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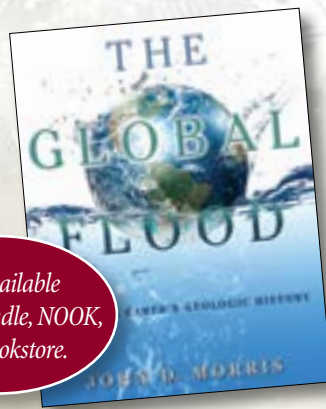
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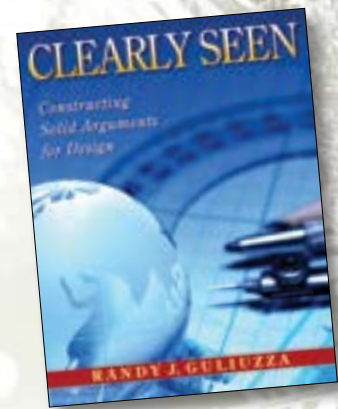
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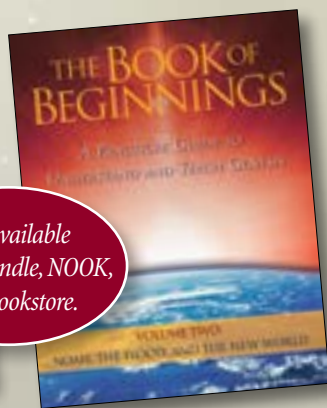
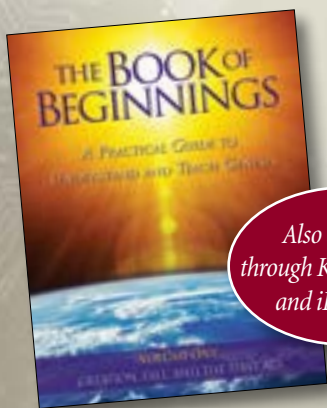


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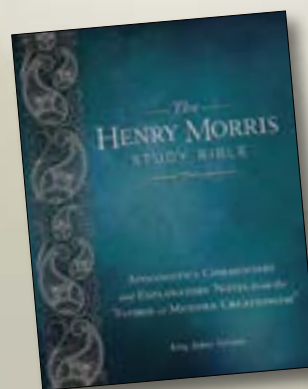


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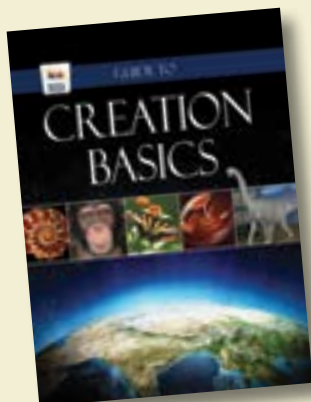
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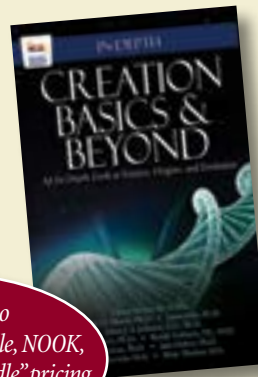
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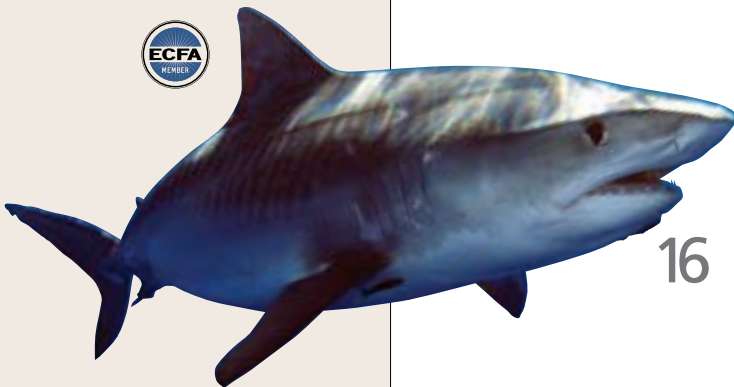
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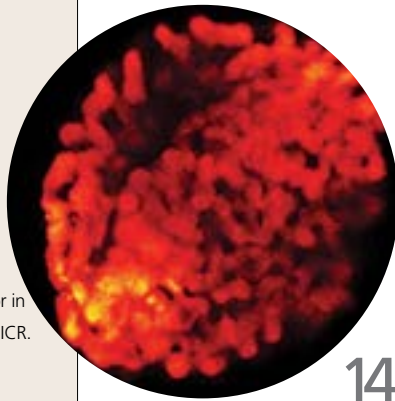
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CARE About Your Child’s Creation Questions

“Did dinosaurs live on Earth with man? Did a flood really cover the entire earth? Are we a product of random accidents? Did humans evolve from apes? Is there life on other planets? How old is the earth?” Our kids continue to ask the same questions that we asked when we were young. The difference today is that our children have many more places to search for answers than we did, and far too little of what they find is true.



How do you get your children to come to you for those critical worldview-shaping answers? Ridicule rarely works (“Only an idiot would believe we came from monkeys!”) and neither does criticizing a popular school teacher (“He’s an evolutionist and probably an atheist”).

Rather than choosing methods that may alienate your children, find ways to build a relationship of trust with them—then you will become the go-to person for their questions. Here are four areas you can foster to become your children’s number-one resource when it comes to difficult creation questions—easy to remember with the acronym CARE.

1) **Communication.** Communicate that you care about the things that matter to them. Listen to them and pay attention to the things they are interested in. If your son raves about dinosaurs, learn the characteristics of the stegosaurus and the *Tyrannosaurus rex* and join the conversation when the topic of dinosaurs comes up.

2) **Availability.** Be available to look up answers, show them sources on the Internet, read books with them, attend workshops, and take them on tours of creation ministries. When you visit museums, zoos, and planetariums, prepare your child beforehand for the theories they will hear and read, and then be ready to discuss their questions.

3) **Research.** As the parent, become informed. Learn the common arguments and study the latest research. If your child asks you something you don’t know, be quick to say, “I don’t know, but I know where we can find the answer.” Go to www.ICR.org, read creation-based resources, watch creation DVDs, and attend conferences. (The ICR website has an archive of thousands of articles dealing with most of the subjects both children and adults have questions about!)

4) **Environment.** Create an environment of learning in your home. Have books and resources available for all ages. Encourage questions, investigative thinking, and research.

At some point, your child will likely become the go-to person in the areas they are passionate about. If you CARE about what’s important to your kids by building the foundation of trust and the habit of investigative research when they are young, then they will be prepared for those high school and college days that challenge their worldview.

We are excited to tell you about our current project—a new DVD series titled *Unlocking the Mysteries of Genesis*. Dr. Henry Morris III reveals details of this incredible 12-DVD set, currently in production, in his article “Unlocking the Mysteries of Genesis” (pages 5-7). Each episode “offers a biblical view of creation that bridges the generation gap and reconciles faith with science.” Parents, churches, and schools will discover that this resource further equips youth and young adults with “tools to move forward with renewed commitment to their Christian values and faith in God’s unfailing Word.”

Jayme Durant

Jayme Durant
EXECUTIVE EDITOR

UNLOCKING THE MYSTERIES OF GENESIS

HENRY M. MORRIS III, D.M.I.N.

BUT WE SPEAK THE WISDOM OF
GOD IN A *mystery*, THE HIDDEN
WISDOM WHICH GOD ORDAINED
BEFORE THE AGES FOR OUR GLORY.... BUT
GOD HAS *revealed* [IT] TO US.
— 1 CORINTHIANS 2:7, 10 —

Salvation's story begins in Genesis. From there the mystery of God's great plan of redemption continues to unfold throughout Scripture. Yet many people struggle with understanding Genesis, hoping perhaps to pick up the story later in the Bible where it appears to be more in line with history. But the first book of the Bible is real history—the history of beginnings.

This book of beginnings holds foundational truths for all of life, and its mysteries beckon us to discover God's

design and purposes in creation.

What seems to confound so many is the creation of the heavens, the earth, and life itself. These unimaginable events and the ongoing evidence of God's designing hand clearly display God's very nature and power (Romans 1:20). Genesis holds the key to understanding our origins.

That body of evidence is so important to salvation's story that from the very beginning Lucifer sought to undermine all trust in the Creator. Since the Fall, rebellion against God has

often centered on confusing, undermining, and even denying any proof of the accuracy and authority of the work of God, starting with original sin and later displayed at the tower of Babel (Genesis 1–11).

In the previous three issues of *Acts & Facts*, our feature articles, "Determined to Disciple," "The Challenge of Plenty," and "Reaching the Millennials," demonstrated a great need of this generation—the millennials don't understand origins issues. They are asking questions, and they want answers about

THIS LANDMARK SERIES REPRESENTS A GREAT AND NEW OPPORTUNITY TO REACH MORE PEOPLE WHO NEED TO KNOW THE TRUTH ABOUT GOD'S WORD AND HIS WONDROUS CREATION!



creation. Collectively, these articles express our passion to reach beyond our faithful constituency to the millions in evangelical churches who are unaware of the full extent of information revealed in the early chapters of Genesis. One of our goals is to guide the millennials to God's Word and equip them with truth. We also want to reveal the empirical scientific evidence that undergirds and confirms the Scriptures and take the message to those who are genuinely seeking answers—we are committed to unlocking the mysteries of Genesis for this generation and the next.

With that mission in mind, ICR is nearing completion of a 12-part DVD series titled *Unlocking the Mysteries of Genesis*. All of these 22-minute episodes are produced as though they were candidates for a stunning PBS series. Shot on locations around the country in labs and libraries and in major studios and unique structures, they are filled with magnificent beauty! Segments feature interviews with experts—scientists whose research unlocks the mysteries of Genesis and tells salvation's story.

Over the past two generations, there has not been a presentation of this kind—one that provides scientific evidence, affirms a biblical worldview, and offers defensible answers to some of the most provocative and controversial questions of faith and science.

The following is an overview of the topics that will be covered in the series.

Design—Chaos or Creation? This episode kicks off the series by exploring the age-old question: Was the universe designed or is it a product of random chance? The first installment begins with a memorable and engaging introduction to the fundamentals and flaws of evolutionary theories and contrasts them with Scripture that illuminates the undeniable evidence of God's creation.

Origins of Life—Plants and Animals. Where did life come from? Was it a chemical accident in a primordial pond or a living microscopic stowaway on an ancient asteroid? Or was it something more intentional? This episode explores the mystery of how life on Earth began. Our experts analyze the prevailing theories of life's origins and test them against known natural laws, recent genetic evidence, and other data that point to the divine origins of plants and animals.

Origins of Life—Humans. One of the most controversial questions in all of science centers on where humans came from. Did we evolve from the animal kingdom, or were we uniquely and divinely created to hold stewardship over the earth? This episode examines some of the prevailing theories about mankind's origins and presents

fascinating new evidence from genetic and medical research that indicates we've been misguided by 150 years of evolutionary theories and teachings.

Fossils. What does the fossil record actually reveal about the history of life on Earth? In this episode, we explore the secrets of the past revealed by fossils and expose how appearances can be deceiving. Astonishing new discoveries from dinosaur fossils cast doubt on mainstream assumptions about the age of the earth and suggest that cutting-edge science is only beginning to uncover the wisdom and complexity of God's design.

Noah's Flood. There is little disagreement among scientists that the earth's climate and geology have been drastically altered by water since the beginning of time, but they puzzle over how and when this occurred. Does the great worldwide Flood described in Genesis explain natural wonders like Grand Canyon? Or was it the result of gradual erosion over eons of time? *Unlocking the Mysteries of Genesis* takes this question on location, where one of the world's leading experts in Flood geology puts the evidence on display.

Age of Earth. How old is Earth? Understanding the approximate age of the earth is more than an intellectual curiosity—it's actually a critical issue of faith. By



Image credit: Jayme Durant

taking a closer look at the scientific evidence, this episode reveals why basic assumptions about Earth's age may be flawed. A recent, explosive example provides further evidence that the earth's ancient past may not be so ancient after all.

Dinosaurs. Dinosaurs captured our imaginations long before the field of paleontology was established in the 1700s. Dragons, winged serpents, and giant behemoths have inhabited folklore around the world for centuries. Most modern scientists claim dinosaurs became extinct eons ago, while ancient historians and monster-hunters have recorded more recent sightings. Did dinosaurs really die off before the age of man? This segment explores surprising evidence that dinosaurs may have walked the earth with early humans and explains why that matters to Christians.

The Ice Age. Most scientists agree that the earth has experienced long periods of time when glacial ice covered the continents as a result of drastic changes in geology and atmosphere. What worldwide cataclysm could have caused such a dramatic change in Earth's climate? How did it affect the development of civilization? Could it happen again? We will dig into the causes and effects of the Ice Age and what it tells us about the world we live in today.

Ancient Civilization. If all living

things except Noah and his family were destroyed in the Flood, how and when did civilizations rebuild? Where did the Neandertals come from? How did the great nation of Egypt develop? Are the Bible stories of Moses and the nation of Israel historical? Using the latest discoveries in biology, medicine, archaeology, and anthropology, this episode unearths man's past to help us uncover the truth.

Origin of the Universe. Modern technology enables scientists and stargazers to explore distant parts of the universe that ancient astronomers only dreamed of. New physics discoveries provoke fascinating and often fanciful theories about how the universe began but offer no tangible evidence. By applying the laws of empirical science and mathematics to the question of origins, it becomes apparent that the biblical account of creation is startlingly accurate. Once again, science confirms Scripture.

Uniqueness of Earth. How is it possible that we exist at all, much less on a planet filled with so much beauty and complexity, hanging upon nothing in the endless void of space? Is the earth unique or merely, as Carl Sagan once said, "an insignificant planet of a humdrum star, lost in a galaxy" among millions of galaxies? By analyzing the uniqueness of Earth's—and our own—position in the universe, we discover more

about God's eternal plan.

The Big Picture. Over the course of these episodes, we will guide the viewer through profound mysteries that have puzzled man for centuries. This final episode reflects on the key questions and evidence and asks the viewers to consider what they have witnessed and learned. Having seen evidence that confirms the biblical account of creation, not just on terms of faith but on terms of science, viewers should acknowledge a greater security and confidence in the Bible's message and purpose.

Unlocking the Mysteries of Genesis has been a rewarding endeavor for our ICR team—a major effort with total costs exceeding two million dollars. We are so thankful for the supporters who have already helped in launching this project and would appreciate any support you can give as we continue this work. Your gift will help the production of this vital project continue unabated. This landmark series represents a great and new opportunity to reach more people who need to know the truth about God's Word and His wondrous creation! Help us unlock the mysteries of Genesis for this generation and the next. ●

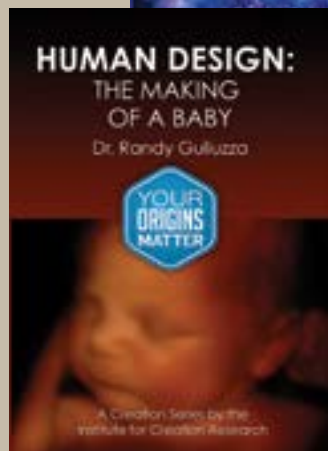
Dr. Morris is Chief Executive Officer of the Institute for Creation Research.



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What You Haven't Been Told about Dinosaurs

Brian Thomas

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Where did dinosaurs come from? When did they live? Why did they go extinct? According to evolution, dinosaurs evolved and died out 65 million years ago. According to biblical history, dinosaurs were created only thousands of years ago and lived with man. Which history is right? ICR Science Writer Brian Thomas examines five clues from science, history, and Scripture as he presents answers to the biggest dinosaur questions—concluding that the evidence of dinosaurs defies evolution but fits biblical history. (59 minutes)

Astronomy Reveals Creation

Dr. Jason Lisle

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What does astronomy say about the truth of the Bible? Many people use astronomy to challenge Scripture, but what do the heavens actually reveal? Dr. Jason Lisle, ICR Director of Research, explores five “secrets of the cosmos” to prove the Bible is right when it talks about astronomy, the age of the universe, the uniqueness of Earth, and the issue of distant starlight. When we really understand the Bible and the universe, we find that the scientific evidence lines up with Scripture. (62 minutes)

Human Design: The Making of a Baby

Dr. Randy Guliuzza

\$9.99 – DHD TMOAB

Evolution holds that life slowly descended from a common ancestor over long periods of time. Actual living creatures, however, reveal something different. ICR National Representative Dr. Randy Guliuzza explores the complexities of human reproduction to demonstrate that life's fully integrated biological systems couldn't possibly have evolved. Tastefully presented, Dr. Guliuzza takes his audience through the detailed process of reproductive physiology and the microscopic anatomy required for the making of a human baby. The inescapable conclusions of design give God all the glory. (65 minutes)



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New Research Debunks Human Chromosome Fusion

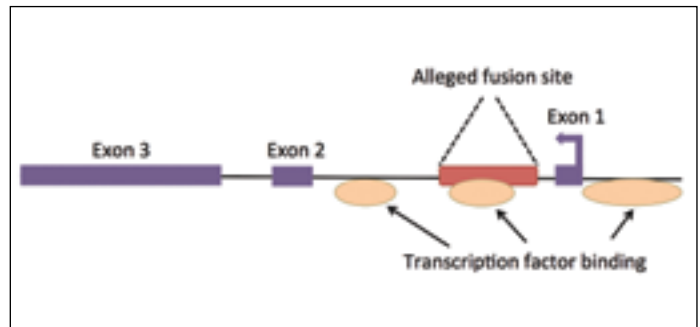
J E F F R E Y T O M K I N S , P H . D .

Humans and great apes differ in chromosome numbers—humans have 46 while apes have 48. The difference is claimed to be due to the “end-to-end fusion” of two small, ape-like chromosomes in a human-ape ancestor that joined in the distant past and formed human chromosome 2. This idea was first proposed by researchers who noticed that humans and chimps share similar chromosomal staining patterns when observed under a microscope.¹ However, humans and chimps also have regions of their chromosomes that do not share common staining patterns.

Supposed proof for the alleged fusion came in 1991, when researchers discovered a fusion-like DNA sequence about 800 bases in length on human chromosome 2.² However, it was unexpectedly small in size and extremely degenerate. More importantly, this new fusion-like sequence wasn’t what the researchers were expecting to find since it contained a signature never seen before. All known fusions in living animals are associated with a sequence called satellite DNA (satDNA) that fuses in one of the two following scenarios: 1) satDNA-satDNA or 2) satDNA-telomereDNA. (Telomeres are the regions at the end of chromosomes that contain thousands of repeats of the DNA sequence “TTAGG.”)^{3,4} The alleged fusion sequence contained a different signature, a telomere-telomere fusion, and, if real, would be the first documented case ever seen in nature.

In 2002, 614,000 bases of DNA surrounding the fusion site were fully sequenced, revealing that the alleged fusion sequence was in the middle of a gene originally classified as a pseudogene because there was not yet any known function for it.^{5,6} The research also showed that the genes surrounding the fusion site in the 614,000-base window did not exist on chimp chromosomes 2A or 2B—the supposed ape origins location. In genetics terminology, we call this discordant gene location a *lack of synteny*.

I have now published new research on the alleged fusion site, revealing genetic data that fully debunk its evolutionary claims.⁷ My analysis confirms that the site is located inside a gene called *DDX11L2* on human chromosome 2. Furthermore, the alleged fusion sequence contains a functional genetic feature called a “transcription factor binding site” that is located in the first intron (non-coding region) of the gene (see illustration). Transcription factors are proteins that bind to regulatory sites in and around genes to control their function, acting like switches. The *DDX11L2* gene has three of these areas, one of which is encoded in the alleged fusion site.



Transcription factor binding sites in DDX11L2.

Chromosomes are double-stranded DNA molecules and contain genes on both strands that are encoded in opposite directions. Because the *DDX11L2* gene is encoded on the reverse-oriented strand, it is read in the reverse direction (see Exon 1 arrow). Thus, the alleged fusion sequence is not read in the forward orientation typically used in literature as evidence for a fusion—rather, it is read in the reverse direction and encodes a key regulatory switch.

The supposed fusion site is actually a key part of the *DDX11L2* gene. The gene itself is part of a complex group of RNA helicase *DDX11L* genes that produce regulatory long non-coding RNAs. These *DDX11L2* RNA transcripts are produced in at least 255 different cell types and tissues in humans, highlighting the genes’ ubiquitous biological function.

Functional genes like *DDX11L2* do not arise by the mythical fusing of telomeres. The alleged fusion site is *not* a degenerate fusion sequence but is and, since creation, has been a functional feature in an important gene.⁷ ●

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Dr. Tomkins is Research Associate at the Institute for Creation Research and received his Ph.D. in genetics from Clemson University.



The Solar System:

Jupiter

J A S O N L I S L E , P H . D .

The planet Jupiter is a wonderful example of the creativity of the Lord. It is remarkably different from the worlds we have examined previously in this Impact series. Jupiter does not possess a solid surface but is an enormous spheroid of gas—eleven times the diameter of Earth—held together by its own gravity. The gas pressure increases with depth, eventually becoming liquid.

Properties of Jupiter

The fifth planet away from the sun, Jupiter is composed primarily of hydrogen and helium, the same gases that comprise the sun. However, the much cooler temperature of Jupiter allows the formation

of molecules such as ammonia, water, and methane from various trace elements. These molecular compounds create Jupiter's colorful cloud formations.

Jupiter is massive—the equivalent of 318 Earths! If we could put it on a scale, it would weigh more than twice as much as all the other planets *combined*. Jupiter is so massive that its gravity slightly, but noticeably, affects the motions of the other planets. Astronomers must factor this into their computations when predicting the precise positions of planets. Due to its large size, the disk of Jupiter is easily visible with virtually any small telescope, or even through good binoculars, despite being 500 million miles away from Earth.

A number of Jupiter's properties are

consistent with its biblical age of about 6,000 years but are difficult to explain via frameworks that adhere to a multi-billion-year-old solar system. One of these is its strong magnetic field. Since magnetic fields naturally decay with time, it is hard to understand how Jupiter could maintain such a powerful field over *billions* of years. Another indication of youth is Jupiter's internal heat. Jupiter emits nearly twice the amount of energy that it receives from the sun. Like popcorn fresh out of the microwave, planets gradually cool as they radiate heat into space. Jupiter is large enough to do this for thousands of years. But if it were really billions of years old, why hasn't it cooled off by now?

Views of Jupiter

Jupiter is an ideal target for a small backyard telescope. The planet is easy to find because it is extremely bright—only Venus is brighter. Jupiter shines through the most light-polluted city skies and always puts on a good show, revealing detailed cloud features to viewers. Powerful winds stretch the clouds into colorful “belts” and “zones” that encircle Jupiter parallel to its equator. Belts are the dark brownish-orange features and zones are lighter in color.¹ Like Earth’s jet streams, these clouds mark the differential rotation of Jupiter’s atmosphere.

Typically, the Northern and Southern Equatorial Belts that sandwich Jupiter’s equator are the most visible. But with larger telescopes under good viewing conditions, it is often possible to see several thinner belts and perhaps even small disturbances taking place within them. Unsurprisingly, these cloud formations are dynamic, changing from year to year, growing or shrinking slightly, and experiencing subtle changes in color. Occasionally, a belt disappears completely for some time. This happened to the Southern Equatorial Belt in 2010, radically changing the appearance of Jupiter until the belt returned in 2011. Since it never looks exactly the same way twice, Jupiter is always fun to watch.

The Great Red Spot, a large, somewhat permanent feature just below Jupiter’s Southern Equatorial Belt, is of particular interest. The Red Spot is a storm vortex, essentially a hurricane, roughly twice the width of Earth.² Hurricanes on Earth are powered by warm ocean water and dissipate when they move over land. However, since Jupiter has no land, its Great Red Spot continues indefinitely. At least 349 years old, this magnificent storm was first discovered by Robert Hooke in 1664. Before this time, telescopes were not optically sufficient to discern such features, so the Red Spot may actually be much older.

Despite its name, the Great Red Spot is currently more of an orange hue and its color changes with time. In the 1990s it had turned a light pink color, reducing its

contrast and making it very difficult to see through backyard telescopes. Though it has darkened since then, the spot is not always easy to see. Since Jupiter rotates, the Great Red Spot is on the other side of the planet and impossible to see 50 percent of the time. But even when on the Earth-facing side of Jupiter, the Great Red Spot is hard to see near the limb (the edge of the disk). The best view is when the spot is said to “transit” or pass near the horizontal center of the disk, an occurrence predictable up to a month or so in advance. Viewers can find upcoming transit times posted on various astronomy websites.

Jupiter rotates in less than 10 hours—faster than any other planet. This rapid rotation, combined with the extraordinary size of Jupiter, causes the planet to bulge at the equator. Even through a decent backyard telescope it is clear that Jupiter is not exactly

bright enough to be seen in binoculars. They were the first moons discovered orbiting another planet, a discovery that changed our view of the universe.

Before Galileo constructed his own telescope in 1609 and began peering into the heavens, no one had considered the possibility that other planets could have moons. As far as anyone knew, there was simply *the* moon that orbits Earth. At that time, most astronomers believed that *everything* orbited Earth, including the other planets and the sun—this is known as a *geocentric* view. When Galileo first pointed his telescope at Jupiter, he was delighted to discover four new worlds never before known by anyone other than God. What a moment that must have been!³ And by observing these moons night after night, he could clearly see that they were orbiting Jupiter. This strongly refuted the geocentric claim that everything

The Galilean satellites are named Io, Europa, Ganymede, and Callisto. Unlike gaseous Jupiter, these moons are solid bodies composed of rock and ice. Jupiter and its moons are like a miniature solar system with the inner moons orbiting faster than the others.

round. Such rapid rotation also means that if you view Jupiter twice in one evening separated by a couple of hours, you will get a different view on the second pass since Jupiter will have undergone one fifth of its rotation. The effect is particularly noticeable when the Red Spot is near Jupiter’s center.

The Galilean Satellites

Jupiter itself is wonderful to view in a small telescope, but the observer will also be struck by the presence of four beautiful, bright “stars” that are always near Jupiter and aligned with its equator. These are moons—natural satellites that orbit Jupiter. They always appear in a nearly straight line because they orbit in the plane of Jupiter’s equator, and we see the Jupiter system from nearly edge-on; it is the same reason a Frisbee looks like a straight line when viewed from the side. These four moons are even

must orbit around Earth. Galileo had found a clear counterexample that paved the way for increased acceptance of the *heliocentric* solar system—the notion that planets, including Earth, orbit the sun.⁴ In honor of their discoverer, these four moons are now called the Galilean satellites.

In order of increasing orbital distance from Jupiter, the Galilean satellites are named Io, Europa, Ganymede, and Callisto. Unlike gaseous Jupiter, these moons are solid bodies composed of rock and ice. Jupiter and its moons are like a miniature solar system with the inner moons orbiting faster than the others. Io takes only 1.77 days to orbit Jupiter, and the orbital periods of Europa, Ganymede, and Callisto are 3.55 days, 7.15 days, and 16.7 days respectively. Notice the pattern: Europa’s period is twice that of Io, and Ganymede’s period is twice that of Europa. This is an example of *orbital reso-*

nance.⁵ Callisto alone is not in resonance. Using a small telescope, it is possible to actually see these moons orbiting over time. If you made a careful mental note of the positions of the Galilean moons at a given moment and then looked again an hour later, you might notice that their locations appreciably changed. To see celestial objects change so drastically in such a short time is a rare delight.

The Galilean moons are comparable in size to Earth's moon. Io is 2,264 miles in diameter—only five percent larger than the moon. Europa is 10 percent smaller than our moon, and Callisto is 39 percent larger. Ganymede is the largest moon in the solar system at 50 percent larger than Earth's



moon. Ganymede is even larger than the planet Mercury! So, if this moon orbited the sun directly instead of Jupiter, it would certainly be classified as a planet. Due to its larger surface area, Ganymede appears noticeably brighter than Io and Europa and slightly brighter than Callisto.

Each of the Galilean satellites is an amazing world, but Io is the clear winner in terms of its unique qualities. High-resolution images of Io taken by the *Voyager* spacecrafts in 1979 revealed that, in contrast to all other known moons, this moon has absolutely no impact craters. Instead, it is covered with sulfuric compounds that are responsible for its colorful surface. Volcanoes pervade the surface of Io. Some are even taller than Mount Everest. Eruptions are almost constant, repeatedly covering the surface with volcanic material and erasing

any previous record of impact craters. Io is the most volcanically active world in the solar system. When *Voyager 1* flew past Io, it detected nine volcanoes erupting simultaneously! The “gravitational stretching” occurring every 3.55 days, when Io passes between Jupiter and Europa, seems to provide the internal energy required for Io's volcanism.

More Moons and Rings

Galileo's telescope was quite small and limited—comparable to modern binoculars. In the centuries that followed, astronomers discovered many additional fainter, smaller moons with the aid of higher-quality telescopes and spacecraft. At latest count, Jupiter has 67 known moons—more than any other planet!⁶ Aside from the Galilean satellites, all these moons are very small, generally only a few miles across.

Based on their orbital properties, these moons fall into eight natural groups. One group consists of the only four moons that are closer than the Galilean satellites to Jupiter. The orbits of these inner moons and the orbits of the Galilean moons are nearly circular, are in the same plane as Jupiter's equator, and are “prograde,” meaning they orbit in the same direction that Jupiter rotates.⁷ The next seven beyond Callisto are also prograde, but their orbits tend to be tilted substantially, relative to Jupiter's equator, and are more elliptical than those of the inner moons. The remaining 52 moons also have tilted, elliptical orbits, but, amazingly, they are all *retrograde*—orbiting in the opposite direction of Jupiter's rotation. So, the region where moons orbit in one direction is separate from the region where they orbit the other way. This reduces the possibility of collision or close gravitational perturbations.⁸

Jupiter also has a system of rings like Saturn that were first detected in 1979 by the *Voyager 1* spacecraft. These rings are much

less substantial than Saturn's, however, and too faint to be seen with a backyard telescope. The main rings consist of dust particles orbiting mainly around and inside the orbit of Jupiter's innermost moons, Metis and Adrastea. An even thinner “gossamer ring” extends farther out.

Conclusions

Most of what we now know about this fascinating planet was hidden from humanity for thousands of years. To our distant ancestors, Jupiter was a bright point of light in our night sky. Who would have imagined that this bright “star” would have so many remarkable characteristics? And what other celestial secrets has the Lord hidden for us to find and cherish? ●

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1. Belts are regions where we are able to see deeper into Jupiter's atmosphere. Zones are lighter because they are clouds of ammonia that are higher in the atmosphere and block the brownish-orange color of the lower atmosphere.
2. Hurricanes on Earth are low-pressure systems. The Red Spot in Jupiter's southern hemisphere is a high-pressure system. For this reason, it rotates counterclockwise—in the opposite direction of hurricanes in Earth's southern hemisphere (which rotate clockwise).
3. Galileo published his discoveries in 1610 in a small, enjoyable book called *The Starry Messenger*. Galileo's sense of wonder and excitement are obvious throughout. He knew that he was seeing something that no human being had ever seen—something that would forever change our perceptions of the solar system.
4. Galileo challenged a number of the prevailing scientific views of the day. Curiously, the Roman Catholic Church had largely adopted the mainstream scientific view of the day (geocentrism) and incorporated it into their theology. They even attempted to use poetic passages in Scripture, such as Psalm 93:1, as evidence for geocentrism. However, such passages were ripped out of context. The psalmist is not addressing motion in the sense of Newtonian physics but rather the inescapable stability of the universe caused by the power of God. Many people think that the Galileo incident was an example of science prevailing over Scripture when in fact it was one view of science prevailing over another view that the Roman Catholic Church had endorsed. Perhaps the lesson to take away is that we should not tie the Bible to any specific scientific theory but instead let Scripture interpret Scripture.
5. A resonance is when the ratio of two periods can be expressed as a simple fraction or integer, such as 1-to-1 or 3-to-4. In this case, the inner three Galilean moons have an orbital resonance of 4:2:1. That is, Io orbits four times for every two orbits of Europa and every one orbit of Ganymede. In this Impact series, we first explored the concept of resonance in the article on Mercury in the August issue of *Acts & Facts*.
6. Planets: Jupiter. Solar System Exploration. NASA. Posted on solarsystem.nasa.gov, accessed October, 2, 2013.
7. Jupiter rotates counterclockwise as viewed from above its North Pole.
8. When one massive object passes closely by another, their mutual gravity will affect their orbits. In some cases, this can result in one of the objects being ejected from the system.

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Fossil Coral “Reefs” Among Rock Strata

In certain regions geologists find what appear to be fossilized coral reefs either buried in deep underground strata or exposed on the earth’s surface. If these reefs really took millions of years to form, they pose a problem for biblical history.

Many modern corals grow quite slowly. Based on these sluggish growth rates, scientists argue that: 1) fossil reefs also developed slowly, 2) the strata they are found in must have been deposited over long ages, and therefore 3) the reefs are far older than the biblical timeline indicates. Creationists, on the other hand, hold that the great Flood of Noah’s day *suddenly* laid down most of the strata containing these fossil reefs. How could these now-dead reefs grow to maturity in the short time from creation to the Flood? And if the Flood happened only thousands of years ago, has there been enough time since then to account for today’s massive coral reefs?

We must address three foundational issues before drawing conclusions. First, what is the average growth rate of today’s reefs? Second, are “fossilized reefs” really coral reefs? Third, could the “fossil reefs” have grown in different environmental conditions before the Flood, and would those conditions have affected their growth rates?

All reefs must grow at shallow depths where sunlight is abundant and currents bring a steady supply of nutrients. Sometimes situated on a submerged outcrop

or object that provides an anchor for their growth, reefs primarily consist of the calcium carbonate remains of corals, sponges, shells, and algae debris.¹ Reef-building organisms grow on these remains, secreting bonding material to connect hard structures. Unless reefs are destroyed by storms or disease, they will grow until they near the ocean’s surface.^{2,3,4}

Modern living reefs have been studied, but measuring their growth rates is an inexact science due to fluctuating factors like disease and nutrient availability. In favorable pre-Flood conditions, reefs now buried in the strata could have grown to the sizes we see in the fossils.⁴ Today, the largest, oldest reefs seem to indicate an age within range of a few thousand years, suggesting that they started at the Flood’s end and are still growing.

Fossil reefs differ greatly from modern reefs. They are typically much smaller, less organized, are often buried in limestone strata, and lack fossil organisms that would have secreted stabilizing glues. What could have bound the coral together?

Scientists interpret ancient reefs subjectively because of these differences. Often, uniformitarian geologists “see” features of a modern growing reef that may not actually exist in the fossil reefs. Cross-sections drawn with an exaggerated vertical scale sometimes show what appears like a buried reef, but is it? These slices often largely consist of chips of broken reef-like material loosely embed-

ded in a limey matrix containing material likely carried in by waves or currents—not produced by reef-building organisms per se. This important detail suggests these “reefs” did not grow but rather were melded together by compression and cementation during a sedimentary deposition.

A biblical understanding brings clarity. Reefs could have grown to maturity in the calm, nutrient-rich pre-Flood waters. During its initial violence, the Flood would have broken the reefs apart and mixed those coral bits with carbonate silt and sand that later solidified. It’s likely that the huge volume of splintered fossil reef material could have accumulated as the strata were laid down during the Flood, roughly resembling actual reefs.

A creation-based explanation answers both our initial questions: There was plenty of time *before* the Flood for the “fossil reefs” to have grown. Then, the Flood deposited piles of broken bits into “reef” look-alikes. Finally, growth rates observed today show there’s been enough time *since* the Flood to explain our great modern reefs. ●

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Upside-down corals embedded in a limey matrix.

Image credit: Timothy Clarey, Ph.D.



POLLEN FOSSILS WARP EVOLUTIONARY TIME

BRIAN THOMAS, M.S.,
AND TIM CLAREY, P.H.D.

Another support beam has fallen from evolution's explanatory framework as European scientists now report the discovery of flowering plant fossils in Middle-Triassic rocks—conventionally assumed to be around 240 million years old. According to secular age assignments, flowering plants were not supposed to have evolved until 100 million years later!¹ These fossils force a shift in the ever-changing story of plant evolution.

Most paleontologists believe flowering plants, or angiosperms, did not “evolve” until the Early Cretaceous system—supposedly 135 million years ago. They often refer to the Cretaceous as a time of transition.² Charles Darwin referenced the sudden appearance of fully-formed flowering plant parts in the fossil record as an “abominable mystery” in a letter to Joseph Hooker in 1879, and these new blooming fossils only intensify the puzzle.

Newly Described Fossil Pollen

The fossil pollen grains in question, recovered by Peter Hochuli and Susanne Feist-Burkhardt from cores in northern Switzerland, have caught the evolutionary world off-guard. The researchers wrote, “In this paper we focus on fossil evidence, presenting the so far oldest angiosperm-like pollen from the Middle Triassic (ca. 243Ma [million years]), a record that predates the generally accepted first occurrence of angiosperm pollen by more than 100Ma.”¹

Their accompanying color photographs show pollen-grain features diagnostic of flowering plants, clearly not gymnosperms like palms or cycads. “The described pollen grains show all the essential features



of angiosperm pollen,” according to their report.³

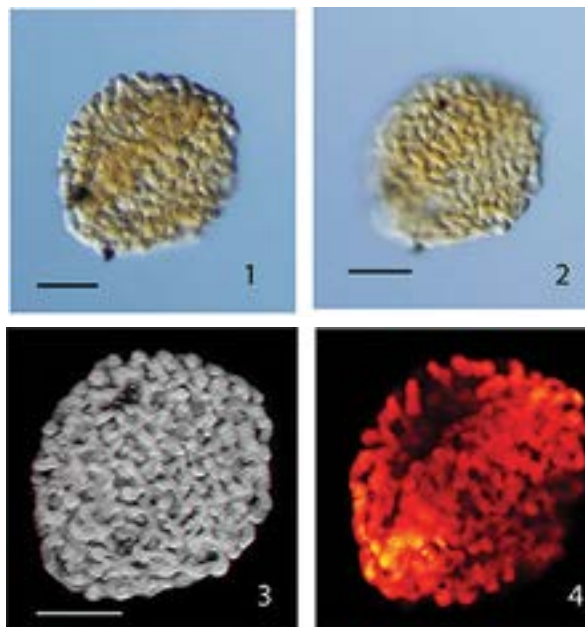
And instead of the few primitive-looking pollens that evolutionary scientists were expecting to find in lower rock layers, the researchers discovered pollens of different but already well-developed types. The study authors wrote of the “sudden appearance” of angiosperm fossils “on most continents as well as the rapid radiation of numerous clades [which] implies a considerable diversification within approximately 3.5Ma or else it represents a wave of immigration from other areas.”¹ In other words, they had difficulty explaining how such a wide variety of

flowering plants suddenly occur in this Triassic layer.

They encountered another challenge in trying to decipher why, after this sudden burst of supposed evolutionary creativity, angiosperms avoided fossilization for 100 million years. The study authors wrote, “If we accepted the monosulcate [single-groove angiosperm] pollen from the Middle and Late Triassic as evidence for a pre-Cretaceous origin of crown group [ancestral] angiosperms the lack of fossil records throughout the Jurassic would remain difficult to explain.”¹

Reasoning in a Circle?

To account for this difficulty, the authors invoked specula-



1-2: Light micrographs of Triassic angiosperm-like pollen
3-4: Confocal laser scanning micrographs of Triassic angiosperm-like pollen

Image: Hochuli and Feist-Burkhardt, *Frontiers in Plant Science*



tive “stem relatives,” writing that “considering the hundred million year gap in the record as well as morphological differences to the earliest Cretaceous we suggest that these pollen grains most likely represent stem relatives of the angiosperms.”¹

Why call these fossils “stem relatives of the angiosperms” instead of simply “angiosperms”? In the scientists’ words, it’s because of an assumed hundred million-year gap of angiosperm absence, not because of any direct scientific observation.

Here’s the problem:

It’s one thing to assert that these fossils represent evolutionary ancestors of modern plants because they are supposedly millions of years older than the accepted age. But it’s entirely circular to then assert that the angiosperm fossils *must* have formed millions of years before the accepted age simply because evolution *requires* that plants evolved over long ages.

More Story-Changing Finds

This isn’t the first fossil evidence for pre-Cretaceous-system angiosperms. Hochuli and Feist-Burkhardt mentioned several reports of angiosperm-like pollens from both Triassic and Jurassic system rocks going back to the 1960s. Unfortunately, most of these finds either “received mixed attention” or were “simply ignored” by most evolutionists, probably because pre-Cretaceous angiosperms disrupt well-established evolutionary theories.¹

For example, Robert Bakker devoted an entire chapter in his book *The Dinosaur Heresies* to “When Dinosaurs Invented Flowers.” Bakker explained, “When plant-eating dinosaurs evolved more effective teeth or fermenting chambers, the plant species had to adjust to the new weaponry or die,” as if merely the presence of a challenge produces its own solution within plants and animals.⁴ Bakker continued in confident narrative, “As more and more new kinds of Cretaceous beaked dinosaurs entered the system, more and more angiosperm families evolved.”⁵

But now that angiosperms have been identified in Triassic layers, at least one chapter in Bakker’s book needs substantial editing.

Moreover, previous finds have knocked even more support beams from rickety evolutionary stories about plant origins. In 2005, lead author Vandana Prasad reported that grass-signature fossils were discovered in dinosaur dung from India.⁶ In 2011, Prasad’s team also

documented microscopic rice-related fossils in other sauropod fossils.⁷ Grasses, including rice, are classified as angiosperms since they produce flowers, albeit small ones. Evolutionary pictures of dinosaurs never depicted them with grass in their mouths, but now they certainly should.

A Better Explanation

The discovery of angiosperms in rock layers below those containing most dinosaurs and the discovery of grass fossils among sauropod (long-neck) dinosaurs confirm two biblical details about behemoth, the dinosaur from the book of Job that “sways his tail like a cedar.”⁸ The text describes its diet, saying, “Look at Behemoth, which I made along with you and which feeds on grass like an ox.”⁹ Prior to the discovery of grass particles in fossil dinosaur dung from India, the evolutionary picture had no place for dinosaurs eating grass, but it was recorded in Scripture all the while!

Job also affirms that God made behemoth “along with you,” meaning during the creation week when God made angiosperms, dinosaurs, and man.⁸ So seeing flowering plant fossils mingled with creation-week animal fossils is no surprise to Bible believers.

The Bible’s record of all the major phases of world history shows no trace of a Triassic time but offers a better explanation for these pollen fossils. First, without using circular reasoning or speculation, eyewitnesses wrote the events recorded in Scripture, indicating that there is error in assuming long ages of plant evolution.¹⁰

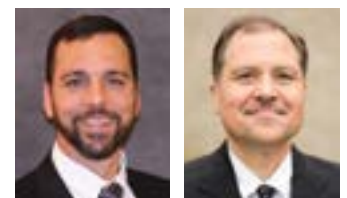
Second, Scripture reports the instant creation of each plant kind. This exactly fits these pollen fossils’ sudden appearance. Third, it describes in detail a worldwide flood capable of preserving life’s traces in fossil forms. In that context, distinct flora and fauna fossils do not represent separate *times* divided by some 100-million-year gap but distinct *ecosystems* buried by massive surges of sediment-laden Flood waters.¹¹

Finally, the Bible’s timeline shows a creation that is thousands, not billions, of years old, erasing any need to explain why pollen grains buried deep in fossil layers look so similar to that of living herbs and flowers. ●

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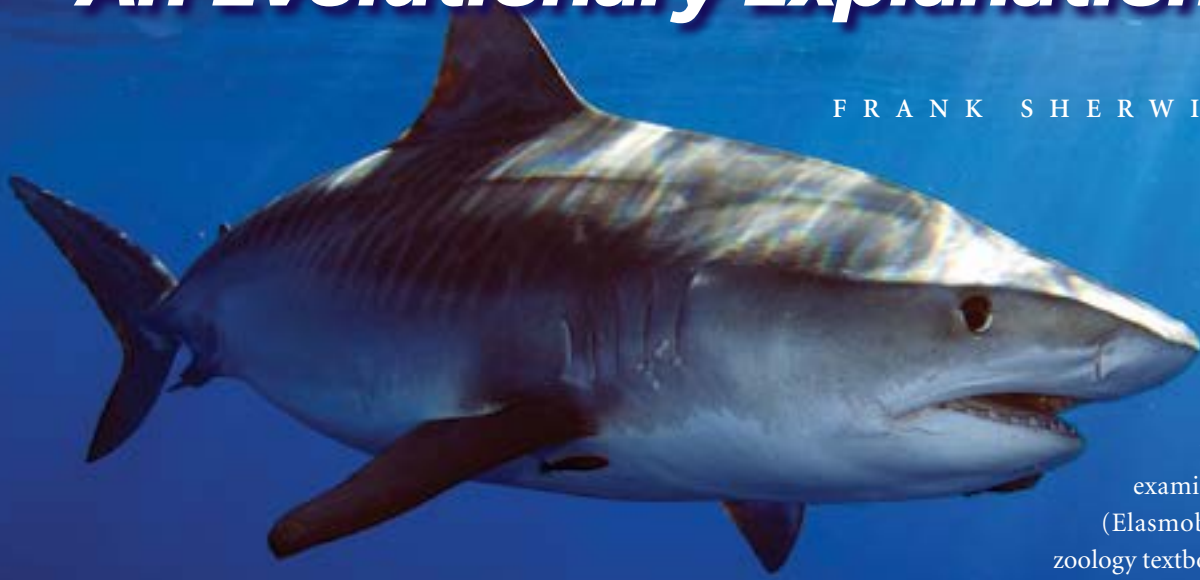
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Shark Origins: An Evolutionary Explanation

FRANK SHERWIN, M.A.



During a recent visit to Florida's Clearwater Marine Aquarium, I peered into a tank containing a host of animals, including a sleek and formidable shark, and thought of evolutionist Theodosius Dobzhansky's dictum "Nothing in biology makes sense except in the light of evolution."¹ Let's test this statement by taking a closer look at prominent evolutionary research on the shark—teeth to tail.

Teeth. Paleoanthropologist Peter Ungar admitted there is no consensus on even the basics of tooth origin:

The past few years have witnessed a remarkable flurry of research on the origin or origins of vertebrate teeth. While this work is progressing, the details of when, where, why, and how teeth first appeared still elude consensus. Indeed, there is not even agreement on the fundamentals, such as how we define a tooth.²

Jaws. In 2002, evolutionist Philippe Janvier made an interesting point: "Considering these facts, one may wonder whether this theory [modified gill arches] still holds, and whether a more parsimonious explanation could not be that jaws have always been jaws."³ A decade later, Kenneth Kardong discussed the shroud surrounding a supposed

evolutionary origin of jaws: "Such work is at the moment under way using molecular and genetic probes, but these have so far produced unsettled and somewhat contradictory results."⁴ Combined with Ungar's report on teeth, these sources indicate that there is "not even agreement on the fundamentals" of tooth origins, "jaws have always been jaws," and that studies yield "contradictory results."

General Classification. Even stepping back and looking at sharks more generally, as either members of phylum Chordata—which includes mammals, birds, amphibians, reptiles, and bony fish—or as craniates, the bony-skulled animals, does not sharpen evolutionary reports. Kardong reported that "disagreement over the origin of chordates has been common."⁵

Eyes. And when it comes to other aspects of shark anatomy, specifically their lifeless, black eyes, all scientists offer is speculation. In his book *Evolution's Witness: How Eyes Evolved*, Ivan Schwab wrote that they can't identify a date for when the first eye "appeared."⁶

Fins. How about the shark's fins—the telltale warning sign of approaching doom for those who cross its path? Edwin Colbert and fellow authors called the

origin of fins "an unsolved problem."⁷

Fish. If we resort to more basic terms and examine sharks simply as fish (Elasmobranchii), even an entire zoology textbook by Cleveland Hickman, Jr. and colleagues leaves us with only a vague commentary: "Fishes are of ancient ancestry, having descended from an unknown free-swimming protochordate ancestor about 550 m.y.a."⁸

So, is biology truly nonsensical "except in the light of evolution"?¹ According to author John Long, "The mystery remains as to how sharks first evolved."⁹ In their own words, evolutionists' explanations are neither definitive nor conclusive. But creationists have a better explanation coming from the One who was there in the beginning, "the living God, who made the heaven, the earth, the sea, and all things that are in them" (Acts 14:15). ●

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STICKING YOUR NECK OUT

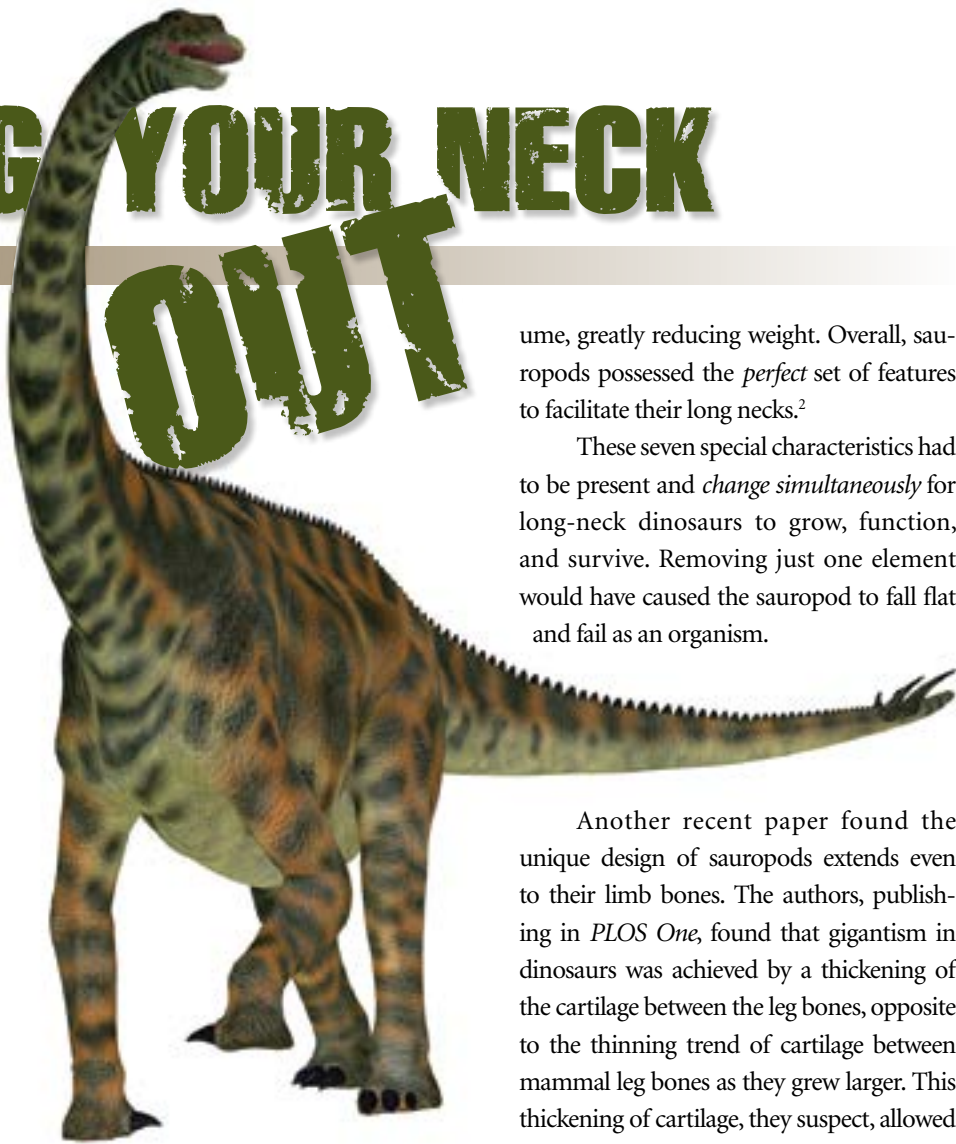
TIM CLAREY, P.H.D.

In 1809, Jean Baptiste Lamarck speculated that the necks of giraffes could grow longer simply by reaching higher and that they could pass this trait on to their offspring.¹ A half-century later, Charles Darwin suggested that giraffes born with longer necks than their rivals could reach more food and were thus better fit to survive. If either one of these ideas were true, scientists should find ancient “giraffe” fossils reflecting a pattern of transformational neck growth over time. However, after generations of searching, paleontologists have failed to uncover *any* evidence of transitional giraffe necks. What about the long-neck dinosaurs—do they show neck-growth evolution?

A recent study of sauropodomorph dinosaurs published in *PeerJ* has unlocked secrets to their marvelous design.² Sauropodomorphs are commonly referred to as the “long-necks” for a reason: All possessed at least 10 elongated neck vertebrae, making sauropodomorph necks six times longer than the tallest giraffe’s neck, at minimum!² Almost all mammals have seven neck vertebrae, by contrast.³ Although the researchers claimed that sauropods (the most common subgroup of sauropodomorphs) “inherited long necks from their basal sauropod ancestors,” they offered no transitional fossils to back their claim.²

However, they did find that sauropod necks—some reaching as long as 48 feet in length—possessed a set of seven special characteristics that facilitated having an extremely long neck: 1) the body size to support a long neck, 2) the skeletal stability of a quadrupedal stance, 3) small heads, 4) ten or more neck vertebrae, 5) elongated neck vertebrae, 6) an apparent air-sac breathing system, and 7) vertebrae designed with “pneumaticity,” i.e., many holes to lessen the weight.²

Without this combination of charac-



teristics, the long-neck sauropods could not have survived. A large body size and stance are essential foundations for a long neck because they stabilize long appendages and literally prevent the animal from toppling.² Sauropods’ small heads also reduced the required lifting power of their necks.

A unidirectional air-sac breathing system would have eliminated “dead space” in sauropod tracheas, caused when used air is re-inhaled before it can be fully exhaled—a limiting factor in the length of mammal necks. Allowing only one direction of air flow through the lungs, as in extant birds, this type of system always keeps freshly inhaled air passing across the lungs and eliminates the leftover, stale air that collects in mammals.⁴

Finally, the authors determined that sauropods had neck bones that were composed of 50 to 70 percent air space in vol-

ume, greatly reducing weight. Overall, sauropods possessed the *perfect* set of features to facilitate their long necks.²

These seven special characteristics had to be present and *change simultaneously* for long-neck dinosaurs to grow, function, and survive. Removing just one element would have caused the sauropod to fall flat and fail as an organism.

Another recent paper found the unique design of sauropods extends even to their limb bones. The authors, publishing in *PLOS One*, found that gigantism in dinosaurs was achieved by a thickening of the cartilage between the leg bones, opposite to the thinning trend of cartilage between mammal leg bones as they grew larger. This thickening of cartilage, they suspect, allowed for better cushioning or “shock absorption” and reduction in joint friction.⁵

It is this all-inclusive, concurrent combination of features that makes any form of intermediate creature impossible and points, not to a fortunate accident, but to an all-encompassing plan. The Creator made fully-formed sauropods, along with man—and giraffes—on Day Six of the creation week. ●

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NEW ICR RESEARCH ASSOCIATE: VERNON R. CUPPS



Vernon R. Cupps believed that God created the universe and that Darwinian evolution was inconsistent with the Bible and science since he was young. But he didn't give much consideration to a recent creation of the universe until about a decade ago.

"I had not given much thought to that proposition until the last 8-10 years when I read both Dr. [Henry] Morris' and Hugh Ross' books. At that point, it seemed self-evident to me that one cannot hold to the inerrancy of Scripture and also believe in an old earth and universe," he said in a recent interview.

Dr. Cupps received his B.S. and M.S. in physics at the University of Missouri-Columbia and his Ph.D. in nuclear physics at Indiana University-Bloomington, where he worked at the Indiana University Cyclotron Facility. He later spent time at the Los Alamos National Laboratory before taking a position as radiation physicist at Fermi National Accelerator Laboratory, where he directed and supervised a radiochemical analysis laboratory from 1988 to 2011. He is a published researcher with 73 publications, 18 of which are in referred journals.

During his time with Fermilab, his assignments varied. "My primary job at Fermilab was to manage the operation of the Radioisotope Analysis Facility," he said. "I also developed and helped implement the Air Monitoring Program, initiated material activation research projects, performed shielding calculations for the accelerator division, and implemented health physics and environmental monitoring projects."

Many discoveries await nuclear physicists like himself. "After over a century of directed effort, we still do not fully understand the nature of the strong and weak nuclear forces," he said. Also, several interesting science questions still bear further investigation, such as, "Is radioisotope dating a reli-

able way to ascertain the age of anything?" and "Can nuclear matter really be explained through the exchange of particles?"

Dr. Cupps recently became the first nuclear physicist to join the Institute for Creation Research as a research associate. "I had been familiar with ICR through published literature for approximately 12 years but was blessed to establish a personal connection only in the last two," he said. When asked what he plans to focus on at ICR, he replied, "First, I will probably review the RATE¹ report and attempt to answer the radioisotope dating questions which came out of that report. Second, I will look at radioisotope dating in general and the assumptions that go into the various dating methods. As an aside to this project, I will try to clarify what the scientific method is and what it is not as there seems to be a great deal of confusion even among 'scientists' on this. Third, I would like to investigate the feasibility of the radioactive decay constants not being constant. And finally, I would like to study more closely the nature of nuclear matter."

When asked where he saw God shining the most in his study of physics, he said, "The structure of the nucleus, which constitutes most of the matter we know; i.e., how can a bunch of electrically repulsive particles like the proton be held together in such a small volume of space without blowing apart?"

Dr. Cupps also intends to continue his work in tutoring young people in math and physics, since he fostered a love of math and science at an early age. "I have loved mathematics, science, and history since I can remember, but I think I became more focused on physics while working on my science-fair projects in high school," he said. "The Lord gave us our minds to use—to search out His truth." ●

References

1. RATE (Radioisotopes and the Age of the Earth) is the Institute for Creation Research's eight-year research study. For more information see: www.icr.org/rate.

Aquaculture expert Jon Steeves recently helped an African community establish a fish farm to supply local food needs—a wonderful example of biblical multitasking through obeying the Genesis mandate while also serving and loving others. But before reviewing that philanthropic project, let’s consider what is commanded in the Genesis mandate, a divine decree also called the dominion mandate.¹

As Noah’s family disembarked the Ark after the worldwide Flood, God renewed mankind’s authority over animals and mandated that the Flood survivors (both humans and beasts) resume the multigenerational task to “be fruitful, multiply, and fill the earth”—all key components of the Genesis mandate.²

This divine decree demonstrated God’s love of both life and biodiversity, anticipating tremendous population growth as a result of reproductive fruitfulness. But is that mandate limited

to reproductive success and numerical population growth? Or does it command outcomes that spread creatures over the large geographic areas of the earth?³

To answer those questions, consider how the group effort to build the Tower of Babel showcases a partial rejection of the Genesis mandate. Led by the rebellious Nimrod (whose name literally means “let’s rebel”) at Babel (same word as “Babylon” in the Hebrew), this post-Flood population prided themselves in resisting God’s instruction and said, “Let us make us a name for ourselves, lest we be scattered abroad over the face of the whole earth” (Genesis 11:4).

Geographically speaking, being “scattered” all over the earth would fulfill God’s original mandate to mankind (Genesis 1:28) and His post-Flood renewal of that mandate to fill the earth (Genesis 9:1). When the early Babylonians refused to fill the earth, however, God’s will was not thwarted by their prideful building project—He disunited them by dividing their communication into many different languages, thereby scattering humanity across the lands (Genesis 11:9).

It is still God’s plan that Noah’s descendants “fill” habitats around the world. But some habitats expose humans to survival

challenges like the struggle to find readily abundant food for easy “hunter-gatherer” acquisition. In those places, the dominion mandate provides a key solution for hungry humans to successfully fill the earth: agriculture.¹ Whenever humans raise livestock and crops

for food, they are actually obeying and furthering the Genesis mandate, often in interesting and diverse ways.

Farming, in fact, is *not* limited to land crops. *Aquaculture* is also a type of farming or ranching, with the livestock “herds” being water creatures—usually fish—as Jon Steeves’ experience illustrates:

My goal has always been to help people in low-income, food deficient countries. Since returning to Cooke Aquaculture from university, I decided I wanted to use business and newly acquired aquaculture skills to make an impact; to feed, educate, and employ people in countries around the world that struggle to meet their basic needs.⁴

Fulfilling the Genesis Mandate While Helping the Poor



Steeves volunteered to help “farm” tilapia in an aquaculture project in Ghana. A bulldozer-built pond was stocked with fingerling tilapia after predatory frogs were removed, and local resources were used to produce affordable fish-feed. This is a “win-win” example of obedience to the Genesis mandate by exercising responsible dominion (i.e., stewardship) over the animal kingdom worldwide *and* helping the poor avoid starvation.

Managing the animal kingdom—fish included—with wisdom and care is what God originally commanded, and it’s also an example of showing the kindness that Christ taught: “For I was hungry and you gave Me food.”⁵ ●

(Adapted from a text lecture in ICR’s School of Biblical Apologetics [SOBA] online program.)

References

1. See Johnson, J. J. S. 2013. Siberian Huskies and the Dominion Mandate. *Acts & Facts*. 42 (6): 18-19.
2. Compare Genesis 1:26-28 and 9:1-7 with Genesis 9:19.
3. Johnson, J. J. S. 2013. God Fitted Habitats for Biodiversity. *Acts & Facts*. 42 (3): 10-12.
4. Steeves, J. 2013. Tilapia Project Helping African Community. *Cooke Aquaculture Newsletter*. Spring/Summer: 4-5.
5. Matthew 25:35.

Dr. Johnson is Associate Professor of Apologetics and Chief Academic Officer at the Institute for Creation Research.



Q: Was There an Ice Age?

J A K E H E B E R T , P H . D .

A: Secular scientists believe there have been at least five major ice ages during Earth's history, and the most recent is thought to have begun about 2.6 million years ago. Within this Pleistocene ice age, ice sheets are thought to have advanced and receded over many tens of thousands of years, growing in size during shorter ice ages called glacials and shrinking during the warmer interglacial periods.

Because secular discussions of ice ages involve millions of years, Bible-believing Christians may wonder: *Was* there really an ice age?

Yes, there is strong geological evidence of an ice age. Today, receding glaciers often leave behind recognizable geological features such as drumlins (elongated ridges) and moraines (rock debris carved and then deposited either along the side or at the end of a melting, moving glacier). Since these features are also found in lower latitudes than today's ice sheets and glaciers, it is clear that both the northern and southern hemisphere ice sheets extended to lower latitudes than they do today and have since melted.

Secular scientists have dozens of theories to explain ice ages, but they all have serious problems. Even the most popular one, the astronomical or Milankovitch theory, offers far too weak a cause.¹

The Bible, on the other hand, suggests a plausible mechanism for explaining a relatively recent ice age that began shortly after the Flood about 4,300 years ago and may have only lasted for several centuries. Surprisingly, the Ice Age actually required large amounts of heat, which this mechanism provides. One can use the acrostic HEAT to remember its key points.

Hot Oceans. During the Genesis Flood, hot, molten material from Earth's interior, possibly including much warmer waters from the "fountains of the great deep" (Genesis 7:11), volcanism, and friction from plate tectonics, would have significantly warmed the world's oceans, perhaps by tens of degrees Celsius.

Evaporation. Warmer oceans would have resulted in greatly elevated evaporation. This would have increased the amount of moisture in the atmosphere, ultimately resulting in much greater snowfall over the relatively cool continents in the mid- and high-latitude regions.

Aerosols. The enormous amounts of volcanic activity that occurred toward the end of the Flood and afterward would have ejected an enormous volume of tiny particles called aerosols into the atmosphere. These aerosols would have reflected significant amounts of



sunlight away from Earth's surface, resulting in cooler summers over the continents. Thus, winter snow and ice would not completely melt, even during the warmest months. Ice sheets would grow as more snow and ice accumulated during subsequent winters.

Time. Explosive volcanic eruptions can result in noticeable cooling over the continents, and both creation and evolution scientists agree that many enormous volcanic eruptions have occurred in the past. Creation scientists believe many of these eruptions occurred toward the end of the Flood and for many years afterward as Earth slowly returned to equilibrium after the Flood cataclysm. As noted above, aerosols from explosive volcanic eruptions are a potent cooling mechanism for keeping developing ice sheets from melting. However, because secular scientists hold that millions of years separated each volcanic eruption from the next, they cannot use this mechanism to account for an ice age. Thus, the Bible's *short* timescale is critical in explaining the Ice Age!

Yes, extensive geological evidence demands that high-latitude ice sheets *did* once extend to much lower latitudes than they do today. The secular view holds that there were multiple ice ages, each lasting for millions of years. In truth, there was only one relatively short ice age, perhaps with several "surges," and it was a result of the Genesis Flood.^{2,3} ●

References

1. Oard, M. J. 2005. *The Frozen Record*. Santee, CA: Institute for Creation Research, 34, 111-122.
2. Geological features at the edges of formerly glaciated areas, which secular scientists interpret as being caused by multiple Pleistocene ice ages, were actually caused by advances and retreats of the ice sheets during the single post-Flood Ice Age.
3. Lithified rubble found within sedimentary layers is interpreted by secular scientists as evidence for multiple ice ages hundreds millions of years ago but is better explained as resulting from underwater mass-flow processes such as underwater landslides and turbidity currents, many, if not all, of which would have occurred during the Genesis Flood.

Dr. Hebert is Research Associate at the Institute for Creation Research and received his Ph.D. in physics from the University of Texas at Dallas.



Wise Giving: Pragmatic Opportunities This Christmas

HENRY M. MORRIS IV

Each Christmas I am reminded of God's many blessings upon the ICR ministry. For over four decades He has faithfully supplied our needs through His people—even during the leanest of times when many were financially struggling themselves. All of us here at ICR are deeply humbled by this and so very thankful for those who choose to “lay up... treasures in heaven” through their support of our work (Matthew 6:20).

As you consider your special gifts this Christmas, please prayerfully consider the following practical ways you can partner with ICR in our work and receive wonderful benefits as a supporter.

Cash Gifts. There is no doubt that ICR's ministry would not function without cash gifts—the most practical, versatile, and immediate form of support. Thankfully, our nation still acknowledges donations to qualified charities like ICR, which are fully tax-deductible as allowed by law. If you are able, please consider blessing our ministry this season.

Gifts from IRAs. The popular IRA Charitable Rollover is *set to expire at the end of 2013*. This special provision allows IRA owners age 70½ or older to authorize charitable gifts directly to ICR—up to \$100,000 each year—without having to declare it as income. Such contributions also count toward your required minimum distribution, providing a twofold opportunity to support ICR while avoiding taxes on income you might be required to take. IRA gifts are easy to make through your administrator, so please contact them today if this opportunity is right for you.

Stock Gifts. With the stock market on the rise, now may be an excellent time to

consider contributions of stocks, bonds, or mutual fund shares. Shares that have been held for at least one year can be donated directly to ICR, providing you with a tax deduction at their full current value while also avoiding tax on any gains. Talk about a double bounty! Contact ICR for our brokerage account information and let us help you facilitate this process.

Matching Gift Programs. Many companies match gifts made by their employees and retirees to qualifying organizations, and ICR's graduate education programs and research projects usually fit within the requirements. With matches typically made dollar-for-dollar (up to certain limits), this is a marvelous opportunity to double the impact of your donations and “sow bountifully” for the cause of Christ (2 Corinthians 9:6). Contact your HR department to get started.

Charitable Gift Annuities. For senior donors over 65, rates on Charitable Gift Annuities—usually 4.5 to 9 percent depending on age—provide the absolute best return in today's market. For as little as \$10,000, you can fund a gift annuity with ICR that provides guaranteed income for life, a present tax deduction, and a tax-free portion of future payments—benefits other secure investments cannot match. If you desire to support the work of ICR but still need ongoing income, this option may be right for you. Contact me for a customized proposal, or visit the Planned Giving section of ICR's website to create your own.

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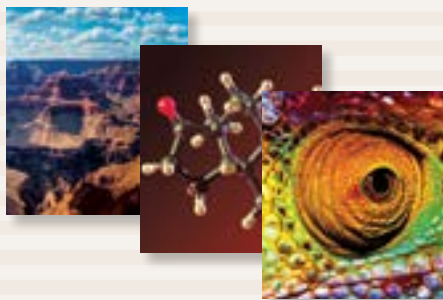
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Mr. Morris is Director of Donor Relations at the Institute for Creation Research.





I wanted to comment on a series of otherwise unrelated articles that appeared in the September 2013 issue of *Acts & Facts*. These would be “Up and Down Like a Cork?” by John Morris, “Endocrine System Evolution: A Textbook Example?” by Frank Sherwin, and “Amazing Animal Eyes” by Brian Thomas.

What impressed me over and over again in these articles were two things: 1) the comprehensibility of the material for the average lay reader and 2) the transferability of the information for easy communication to a third party.

I not only understood exactly what was being communicated in these various fields (my own discipline is atmospheric sciences) but I felt I could speak in everyday language to someone else who is a doubter about the scientific confirmation of God’s biblical account of natural history and the evidence that He clearly designed all things and quickly!



In fact, I should add the very next article to the list: “Dark Matter, Sparticles, and the Big Bang” by Jake Herbert.

Here again, a subject that could well bring scales over one’s eyes was made quite understandable so that an average reader could grasp it and articulate the main points to others.

I write these comments for the purpose of encouraging you in this area. I don’t know whether there was a concerted effort this time to have your writers write in this fashion, or whether the clarity and simplicity in this string of articles were just a “coincidence,” but I want to exhort you to keep up this welcome pattern. I was truly blessed from this issue more than from any that preceded it.

— R.D.



Your recent Impact article entitled “The Solar System: Earth and Moon” by Jason Lisle impacted me! By the close of the article I had tears in my eyes as I praised our great God of creation and salvation. In respect to science, I am a “layman,” yet I not only understood the article but was challenged by it. Thanks!

— S.S.

Editor’s Note: Henry Morris IV’s son’s public school teacher recently covered early people groups in her 7th-grade history class. After presenting the standard evolutionary curriculum on the origin of man (evolved from ape-like creatures to hominids in Af-



rica, etc.), she boldly told her students that these were only assumptions. She proceeded to give the biblical account of the origin of man—Adam through Noah, the dispersion at Babel, and the “filling of the earth” that

resulted as people groups spread out over a few thousand years. She ended her lesson by stating that she believed in the biblical account and encouraged her students to think critically—especially in relation to evolutionary assumptions they will hear in the future. Henry’s son was greatly encouraged by her bold stance, and as a Christian parent Henry Morris IV was thrilled and couldn’t let the opportunity slip away. He thanked the teacher and gave her a few resources that might encourage her continued witness for the Creator. Here is her response:

Dear Mr. Morris:

Thank you so very much for the books and literature you gave to our family! We are thrilled and have started reading them already.

Every year when we get to this particular chapter, I wonder what kind of response I’m going to get, but I am so encouraged when I see heads nodding in agreement! When I read the textbooks, I know the scientists have faith to believe what they believe. It is the same for me—only the object is different for each. I am grateful the object of my faith is the God of the Universe and the evidence is overwhelming for creation. My students need to know the other side. Your son...is a great young man. Thank you for sending him my way. Thank you again for the notes and books.

— S.L.



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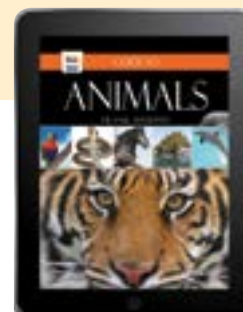
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