

# ACTS & FACTS

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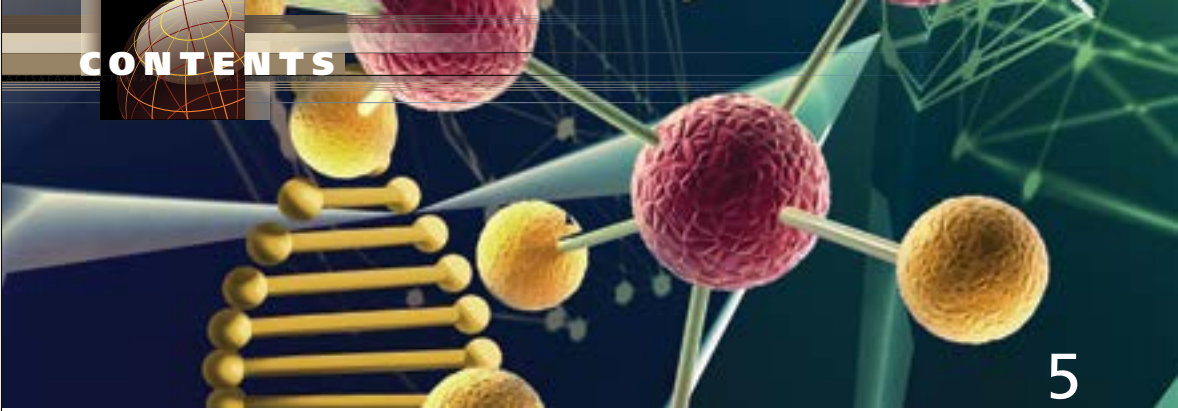
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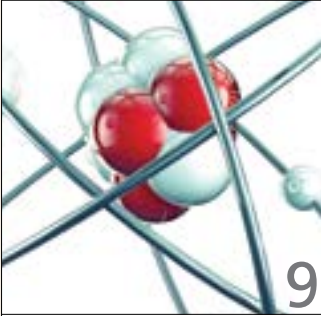
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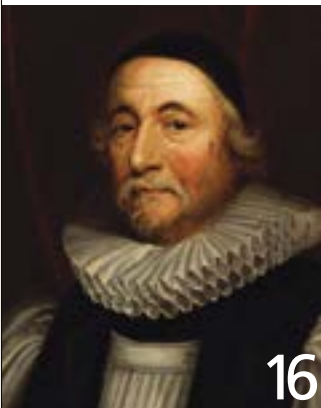
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# Go and Tell

As I was reading the biblical account of Easter this week, I imagined the small group of broken, defeated followers of Christ making their way to the burial site that morning. They brought spices to anoint the body of their Lord. As the women walked along the path to the tomb, they discussed who would move the stone at the entrance. The mourners anticipated obstacles to their mission, but what they found left them amazed—the stone was already rolled away and the body was gone. They expected to find a huge boulder and a dead body, but instead they witnessed evidence of the resurrection power and glory of God (Mark 16:1-8).



They also received God’s direction through an encounter with a stranger. Inside the tomb, they saw a young man clothed in a long white robe, who said to them, “Do not be alarmed. You seek Jesus of Nazareth, who was crucified. He is risen! He is not here. See the place where they laid Him. But go, tell his disciples...” (Mark 16:5-7). In an instant, these followers of Christ gained a new mission: Go and tell.

ICR zoologist Frank Sherwin’s belief in biblical creation is the result of someone “going and telling.” While on board a Navy aircraft carrier, Mr. Sherwin picked up a booklet by Dr. Duane Gish and as a result became convinced that the early chapters of Genesis were historically accurate (“Creation Conversion: The Turning Point,” page

18). He recalls being “amazed that there were clear scientific evidences against Darwinism and in favor of the biblical account of creation.”

We’ve packed this issue of *Acts & Facts* with scientific evidences of God’s majestic work with hopes that you, too, will be amazed. In “New Genetic-Clock Research Challenges Millions of Years,” Dr. Nathaniel Jeanson says, “Ticking within every species is a ‘clock’ of sorts that measures the length of time that a species has existed on earth. Since DNA is passed on imperfectly from parent to offspring, each generation grows more genetically distant from prior generations” (page 5). Dr. Vernon R. Cupps discusses problems with the Standard Model for particle physics (page 9). Brian Thomas gives us a glimpse at how marvelous God made our eyes (page 13), and Dr. Jason Lisle reveals fascinating details of the “dwarf planet” Pluto (pages 10-12).

Emphasizing how all of nature’s wonders take place because of the Creator, Dr. John Morris points us to Scripture: “He simply spoke and things were” (page 15). Our powerful, glorious God who rolled away a stone and raised our Lord from the dead simply spoke the universe into existence.

Henry M. Morris IV wraps up this edition, succinctly stating our mission: “ICR’s ministry is straightforward: Teach biblical creationism to this generation and the next” (page 21). We are here to go and tell about the wonders of God. Sadly, many young people are unaware of these wonders and of the truths of God’s Word. To reach them, ICR is wrapping up work on *Unlocking the Mysteries of Genesis*, a powerful 12-part DVD series that offers empirical evidence and answers to vital questions of science and faith. We invite you to join us as we “go and tell” the saving truth of our Creator to the next generation.

The Bible is true and the science is strong. All of creation causes us to marvel at God’s unlimited creativity. Be blessed this Easter as you ponder His most glorious work—the gift of salvation through Jesus Christ our Lord. He is risen indeed!

**Jayme Durant**  
EXECUTIVE EDITOR

# New Genetic-Clock Research Challenges Millions of Years

NATHANIEL T. JEANSON, P.H.D.

Does a 6,000-year-old earth match the findings of modern science? Secular scientists have answered forcefully in the negative for generations. However, their arguments rest on the assumption of constant natural processes and constant rates, and new discoveries from ICR's geneticists present a strong challenge to these claims.

## Genetic "Clocks"

Ticking within every species is a "clock" of sorts that measures the length of time that a species has existed on the earth. Since DNA is passed on imperfectly from parent to offspring, each generation grows more genetically distant from prior generations. Consequently, with each successive generation reproductively isolated groups within species grow more and more genetically distant from each other.

This is true for DNA found not only in the nucleus of the cell but also in the cellular energy factories termed *mitochondria*. Mitochondrial DNA is present in both males and females, but unlike nuclear DNA, it is inherited only from mothers. Thus, mitochondrial DNA differences among modern individuals within a created "kind" trace back to the maternal ancestor of the kind.

For kinds that survived the Flood on board the Ark, modern differences are mutated versions of the mitochondrial DNA sequence that was present in the female representative on the Ark (one representative for the unclean kinds; several representatives for the clean kinds). For kinds that survived off the Ark, modern differences may trace back to the individual females that God created during days three through six of the creation week. Since God likely created many indi-

viduals of each kind, some modern mitochondrial DNA differences for off-Ark kinds may be due to God creating DNA differences among individuals and not to mutation over time. Nevertheless, for both on-Ark and off-Ark kinds, most mitochondrial DNA differences among members of the same kind likely reflect the length of time that the kind has existed on Earth, to a first approximation, and thus represent the "ticks" of the mitochondrial DNA clock.

These biological facts create a new venue in which to compare the young-earth creation timescale to the secular timescale head to head. The true age of any given kind will be reflected in the amount of mitochondrial DNA diversity among its modern descendants. If kinds have existed on this planet for millions of years, then they should be quite genetically diverse. In contrast, if their origins trace back only 6,000 years, then they should be more genetically homogeneous.

These qualitative statements can be restated with mathematical rigor. Predicting mitochondrial DNA diversity with precision is a straightforward calculation. Secular scientists have spent many years developing the equations for estimating DNA differences over time. The mitochondrial DNA differences between isolated groups of individuals are a product of twice the DNA mutation rate and their time of separation.<sup>1,2</sup> We can show this in mathematical notation as follows:

$$(1) d = 2 * r * t$$

where

$d$  = DNA differences between two individuals

$r$  = the measured mutation rate in the species or lineage

$t$  = time of origin derived from each origins model

As long as the mitochondrial mutation rate

has been accurately measured in the laboratory, equation (1) can be used to predict genetic diversity.

Secular scientists have measured the mitochondrial DNA mutation rate for four species—humans, fruit flies, roundworms, and water fleas. The Bible puts the origin of each of these about 6,000 years ago, and we rounded it up to 10,000 years.<sup>3</sup> However, the published evolutionary literature puts the origin of modern humans about 180,000 years ago; fruit flies, about 20 million years ago; roundworms, about 18 million years ago; and water fleas about 7.6 million years ago.<sup>4</sup>

Plugging these numbers into equation (1) reveals a sharp contrast between the creation and evolutionary predictions (Figures 1 and 2). For example, the measured mitochondrial DNA mutation rate for humans is, on average, ~0.00048 mutations per year.<sup>4,5</sup> Multiplying 0.00048 by 2 and by 10,000 years yields a prediction of about 10 mutations after 10,000 years of existence. Conversely, multiplying 0.00048 by 2 and by 180,000 years yields a prediction of about 174 mutations after 180,000 years of existence.<sup>4,6</sup>

Comparing these predictions to the range of actual human mitochondrial DNA diversity shows a striking result (Figure 1).<sup>4</sup> On average, human mitochondrial DNA sequences differ at 10 positions. The biblical model predicts a range of diversity that accurately captures this value. In contrast, the evolutionary timescale (and, by extension, the old-earth creation timescale) predicts levels of genetic diversity that are 12–29 times off the real DNA differences that we see today (124–290 mitochondrial DNA differences versus 10).

Similar calculations for fruit flies, roundworms, and water fleas depict the same

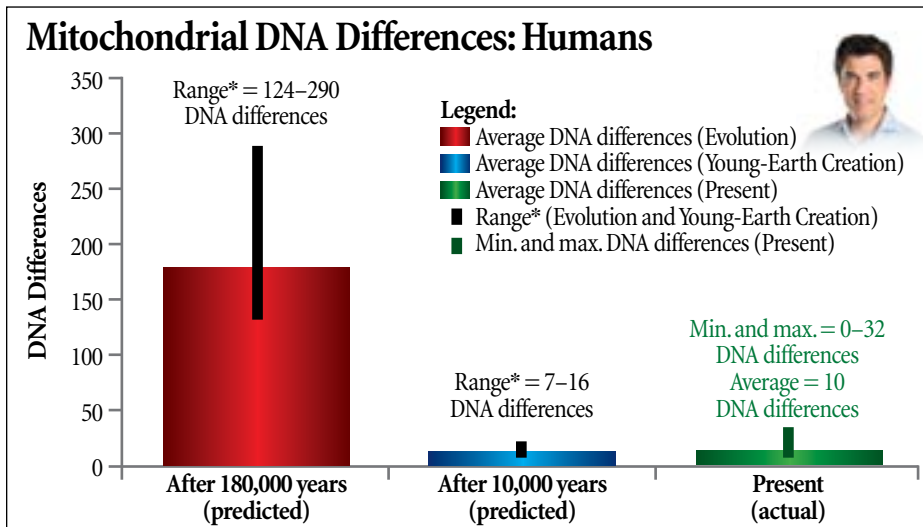


Figure 1. Present DNA differences among modern humans match the predictions of the young-earth creation model but contradict the predictions of the evolutionary model.

\*Range represents the 95% confidence interval.

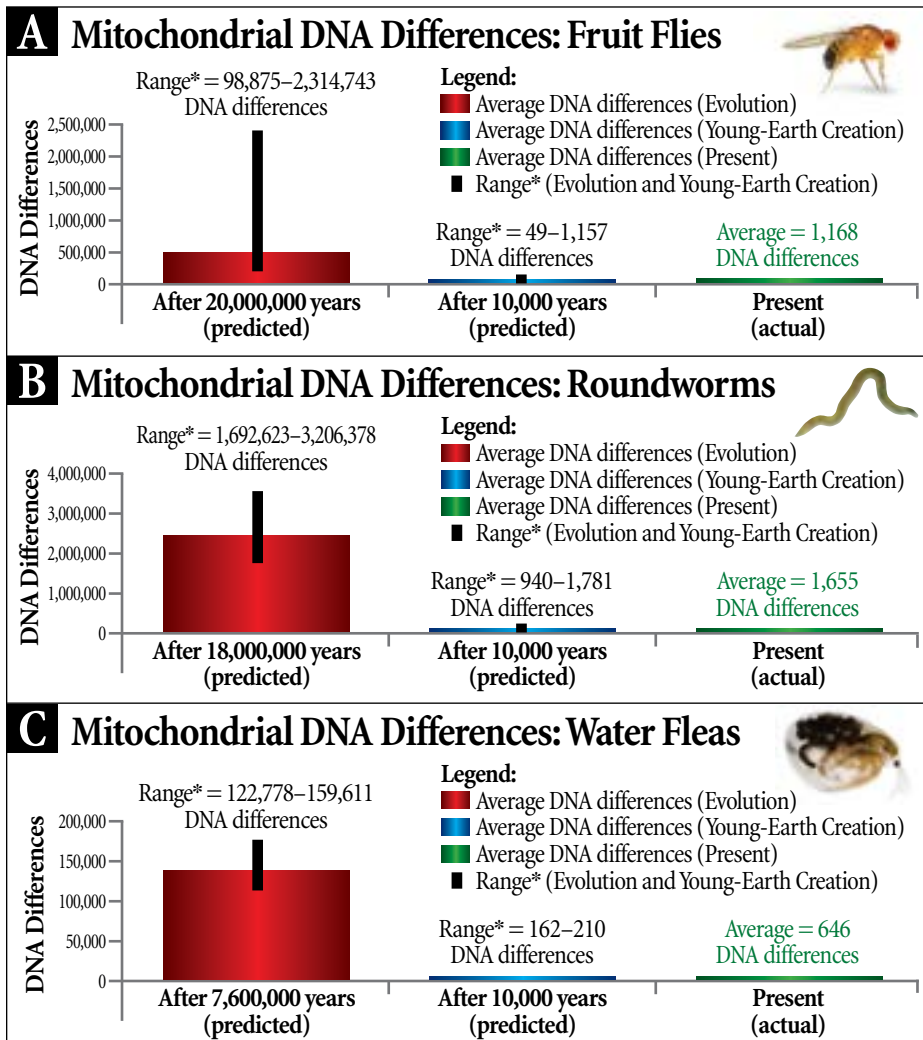


Figure 2. Present DNA differences among modern fruit flies, roundworms, and water fleas match (or are very close to) the predictions of the young-earth creation model but contradict the predictions of the evolutionary model.

\*Range represents the 95% confidence interval.

result—evolutionary predictions that are orders of magnitude off from the real DNA differences we see today and creation predictions that either match actual diversity or are very close to it (Figures 2A–C).

The evolutionary results cannot in any way be explained by invoking a slower mutation rate in the past. First, this would be inconsistent with the assumption of constant rates and constant processes invoked in astronomy and geology. Second, for species to be as genetically similar as they are today yet as old as the evolutionists claim, they would need to mutate only once every 21,000–36,000 years and consistently so for millions of years (Table 1). This incredibly slow rate is completely counter to the actual mutation rates observed in genetics; in fact, rates this slow seem biologically impossible. These results appear to present a dramatic challenge to the millions of years espoused by evolution and old-earth creation, and they seem to powerfully confirm the biblical account.

Species	Evolution	Creation	Actual
Humans	36,364	2,020	1,244 – 2,915
Fruit Flies	34,247	17	9–202
Roundworms	21,752	12	6–11
Water Fleas	23,529	31	48–62

Table 1

### Answering Objections


However, a case this simple and powerful will be met with some measure of opposition. Can the evolutionists find a hole in these arguments? Let's look at their possible objections.

*Objection 1: The results of this study are contradicted by the many evolutionary molecular clocks published previously.*

Comparing the clock in this study to the evolutionary molecular “clock” is essentially an apples-to-oranges comparison. While both clocks are based on the same biological principles, the evolutionists have used a shortcut to determine the mutation rate in their version of the clock. Rather than measure the actual rate of genetic change in the laboratory, evolutionists have

Image credit: Adapted with permission from Answers Research Journal

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determined the “ticking” of the clock from the dates they have assigned to the layers in the fossil record. This would be analogous to a young-earth creationist determining the mutation rate by measuring the genetic differences between two species, assuming a date of origin of 6,000 years, calculating the mutation rate from the genetic differences divided by 6,000 years, and then claiming that modern genetic differences confirm a 6,000-year origin for these species. Hence, evolutionary molecular “clocks” are actually a form of circular reasoning, not independent scientific data points, and they cannot logically contradict the results noted in Figures 1 and 2.

*Objection 2: The results of this study are contradicted by empirically measured molecular clocks for nuclear DNA.*

The nuclear DNA clocks that evolutionists use assume that all nuclear DNA differences are the product of mutation, and this interpretation is in error. Unlike mitochondrial DNA, nuclear DNA comes in two copies and is inherited from both parents, which means that DNA differences in offspring are the result of DNA mutation and of *pre-existing* DNA variation in the parents. For example, under the creation model, some of this pre-existing variation in humans traces back ultimately to the two parents, Adam and Eve, whom God created with pre-existing DNA differences. When this fact is accounted for, nuclear-genetic clocks point to recent creation, not millions of years.<sup>7</sup>

*Objection 3: The results of this study are based on flawed methods—too few modern individuals were represented.*

Inclusion of more modern individuals when tallying actual genetic diversity fails to help the evolutionary model for two reasons. First, the rate of mitochondrial DNA mutation might be different in the lineages that led up to these additional individuals. Hence, if the evolutionists wish to better represent the worldwide diversity in mitochondrial DNA sequences, then they must also better represent the worldwide diversity in mitochondrial DNA mutation rates. Any increase

in actual genetic diversity afforded by more individual sequences might be counteracted by the discovery of faster mutation rates in these new lineages. Second, the magnitude between actual diversity and predicted diversity is far too great a gap to be bridged by even a hundred more DNA sequences from additional individuals or species. Sampling error does not reconcile evolutionary predictions with reality.

**These biological facts create a new venue in which to compare the young-earth creation timescale to the secular timescale head to head. The true age of any given kind will be reflected in the amount of mitochondrial DNA diversity among its modern descendants.**

*Objection 4: The results of this study are based on flawed methods—too few historic/fossil individuals were represented.*

Fossil DNA sequences were deliberately omitted from this study because they are too fraught with scientific uncertainty. Our own in-house analysis revealed that most fossil DNA sequences are highly degraded and unreliable. Furthermore, it is currently impossible to verify the accuracy of these sequences, even if they do not appear degraded, since we lack an independent means to verify their accuracy. (The evolutionary interpretation of the fossil record is not an independent test.) Finally, even if fossil sequences were reliable, the magnitude between actual diversity and predicted diversity is far too great a gap to be bridged by the inclusion of fossil DNA sequences. Again, sampling error simply does not reconcile evolutionary predictions with reality.

*Objection 5: The results of this study falsely represent the evolutionary expectations. Mutational saturation and homoplasy (independently acquired identical mutations) would lower the absolute value of the expected DNA differences under the evolutionary model.*

Mutational saturation could theoretically rescue the evolutionary model but fails to do so for lack of scientific evidence in its favor. If the individuals in this study had mutated to saturation such that every DNA position had been mutated, then the DNA identity between them should have been no

different than a random alignment of DNA sequences. Since every position in a DNA sequence has four possibilities due to the four bases—A, T, G, C—in the DNA code, a random alignment matches 25% of the time by chance and mismatches 75% of the time. None of the comparisons in this study even came close to 25% identity. The lowest match was 86%—far in excess of 25%.

Likewise, independently acquired

identical mutations could also theoretically rescue the evolutionary model, but this explanation strains credulity. Under the evolutionary model, these creatures have undergone hundreds of thousands to millions of random mutations to a DNA sequence that is less than 20,000 DNA bases long, yet they have maintained sequence identities of 86% or greater. To postulate that these high identities resulted from separate species arriving at the same mutation repeatedly, by chance, over millions of years is to invoke a statistical miracle—a practice evolutionists reject in other fields. Clearly, homoplasy is not a tenable scientific explanation for these results.

*Objection 6: The results of this study failed to account for all evolutionary mechanisms. Natural selection would have eliminated millions of deleterious mutations over the past several million years in each of these species.*

This evolutionary rescuing device could potentially solve the numerical discrepancy problem, but it is entirely *ad hoc* and, therefore, unscientific. Scientific explanations must make testable predictions, and if natural selection explains why the evolutionary predictions are so far off from reality, then it must also predict levels of genetic diversity in species for which diversity is currently unknown. Until evolutionists actually make these predictions, this line of reasoning does not pass muster.

*Objection 7: The results of this study are simply a statistical artifact. Four species do not repre-*

sent biological diversity on Earth.

This objection is perhaps the strongest that the evolutionists could raise, and it appears compelling at first pass. Four species is a far cry from the millions of species that currently exist on Earth. However, these four belong to three separate phyla (humans—Chordata; fruit flies and water fleas—Arthropoda; roundworms—Nematoda) that allegedly diverged deeply in evolutionary history. Therefore, the results from these species span a broad swath of life and of supposed evolutionary time. Any evolutionary explanation that seeks to dismiss these results has very broad implications for the history of this planet, and simple explanations will not come easily, especially in light of the fact that the mutation rates for each species were obtained independently. Hence, statistical error is not a compelling explanation, and I encourage any reader to perform mutation-rate studies on organisms for which this rate

has yet to be measured. (I predict similar results to those depicted in this article.)

None of the above objections have yet to appear in peer-reviewed scientific literature—either in the creationist or secular journals. In fact, no peer-reviewed objections have been published at all to date. The objections above are ones that I anticipate or that have been expressed in popular forums such as evolutionary blogs—a common source of origins information and ideas that are unencumbered by the accountability of scientific professionals.

Will evolutionists be able to reconcile these genetic data with their millions-of-years claims in geology and astronomy? The results in this article were derived using the same assumptions pervading these latter fields—for example, the constancy of the rate of change—yet these results flatly contradict the secular conclusions in geology and astronomy. Can the evolutionary

community resolve this great paradox without undermining the logical foundations of their arguments for deep time? ●

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2. Howell, N. et al. 2003. The pedigree rate of sequence divergence in the human mitochondrial genome: There is a difference between phylogenetic and pedigree rates. *American Journal of Human Genetics*. 72 (3): 659–670.
3. We allowed the extra time because Septuagint manuscripts differ in their ages for the patriarchs.
4. Jeanson, N. T. 2013. Recent, Functionally Diverse Origin for Mitochondrial Genes from ~2700 Metazoan Species. *Answers Research Journal*. 6: 467–501.
5. This is for a subset of the mitochondrial DNA, the “D-loop,” the only region of the human mitochondrial DNA for which a mutation rate has been measured to appropriate statistical confidence.
6. When the statistical variation in the measured mutation rate is factored in, both creation and evolutionary predictions yield a range of values, but these ranges (creation = 7–16 mutations; evolution = 124–290 mutations) are still very distinct from one another.
7. Carter, R. The Non-Mythical Adam and Eve! Refuting errors by Francis Collins and *BioLogos*. Creation Ministries International. Posted on creation.com August 20, 2011, accessed January 9, 2014.

Dr. Jeanson is Deputy Director for Life Sciences Research at the Institute for Creation Research and received his Ph.D. in cell and developmental biology from Harvard University.



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# Proton Problems: Faith in Theories or Reality?

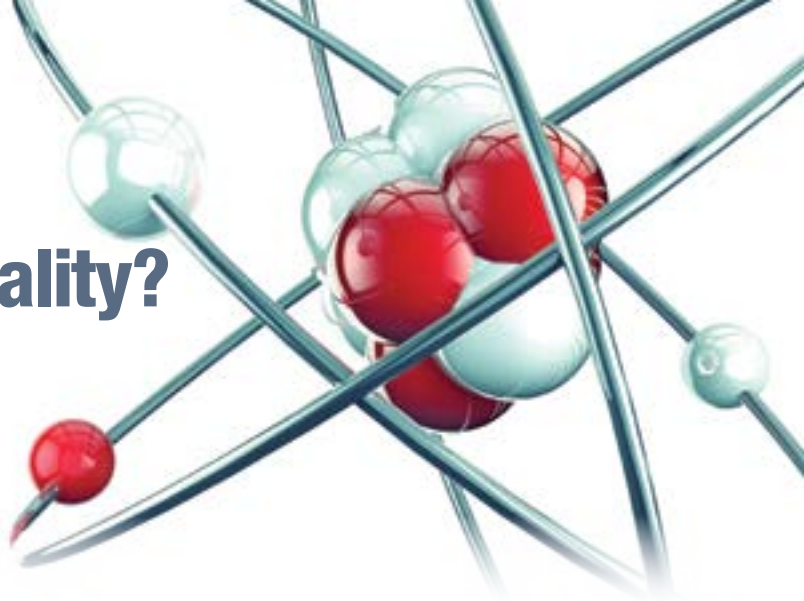
VERNON R. CUPPS, PH.D.

The proton—a positively charged particle found in the nuclei of atoms—continues to present problems for the Standard Model of particle physics. Generally considered a composite particle, it is made up of three subatomic particles known as quarks. Among the zoo of known particles, only the proton, antiproton, electron, positron, neutrinos, and photons appear to be stable. All other particles decay. Even the free neutron (one that is not bound in a nucleus) decays with a 15-minute half-life. The Grand Unified Theory (GUT) of particle physics that seeks to unify all physics under a single model predicts that the proton should decay with a half-life of  $\sim 10^{32}$  years, but more recent measurements suggest that the half-life must be greater than 5 times  $10^{33}$  years. Why the proton and its antiparticle should appear to be the only stable hadrons remains a mystery.<sup>1</sup>

The results from an experiment performed at the Paul Scherrer Institute in Switzerland, using a  $\pi E5$  proton beam-line to measure the radius of the proton, seem to add to this mystery. Drs. Jan Bernauer and Randolph Pohl attempted to measure the proton's charge radius via two different experimental methods: Dr. Bernauer, by direct scattering of an electron beam from hydrogen nuclei, and Dr. Pohl, by measuring the Lamb shift in muonic hydrogen.<sup>2,3</sup> Both scientists depended upon one of the best-tested theories in physics, quantum electrodynamics (QED), to assist in interpreting their observations. Since the 1940s, QED has successfully predicted the electron magnetic moment to an astonishing accuracy and also explained the Lamb shift of electron orbitals in the hydrogen atom.<sup>4</sup>

Dr. Bernauer and colleagues attempted to measure the proton charge radius in the conventional way by shooting electrons at hydrogen atoms and determining the proton charge radius. From this and other electron scattering measurements, the proton's charge radius is currently determined to be  $0.878 \pm 0.005$  fm. ( $10^{-15}$  meters).<sup>5,6</sup>

Dr. Pohl and colleagues used a different method termed the Strange Hydrogen Technique. They shot muons at a target of



hydrogen gas. Some of the muons were captured in the metastable 2S orbital of hydrogen, which is slightly separated in energy from the 2P orbital state due to the Lamb shift. The energy difference between the 2S and 2P states depends on the

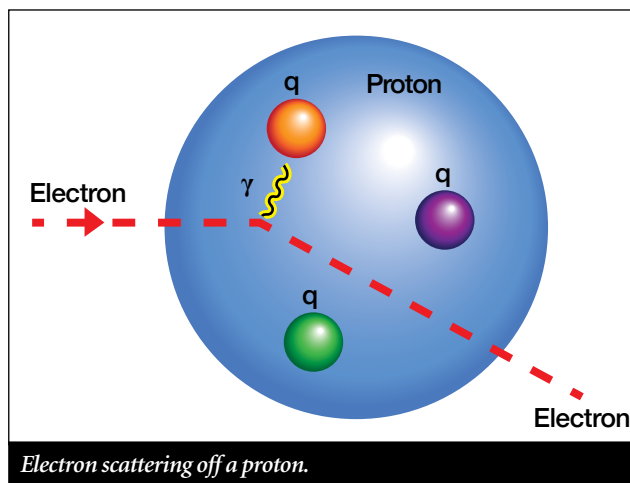
Lamb shift and is functionally related to the proton radius. A proton radius of  $0.8409 \pm 0.0004$  fm. was determined from this experiment.

The discrepancy between the two measurements ( $\sim 4\%$ ) doesn't seem like much, but in subatomic physics it is huge and presents physicists with another problem in understanding the proton. Physicists Ingo Sick and Dirk Trautmann believe we may not fully understand the ramifications of each experimental setup.<sup>7</sup>

Are some of the models so many physicists have put their faith in (GUT, QED) still tenable or are

they breaking down? One would think that history has taught us to be very careful about the object of our faith! Perhaps the proper object of our faith is a "Who" rather than a mysterious "what." ●

**He is before all things, and in Him all things consist. (Colossians 1:17)**



Electron scattering off a proton.

## References

1. A hadron is any particle that interacts primarily via the strong nuclear force.
2. According to solutions of the Schrödinger or Dirac equations, the  $^2S_{1/2}$  and  $^2P_{1/2}$  orbitals should have the same energies in the hydrogen atom. The Lamb shift is the manifestation of a small difference in energy between these two states that is not accounted for by either solution. A muon is a negatively charged lepton (a cousin of the electron) with  $\sim 200$  times more mass than the electron. A muonic hydrogen atom is a proton with a muon orbiting it rather than an electron.
3. Bernauer, J. C. and R. Pohl. 2014. The Proton Radius Puzzle. *Scientific American*. 310 (2): 32-39.
4. Gabrielse, G. 2013. The Standard Model's Greatest Triumph. *Physics Today*. 66 (12): 64-65.
5. Imagine shooting BBs at a large aluminum disk that is very thick at the center and tapers out to its edges. The BBs bounce back from the center but penetrate with less and less loss of velocity until they just miss hitting the edge of the disk. If you were to plot velocity loss versus radius of the disk and extrapolate to zero, you would have a measure of the disk radius.
6. Mohr, P. J., B. N. Taylor, and D. B. Newell. 2012. CODATA recommended values of the fundamental physical constants: 2010. *Reviews of Modern Physics*. 84 (4): 1527.
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Dr. Cupps is Research Associate at the Institute for Creation Research and received his Ph.D. in nuclear physics at Indiana University-Bloomington.



# The Solar System: Pluto

In 1930, astronomer Clyde Tombaugh discovered a faint point of light orbiting the sun beyond Neptune. The new world “Pluto” was considered the ninth planet for 76 years, but in 2006 the International Astronomical Union voted to reclassify Pluto as a “dwarf planet.” What prompted this change in nomenclature?

## The Rise and Fall of the Ninth Planet

The discovery of Neptune in 1846 was a triumph of Newtonian physics.<sup>1</sup> The planet was detected by its gravitational influence on the orbit of Uranus. This novel technique prompted astronomers to carefully monitor the orbits of Uranus and Neptune hoping that subtle deviations in their orbits might lead to new discoveries. By the end of the 19th century, some astronomers believed an additional planet was needed to explain slight discrepancies in the orbits of these planets. In 1906 Percival Lowell began a systematic search for this undiscovered world he termed “Planet X.” He died before finding it.<sup>2</sup>

Clyde Tombaugh resumed the search at Lowell Observatory in 1929. He took photographs of various sections of the sky and then photographed the same sections days or weeks later. Since planets orbit the sun, while stars do not, Planet X would be in a different position on two photographic plates of a particular region of the sky taken on different nights. But of the thousands of stars in a typical photograph, how could he possibly notice the one that had moved?

Tombaugh used a machine called a *blink comparator*. This device allows a view of two photographic plates in rapid succession. By shifting from one photograph to a nearly identical one taken some time later, the human brain is able to perceive any change. A planet will appear to jump back and forth

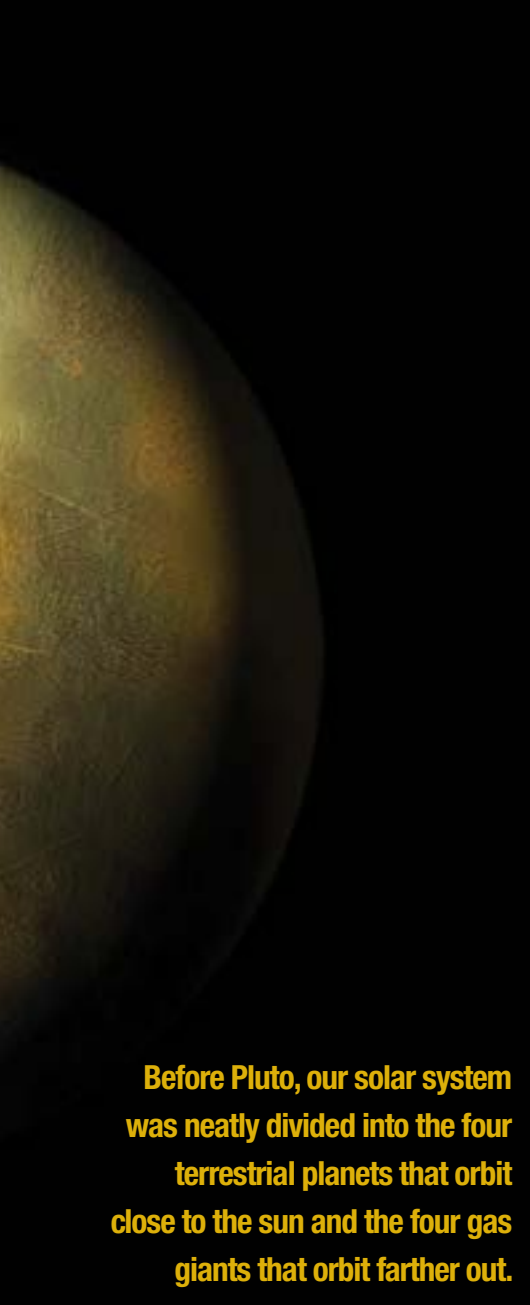
when the plates are flipped, while the stars remain stationary. Tombaugh found Planet X (Pluto) on February 18, 1930, by “blinking” between two photographs taken a few days apart in January of the same year. Pluto was revealed by its own motion.

Before Pluto, our solar system was neatly divided into the four terrestrial planets that orbit close to the sun and the four gas giants that orbit farther out. This new planet broke the mold, being a small rocky/icy body at tremendous distance. Unlike any other planet, Pluto showed no discernible size in even the largest telescopes of the period. This meant that it had to be much smaller than Uranus or Neptune and no bigger than Earth.

As technology grew, the estimated size of Pluto shrank. By the middle of the 20th century, Pluto was known to be no larger than Mars, and by the 1970s it was believed to be even smaller. Using modern telescopes, we now know that Pluto is only 1,430 miles in diameter—about 18 percent the diameter of Earth—and smaller than any of the other eight planets. It has less than 1 percent of the mass of Earth. Such a diminutive world is not nearly massive enough to affect the orbits of Neptune or Uranus in a measurable way. It now appears that there never was any discrepancy in the orbits of these planets. So, the discovery of Pluto was serendipitous.

The new estimate of its small size is one reason for Pluto’s demotion from

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



**Before Pluto, our solar system was neatly divided into the four terrestrial planets that orbit close to the sun and the four gas giants that orbit farther out.**

Image credit: Artistic conception by C. M. Handler

planet-hood. But it's not the only reason. In 1992, astronomers detected another object orbiting beyond Neptune. Designated "1992 QB<sub>1</sub>," the object was a mere 100 miles in diameter—far too small for a planet. The following year, five similar objects were also discovered orbiting beyond Neptune. Over the next several years, dozens more of these distant masses were found, and we now know of hundreds. A few of them, such as Sedna and Makemake, are nearly as large as Pluto.

With these discoveries, astronomers began to realize Pluto was not an unusual out-of-place planet but the largest member of a new class of objects—a trans-Neptunian object (TNO). As more TNOs were discov-

ered, astronomers began to ask, "Should Pluto be reclassified?" For 70 years, school children had been taught that there were nine planets, but a new discovery was about to challenge old taxonomy.

In 2005, astronomers discovered a TNO that is *larger* and more massive than Pluto.<sup>3,4</sup> Now named Eris, this world orbits the sun at twice the average distance of Pluto. But how should we classify this new world? It would not make sense to call it a TNO but not a planet since it is larger than the planet Pluto. Either Eris needed to be classified as the 10th planet, or Pluto would have to be demoted. Since Pluto and Eris are far more similar to the hundreds of other TNOs than they are to the (other) planets, the International Astronomical Union opted to revoke Pluto's status as a planet rather than reclassify dozens of similar-size objects as planets.<sup>5,6,7</sup> With this new classification system in place, the solar system returned to having only eight planets, as it did before 1930.

### Properties of Pluto

Pluto is a small world composed of rock and various types of ice, including nitrogen, methane, and carbon monoxide. It has a tilt of 120 degrees and therefore rotates on its side like Uranus. Pluto's average distance from the sun is 3.6 billion miles, or 39 times Earth's distance. On Pluto, the sun would appear over 1,500 times fainter than it does to us. The temperature of Pluto's surface is -229°C (-380°F). Due to its extreme distance, Pluto takes 248 years to orbit the sun.

The orbit of Pluto is inclined relative to the plane of the solar system by 17 degrees—far larger than the inclination of any planet.<sup>8</sup> Also, its orbit has high eccentricity (the "squashed-ness" of the ellipse). Pluto is 1.79 billion miles closer to the sun at its closest approach (perihelion) than at its most distant point (aphelion). That's a phenomenal difference! In fact, near perihelion Pluto is closer to the sun than Neptune. This was the situation between 1979 and 1999 when Pluto was considered to be the *eighth* planet

from the sun, and Neptune was the ninth. But for the remaining 228 years of its orbit, Pluto will be farther from the sun than Neptune.

It may seem that the two worlds might collide when Pluto crosses the orbit of Neptune. But their orbits are not in the same plane and never actually intersect. There is another reason why a collision could not occur. Pluto is in a 2:3 orbital resonance with Neptune. That is, Pluto orbits the sun twice for every three orbits of Neptune. Such a stable configuration guarantees that these two worlds can never be near the same place at the same time. Could this be a design-feature of the solar system?

At the time this article was written we had no detailed images of Pluto because it has never been visited by spacecraft. Our best images are from the Hubble Space Telescope. But even Hubble cannot provide much detail on such a small, distant world. This situation should change drastically in July 2015 when the *New Horizons* spacecraft is scheduled to reach Pluto.

Pluto has a thin atmosphere—sometimes. It consists primarily of nitrogen, methane, and carbon monoxide—the same composition as Pluto's icy surface. Solar heating is sufficient to keep trace amounts of these substances in a gaseous state when Pluto is near perihelion. But as Pluto moves toward aphelion, its surface temperature will drop due to lack of sunlight. Astronomers expect that at some point the atmosphere will "freeze out" and drop to the surface. There is high hope that *New Horizons* will reach Pluto before this happens.

### Pluto's Moons

Pluto has five known moons. Charon is the largest and was identified in 1978, appearing as a "bump" on an image of Pluto.<sup>9</sup> More recently, Hubble Space Telescope images distinctly reveal the separation between Pluto and this moon. Charon is over half the size of Pluto in diameter. Pluto and Charon revolve around their common center of mass, which is in between these two worlds

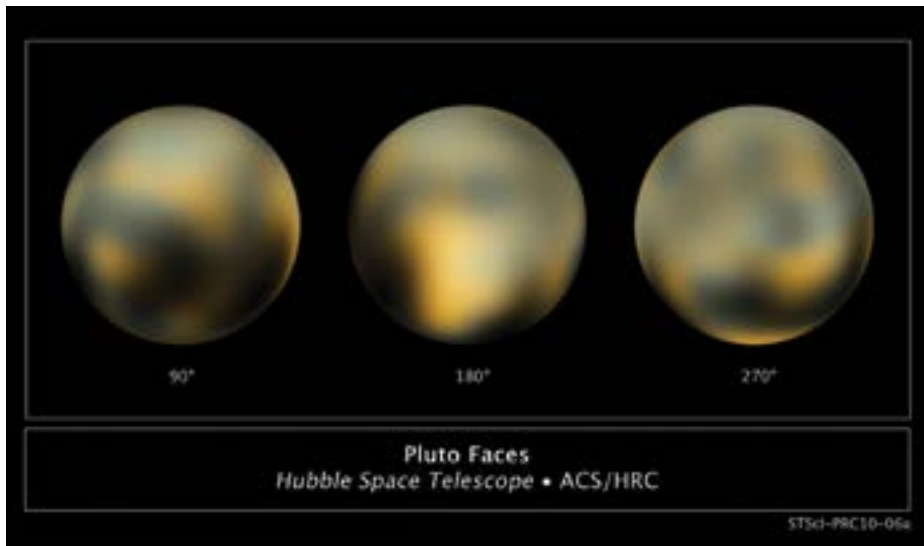


Image credit: NASA, ESA, and M. Bute (Southwest Research Institute)

but closer to Pluto.<sup>10,11</sup>

Like all large moons, Charon is tidally locked—meaning it keeps the same side pointed toward Pluto as it revolves. Amazingly, Pluto is also tidally locked with Charon. The orbital period of Charon therefore exactly matches the rotation period of Pluto, which is 6.4 days. A person standing on one of these worlds would see the other one remain stationary in the sky as the sun and stars rise and set.<sup>12</sup>

Pluto’s other four known moons are all less than 100 miles in diameter. Each of these was discovered using the Hubble Space Telescope. All orbit in the same plane farther out than Charon and are named—in order of increasing distance from Pluto—Styx, Nix, Kerberos, and Hydra.

**Other TNOs**

Much less is known about other TNOs because they tend to be smaller than Pluto and are consequently harder to image. Eris alone is larger than Pluto, though only by about 1 percent. But Eris orbits 73 percent farther from the sun than Pluto, so images of this little world don’t reveal much detail. From tracking this dwarf planet, we know that Eris has a highly eccentric orbit that is inclined a whopping 44 degrees relative to the plane of the planets. The elliptical orbit brings Eris within 3.5 billion miles of the sun and out to a distance of over 9 billion miles. Spectroscopic studies suggest that the

composition of Eris is similar to Pluto. We also know from Hubble images that Eris is orbited by a moon, Dysnomia. But this is about the limit of our knowledge of this little world.

**Plutinos and KBOs**

TNOs are further classified by their orbital characteristics. Of particular interest is a type of TNO referred to as a *plutino*. A plutino has the same orbital period as Pluto and is consequentially also in a 2:3 resonance with Neptune. A surprisingly large percentage of TNOs are plutinos, possibly having been influenced by the gravitational pull of Neptune.

Some astronomers prefer the term *Kuiper Belt Object* (KBO) to TNO. The two terms are essentially synonymous, but KBO has a secular origin. Since comets cannot last billions of years and since we still see comets, secularists have invented a hypothetical source to resupply short-period comets over billions of years: a Kuiper Belt. This belt was supposed to be a disk of trillions of comet-size objects orbiting beyond Neptune.

Contrary to expectations, astronomers instead found a few hundred much larger icy objects beyond Neptune. TNOs are typically tens of thousands of times more massive than a comet nucleus and cannot therefore be a source of new comets. Secular astronomers believe that many trillions of comet-size TNOs exist and simply

have not yet been detected. But this remains to be seen. Thus, though it is widely used, KBO is misleading terminology. On the other hand, the term trans-Neptunian object is more objective and observationally driven. In any case, whatever we choose to call them, and however we decide to classify Pluto, these objects are fascinating and give us a small glimpse into the infinite creativity of our Lord. ●

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1. See my article on Neptune in the March 2014 issue of *Acts & Facts*.
2. Lowell founded an observatory in Flagstaff, Arizona, in 1894. He was famous for believing that he could see evidence of civilizations on Mars. Specifically, Lowell believed he could see canals that the Martians used to transport water across their planet and sketched many of these. Of course, modern technology confirms that no such canals exist. Lowell was sincere but mistaken. He searched for Planet X until his death in 1916.
3. Newer estimates indicate that Eris is only slightly larger than Pluto. But the uncertainties are such that we cannot rule out the possibility that Eris may in fact be slightly *smaller*. The extreme distance to both of these worlds makes exact measurements impossible.
4. Scientists Discover Tenth Planet. NASA News. Posted on nasa.gov July 29, 2005, accessed January 15, 2014.
5. This has inspired a new term in colloquial English: To be “plutoed” is to be demoted or devalued. The new word was voted the 2006 Word of the Year by the American Dialect Society.
6. Not everyone was happy with this decision. But we would do well to remember that this is merely a matter of classification. Pluto is exactly the same world today as it was before 2006 or as it was before its discovery in 1930. It’s just a matter of nomenclature. Perhaps as a tribute to Pluto’s previous status, the IAU designated a new category “dwarf planet” that includes Pluto, as well as Eris and the largest asteroid Ceres. This new term is reserved for masses smaller than planets that orbit the sun directly and have sufficient gravity to pull themselves into a spherical shape. Pluto is both a TNO and a dwarf planet. So is Eris.
7. This is not the first time in history that the number of planets in our solar system has been reduced by reclassification. In the early 1800s, astronomers discovered several small “planets” orbiting between Mars and Jupiter. As more of these tiny worlds were discovered, it made more sense to classify them as a new type of object—an asteroid or “minor planet.” Nonetheless, for nearly 50 years the first asteroids were considered to be “planets” until astronomers gradually began reserving that term for only the largest eight planets.
8. The plane of the solar system, the ecliptic, is defined as the plane of Earth’s orbit around the sun. However, the orbits of the other planets are all essentially in this plane as well. Mercury’s orbital plane is offset from the ecliptic by 7 degrees, and Venus is offset by 3.4 degrees. All the other planets orbit within 3 degrees of the ecliptic. From a secular standpoint, it is surprising that the planets deviate at all from a common plane if they all developed from the same nebular disk.
9. Charon is pronounced “kair-uhn” or less commonly “shair-uhn.”
10. The center of mass is the “balance point” of a mass or system of masses. Imagine that Pluto and Charon were placed on a large seesaw. In order for the seesaw to be level, Pluto would have to be much closer to the pivot point than Charon. When the seesaw is balanced and level, the pivot point would be the center of mass of the Pluto-Charon system.
11. For this reason, some astronomers have suggested that Pluto and Charon should be considered a double-dwarf planet rather than a dwarf planet and moon.
12. This is the case unless the person is standing on the opposite side of Pluto or Charon. In the latter case, the person would never see the other world.

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# Miracle EYES

Jesus had compassion and touched their eyes. And immediately their eyes received sight, and they followed Him.”<sup>1</sup> Just as quickly as He made the first human eyes out of dust, Jesus the Creator fixed two men’s broken vision systems as only a Master Biotechnician could. Today, new inner-eye wonders are regularly uncovered, exposing the eye’s miraculous origin.

One critical vitamin-like eye molecule bears the chemistry-friendly name “11-*cis*-retinal.” When this molecule is embedded in its partner protein, energy from an absorbed photon straightens its bend at the 11th carbon atom to complete vision’s first step. This altered shape initiates other factors that amplify the visual signal inside the eye cell. Yet, slightly different versions of the retinal molecule—those built to bend at the 9th, 10th, or any other carbon atom—demonstrate little or no optic activity.<sup>2</sup> The Lord placed each atomic bond precisely where it needed to be.

Biophysicists have even concluded that certain living systems, including the human visual system, “couldn’t get faster, more sensitive or more efficient without first relocating to an alternate universe with alternate physical constants.”<sup>3</sup> For example, researchers discovered that Müller cells inside the retina—that thin, light-sensitive tissue layer at the back of our eyes—perform several tasks to optimize vision:

1) Covering the entire surface of the retina to collect the maximum num-

- ber of available photons<sup>4</sup>
- 2) Conducting light from around nerve cells and blood vessels directly to light-sensitive cells
  - 3) Filtering certain harmful radiation
  - 4) Reducing light noise—light waves reflected randomly inside the eyeball
  - 5) Collecting and reorienting different wavelengths of light
  - 6) Providing architectural support for neighboring cells
  - 7) Supplying nearby neurons with fuel<sup>5</sup>
  - 8) Mopping up and recycling waste
  - 9) Managing potassium ion distribution

But sight requires more than just eyes—the brain processes visual input. For example, one program in particular solves the problem of “perceptual stability.” Mental software organizes dizzying, streaky blurs from fast eye movements into coherent visual pictures. Investigation revealed that part of the brain does process the blurred streaks, but like a clutch that disengages an engine from the transmission when car gears shift, it disengages streaky images from the conscious awareness center of the brain.<sup>6</sup> Sound wasteful? It’s not. This process tells how far and fast the eye moved so the brain can place subsequent images right back in gear.

Lastly, retinas pre-process visual data. Their different cells sort raw visual inputs into 20 different “channels,” or parallel representations, before the data are recompiled and transmitted to the brain. One channel uses parasol ganglion cells to detect motion

and flicker. Another uses midget ganglion cells to process spatial information. Ganglion cells are “far from being simple passive ‘cables’ that [evolutionists have long believed] relay the photoreceptor signal from the outer to the inner retinal layers.”<sup>7</sup> Recently, neurologists worked with macaque eyes to discover that retinal pre-processing works by precise placement of voltage-gated channel proteins *within* each ganglion cell.

Precision never just happens, and even a human engineer cannot achieve the level of precision in eye design. Thus, someone had to ensure proper placement of these channel proteins, mental software, Müller cells, and 11-*cis*-retinal. “Lift up your eyes on high, and see who has created these things.”<sup>8</sup> Inner eye workings leave no doubt that the Lord of miracles created eyes. ●

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# The Bitter Harvest of Evolutionary Thinking

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

What would you think if scientists were to suggest that large tracts of uncultivated land, which could be used to grow crops to feed hungry people, should be left untouched? And how would you react if their reason for leaving this potential farmland unused was to combat climate change?

Believe it or not, that is precisely the scenario discussed in a recent issue of the journal *Nature*.<sup>1</sup> Since 1990, about 77 million acres of cropland have remained uncultivated in Eastern Europe. Given the millions of hungry and undernourished people in the world, one would think that an intentional refusal to cultivate such land would be absolutely out of the question. However, if this land were put to the plow, some worry that the carbon released into the atmosphere as a result would contribute to global warming, and one scientist has even suggested that about two-thirds of this land should remain uncultivated indefinitely.<sup>1,2</sup>

Creation scientists have generally acknowledged that global warming could be real, although there does not appear to have been any such warming for the last 15 years, and that there might even be a man-made contribution to such warming.<sup>3,4</sup> However, we also recognize that much of the hysteria over climate change is being fueled by an acceptance of evolutionary and old-earth beliefs.

Specifically, there is abundant geological evidence that glaciers once extended to much lower latitudes and elevations than they do today, and the Genesis Flood provides a convincing mechanism for explaining this occurrence.<sup>5</sup> Therefore, the most dramatic climate changes that have occurred within the last 4,300 years—during the onset and passing of the Ice Age—were caused by the Flood and not by human activity or normal natural processes.

Because secular scientists reject the Bible's testimony, they have proposed their own theories to explain the Ice Age, and all have serious problems explaining the observed data. In the currently popular astronomical or Milankovitch theory, ice ages are supposedly paced

by subtle changes in the amount of summer sunlight falling on the higher northern latitudes. But these changes are so small that they cannot, by themselves, account for an ice age.

Secular scientists have therefore concluded that unknown feedback mechanisms can amplify these subtle changes to bring about more substantial changes—perhaps even *drastic* changes—in climate. Thus, they fear that increased atmospheric carbon dioxide could conceivably result in some type of catastrophic global warming.

So there is a subtle connection between old-earth ideas and panic over climate change. For those who reject a supernatural Creator, some kind of evolutionary process is the only remaining alternative to explain the existence of life on Earth. Such a process demands eons of time in order to have even the *appearance* of plausibility. So those who accept evolutionary ideas must embrace an old earth in which even small changes—such as the resulting additional atmospheric carbon dioxide when uncultivated carbon-storing soils are employed for agriculture—could contribute to large-scale upheavals.

That scientists would propose intentionally leaving large tracts of farmland uncultivated when so many of the world's people are without food is just one more example of the bitter harvest that comes from rejecting God's Word. These words of the Lord Jesus are certainly applicable: "Even so, every good tree bears good fruit, but a bad tree bears bad fruit" (Matthew 7:17). It is easy to see what kind of fruit the evolutionary tree has borne. ●

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# CREATION VERSES

JOHN D. MORRIS, PH.D.

For years I've collected good creation verses—passages that clearly speak of the majesty of God in creation. When signing letters I often follow my signature with such a reference. As you might imagine, creation doctrine is important to me, and in this way I pass it on and encourage others. I often ask visiting creationists for their favorite creation verses and add them to the list. My favorite has changed over the years from Isaiah 40:26 to Romans 1:20, and now to Nehemiah 9:6. Passages filled with creation truth permeate Scripture. How can Christian leaders miss this or misinterpret it?

Dr. John Whitcomb told me his favorite creation verse is Jeremiah 32:17, which extols God's great sovereign control over all things:

Ah, Lord GOD! Behold, You have made the heavens and the earth by Your great power and outstretched arm. There is nothing too hard for You.

My father, ICR's founder Dr. Henry Morris, loved Psalm 33:6, 9: "By the word of the LORD the heavens were made, and all the host of them by the breath of His mouth.... For He spoke, and it was done; He commanded, and it stood fast." He called these verses "the strongest, most unequivocal statement of fiat creation in the Bible"<sup>1</sup> and said that "if anyone should try to distort the Genesis creation account into a record of slow processes over long ages, this clear affirmation of instantaneous creation would decisively refute any such notion."<sup>2</sup>

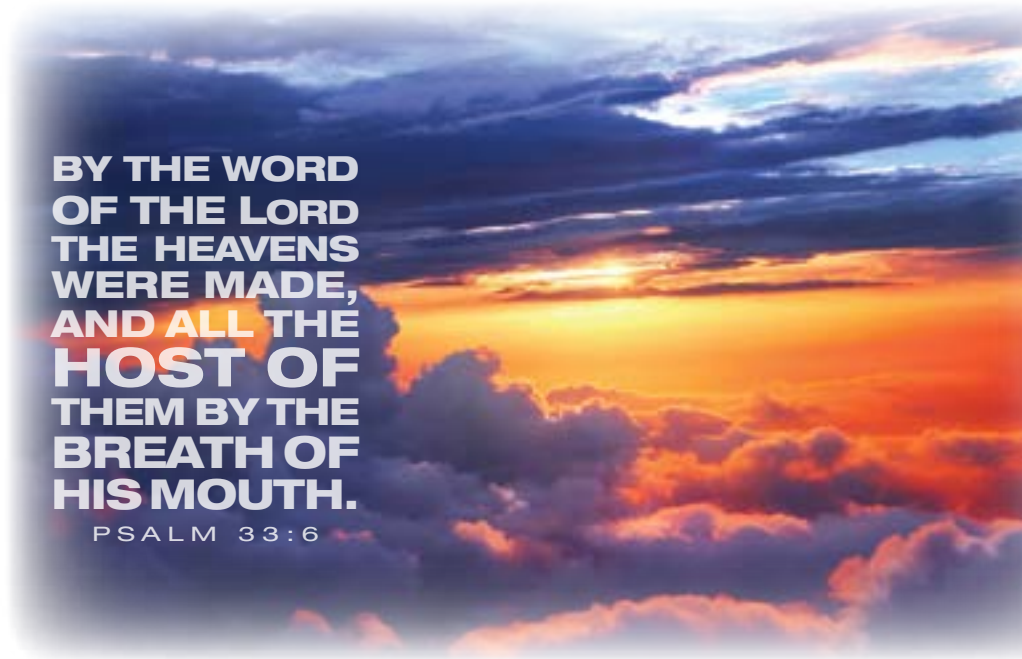
We are told that all things, including the stars, the hosts of the heavens, were created by God's word—their existence simply called into being by the omnipotent Creator. There is no hint of any long process of stellar evolution or of biological mutation and natural selection having acted. He simply spoke and things were. There is no need to add anything to Scripture or to creation;

both are complete and sufficient.

Psalm 33 also points back to other events of creation week. "For the word of the LORD is right, and all His work is done in truth" (v. 4). God cannot lie and has not done so. He proclaims truth and expects us to believe it. "He loves righteousness and justice; the earth is full of the goodness of the LORD" (v. 5). Indeed we are told the completed creation was "very good" (Genesis 1:31), perfect from God's holy perspective. All things were either living or operating

sees all the sons of men....He fashions their hearts individually; He considers all their works" (Psalm 33:13, 15).

You know the story, how man rejected God and His gracious authority over our lives, and how He continually wooed us back, even by sending His only begotten Son to provide a solution to our rebellion. "Blessed is the nation whose God is the LORD....Behold, the eye of the LORD is on those who fear Him, on those who hope in His mercy" (Psalm 33:12, 18).



**BY THE WORD  
OF THE LORD  
THE HEAVENS  
WERE MADE,  
AND ALL THE  
HOST OF  
THEM BY THE  
BREATH OF  
HIS MOUTH.**  
PSALM 33:6

in accordance with His grand plan, fully functioning in their designated ministries. There's more. "He gathers the waters of the sea together as a heap; He lays up the deep in storehouses" (v. 7), reserved for future ministries.

On Day Six God re-created His own image in man, imparting aspects of His own nature to Adam and Eve and showering on them all they needed for a productive life and destiny. Furthermore, He conferred on them the unimaginable ability to procreate but retained the power to create the eternal spirit in man. He "looks from heaven; He

What precious lessons we can learn from creation thinking and from creation verses! These passages are found throughout Scripture because creation is a Bible basic, and they should drive us to not only accept creation truth but to also respond in grateful submission to the Creator. ●

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Dr. Morris is President of the Institute for Creation Research and received his Ph.D. in geology from the University of Oklahoma.



# James Ussher

## and His Chronology: Reasonable or Ridiculous?

### Introduction

Archbishop James Ussher (1581–1656) was one of the most important biblical scholars of the 17th century. His research and scholarly work have even earned high praise from some who are opposed to his conclusions. Called “the greatest luminary of the church of Ireland” and “one of the greatest scholars of his day in the Christian Church,” his work has influenced generations of Christian thinkers with a force still felt today.<sup>1</sup>

An expert on the writings of the early church fathers, Ussher majorly impacted Reformation theology. The 18-volume set titled *The Whole Works of James Ussher* contains his most important writings.<sup>2</sup> Today, he is best known for his chronology research that concluded Adam was created in 4004 B.C. Consequently, anti-creationists heavily criticize him, often picturing him as naive, ignorant, anti-science, and someone whose research was superficial and based solely on the biblical record.<sup>3</sup> Harvard paleontologist Stephen Jay Gould wrote that Ussher “is known to us today almost entirely in ridicule—as the man who fixed the time of creation at 4004 B.C.”<sup>4</sup>

In reality, Ussher was a first-class scholar very involved in scholarly research. He regularly interacted with “the most learned men of the day” to intellectually savor their ideas.<sup>5</sup> He was also “a real connoisseur of books,” and there was scarcely a book in any British library that he was unfamiliar with.<sup>6</sup>



© National Portrait Gallery, London

### History and Scholarship

In the West, our knowledge of the ancient world has historically been determined largely “by a straightforward reading of the Old Testament” plus a study of history.<sup>7</sup>

This practice conflicted with many “Eastern religions [that] allowed for a far older universe than was common in Judaism. And the Greeks, Aristotle for example, thought that the world was eternal. Early Christian



theologians like Augustine dismissed pagan estimates that ran into the hundreds of thousands of years as myths.<sup>78</sup>

According to the Jewish calendar, the creation event occurred in 3761 B.C. The Greek translation of the Old Testament, known today as the Septuagint, put the date at 5500 B.C., and “by the time of the Renaissance, an age of the Earth somewhere around 5000 to 6000 years appeared perfectly reasonable.”<sup>79</sup> Furthermore, it was widely accepted that the narrative “given in the book of Genesis, which parallels to some extent creation narratives from other cultures of the Middle East, accounts for the origin of the physical world as the deliberate act of an almighty Creator.”<sup>80</sup>

In the 17th century, “Archbishop James Ussher turned his outstanding scholarly expertise” to the problem of the date of creation.<sup>9</sup> This project meshed very well with his strong interest in history, astronomy, math, and geometry.<sup>10</sup>

## Background

Ordained as a priest at the young age of 20, James Ussher became a professor at Trinity College, Dublin, in 1607 when he was only 26. In 1625, he was appointed as Archbishop of Armagh, which made him “head of the Anglo-Irish church, the Protestant leader in a predominantly Catholic land.”<sup>9</sup>

Ussher wrote his famous *Annals of the Old Testament, Deduced from the First Origins of the World*, in which he arrived at the 4004 B.C. date, during the latter period of his life. The monumental work contains over 12,000 footnotes from secular sources and another 2,000 references from the Bible and the Apocrypha.<sup>11,12</sup>

## Building the Dates

The common claim is that “Ussher reached his famous date of 4004 B.C.E. by simply calculating back from the time of Jesus by adding up years involved in the lineages of Christ given in the Bible and going all the way back to Adam.”<sup>13</sup> One problem was that the Old Testament contains the re-

quired information to achieve an accurate chronology only up to Solomon’s time. After that, ambiguities exist and no straightforward data were available. And for about 400 years before the birth of Jesus, the Bible’s book of Matthew gives the genealogy leading up to Christ, but not the chronology.<sup>13</sup>

To arrive at the date of creation, Ussher replicated the methods that others had used before him; namely, he attempted to correlate information from around 400 B.C. to Jesus’ birth “with known dates from the histories of other cultures, specifically the Chaldeans and Persians. This all required... an incredible expertise in biblical knowledge, in secular history, and in language abilities.”<sup>13</sup> In fact, the majority of the evidence Ussher used to arrive at the 4004 B.C. date was non-biblical. Historians acknowledge that “Ussher had one of the best minds of his time and he applied it unrelentingly to synthesize information from disparate sources” to achieve as accurate a chronology as possible.<sup>13</sup>

To deal with the many major contradictions in secular records, Ussher’s calculation required an intensive study of both history and languages. For example, King Herod, who attempted to kill Christ, died in 4 B.C., and the Julian calendar had undergone major revisions at the end of the 16th century. In order to produce his chronology, Ussher was forced to deal with these and other problems.<sup>13</sup> After many years of labor, in 1640 he published the first part of his *Annals of the Old Testament*. Four years later, the second part of the work was available to the public. He then began a third part, carrying on the chronology to the beginning of the fourth century A.D., but did not live long enough to complete it.<sup>14</sup>

## “Light of Reason”

Many skeptics have dismissed Ussher’s work, claiming he merely used dogma to solve a scientific problem. The late Stephen Jay Gould disagreed. Seeking to understand how Ussher arrived at his deductions, after detailed investigation Gould concluded

## Historians acknowledge that “Ussher had one of the best minds of his time...” to achieve as accurate a chronology as possible.

that the archbishop’s critics were not only ignorant but that they also entirely misunderstood his work.<sup>15</sup> Gould addressed this with an entreaty: “I close with a final plea for judging people by their own criteria, not by later standards that they couldn’t possibly know or assess.”<sup>15</sup> He was delighted with Ussher’s declaration that his (Ussher’s) results were determined “not only by the plain and manifold testimonies of Holy Scripture, but also by light of reason well directed.”<sup>15</sup>

For these reasons, Gould determined that Ussher’s chronology was an “honorable effort for its time” and argued that the common ridicule only reflects a “lamentable small-mindedness based on mistaken use of present criteria to judge a distant and different past.”<sup>16</sup>

The reality is that the relevance of Ussher’s work “may be seen in the fact that his Chronology has been accepted by nearly all the Reformed Churches.”<sup>14</sup> Ussher’s research merits our highest respect and serves as a solid foundation for us to build upon today. ●

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Dr. Bergman is Adjunct Associate Professor at the University of Toledo Medical College in Ohio.



# Creation Conversion: The Turning Point

Many people believe that creationists are “brainwashed from birth” and adhere to a recent biblical creation simply because it has been drilled into their heads since they were toddlers—a form of partisan indoctrination. But there are scientists who became creationists only after careful study and serious deliberation. They believed in a billions-of-years-old universe for many years before coming to a crossroads in their lives.

When these scientists reached a turning point—from belief in countless years of evolution to belief in a recent creation that took place just thousands of years ago—their lives completely changed course. This “creation conversion” couldn’t be more radical. It’s a complete revision in worldview that forever alters an individual’s understanding of the age and origin of the reality around him.

Numerous Christians who’ve diligently studied both Scripture and the scientific case for recent creation have experienced this convergence of life, education, and discovery as they journey toward God—this pivotal moment. Others are traveling down a similar road but still want more answers. Perhaps looking at the creation conversion of a scientist who has been on that same path can shed some light. Here is Frank Sherwin’s story:

ICR zoologist Frank Sherwin came to Christ as a young adult in the 1970s but refused to believe the early chapters of Genesis were historically accurate.

“This changed while I was in the Navy working onboard an aircraft carrier. In the jet-engine shop was the booklet *Have You Been...Brainwashed?* by Dr. Duane Gish.<sup>1</sup> I was amazed that there were clear scientific evidences against Darwinism and in favor of the biblical account of creation. Living things—with all their intricate cellular detail—were created and did not come from red-hot, sterile stone as Darwinists teach. Thus began my interest in science and the Bible.

“Months later, I signed up for a community college class in environmental science while stationed in California. After that course, I knew God was leading me into science. My next night class was a human biology course. I became hooked on reading and studying biology from a creation science perspective. I pursued other classes with renewed vision—I now saw creation everywhere.

“After discharge from the Navy in December 1974, I attended college in Colorado and earned my degree in biology. Later, I was accepted as a zoology graduate student, studying under one of the foremost parasitologists in America. I collected helminths from tree swallows obtained in the Colorado mountains and named a new species of nem-

atode (worm). The results were published in the peer-reviewed *Journal of Parasitology*. During this time, one of my graduate classes was titled ‘Evolution.’ However, after an entire semester, not a single fact of real, vertical evolution was presented. The course was more properly an advanced genetics class where the origin of any species was never discussed.

“Many examples of mutations in biology were given in our text and lectures but none proved beneficial for the organism. I learned that people are carrying a deleterious genetic burden, passing these mutations from one generation to the next. I saw that there were natural limits to biological change in animals—Darwin’s finches and fruit flies, bacteria, and plants—both in the laboratory and in the wild. I saw no documentation of upward, onward evolution but instead realized that every facet of nature confirmed creation.”

Brainwashed since birth? No. The radical transformation of a creation conversion births a fresh and new understanding of the universe, life, and mankind that simply can’t be explained away.

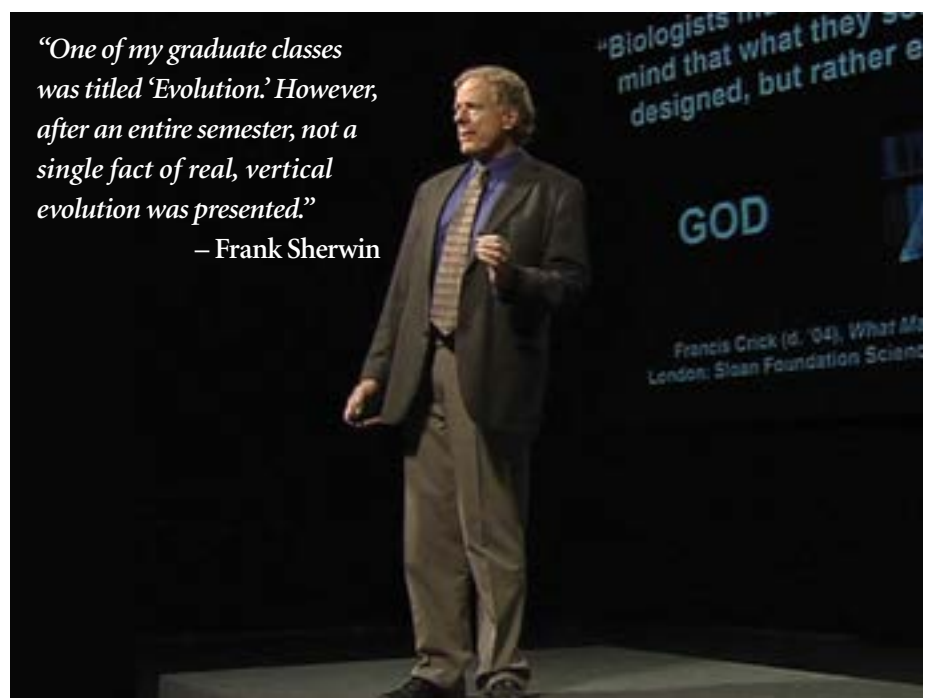
It is our prayer that God uses biblical creation ministries to open the world’s eyes to the truth of the Bible and the reality of creation. We want all generations to have a “creation conversion.” Look for more accounts of scientists whose lives were changed in future issues of *Acts & Facts*. ●

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*Frank Sherwin's Guide to Animals is available in the ICR.org store.*



# APOLOGETICS: REACTIVE, PROACTIVE, OR BOTH?

Recently I heard a radio talk show host caution, “When it comes to Christian apologetics, we cannot select the questions to be answered.”

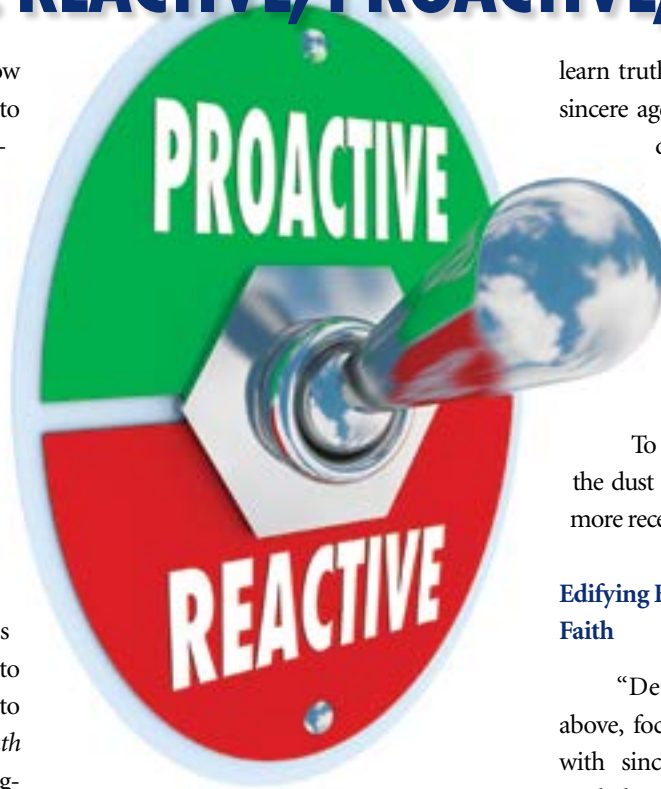
*Why not?* Relying on 1 Peter 3:15, he explained, “Because only unbelievers and doubters may pose faith questions. It is the task of apologists to respond respectfully to their inquiries and their challenges, not to answer questions that are not being asked. It’s like dialogue chemistry: action, reaction. They act; we only react.”

Impressive sound bites? Yes. Sound judgment? No. Real-world apologetics doesn’t wait for biblical faith discussions to be fashionable among skeptics. We need to clarify *what is true* and *how we know truth* even when secular Q&A conversations ignore the most critical topics.

## Answering Questions—Both Asked and Unasked

But isn’t giving rational responses to inquirers’ questions the essence of apologetics? Some apologetics websites say so. To be sure, a large part of biblical apologetics involves obeying the mandate of 1 Peter 3:15b to provide a logic-based explanation for the Christian faith to those who ask (“always be ready to give a defense to everyone who asks you a reason for the hope that is in you”). That requires careful listening and careful answering (Luke 12:11-12; Acts 24:10-16). The responses given must truly address and answer the questions actually asked. But there is more.

The Lord Jesus, when dialoguing with the Samaritan woman at the well, did not limit His answers to her specific questions (John 4:7-27). Why? Because He knew the need to address questions she did not ask. The Samaritan woman discussed *where* God should be worshiped, but Christ de-



clared *how* God should be worshiped—an issue she hadn’t raised. Sometimes apologetics must reach beyond to answer the unasked yet relevant question.

Another important consideration is whether our apologetics is “vertical.” Many quote only the “horizontal” exhortation of 1 Peter 3:15b, but that instruction presupposes 1 Peter 3:15a (“sanctify the Lord God in your hearts”), which is a doxological priority for any apologetics-oriented communication. Consider Stephen’s sermon in Acts 7 before he was stoned to death. Not only did he rationally refute the false charges of the Pharisees, including the future apostle Paul, but he did so while also demonstrating his own heart-sanctification—his own loyalty to the Christ who waited to welcome him into heaven (Acts 7:55-60). In all things, and especially in our defense of the truth, we must glorify God.

## Does Every Question Need an Answer?

Are all dialogues sincere efforts to

learn truth? No. Some “inquiries” have insincere agendas (Matthew 2:7-8). If an inquirer’s challenge is just a mask for scoffing, don’t waste your time with it (Psalm 1:1; Titus 3:9-10). After giving an earnest yet succinct witness of God’s truth (Jude 1:3-4; Philippians 1:7), go help others who really care about truth.

To paraphrase Christ’s words, shake the dust from your feet and move on to a more receptive audience (Mark 6:11).

## Edifying Believers by Verifying Biblical Faith

“Defensive” apologetics, described above, focuses mainly on communicating with sincere doubters while sanctifying God throughout the process. Yet there is one special service that biblical apologetics offers *to believers*—providing comfort, clarification, and confidence regarding the certainty of the biblical faith; i.e., verifying (confirming and corroborating) the truth of God and His Word. For example, note how Luke’s purpose statement illustrates that the Christian faith is truly trustworthy—and its reliability can be documented in many details: “That you may know the certainty of those things in which you were instructed” (Luke 1:4).

Reinforcing the certainty of our biblical faith (2 Peter 1:16-21) and appreciating its “many infallible proofs” (Acts 1:3) are valuable ministries that biblical apologetics provides to receptive believers, regardless of whether the questions are invited by the skeptical crowd. ●

*This article is adapted from a lesson in the online Bachelor of Christian Education program of ICR’s School of Biblical Apologetics (SOBA).*

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



# Q: Do Ice Cores Disprove Recent Creation?

BRIAN THOMAS, M.S., AND JAKE HEBERT, PH.D.

**A:** Glaciologists drill and extract cylindrical cores from high-latitude ice sheets and use different techniques to estimate the cores' age at certain depths. Bible skeptics, like recent debater Bill Nye,<sup>1</sup> claim these ice cores contain hundreds of thousands of annual layers, far too many for the Bible's short timescale. However, two "dating details" negate this challenge.

The first dating detail exposes circular reasoning, which occurs when one assumes a particular outcome in arguing for that same outcome. In the Greenland ice sheet, clear seasonal layers are found only in the upper parts of the cores, but in central Antarctica less snowfall and blowing snow prevent clear seasonal layering. Because ice layers become less distinct at greater depths, simply discerning deeper layers becomes more difficult. Thus, researchers usually "date" ice cores with theoretical models called "glacial flow models"—and these models assume evolutionary time.<sup>2,3</sup> Not surprisingly, they yield vast ages.<sup>4</sup>

Counting layers sounds straightforward, but circular reasoning even shows up here. For example, secular scientists dated the Greenland GISP2 ice core by counting what they presumed were annual patterns of, among other features, dust, volcanics, isotopes, and ions in the ice. They assigned an "age" of about 85,000 years to the 2,800-meter depth back in 1994. However, other scientists produced a "SPECMAP" timescale based on the idea that seafloor sediments were deposited slowly and gradually for many thousands of years.

Their SPECMAP predicted that the GISP2 ice should have been 25,000 years older at that 2,800-meter depth. Workers then re-counted dust layers and conveniently found the "missing" 25,000 supposed years.<sup>5</sup> Secular expectations guided their age-dating procedures in a tight circle that excluded the biblical record.

The second dating detail questions whether or not each layer represents a year. A single large storm can deposit multiple layers that might look like annual layers, and multiple dust layers may also be deposited within a single year.<sup>6</sup> No modern scientist watched the ice sheets form, so it's possible that storms or phases within a storm, not whole winters, deposited many of them. This would have been especially true during the post-Flood Ice Age, a time of numerous storms and volcanic eruptions.<sup>7</sup>

Ironically, the hundreds of thousands of supposedly annual layers are far too few for old-earth expectations. For instance, secular scientists expected the bottom of the GISP2 core to be *more* than 200,000 years old.<sup>8</sup> Yet, even after their convenient re-count of the bottom part of the core, they could only find about 110,000 supposed "annual" layers. Thus, even after forcing the data into old-earth assumptions, they still didn't find enough layers to fit their expectation of many hundreds of thousands of years.<sup>9</sup>

These two important details derail the ice-core argument for an old earth: layers are not necessarily annual, and researchers employ circular reasoning to adjust counts to fit the vast ages they expect. The volcanism during the Flood year would have warmed ocean water enough for increased evaporation and precipitation to rapidly build the ice sheets.<sup>7</sup> A post-Flood ice age best explains the origin of today's ice sheets. ●

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Mr. Thomas is Science Writer at the Institute for Creation Research. 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.



Image credit: Doug Clark, Western Washington University



# THE HANDS AND FEET OF CHRIST

The late pastor and prolific author A.W. Tozer once wrote:

As base a thing as money often is, it yet can be transmuted into everlasting treasure. It can be converted into food for the hungry, and clothing for the poor; it can keep a missionary actively winning lost men to the light of the gospel and thus transmute itself into heavenly values. Any temporal possession can be turned into everlasting wealth. Whatever is given to Christ is immediately touched with immortality.<sup>1</sup>

The great scriptural truth in this statement can unfortunately be taken to an extreme by some very worthy ministries (Matthew 6:19-20). While they may have the best reasons and intentions in the world to ask for money, relentless and elaborate solicitations can be a regrettable side effect of their effort to fulfill their mission.

Christian organizations that are reluctant to ask believers for help, however, may suffer the tragic consequence of seeing their ministry fall far short of its potential for the Kingdom. The best approach calls for a gracious balance between the two: making needs known yet also being content to wait on the Lord to supply according to His will (Philippians 4:10-19). If we are truly doing God's will, then we do not have to exaggerate our needs or the story of our work. Believers will be inspired to respond as His Spirit directs, simply because the need is real, the cause is God's, and His Kingdom work will be advanced through our efforts for Him.

ICR's ministry is straightforward: Teach biblical creationism to this generation and the next. To that end, we publish *Acts & Facts*, *Days of Praise*, and online science

news and videos, and we send our speakers to events across the country. But the Lord has placed it on our hearts to reach even further and equip believers—especially pastors, Bible teachers, and homeschoolers—with vital creation materials.

Today, many Christians are confused about creation and evolution. Some even walk away from their faith because their questions go unanswered. To provide comprehensive answers, we are developing a new DVD series, *Unlocking the Mysteries of Genesis*.

This DVD series will equip viewers with answers to tough issues by presenting new scientific evidence that confirms the *truths* found in Genesis and dispels the *myths* of evolution. Designed to engage this generation, each episode addresses the most provocative questions of faith and science. *Unlocking the Mysteries of Genesis* empowers the Church with tools needed to affirm and defend the faith.

ICR could use your help in promoting this groundbreaking series to your pastor, your Bible teachers, and homeschool families you may know. Please ask them to visit [www.UnlockingTheMysteriesOfGenesis.org](http://www.UnlockingTheMysteriesOfGenesis.org) for more information.

God has granted us the privilege of serving as the hands and feet of Christ, fulfilling His work here on Earth. Those who have been given much by God have unique

opportunities to direct resources into areas of need, in much the same way their spiritual needs are met by those of the “household of faith” (Galatians 6:10). But we all have the privilege of responding—indeed, we are commanded to impact eternal destinies by proclaiming His transforming gospel. This is obedience to Scripture, and the believer will thrive when doing and supporting His work. Because this is how God designed us. ●

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



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ICR is a recognized 501(c)(3) nonprofit ministry, and all gifts are tax-deductible to the fullest extent allowed by law.

Thank you [Dr. Henry M. Morris III] for your presentations at the recent pastor's conference at FBC [First Baptist Church] Jacksonville. I attended with my 16-year-old son, and he was absolutely floored by what you had to say. He was amazed at how you brought the patriarchs to life, and he kept telling me that it was the most interesting



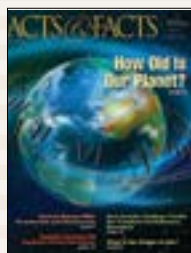
Bible study he had ever been to. As you might imagine, it thrills my heart to see him so excited about the Bible. He sat through all four of your seminars and has already devoured your book [*The Book of Beginnings*, Vol. 3]. Thank you for making a difference!

— C.K.



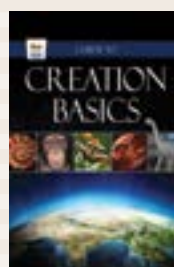
I am praying for ICR as I know what you are doing is so important. I am a missionary/pastor here in the United States to the Native American people, and I am teaching, even now, Genesis and the important role it has in all theology. As a missionary pastor I don't have much money to donate to your work, but what I can offer is greater than anything else. I lay your ministry at the feet of Jesus. Keep doing what you are doing.

— P.K.



We thank God for organizations like yours. Our children are now at the age where they find *Acts & Facts* and other creation-science material lying around our house and read it. I will hear one of them say, "Hey, Mom, listen to this..."

— C. T.



To the researchers, writers, and staff at ICR, [a] most heartfelt thanks for presenting the science of creation. I found your *Guide to Creation Basics*, *The Global Flood*, and *Creation Basics & Beyond* incredibly encouraging and empowering. Previously I had no scientific resort to refute the evolutionary dogma—I retreated to the Bible, which I knew to be true regardless of any evidence. Now, thanks to you, I know that in countless ways the natural world con-



firms creation and exposes the old world/evolutionary science as a hollow hypothesis. I intend to use what you have presented as a basis for further study and hope to present it to others that they may know that faith in God is not opposed to rational science, that in fact science apart from God is irrational. God bless you.

— J.D.



I have read with keen interest the series of articles by Dr. Jason Lisle on the various planets in our solar system. Each article has been more interesting than the last one, with the current write-up on Uranus being amazing to read. I didn't know that science could [discover] so much about such distant objects, and the fact that Uranus has 27 moons in various orbits and a strange magnetic pole is mind-boggling. The more one learns of our universe, the more one stands in awe of the God who created it all. Keep up the good work.

— R.T.

Just a few words of praise for the "Following Faithful Footsteps" article in the February 2014 issue of *Acts & Facts*. I have grown spiritually as the Lord

has used [Dr. Henry Morris'] articles in *Acts & Facts* and *Days of Praise*. I am 80 years old and [Dr. Morris] is still mentoring me through daily devotionals. What a wonderful legacy that your family continues to share the depth of his understanding of the Scriptures. Indeed, should the Lord tarry...the ministry of ICR will go on impacting the world for Christ for generations to come.



— K.B.

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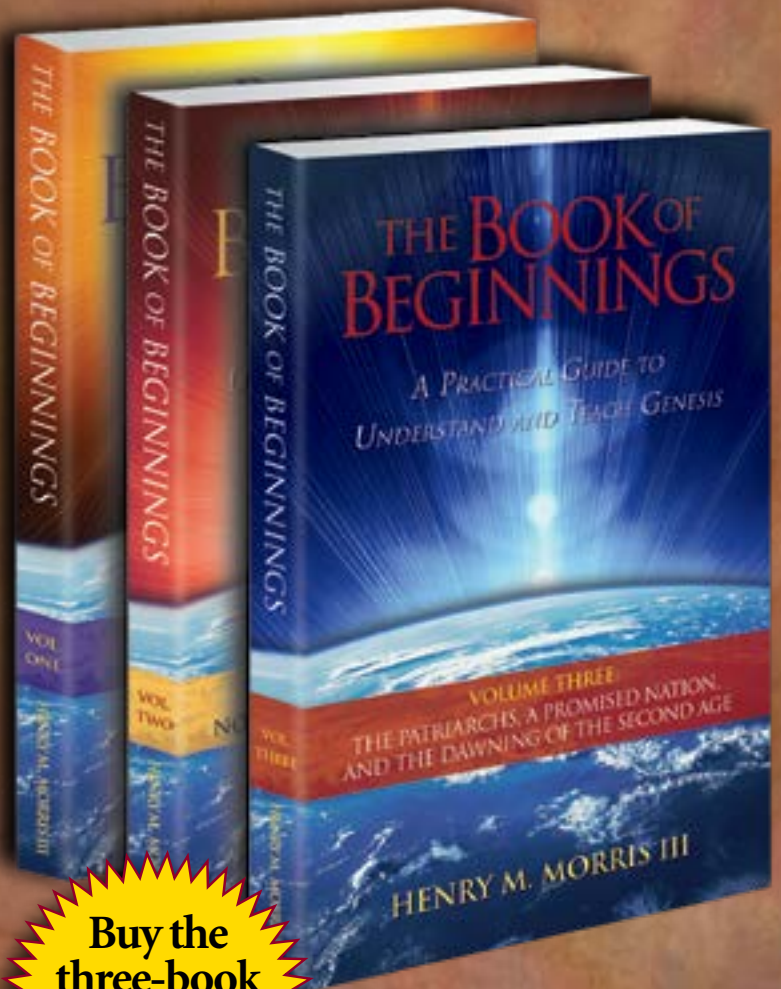
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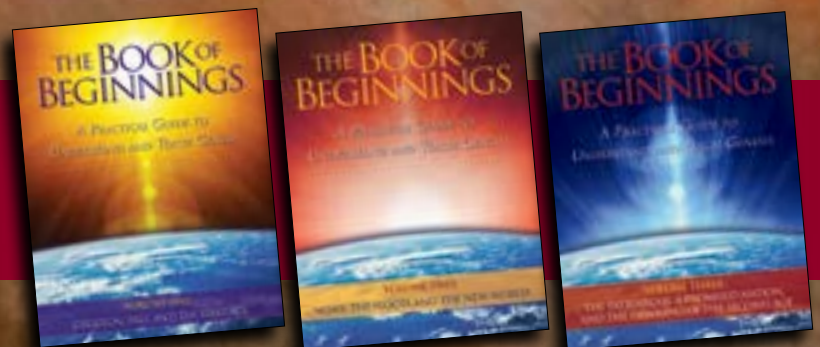
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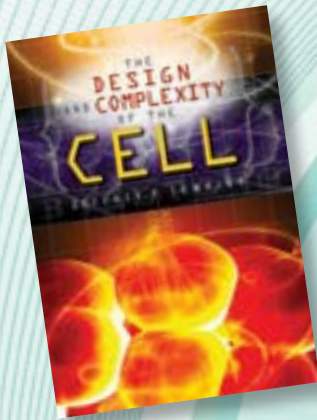
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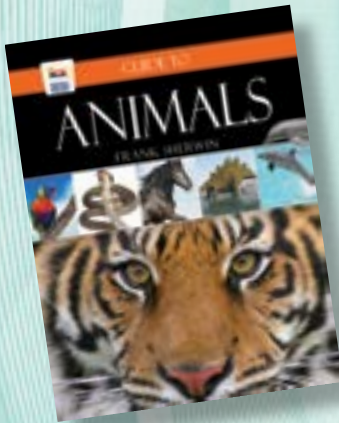


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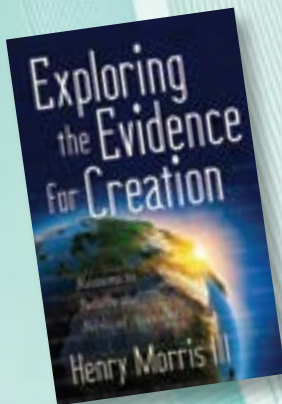
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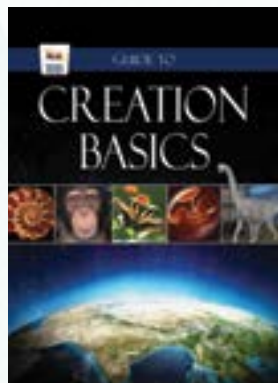
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