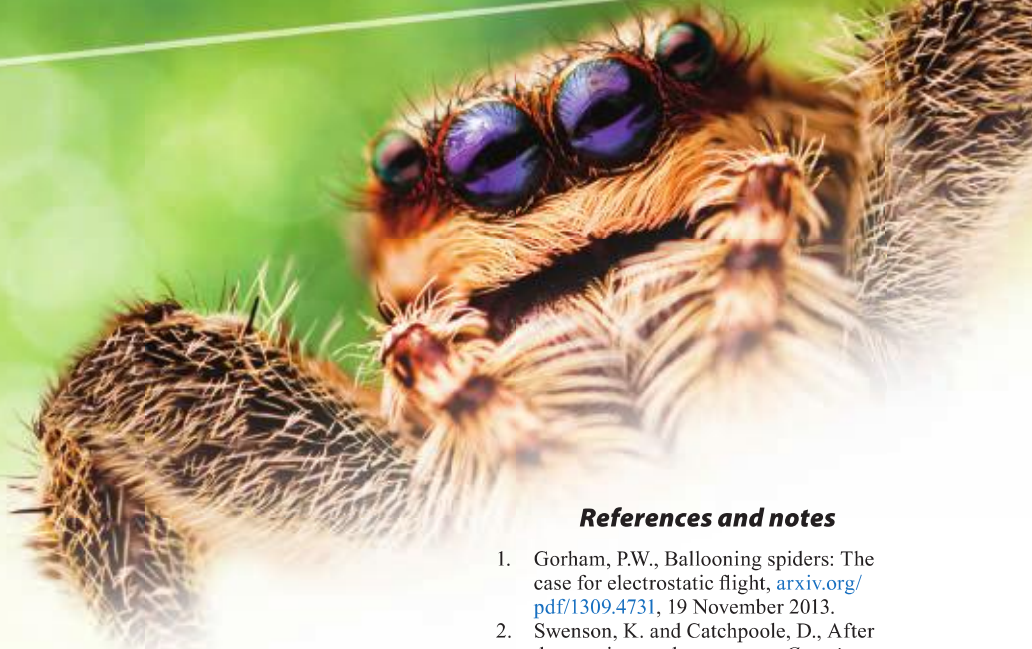
elevate its abdomen, send forth a thread, and then sail away in a lateral course, but with a rapidity which was quite unaccountable."⁶

The fact that Darwin saw spiders project away at such speed—and also horizontally—convinced Dr Gorham that electrostatic forces could be at work.

FLIGHT CONTROL

To test this, Gorham considered the effect of the earth's electrostatic field, the forces a spider would need to generate to 'take off', and why





horizontal projection was sometimes observed.

Gorham concluded that a spider's silk strand must produce a charge in order to 'lift'. The silk has charge-bearing molecules (amino acids) which—when in contact with other materials—become negatively charged. Also, the silk is thought to charge as it leaves a spider's spinneret (silk-spinning organ), which fits with observations of them launching vertically as well as horizontally.

To test why Darwin saw spiders launch horizontally from the *Beagle*, Gorham noted that on a computer-generated model of the vessel, it showed “a significant horizontal component [of the electric field] near the ships [*sic*] rail over most of its length”.¹

He concluded that “existing observations and the physics of spider silk in the presence of the Earth's static atmospheric electric field indicate a potentially important role for electrostatic forces in the flight of Gossamer spiders”.¹

“Given these results, it appears that the near-horizontal launches observed by Darwin are consistent with expectations if the charge state of the silk is relatively high at the time of initial spinning or shortly afterward. Such launches are very difficult to explain by thermal convection given the calm conditions noted by Darwin,” Gorham wrote.¹

Gorham sees a naturalistic explanation to the phenomena that “will place the Gossamer spider's electrification ability among the most striking evolutionary adaptations that Darwin encountered on his voyage”.¹

EXTRAORDINARY FEATURES

Spiders, of course, are perfectly designed by the Creator and endowed with this and other extraordinary features. Consider the following:

- Spider silk is stronger than steel.⁷
- Spiders can use different features on their legs and feet according to whether they need to cling to rough, or smooth, surfaces.⁸
- They can make silk at different speeds.⁹
- They can use their silken strands to lift objects below.¹⁰
- The electrostatic properties of spider silk (and a ‘quirk of physics’) causes webs to actively spring towards prey and other passing objects.¹¹
- Spiders are unchanged from those found as fossils. Why no evolution during the supposed intervening millions of years?¹²
- In England, spiders consume so many insects each year that their combined weight is estimated to be equal to that of all the humans on earth.¹³
- Some spiders are known to be vegetarians.^{14,15}

Spiders are yet another reminder of the Master Designer's special creation which we know from the Bible occurred in six days, about 6,000 years ago. Now, who wouldn't get a ‘charge’ out of that? ■

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OUT OF SEQUENCE FOSSILS

ARE THERE
OUT-OF-
SEQUENCE
FOSSILS
THAT ARE
PROBLEMATIC
FOR
EVOLUTION?

Gary Bates and Lita Cosner

IT SEEMS some prominent evolutionists like the US's 'science guy', Bill Nye, often claim that there are no out-of-order fossils in the geologic record, because if there were any, it would be problematic for the evolutionary model. Christians at universities have said this assertion is being used as a club by lecturers to 'beat' them with. So how can we answer this challenge? Is it strong evidence for evolution and a falsification of the creation model?

A constantly changing story

First, by definition, evolutionists would say there are no out-of-sequence fossils, claiming that the fragmentary nature of the fossil record means that we don't have a good idea of the entire period a fossil belongs in. So if we find a fossil in a stratum that is supposed to be 100 million years older than the species (using evolutionary dating for the sake of the argument), it simply means that it evolved 100 million years earlier than they thought. Their interpretation of the fossil record is so flexible that it can incorporate virtually any unexpected surprises. In short, evolution is assumed to be a fact and then used to explain the fossils.² So, no matter what is found, by the very nature of the way evolutionists interpret the facts, nothing would falsify evolution anyway!³

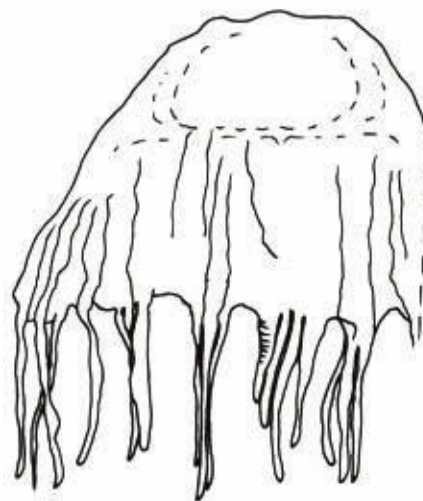
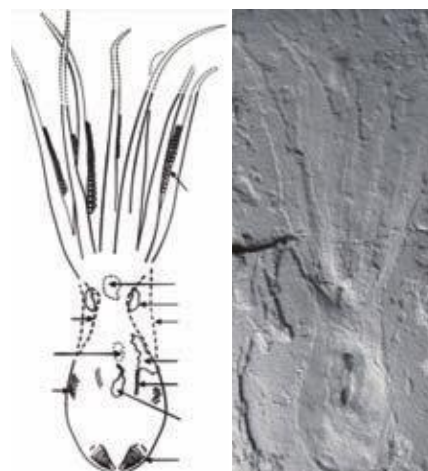
A better response would be to ask if evolution has made predictions about the



An exceptionally preserved, very modern-looking jellyfish supposedly one-half billion years old.

Cartwright, P. Halgedahl, S.L., Hendricks, J.R., Jarrad, R. D., Marques, A. C., Exceptionally preserved jellyfishes from the Middle Cambrian, Public Library of Science ONE 2(10):e1121 | doi:10.1371/journal.pone.0001121, October 2007.

fossil record that have been confirmed or contradicted by subsequent discoveries. And by this measure evolution falls dramatically short. For instance, Charles Darwin said that "no organism wholly soft can be preserved." But he was massively wrong, because we have many examples of this. E.g. there are hundreds of fossilized jellyfish⁵ and a fossilized squid⁶ that look remarkably similar to the same creatures living today. Yet they are claimed to be 505 million years (Ma) and 150 Ma old respectively. The fossilized squid even contained an ink sac so fresh the dried ink could be used to paint a picture after reconstitution. The ages assigned to these fossils come from their position in the alleged geologic column and the dates assigned



Fossil photo and diagram from D. Fuchs et al., ref. 4

Remarkably preserved fossil octopus from Lebanon reveals details of the eight arms, suckers, ink, gills, mouth, eye capsule, and more.

Lots of inconvenient fossils

There are a lot of fossils that don't fit within the neatly-defined evolutionary order of things paraded in our geology and biology textbooks:

- Trilobites in Cambrian strata, which are allegedly 500 million years old, have eyes that are far too complex for their place in the fossil record.⁸ That is, they have no precursors to their appearance.
- Perhaps most astonishingly, pollen fossils—evidence of flowering plants—were found in Precambrian strata. According to evolutionists, flowering plants first evolved 160 million years ago, but they say the Precambrian strata are older than 550 million years.⁹
- A dog-like mammal fossil was found with remains of dinosaurs in its stomach—but no mammals large enough to prey on dinosaurs were supposed to exist alongside them.¹²
- Dinosaurs are supposed to have evolved into birds. But *Confuciusornis* was a true beaked bird that pre-dates the 'feathered' dinosaurs that it allegedly came from.¹⁰
- Grass phytoliths have been found in dinosaur coprolites (fossilized dung). But grass was not supposed to have evolved until at least 10 million years after the dinosaurs went extinct.¹¹
- A mammal hair was found in amber supposedly 100 million years old. It was completely modern-looking, showing that mammal hair hasn't evolved at all since the 'age of the dinosaurs'!¹³

As Calvin Smith summarized:

"To the surprise of many, ducks, squirrels, platypus, beaver-like and badger-like creatures have all been found in 'dinosaur-era' rock layers along with bees, cockroaches, frogs and pine trees. Most people don't picture a T. rex walking along with a duck flying overhead, but that's what the so-called 'dino-era' fossils would prove!"¹⁴

to the rock layers in which they were found. Remember that evolutionists have said that the rock layers have been slowly deposited over millions of years, and similarly, the process of burial and permineralization is supposed to have taken a very long time.

But besides soft-bodied creatures, we have fossils like an ichthyosaur giving birth,⁷ fish in the process of eating other fish, and fossilized raindrop impressions in sand that capture moments in time. They must have been preserved *quickly*. Logically, if the fossils themselves provide evidence for rapid burial, then it only makes sense to presume that the sediments that buried them had to also be deposited quickly.

Tiktaalik? 'You gotta be kidding!'

The media was in a frenzy about the discovery of an alleged sea-to-land (fish-to-tetrapod) intermediate called *Tiktaalik roseae*.

This 'perfect missing link' was cited as a 'slam dunk' for evolution and

supposedly fulfilled an evolutionary prediction. *Tiktaalik* has appeared on the cover of magazines, and textbooks, and it even has its own theme song and website to promote evolution.

But they all fail to mention that fossil tetrapod footprints have been found in Poland which evolutionists 'date' at 18 million years *before Tiktaalik*.¹⁵ It can't be the claimed ancestor of land vertebrates if it arose long after them. That looks like a slam dunk for falsifying that evolutionary story!

'Living fossils' are out-of-place for evolutionists

Another indication that the evolutionary story is flawed is the huge number of living fossils. That is, creatures that have been found in the fossil record have been assigned ages of hundreds of millions of years, yet are identical to creatures alive today. Dr Carl Werner has documented museum displays showing how many modern animals are found in dinosaur-era rock layers. Dr Werner said:



Tiktaalik

"I found representative examples from all of the major animal phyla living today and all of the major plant divisions living today. Taking it one step further, within these bigger groups, I frequently found representatives of all the major groups or classes within a phylum."¹⁶

But if all these animals are found in dinosaur-era layers, what has evolution been doing for the last hundred million years? For example, if apes eventually became humans in just 6 million years, how, with ever-changing ecological pressures, can there be so many plants and animals that are basically

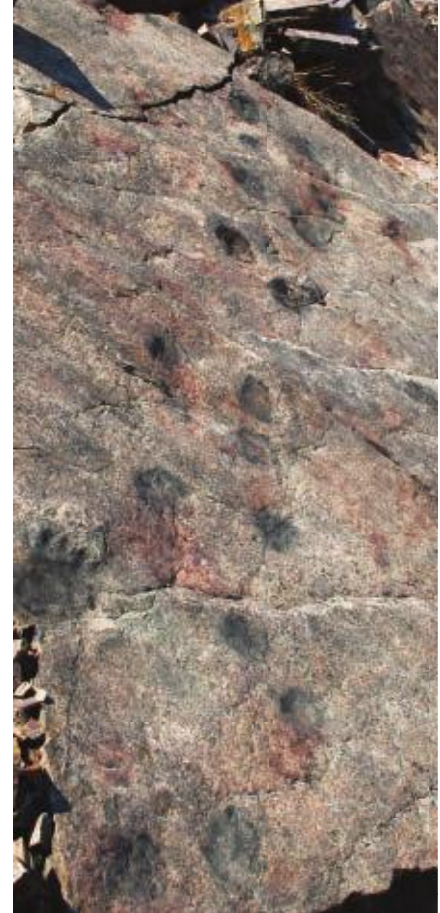


Undina penicillata (a species of fossil coelacanth) Münster, Upper Jurassic, Germany. From Wikimedia Commons.



Preserved specimen of *Latimeria chalumnae* (west Indian Ocean coelacanth) in the Natural History Museum, Vienna, Austria. From Wikimedia Commons.

Fossil and modern coelacanth. The coelacanth is an example of a 'living fossil'.



Limestone slab from Poland with fossil tetrapod footprints that predate *Tiktaalik*.

unchanged from their forms supposedly millions of years ago?

For instance, the Wollemi pine was supposed to have thrived around 150 million years ago and to have been long extinct, but in 1994, it was found growing in a forest in New South Wales, Australia. Even evolutionists claimed it was “like finding a live dinosaur”.¹⁷ And the coelacanth was supposed to have gone extinct around the same time as the dinosaurs, but we know that this deep-sea fish is still living because fishermen have caught them and *National Geographic* has filmed them swimming around!¹⁸

The ‘Cambrian explosion’ is an out-of-order problem for evolutionists?

In Cambrian rocks (some of the allegedly oldest complex-fossil-bearing rocks on earth—500+ Ma), ‘index’ fossils of just about every major phylum can be found. This has long been a massive problem for evolutionists, because next to no ancestor candidates of these organisms

appear below them—they appear suddenly and simultaneously in the fossil record. As there is no smooth and gradual sequence to the appearance of these fossils, one could argue that the millions of creatures that represent the Cambrian explosion are out-of-sequence fossils by the evolutionists’ own measure.¹⁹



Cross-section of a coprolite (fossilized dung).
Photo by Keaton Halley

There are many exceptions to the neatly portrayed order of the fossil record

In fact, the more fossils we find, the more random the picture becomes.²⁰ This does not fit the orderly progression of ever-evolving specimens that evolutionists would predict. But it does fit very well with the creationist

narrative of plants and animals created “according to their kinds” (Genesis 1), and buried in a worldwide catastrophic Flood.

In reality, the fossil evidence speaks against the neatly pigeonholed sequence that is claimed.

So, evolutionists might want to think twice before drawing attention to such a vulnerable chink in their self-proclaimed armour!

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PIERCING THE DARKNESS

Evolution is such a stronghold that many ‘doubting’ scientists dare not speak up for fear of ridicule, discrimination and even loss of funding for their work. As such, academics rarely get to hear good creationist responses to what they’ve been told or are even teaching. Our in-depth *Journal of Creation* can shine a light into this darkness by demonstrating that real scientists can believe in, and develop good models for, biblical creation.

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Evolutionary ART?

A FLY WITH INSECTS PAINTED ON ITS WINGS!

■ Philip Bell

IN RECENT years, tiny flies with pictures on their wings have excited and intrigued scientists and lay people alike. “Surely those aren’t real?” people ask, aware of the need for a healthy dose of skepticism in this age of sensational claims. On first viewing, some wonder aloud whether the images have been photo-shopped¹ by a talented graphic artist.

Picture-wing fly

The species of fly pictured here (*Goniurellia tridens*) is very real indeed. Flies of this sort have been known to science for a century or more—and many more species have been described (in the family Tephritidae).² They are fruit flies, not to be confused with the more familiar *Drosophila* genus of fruit flies (family Drosophilidae).

Picture-wing flies were brought to the attention of a new generation when Dr Brigitte Howarth, a fly mimicry specialist at Zayed University, encountered *G. tridens* in the United Arab Emirates. The *National* (UAE) reported, “... a closer examination of the transparent wings of *Goniurellia tridens* reveals a piece of **evolutionary art**. Each wing carries a precisely detailed image of an ant-like insect, complete with six legs, two antennae, a head, thorax and tapered abdomen [my **emphasis**].” One might add to this an eye, a visibly darker area of the head. Furthermore, Dr Howarth was reported as exclaiming, “The image on the wing is absolutely perfect.”³

When we talk of a ‘piece of art’, we often have in mind a painting or sculpture, something which is aesthetically pleasing—often intricate or beautiful—and which displays the skill and talent of its maker. A person’s artwork doesn’t have to have any utilitarian value in order for it to be highly acclaimed. As we say, ‘beauty is in the eye of the beholder’ and we’re familiar with artworks which may ‘do nothing for us’ fetching fantastic sums of money at auction.⁴

Works of art frequently depict objects with which we’re familiar; a sketched or painted image might be an impressionistic representation or else a very close likeness. In the case of the ant-like insects on the wings of *G. tridens*, the likeness is so accurate that Dr Howarth initially took it to be “an infestation on the fly’s wings”—but seeing the perfect symmetry of the two images intrigued her. “When I got it

under the microscope I realised that these were insects painted onto the wings.”³

Art without an artist?

The precise function of these images isn’t entirely clear.⁵ Some think they could be used as part of the fly’s courtship (attracting a mate), others that they may be for defence; that when threatened, the fly exposes the images on its wings, and the appearance of tiny ants seemingly walking back and forth may confuse a potential predator. However, *G. tridens* is about 3 mm (1/8 in) long and the ‘ant’ images only 1 mm long. That’s about the size of the world’s tiniest species of ant,⁶ so it seems rather unlikely that a jumping spider (the fly’s predator) would be deterred by these minuscule ‘creatures’.

Many will agree with the fly specialist that the wing images are “absolutely perfect” depictions of ant-like insects. They’re works of art—but “evolutionary art”? The strikingly accurate depictions seen in some human artworks demonstrate the skill of intelligent artists. Paintings do not paint themselves! That these wing images qualify as aesthetically pleasing ‘art’ is hardly in question, yet the idea of ‘evolutionary art’ is an oxymoron.⁷

By definition, evolution is meant to be purposeless and undesigned. Charles



Photograph by Peter Roessenschoon

Darwin wrote, “I cannot look at the Universe as the result of blind chance, yet I can see no evidence of beneficent design, or indeed of design of any kind in the details.”⁸

Contrary to this, the Bible testifies that the natural world everywhere reveals overwhelming evidence for the Creator (Romans 1:20). Complex design implies an intelligent designer.⁹ Architecture requires an architect. Surely, then, the artful miniatures on the wings of this tiny fruit fly are testimony to the Divine Artist?¹⁰

Divine artwork?

Well, not so fast. Could there be a different explanation for these artworks that, while not supporting the evolution of new kinds of creature, nevertheless accounts for the art’s appearance by natural processes? A few Tephritid fly species are known to have similar, but less well-defined ‘ants’ on their wings, while numerous other species in this family have patterned wings, but no obvious images at all. Did the Creation Week flies possess the artwork whereas most of the other species (related to *G. tridens*) have devolved (losing the defined artwork)? If so, they were directly ‘painted’ by God.

Alternatively, did the originally created flies lack such images entirely, a few species gradually acquiring them, over thousands of years of natural selection, because of some protection afforded by ant mimicry? If the latter, the case for their intelligent origin would not be quite so obvious.

Imagined patterns?

Human beings have a tendency to see patterns and objects where they don’t really exist—for example, faces on toast, in the clouds or even on Mars!¹¹ Pareidolia is the name given to this psychological phenomenon. A combination of the brain’s perception



Photograph by Peter Roessenschoon

A *G. tridens* fly with wings folded at rest. Notice the sand grains for scale.



"Each wing carries a precisely detailed image of an ant-like insect, complete with six legs, two antennae, a head, thorax and tapered abdomen", Dr Brigitte Howarth, Zayed University (UAE).

and the power of expectation ('seeing what we want to see') can result in something *entirely* coincidental being claimed as significant, even supernatural.¹² Are these wonderful ant-like images on the wings of *G. tridens* simply a fluke and we're seeing more than is really there? Well it certainly cannot be said that Dr Howarth is guilty of pareidolia regarding these images; as indicated earlier, she didn't expect to see anything of the sort and initially thought she was observing a fruit fly infested with actual miniature insects!

Naturally selected images?

Like Dr Howarth, many evolutionary biologists are also unwilling to explain away such striking ant depictions by appealing to pareidolia. Their only alternative is to argue that it's a case of naturally acquired mimicry. This is the position of arch-evolutionist Professor Jerry Coyne (well known for his antipathy to God).¹³ Along with a few others, he speculates that *G. tridens*' painted wings may be depicting spiders instead of ants, but acknowledges, "The truth is that we don't really know why this fly has antlike markings..."¹⁴

As already mentioned, their small size is a problem for a naturalistic origin (what use are they?). And could such life-like ant-art really be accomplished by natural selection within the biblical timescale? We have regularly demonstrated that natural selection is a valid part of the creation model, certainly *not* the same thing as big-picture evolution.¹⁵ Nevertheless, it seems a big ask to expect so many distinct insect features (as listed by

Dr Howarth) to be arrived at by such a process.

British surgeon and author Dr Vij Soderia asks whether the changes you would need to see (to gradually evolve something complex and useful) are really possible, concluding, *What you want you won't get*.¹⁶ For instance, if useful mutations *could* arise randomly, unless they enhanced the organism's fitness (thus, its survivability), they would be invisible to natural selection *until* many other random mutations had been added.

Yet, the earlier mutated DNA sequences (with a neutral effect on fitness until much later on) would themselves be susceptible to mutations; such that, over evolutionary timescales, they would become completely scrambled before a later usefulness arose. Applying this to the artwork on the wings of *G. tridens*, is it really conceivable that all the body parts of the ant-like image were *gradually* produced by blind natural selection?

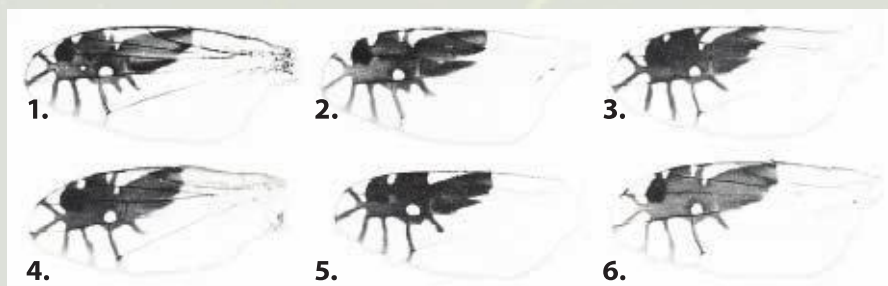
The Creator's design

Within the creation model and timeframe, if one day it was

demonstrated that the images had indeed arisen after Creation Week, there's a more likely explanation—that the Creator pre-designed these fruit flies with the in-built capacity to produce ant images on its wings. If so, it would be an example of the plasticity of a creature's outward appearance being brought about by the execution of pre-programmed 'sub routines' in the DNA.¹⁷ This seems to be the case with the many varieties of orchids with intricate reproductive systems.¹⁸ In other words, if natural selection cannot explain what we see, there are two options. Either, God painted ant-like creatures on the wings of *G. tridens* from the start, or else He designed their genetic system with the capacity to produce the images in response to some later environmental cue, whether related to mimicry or not.

Whether the artwork existed from Creation week or was acquired later via pre-programmed variability, or even natural selection, there is nothing here that is incompatible with biblical creation. Flies changing into the same kind of flies, albeit with different wing patterning, does not demonstrate how flies could evolve into something basically different. Moreover, God not only created but continually upholds all things (Colossians 1:17; Hebrews 1:3). This speaks of His intimate ongoing interest in all that He has made, these humble fruit flies included.¹⁹

Add to this God's sovereignty and foreknowledge, and we must surely credit the Divine Artist. 'Evolutionary art' it cannot be, for such an ideology makes no allowance for *intelligent* design or artists.



Figs 1–6. Wings of Goniurellia species. 1. *G. tridens* (Hendel). 2. *G. longicauda*. 3. *G. munroi*. 4. *G. omissa*. 5. *G. persognata*. 6. *G. spinifera*.

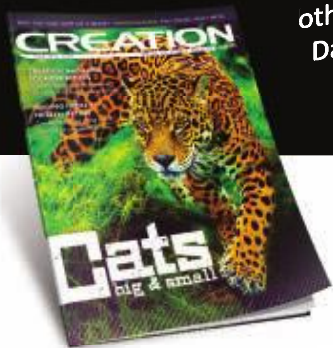
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5. Whatever the *function*, this in no way detracts from the images being, simultaneously, *artistic*—as is the case with countless man-made objects.
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~The~ ELEPHANT IN THE ROOM

This idiom is used to describe an obvious problem confronting people that they don’t want to talk about. Biblical creation is such an ‘elephant’ for evolutionists. For example, they claim that dinosaurs died out at least 65 million years ago. Finds of soft tissues, blood cells, DNA and even carbon-14 testing of dinosaur bones show this to be a huge problem for their evolutionary assumptions. However, this is not a surprise for creationists who believe that dinosaurs, along with other land animals, were created on Day 6 just a few thousand years ago.



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By subscribing your family and friends to *Creation* magazine they will get to hear the ‘problematic’ information that is often ignored by the secular community, and it could also help change the lives of your friends and family members too. See page 2 for details.

I^N

1961, Drs. Whitcomb and Morris published *The Genesis Flood*¹ demonstrating how the overall picture of geology is favourable to the global Genesis Flood. Since then, many secular scientists have challenged this. The questions mostly involve the short timescale presented by the tight chronogenealogies of Genesis 5

and 11. Over the years, creation scientists have provided reasonable answers to these challenges in the *Creation Answers Book*.² Other works provide in-depth answers to geological questions.³ Still, unanswered questions remain.

Ancient ice ages?

One earth science challenge is ‘ancient ice ages.’ There was a real Ice Age that occurred rapidly after the Flood, based on features we see on the surface of the earth.^{4,5} We do not include this Ice Age in this article. The concept of ancient ‘ice ages’ comes from certain rocks found in cliffs across the earth. The rocks do have a superficial resemblance to rocks and features seen around glaciers today.

Secular scientists date these ancient ice ages into four main periods within their earth history story. Their earliest ‘ice age’ was over 2 billion years ago and the most recent around 280 million years ago.



Fig. 1: Rock assumed to be from an ancient ice age over 2 billion years old from Larry Island, Ontario, Canada. Scratches on top of rock are actually from the post-Flood rapid Ice Age.

THE CHALLENGE OF ANCIENT ICE AGES ANSWERED

Michael J. Oard

They say that some of these ice ages were so severe that they covered most, if not all, of the earth. This idea is known as ‘snowball earth’, which is based on rocks they think were laid down in the ocean in the tropics.

One major problem with the idea of snowball earth is that the reflectivity of white snow would cool the earth down by about 100 degrees Celsius (180 degrees Fahrenheit), way below freezing, and the condition would likely be permanent. Secular scientists realize that melting the frozen globe is a serious challenge. They have come up with some far-fetched ideas to explain how it melted. Interestingly, when I investigate challenges to the Bible, I usually find such challenges are also challenges for secular scientists. Often the challenges for secular scientists are even

worse, such as the example of snowball earth.

What is the evidence for these ancient ice ages in the rocks? First, the rocks look like hardened glacial debris composed of rocks of all sizes surrounded by small particles, such as sand (figure 1). These deposits are discovered to have covered tens of thousands to sometimes over 100,000 km². Second, the rocks sometimes have features similar to glaciated areas today, scratched rocks, scratched bedrock (figure 2), and larger rocks floating within banded layers of fine sediments.

Do the features always indicate glaciation?

A major problem is that other processes can create the features that secular scientists think indicate ancient ice



Fig. 2: Scratched bedrock from an ancient ‘ice age’ (courtesy of Tas Walker, pictured for scale).



Fig. 3: Landslide debris south of the Stillaguamish River, Washington, USA.

ages. Even a few secular scientists have pointed this out,⁶ but have been ignored.

Various types of landslides can produce all of the features used to ‘prove’ ancient glaciation.⁷ Landslides can duplicate the glacial look of the rocks and fine particles (figure 3). The movement of the rocks in the landslides can scratch rocks as rock scrapes against rock. Landslides also can scratch bedrock as the landslide moves over hard rock. Landslides can also cause large rocks to float in finer-grained layered sediments. Other creation scientists have come to the same conclusion.⁸

Evidence that landslides scratch rocks is shown by an ancient landslide deposit on top of the Gravelly Mountains of southwest Montana. It

displays glacial-like features, namely rocks of large size surrounded by finer sediments (figures 4 and 5), scratched bedrock (figure 6), and scratched stones.

The Flood caused the landslides

Present-day landslides are small, while the debris claimed to be from alleged ancient ice ages sometimes covers very large areas. One claimed ice age deposit in South Africa was believed to cover most of the country. This claim is based on scattered outcrops.

How can these large landslides be explained within the biblical worldview? The vast majority of the earth’s sedimentary rocks were laid down by the Flood.¹ So, these ‘ice age deposits’ are from the Genesis Flood. There could not have been any large accumulations of snow and ice at that time. The Flood water would have been too warm from the ‘fountains of the great deep’ and abundant volcanism.



Fig. 4: Top surface of landslide debris on the rolling top of the Gravelly Range, southwest Montana, USA (view north).



Fig. 5: Scratched boulder of well-rounded quartzite within finer-grained sediments at the location of Figure 4.



Fig. 6: Scratched bedrock from the landslide on the top of the Gravelly Range, southwest Montana, USA. Note landslide debris lower right of photo.

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However, the Flood was global and can account for the large size of most of these ancient ice age deposits⁷ and it did produce huge landslides. There would be locations in the Flood where very thick sediments piled up. Because of uplift of the area or earthquake shaking, the sediments would slide rapidly and spread over large areas. This would be similar in size to other sedimentary layers that can sometimes be traced for hundreds to even a few thousands of kilometres.

There is evidence within the deposits that the Flood laid down these layers. Nearly all of the deposits appear to have been deposited in ocean waters, which is exactly what we expect from the Flood.

Concluding thoughts

The study of the challenge of ancient ice ages to biblical creation points to how we can approach other challenges by first gathering the facts and sifting out bias. Often we find the challenge presented by secular science is also a problem for them.

More often than not, we discover that the Flood or the post-Flood rapid Ice Age accounts for the challenge. It is important to keep in mind that our information about the Flood and Ice Age may be incomplete. The vast size of the global Flood and Ice Age would cause unique events and result in unique features. I have found that restoring the Flood to earth history commonly provides reasonable answers to challenges.

Submarine flow and slide deposits in the Kingston Peak Formation, Kingston Range, Mojave Desert, California: evidence for catastrophic initiation of Noah's Flood, in: Walsh, R.E. (Ed.), *Proc. 3rd Intl Conf. Creationism (ICC)*, Creation Science Fellowship, Pittsburgh, PA, pp. 487–501, 1998.

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THE Z FACTOR

How a university geology lecturer's last obstacle to believing a literal Genesis—"What about coal?"—was overturned in an instant

■ David Catchpoole

THIS IS an account of the interaction between the senior pastor of a large metropolitan church (whom I'll refer to as 'Pastor X'), a university geology lecturer ('Geologist Y'), and myself.

I had just addressed the first of three services on a Sunday morning concerning the creation/evolution issue, at Pastor X's church. But now, sitting in the pastorate office facing Pastor X across a coffee table, I was anxiously wondering if he might abruptly cancel my scheduled addresses to the subsequent two services. Not because he was unhappy about what I'd presented to the first congregation—he had in fact glowingly endorsed my presentation publicly as he closed the first service. However, I was now daring, in the privacy of his office, to challenge one aspect of his closing remarks.

Perhaps I'd not made it clear in my presentation that not only was I taking a very public stance against *evolution*, but also against evolution's claimed *millions and billions of years*. For in Pastor X's closing comments to the first

congregation he had told them that the age of the earth is not an issue they need worry about, as millions or billions of years can be inserted between Genesis 1:1 and 1:2. I was mortified, for these remarks revealed his support for a 'gap theory', in which a supposed gap in time between verses 1 and 2 included Satan's fall, a great flood catastrophe, and then God supposedly re-creating the earth in six normal-length days. Aside from being just plain wrong,¹ the gap theory dangerously lulls Christians into thinking that a long age of the earth does not contradict God's Word, rendering them mute. That's not a good outcome in these days of evolutionary bombardment, when more than ever the Christian voice needs to be heard strongly² to counter such anti-God claims.

I weighed my options: Politely keep my silence (a much easier course of non-action!), or ask for a private chat? Knowing that many in the congregation after the service would be purchasing the 'young-earth' creation resources I'd brought along that day, and that when they read of the error of gap theories³ it

would likely mean embarrassment for Pastor X later, I steeled myself to ask to meet him privately, hoping he would ultimately see my forwardness as being in line with Proverbs 27:6.⁴

A surprising turn ... of events

And so here I was in his office, explaining how Scripture is utterly incompatible with the gap theory. E.g. how could there have been a 'Lucifer's Flood' *before* God declared in Genesis 1:31 that *everything* He had made (i.e. including the being we now call Satan) at the end of the six days (Exodus 20:11) of Creation Week was (still) "very good"? And Revelation 21:1 makes it clear that *this* earth (the one that will pass away) is the *first* earth (i.e. there never was any previous one).

To my surprise, Pastor X shifted from gap theory to a 'day-age' view, saying, "Ah, but doesn't Scripture say 'a day is like a thousand years'?" I began to point out that 2 Peter 3:8 is simply teaching that what might seem like a long time to us waiting for the second coming of Christ is as nothing to the

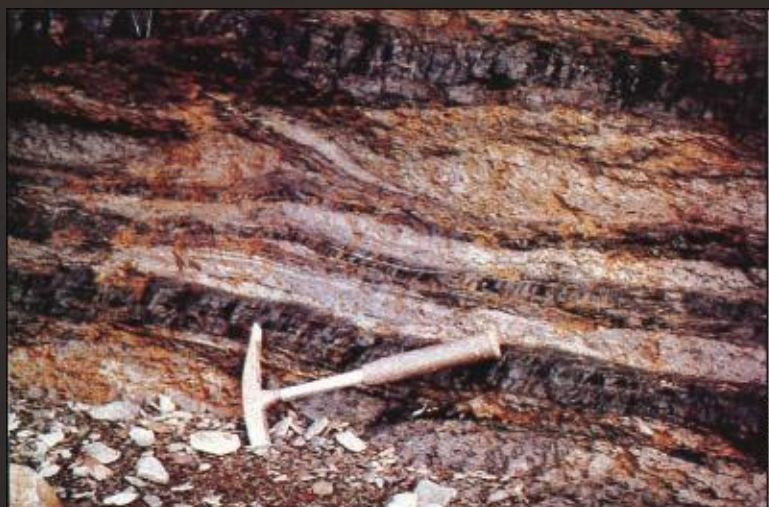
eternal God, and has nothing at all to do with the meaning of ‘day’ in Genesis 1, otherwise you might similarly invoke Psalm 90:4 to argue a night watch is a thousand years long!⁵ But before I had a chance to utter more than a few words, we were interrupted by an abrupt knock at the door, which immediately burst open, and a well-dressed gentleman aged about 50 said to Pastor X, “I need to ask a question.”

Then the man turned to me, saying, “Your presentation today has been incredibly useful to me, answering so many of my questions, and I’ve just bought these books you recommended which I expect will answer more. But I need an answer to this question right now: What about coal?”

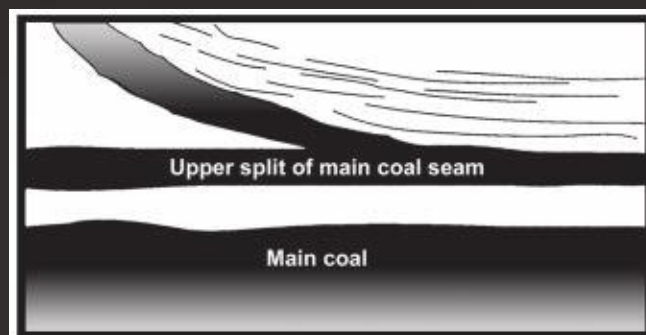
“Coal is easy,” I said, taking from him one of the books he’d purchased, *Stones and Bones*,⁶ and opened it to the pages showing Z-shaped coal seams. To my amazement, before I’d had a chance to even open my mouth to explain, his face lit up in instant recognition, and he became even more excited: “That’s it! That’s it!” Turned out he was a lecturer in geology at the local university, so no wonder he (‘Geologist Y’ referred to at the start of this article) had simply glanced at the picture, and gotten the point immediately.

The evolutionary millions-of-years ‘swamp forest’ storytelling about coal’s origins cannot explain Z-shaped coal

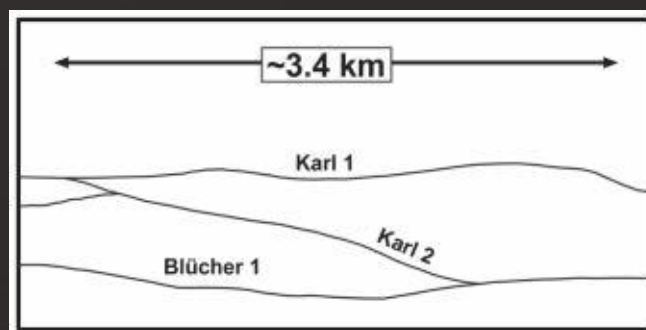
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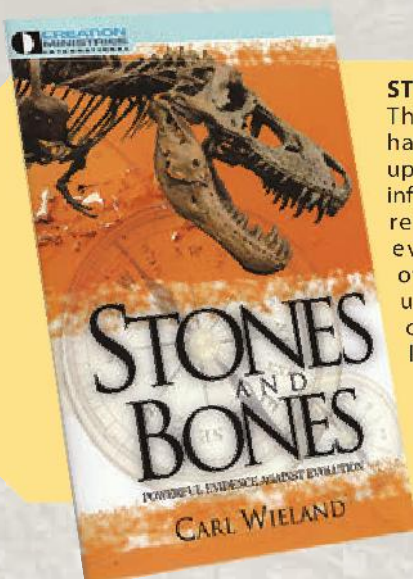
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STONES AND BONES

This popular booklet has been revised and updated with additional information. Offers basic reasons for rejecting evolution in favour of creation. Easy-to-understand explanations on fossils, ‘missing links’, mutations, dinosaurs, natural selection and more (available creation.com/s/00-1-537, also in bulk and as ebook).

These diagrams [Figures B, C] from *Stones and Bones* and photo [A] of actual Z-shaped and forked coal seams point to a single depositional event producing these layers, and powerfully deny the millions of years normally claimed to have produced coal. And note that such coal seams are not the only feature in coal deposits that defy evolution’s long-age ‘swamp forest’ storytelling. Others include sorting of vegetation material, wide bands of pollen, trees penetrating vertically through multiple layers with their roots broken off, huge coal seams stacked on top of one another with a regular repeating sequence of rock layers in-between, and the fact that coal seams contain much vegetation (like pine trees) that doesn’t grow in swamps! Instead, these are all indicators of rapid burial of violently ripped-up vegetation by a massive watery catastrophe—the Flood of Genesis 6–9.



seams—because they can only have formed through the action of rushing water.⁷ Geologist Y, having heard me talk at some length during the church service about the global Flood of Noah's day (Genesis 6–9), about 4,500 years ago, had now seen its significance for coal formation.⁸ He certainly was excited: “That’s it! That’s it! Noah’s Flood explains coal, the fossil-bearing rocks. I believe everything now—the whole Bible. The universe is only 6,000 years old. What a wonderful day this is.”

For the first time during this extraordinary intrusion into his office, Pastor X now spoke up, directly addressing Geologist Y. “But there’s no need to believe in a 6,000-year-old earth, for the Bible says that a thousand years is like a day ...”

Geologist Y now rounded on his pastor, with frustration in his voice: “You think that solves your problem? It doesn’t! I know, for I see our young people at uni every day. I see their unbelief—they’re not stupid, they can recognize that what they’re being taught in class about the age of the earth directly contradicts the Bible. You theologians don’t realize that your ‘harmonizing’ ideas aren’t helping our young people at all. You might argue that they’re still coming along to church and youth group, etc., but it’s got more to do with finding someone of the opposite sex than with any expression of trust in God’s Word! But today, for me, it’s now clear-cut and simple. The earth is only 6,000 years old. No room for any other ideas.” Geologist Y then turned to me, and smiling broadly, said, “Thank you very much,” shut the door, and was gone.

The ensuing quiet was embarrassing, but I resolved not to be the first to speak. At length, Pastor X broke the silence, saying: “Tomorrow, as it happens, I’m on roster to host our denomination’s monthly city-wide meeting of pastors and church leadership teams—there’ll be several hundred people coming. I was scheduled to give them a 90-minute address, but I’ll withdraw so you can use

that time slot to present material similar to what you’ve shown us this morning, with ample question time, please.”

Did this mean Pastor X had now been won over to a ‘young-earth’ view? This much I know: Pastor X did not make any contradictory long-age comments when he closed the subsequent two church services, and the following day when he introduced me to the assembled pastors and leaders he exhorted them to carefully weigh what I had to say. The very best indicator, however, occurred the following Sunday, when I addressed a church far from Pastor X’s city. That congregation’s pastor stood up to close the service, and relayed this news: “Brothers and sisters in Christ, a few days ago I and many other pastors around this nation received an email from Pastor X, commending *Creation Ministries International* in the highest possible terms. Now that I’ve seen and heard today’s message for myself, I too now understand why! It really is true; a 6,000-year-old earth.”⁹

The importance of evidence

For Geologist Y, evolutionary indoctrination about coal needing millions of years to form in forested swamps had been his final obstacle to believing the whole Bible. But note how being shown the evidence, in his own scientific field no less, overturned that indoctrination. How apt that for Geologist Y, his ‘Z factor’¹⁰ so-to-speak should prove to be Z-shaped coal seams! For other people, their ‘Z factor’ could be different, e.g. related to dinosaurs or natural selection or races or biblical authority, but an overarching lesson from this encounter in Pastor X’s office is surely that evidence, and being ready to answer (1 Peter 3:15), are of critical importance.

And note the ‘domino effect’ here, i.e. how the knowledge that real-world evidence supports the plain biblical account of Creation and the Flood can be contagious in a positive sense: A creationist publication illustrated with Z-shaped coal seams clinched

it for Geologist Y, whose excitement ‘knocked-on’ to Pastor X, who in turn exposed his colleagues to the simple truth that reading Genesis is as straightforward as A-B-C.

What’s more, now that you’ve read this account, I certainly hope the ‘domino effect’ unleashed from Pastor X’s office continues through you ...

References and notes

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3. E.g. in: “What about gap theories?”, Chapter 3 of CMI’s *The Creation Answers Book*, chapter available as a pdf at creation.com/cab3.
4. “Faithful are the wounds of a friend, ...” (ESV).
5. For more on this see Sarfati, J., 2 Peter 3:8—‘one day is like a thousand years’, *Creation* 31(4):16, 2009; creation.com/thousand. Also see “Six days? Really?”, chapter 2 of CMI’s *The Creation Answers Book*, chapter available as a pdf at creation.com/cab2.
6. Wieland, C., *Stones and Bones—powerful evidence against evolution*, Creation Book Publishers, Powder Springs, GA, USA, 2011, available via creation.com/store.
7. Snelling, A., Forked seams sabotage swamp theory, *Creation* 16(3):24–25, 1994; creation.com/z-coal-seams.
8. Walker, T., Coal: memorial to the Flood, *Creation* 23(2):23–27, 2001; creation.com/coal.
9. Catchpoole, D., The importance of evidence, *Creation* 30(3):6, 2008; creation.com/evidence.
10. In assay statistics, ‘Z factor’ has to do with evaluating the quality of a result for the purpose of higher-order application. It’s adapted here to mean the key to (re) evaluating thinking about origins, with application of the highest order.

MERCATOR'S PROJECTION

MERCATOR, THE CREATIONIST
WHOSE MAP REVOLUTIONIZED
NAVIGATION



Russell Grigg

FEW MEN have had as significant an effect on anything as Gerard Mercator has had on navigation. He was born in 1512 at Rupelmonde (near Antwerp). His father died c. 1527, and his Uncle Gisbert became his guardian and sent him to a school at 's-Hertogenbosch,¹ in the Netherlands. This was run by the Brethren of the Common Life, and was “ranked with the finest secondary schools on the continent.”² The Brothers “cultivated an intense, loving, and personal faith,”² and also specialized in copying sacred texts. Thus Gerard learned penmanship and especially italic script, which he later used profusely to annotate his maps.

Name change to Latin

Young scholars of that era often Latinized their names, and Gerard Kremer chose to call himself Gerardus Mercator Rupelmundanus,³ under which name he enrolled at the University of Louvain, and received a Master of Arts degree in humanities and philosophy in 1532. These studies were based on the teachings of Aristotle: e.g. that all matter was composed of earth,

air, fire, and water, that there was no divine purpose in the affairs of man or nature, and that the universe never had a beginning and would never end. This presented something of a crisis of faith for Mercator—not so much of his faith in the Bible, but in what he had been taught.

He corresponded with and then visited a group of Franciscan friars in Antwerp and Mechelen, which reinforced his strong Christian convictions. He later wrote: “When I saw that Moses’ version of the Genesis of the world did not fit sufficiently in many ways with Aristotle and the rest of the philosophers, I began to have doubts about the truth of all philosophers and started to investigate the secrets of nature.”⁴ Surely a commendable approach today for those who heedlessly imbibe the anti-God and anti-scientific philosophy of Darwinism.

Mercator’s travels also gave him a deep interest in geography as a means of explaining the world that God had created, so that “the making of maps ... became not only a profession that promised him an adequate income, but a calling as well.”⁵

Marriage and map-making

By the time he was 24, Mercator was well versed in geography, astronomy,

cartography and surveying, and had also become a highly skilled engraver, calligrapher, and scientific instrument maker. In 1536, he married Barbara Schellekens. They had three sons and three daughters. All three boys became mapmakers; the youngest, Rumold, supervised publication of Mercator’s world *Atlas* in 1595, after the death of his father.

Arrested for heresy

In 1544, the Catholic Inquisition charged 43 Louvain residents with ‘heresy’. Mercator was accused of ‘Lutheranism’, and of having written ‘suspicious letters’ to the friars at Mechelen.⁶ At the time, he was temporarily in Rupelmonde as executor of his recently deceased Uncle Gisbert’s estate. Nevertheless, he was declared a fugitive, arrested, and imprisoned in Rupelmonde Castle.

Despite a search by the authorities at Mechelen, no incriminating letters were found. Mercator’s friends at the University of Louvain petitioned strongly for his release, which finally happened after he had endured several months’ incarceration.

Mercator’s projection

In 1569, Mercator published the world map for which he is now famous, and which he titled (in Latin): “New and



Mercator’s original 1569 map. North and South America still needed nautical surveying. The 15 text boxes included a dedication, a eulogy, greetings to readers, comments on various localities, a copyright notice, etc., all in Mercator’s italic script.



On the above Mercator map, the Rhumb line between Seattle and London crosses each line of longitude at a constant compass bearing of 87°. The Great Circle air route from Seattle changes continually along the course until arrival at London.

more complete representation of the terrestrial globe properly adapted for its use in navigation.” Instead of depicting the earth as a circle, Mercator’s new map was a rectangle 1.24 × 2.02 m (~4 ft 1 in x 6 ft 7½ in). in which the northern and southern extremities extended the full width of the map, and so the lines of longitude were thus all vertical and parallel.

Land masses near the top and bottom of this map are distorted. The problem arises from trying to represent earth’s 3D global surface on a 2D plane surface. No matter how it is done, some feature of the globe gets distorted, e.g. on modern maps Greenland looks about the same size as Africa, but Africa is actually about 14 times larger.

The huge advantage of this map for seamen was that a course between any two places crosses all longitudes at the same angle, so sailors could chart their course on this map as a straight line (called a rhumb line or a loxodrome), and then simply sail one constant compass bearing along this line to eventually arrive at their destination.

However, a rhumb line is not the

shortest distance between any two places on the earth’s surface, which is a ‘great circle’ route.⁷ This is a straight line (i.e. ‘as the crow flies’) on a globe of the world, but is a curve on a Mercator map. On any great circle route (other than along the equator or North–South), the compass bearing constantly changes as the voyage proceeds. Hence navigators on ships sailing a great circle route had to make daily accurate determinations of their position so as to change their compass course accordingly. Inaccuracy could be disastrous and often was. Mercator’s projection is still used for virtually all nautical charts published today.

Mercator’s *Atlas*

In 1578, Mercator published updated versions of Ptolemy’s 2nd-century maps of the world, as a preliminary to his world *Atlas*, which he labelled “Cosmographic Meditations on the Creation of the World and the Shape of that which was Created”. This *Atlas* was published in three instalments: the first in 1585 with 51 maps, a second in 1589 with 23 more maps; the final one



A ‘great circle’ route between any two places is the shortest distance, i.e. it is ‘as the crow flies’.

with all of these plus still more maps was published by his son, Rumold, in 1595, the year after Mercator died of a stroke aged 82.

Bible student

Mercator was a devout Christian, a Bible student, and a cogent creationist. In the 1560s, he produced a harmony of the Gospels, which he republished, enlarged, in 1592, and he also wrote a commentary on the first chapters of Romans. In his *Atlas*, he included a thesis of about 36,000 words,⁸ on the 1st chapter of Genesis. In this, he upheld that the triune God was “the Father, the logos or Son, and the Holy Spirit”. Opposing the Platonists whom he said, “posit that Intellect or Mind is the maker of the world”, he wrote: “Therefore let us give thanks to the one sole God, who is the beginning and creator and life-giver and preserver and the end of the work of the world, that he deigned to reveal to us the true fabric of the world, its beginning and the source of all philosophy and all truth, through Moses and the other prophets.”^{9,10}

References and notes

1. The city’s official name is a contraction of the Dutch *des Hertogen bosch*—‘the Duke’s forest’, after Henry I, Duke of Brabant. In speech, Dutch people usually abbreviate it further to “Den Bosch” (pronounced ‘demBOS’).
2. As quoted by Karrow, R.W., Commentary on *Gerardus Mercator, Atlas sive cosmographicae meditationes de fabrica mundi et fabricati fi gura*, on which much of this article is based, see mail.nysoclib.org/Mercator_Atlas/MCRATS.pdf, pp. 3–4. (Accessed March 17, 2015.)
3. I.e., Gerard Mercator of Rupelmonde.

4. Kremer/Kramer/Krämer is of Germanic origin meaning ‘merchant’, which in Latin is *mercator*.
5. Mercator, G., *Evangelicae Historiae: Quadripartita Monas Sive Harmonia Quatuor Evangelistarum* (“Harmonization of the Gospels”), 1592, dedicatory letter. Quoted in Jean Van Raemdonck, *Gerard Mercator: sa vie et ses oeuvres* (1869), p. 25, footnote 2.
6. Ref. 2, p. 6.
7. Ref. 2, p. 10.
8. A great circle is a circle on the earth’s surface the plane of which passes through the centre of the earth. Aircraft pilots save fuel and time by flying great circle

9. routes, unless impeded by high mountains, volcanic eruptions, bad weather, etc.
10. Titled “On the Creation and Fabric of the World”
11. Ref. 2, pp. 47, 41, 42.
12. Mercator was, of course, limited to the narrow and speculative nature of the science of his day, e.g. Newton’s concept of gravity had not yet emerged, and he held some positions that CMI rejects.

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