

A tremendous pyramid of evidence for design and recent creation is available for detailed study.

Romans 1:20 states: "For the invisible things of him from the creation are clearly seen, being understood by the things that are made, even his eternal power and Godhead: so that they are without excuse."

Scientific evidence for creation abounds in areas of objective observation. Scholars in various scientific disciplines have written about the incredible complexity in living systems and the structure of the universe. This complexity is beyond the possibility of natural development.

In the panel to the right, we begin with a brief summary of the Creation in Symphony Model by our Director.

- **Coal: Evidence for a Young Earth** Evolutionary theory requires millions of years in the formation of coal in order to afford time for the development of living organisms whose fossils...**CONTINUE**
- **Evidence for Creation (10 brief reasons)** The Fossil Record...Evolutionists have constructed the Geologic Column in order to illustrate the supposed progression of "primitive"...**CONTINUE**
- **The Earth's Magnetic Field** Many people know that the earth has a magnetic field, but few are aware that this field is shrinking. This decrease has been measured over a period of 150 years...**CONTINUE**
- **Our Created Earth: Uniquely Designed for Life** Of all the lessons which the Earth continually teaches us, perhaps the most obvious...**CONTINUE**
- **Scientific Problems With Macroevolution:** (Karl Popper's definition of the scientific method)...**CONTINUED**
- **Mammoths** The largest quantities of woolly mammoth remains are found in Arctic and sub-arctic...**CONTINUED**
- **Carbon Dating** A less-common form of the carbon atom, carbon-14, is used today by scientists...**CONTINUED**
- **Evidence for Creation**
- **Scientific Allusions in Scripture**

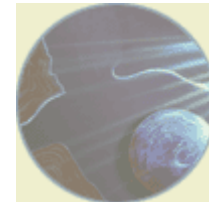
Products Pertaining to the Creation Model

Various aspects of the creation model such as the effects of the electromagnetic field, pink light, ultraviolet filtration, energized water, etc. have been incorporated into various products (**pink eyeglasses, energized water and stun guns**) being sold to the general public...**more info...**

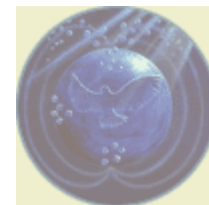
Illustrated Creation Model

The question is often asked, "What do you mean by the term creation model" ? A model is a framework around which observations and facts are organized. Thus, the creation model is a framework of information in which the universe and its living systems are explained as having been designed and sustained.

In the course of forty years involving Biblical and scientific research, our Director has formulated a composite Creation Model. Its basic tenets are held by leading creationists. In addition to these basic pillars, distinctive research programs have led to specific areas of refinement in this particular model. An outline of this model follows.



Creation Model- Session 1



Creation Model- Session 2

A Moment in History...

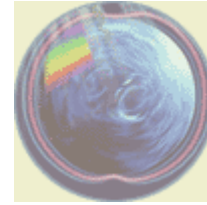
That a maker is required for anything that is made is a lesson Sir Isaac Newton was able to teach forcefully to an atheist-scientist friend of his. Sir Isaac had an accomplished artisan fashion for him a small scale model of our solar system which was to be put in a room in Newton's home when completed. The assignment was finished and installed on a large table. The workman had done a very commendable job, simulating not only the various sizes of the planets and their relative proximities, but also so constructing the model that everything rotated and orbited when a crank was turned. It was an interesting, even fascinating work, as you can image, particularly to anyone schooled in the sciences.

Newton's atheist-scientist friend came by for a visit. Seeing the model, he was naturally intrigued, and proceeded to examine it with undisguised admiration for the high quality of the workmanship. 'My! What an exquisite thing this is!' he exclaimed. 'Who made it?' Paying little attention to him, Sir Isaac answered, 'Nobody.'

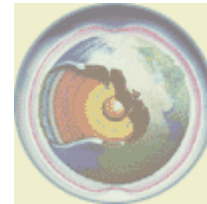
Stopping his inspection, the visitor turned and said: 'Evidently you did not understand my question. I asked who made this. Newton, enjoying himself immensely no doubt, replied in a still more serious tone. 'Nobody. What you see just happened to assume the form it now has.' 'You must think I am a fool!' the visitor retorted heatedly, 'Of course somebody made it, and he is a genius, and I would like to know who he is.'

Newton then spoke to his friend in a polite yet firm way: 'This thing is but a puny imitation of a much grander system whose laws you know, and I am not able to convince you that this mere toy is without a designer and maker; yet you profess to believe that the great original from which the design is taken has come into being without either designer or maker! Now tell me by what sort of reasoning do you reach such an incongruous conclusion?'

Sir Isaac Newton Solar System Story (from the book: 'The Truth: God or evolution?' by Marshall and Sandra Hall, Baker Book House, Grand Rapids, MI)



Creation Model- Session 3



Creation Model- Session 4



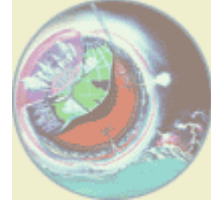
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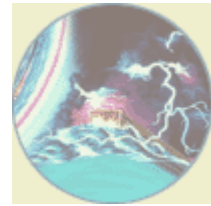
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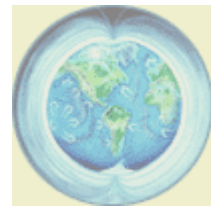
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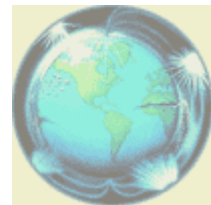
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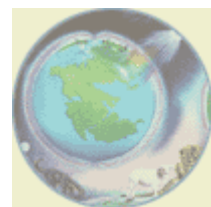
Creation Model- Session 9



Creation Model- Session 10



Creation Model- Session 11



Creation Model- Session 12



Creation Model- Session 13

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"Coal: Evidence for a Young Earth"

Abstract:

Evolutionary theory requires millions of years in the formation of coal in order to afford time for the development of living organisms whose fossils are found in coal deposits. However, laboratory and field research has demonstrated that coal is formed rapidly and in vast quantities. These vast coal deposits are unsullied by other material. The conclusion is drawn that actual research indicates a young age to the Earth that contains such coalified materials.

Introduction

"If coal takes millions and millions of years of heat and pressure to form, how is it possible that creationists are teaching that the earth is only a few thousand years old?" This is a commonly asked question among individuals seeking answers about the age of the earth and the universe. Research has been done by several creation organizations, as well as independent scientists, in order to answer such questions. The evidence actually shows that coal does not take millions of years to form, as is commonly asserted. In fact, the formation of coal has been proven to be a rapid process that can be duplicated in modern laboratories in a matter of days - or even hours.

I. Rapid Formation

In order for coal to be formed, several factors must be present. Pressure, temperature, water, time, and some sort of vegetation are the key elements for the formation of coal. According to evolutionary theory, the slow accumulation and decomposition of vegetation living in past ages accounts for the coal seams. However, this theory can not answer why such large amounts of original vegetation without soil can be found in the areas that are now coal seams, or how these coal seams became so thick - some being over two hundred feet in depth.

Scientist Robert Gentry analyzed coalified wood found on the Colorado Plateau in order to determine how long it took for coal to form.¹ By treating coal with epoxy and slicing it into thin sheets, Dr. Gentry was able to examine tiny, compressed radiohalos found in the coal. Radiohalos are discolorations in the coal, ejected by radioactive elements in the centers (such as uranium).

According to evolutionary theory, in order for these halos to form, several processes must have occurred. First, water-saturated logs must have been laid down in several different geologic formations, including the Triassic, Jurassic and Eocene layers. Later, uranium solutions infiltrated the water-saturated logs, and uranium decay products were collected at tiny sites within the logs. The radioactive decay from the tiny particles ejected spherical radiation damage regions around those sites, thus producing halos. Finally, a pressure event on the site of the formations compressed the logs as well as the radioactive halos within them. However, because coal is not a malleable substance, scientists know that these logs had not turned to coal at the time the compression event occurred. This points to a quick burial and coalification of the logs – rather than a long time period.²

II. Decay Ratios

When the ratio of uranium decay to its decay product (lead) is analyzed, the conclusion is drawn that all the logs within the various geologic formations were buried at the same time. The high lead-to-uranium ratios admit the possibility that both the initial uranium infiltration and the coalification could possibly have occurred within the past several thousand years.³

III. Polystrate Fossils

The presence of "polystrate" trees (trees petrified or coalified in an upright position) point to a rapid coalification process. One of the most commonly known polystrate trees is found at Katherine Hill Bay, Australia. This fossilized tree can be seen extending over twelve feet, through several sedimentary layers. According to evolutionary theory the different sedimentary layers took hundreds of thousands of years to accumulate. However, we know this is impossible since the tree would have decomposed long before the sediments would have had time to accumulate. Rather, this tree is testimony to the catastrophic and rapid burial that must have taken place.

IV. Unsullied Deposits

Finally, coal seams such as those found in the Powder River Basin of Gillette, Wyoming, ranging from 150 to 200 feet in depth, point to a rapid coalification process. "These coal seams run remarkably thick and unsullied by other material. Usually, unwanted sediments, such as clay, washes over a deposit before coal seams can get very thick. This leaves scientists with the baffling question of how the seams get so massive and still remain undiluted by influxes of clay and other impurities before they thicken."⁴

Conclusion

The answer can be found in the Biblical account of Noah's Flood. The Biblical description of the fountains of the great deep breaking up gives strong reference to volcanic activity in the pre-Flood basins.⁵ This would have provided several of the key factors need for the production of coal, along with an explanation of how the process could have occurred at such a rapid pace.

Although the coalification process has been used in the past to support theories of an aged universe, research done by leading creation scientists reveals that this process actually supports creation teachings of a young Earth. Physical evidence demonstrates that the coalification process must have occurred rapidly, rather than over vast time periods.

CEM Staff Writer

¹*Robert V. Gentry, Video: Young Age of the Earth*

²*Ibid.*

³*Science*, October 15, 1996

⁴*Earth Magazine*, May 1993

⁵*Genesis*, chapter seven

EVIDENCE FOR CREATION

1. The Fossil Record... Evolutionists have constructed the Geologic Column in order to illustrate the supposed progression of "primitive" life forms to "more complex" systems we observe today. Yet, "since only a small percentage of the earth's surface obeys even a portion of the geologic column the claim of their having taken place to form a continuum of rock/life/time over the earth is therefore a fantastic and imaginative contrivance."¹ "[T]he lack of transitional series cannot be explained as being due to the scarcity of material. The deficiencies are real, they will never be filled."² This supposed column is actually saturated with "polystrate fossils" (fossils extending from one geologic layer to another) that tie all the layers to one time-frame. "[T]o the unprejudiced, the fossil record of plants is in favor of special creation."³

2. Decay of Earth's Magnetic Field... Dr. Thomas Barnes, Emeritus Professor of Physics at the University of Texas at El Paso, has published the definitive work in this field.⁴ Scientific observations since 1829 have shown that the earth's magnetic field has been measurably decaying at an exponential rate, demonstrating its half-life to be approximately 1,400 years. In practical application its strength 20,000 years ago would approximate that of a magnetic star. Under those conditions many of the atoms necessary for life processes could not form. These data demonstrate that earth's entire history is young, within a few thousand of years.

3. The Global Flood... The Biblical record clearly describes a global Flood during Noah's day. Additionally, there are hundreds of Flood traditions handed down through cultures all over the world.⁵ M.E. Clark and Henry Voss have demonstrated the scientific validity of such a Flood providing the sedimentary layering we see on every continent.⁶ Secular scholars report very rapid sedimentation and periods of great carbonate deposition in earth's sedimentary layers.⁷ It is now possible to prove the historical reality of the Biblical Flood.⁸

4. Population Statistics... World population growth rate in recent times is about 2% per year. Practicable application of growth rate throughout human history would be about half that number. Wars, disease, famine, etc. have wiped out approximately one third of the

population on average every 82 years. Starting with eight people, and applying these growth rates since the Flood of Noah's day (about 4500 years ago) would give a total human population at just under six billion people. However, application on an evolutionary time scale runs into major difficulties. Starting with one "couple" just 41,000 years ago would give us a total population of 2×10^{89} .⁹ The universe does not have space to hold so many bodies.

5. Radio Halos... Physicist Robert Gentry has reported isolated radio halos of polonium-214 in crystalline granite. The half-life of this element is 0.000164 seconds! To record the existence of this element in such short time span, the granite must be in crystalline state instantaneously.¹⁰ This runs counter to evolutionary estimates of 300 million years for granite to form.

6. Human Artifacts throughout the Geologic Column... Man-made artifacts - such as the hammer in Cretaceous rock, a human sandal print with trilobite in Cambrian rock, human footprints and a handprint in Cretaceous rock – point to the fact that all the supposed geologic periods actually occurred at the same time in the recent past.¹¹

7. Helium Content in Earth's Atmosphere... Physicist Melvin Cook, Nobel Prize medalist found that helium-4 enters our atmosphere from solar wind and radioactive decay of uranium. At present rates our atmosphere would accumulate current helium-4 amounts in less than 10,000 years.¹²

8. Expansion of Space Fabric... Astronomical estimates of the distance to various galaxies gives conflicting data.¹³ The Biblical Record refers to the expansion of space by the Creator¹⁴. Astrophysicist Russell Humphries demonstrates that such space expansion would dilate time in distant space.¹⁵ This could explain a recent creation with great distances to the stars.

9. Design in Living Systems... A living cell is so awesomely complex that its interdependent components stagger the imagination and defy evolutionary explanations. A minimal cell contains over 60,000 proteins of 100 different configurations.¹⁶ The chance of this assemblage occurring by chance is 1 in 10 4,478,296.¹⁷

10. Design in the Human Brain... The human brain is the most complicated structure in the known universe.¹⁸ It contains over 100 billion cells, each with over 50,000 neuron connections to other brain cells.¹⁹ This structure receives over 100 million separate signals from the total human body every second. If we learned something new every second of our lives, it would take three million years to exhaust the capacity of the human brain.²⁰ In addition to conscious thought, people can actually reason, anticipate consequences, and devise plans - all without knowing they are doing so.²¹

¹Woodmorappe, John, "The Essential Non-Existence of the Evolutionary Uniformitarian Geologic Column: A Quantitative Assessment," *Creation Research Society Quarterly*, vol. 18, no.1 (Terre Haute, Indiana, June 1981), pp. 46-71

² Nilsson, N. Heribert, as quoted in Arthur C. Custance, *The Earth Before Man, Part II, Doorway Papers*, no. 20 (Ontario, Canada: Doorway Publications), p. 51

³Corner, E.J.H., *Contemporary Botanical Thought*, ed. A.M. MacLeod and L.S. Copley (Chicago: Quadrangle Books, 1961), p. 97

⁴Barnes, Thomas, *ICR Technical Monograph #4, Origin and Destiny of the Earth's Magnetic Field* (2nd edition, 1983)

⁵Blick, Edward, *A Scientific Analysis of Genesis* (Oklahoma City: Hearthstone, 1991) p. 103

⁶Clark, M.E. and Voss, H.D., "Fluid Mechanic Examination of the Tial Mechanism for Producing Mega-Sedimentary Layering" (Third International Conference on Creation, Pittsburg, July 1994)

⁷Ager, Derek, *The Nature of the Stratigraphical Record* (New York: John Wiley and Sons) p. 43 and p. 86

⁸West, John Anthony, *Serpent in the Sky: The High Wisdom of Ancient Egypt* (New York: Julian Press, 1987) pp. 13-14

⁹ See Morris, Henry, *Scientific Creationism* (El Cajon, CA: Master Books)

¹⁰Gentry, Robert, *Creation's Tiny Mystery* (Knoxville, Tenn.: Earth Science Assoc., 1988)

¹¹ Baugh, Carl, *Why Do Men Believe Evolution AGAINST ALL ODDS?* (Oklahoma City: Hearthstone, 1999)

¹²Cook, Melvin, "Where is The Earth's Radiogenic Helium?" *Nature*, Vol. 179, p. 213

¹³Cowan, R., "Further Evidence of a Youthful Universe," *Science News*, Vol. 148, p. 166

¹⁴Psalm 104:2; Isaiah 40:22

¹⁵Humphries, Russell, *Starlight and Time* (Green Forest, AR: Master Books, 1994)

¹⁶Denton, Michael, *Evolution: A Theory in Crisis* (Bethesda, Maryland: Adler & Adler, 1986) p. 263

¹⁷ Mastropaolo, Joseph, "Evolution Is Biologically Impossible," *Impact* # 317 (El Cajon, CA: Institute For Creation Research, 1999) p. 4

¹⁸Restak, Richard, *The Brain: The Last Frontier*, 1979, p. 390

¹⁹*The Brain, Our Universe Within*, PBS Video

²⁰*Wonders of God's Creation*, Moody Video Series

²¹Weiss, Joseph, "Unconscious Mental Functioning," *Scientific American*, March 1990, p. 103

The Earths Magnetic Field

Many people know that the earth has a magnetic field, but few are aware that this field is shrinking. This decrease has been measured over a period of 150 years, and the rate of the decrease shows that something very earth-shaking took place less than 6000 years ago. The fossil record contains evidence of great disturbances in the field that give us an idea of the magnitude of the geologic events during Noah's flood. This fact sheet answers some

common questions on this subject, beginning with basic questions about magnetism and ending with some current theories about geomagnetism.

What's a magnet?

Everyone knows what a magnet is, or what a magnet does. An invisible force (the magnetic field) attracts iron objects. This force can be very strong. A better question is "Why does a magnet attract iron objects?". For this we must take a look at what a magnet is made of.

If you take a bar magnet and break it in half, you end up with two smaller bar magnets. If you break the halves into fourths, you get four small bar magnets. If you have enough patience and time you can repeat this until you have millions of microscopic magnets.

All magnets have two poles; a north pole and a south pole. We call this a dipole (two poles). Two north poles or south poles repel each other. Try forcing the two north poles of two bar magnets together. The unseen magnetic field makes it feel like there's a water balloon between them resisting your push. Opposite poles (a north and a south) attract strongly.

How do you make a magnet?

Since opposite poles attract, you can put two magnets together to make a larger magnet. If you have many little magnets, you can keep adding magnets into a larger mass and have one large, strong magnet.

Some molecules, some atoms, and all electrons are little magnets. So why isn't everything magnetic? In most matter, the molecules, atoms, and electrons are all jumbled up together. In a strong magnet, most of the little magnets (magnetic domains if you want to get fancy) point in the same direction. This makes the magnetic force of all the little magnets add up to make a large magnet, called a permanent magnet.

Free magnets tend to align with each other. You can try this by placing one magnet on a table and slowly moving another magnet toward it. The magnet that is loose on the table turns to align with the magnet in your hand. If you stroke a piece of iron with a magnet, you gradually align the little magnetic domains, and the result is a larger magnet.

Electric current is the flow of electrons through a conductor. A conductor is a material that lets the electrons hop from atom to atom when influenced by an outside force. If you move a wire (which is an electric conductor) through a magnetic field, you force (induce) the electrons to travel in one direction through the wire. Electrons flowing through a conductor create a magnetic field around the conductor. This is called electromagnetism.

Can you 'unmake' a magnet?

A stronger magnet can partially realign the magnetic domains of a weaker magnet.

Many different substances can be made into permanent magnets. However, for all these materials, there is a critical temperature called the Curie point. At this temperature or above, the molecules within the material are moving around too much for the material to retain the magnetic alignment necessary to exhibit a magnetic field.

How big can a magnet be?

We live on a magnet. The earth itself has a large magnetic field called the geomagnetic field. You can see the effects of the field when you use a compass to find out which direction is north.

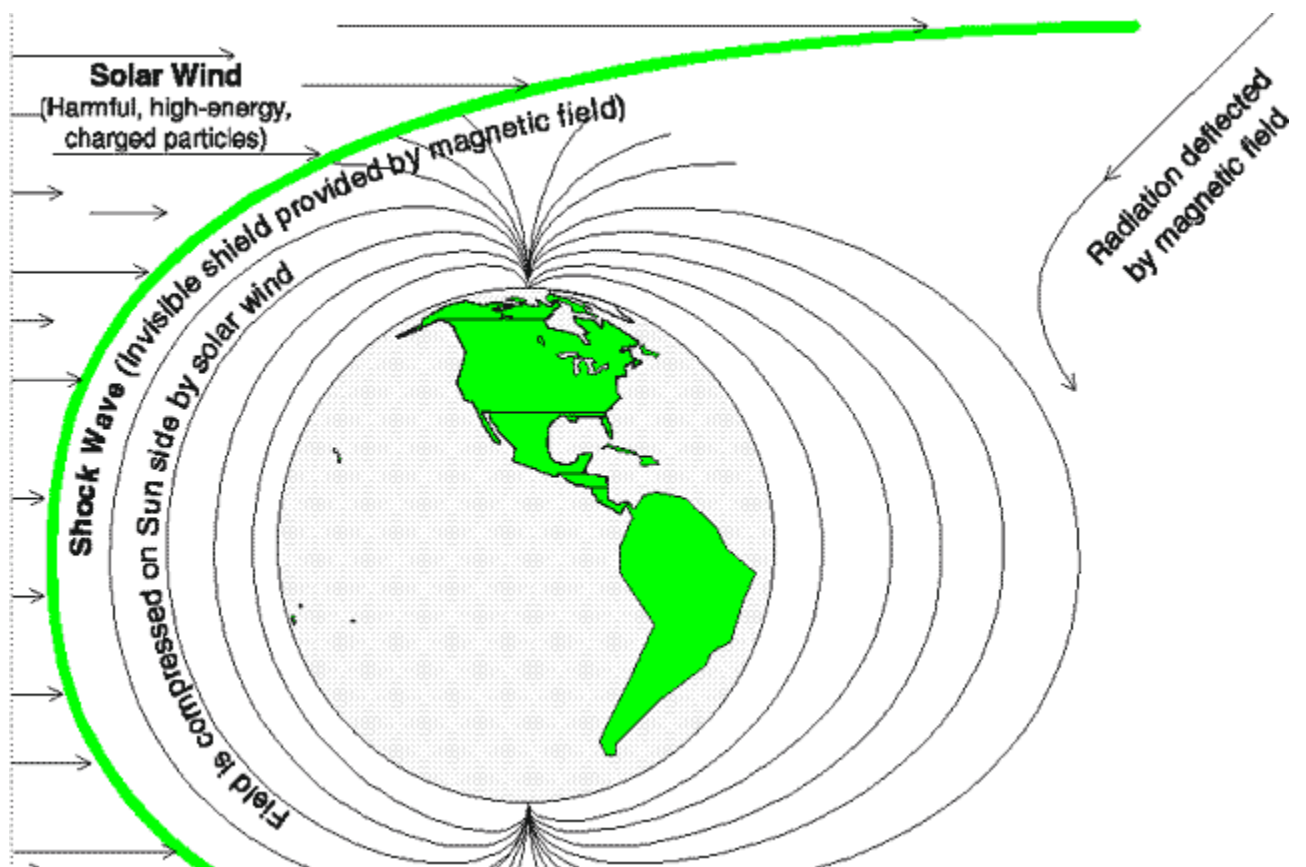
Earth's magnetic field is very complicated. It can be thought of as being one large magnetic dipole with twelve more small magnets arranged at various angles.

A curious fact about Earth's magnetic field is that it is not lined up with the spin axis. Its alignment is about 11 degrees off the axis defined by the north and south poles. (Without knowing this, you can't find the North pole using only a compass!)

What does Earth's magnetic field do for us?

The magnetic field helps us find our way around. Using a compass, we can tell which way is north even when there are no familiar landmarks in sight.

The magnetic field shields us from much harmful radiation. Cosmic rays come from all directions, and the sun sends out a steady stream of high-energy particles known as the solar wind.



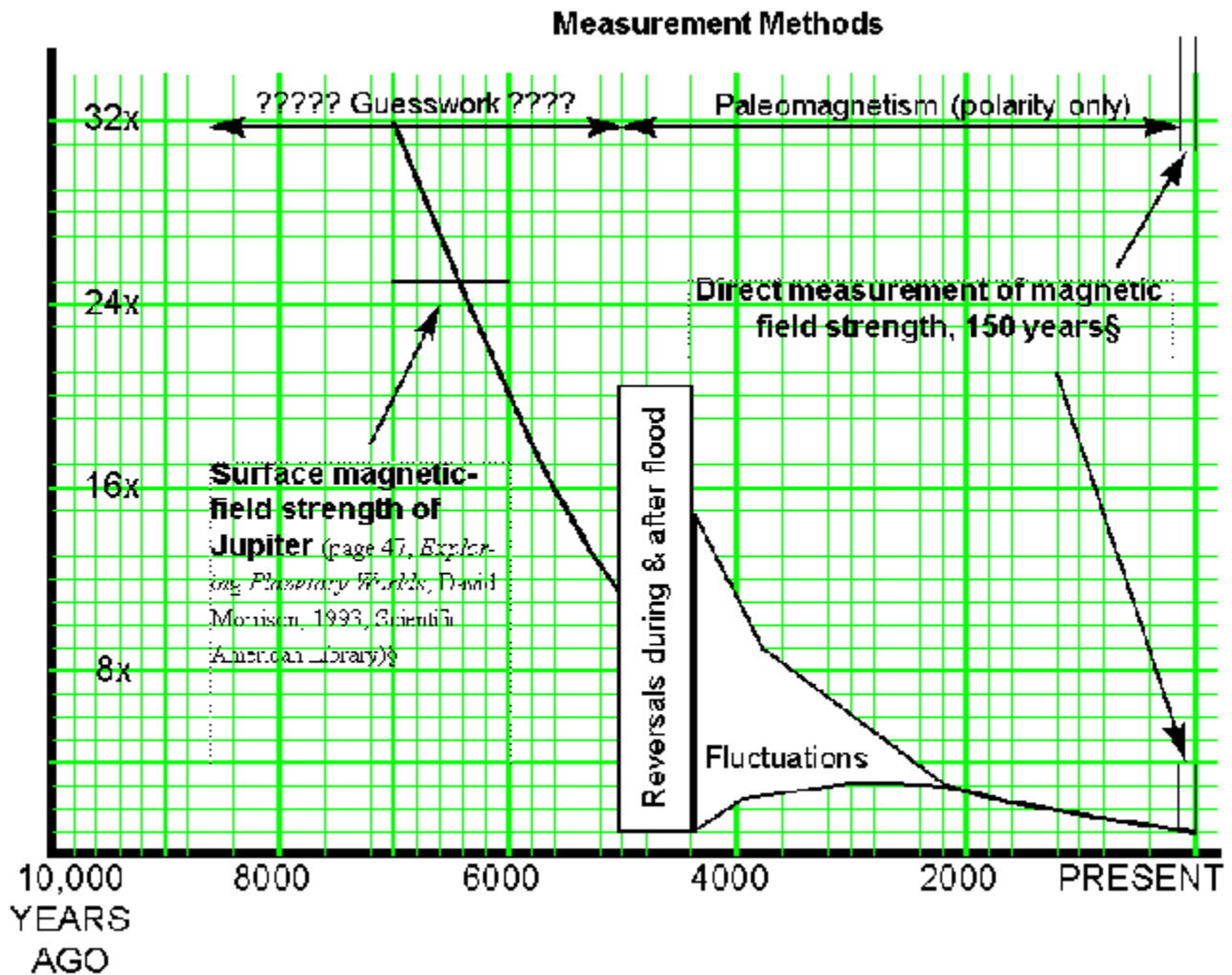
Genesis 1:6 describes the firmament (Hebrew *raqia*) separating the water below from the water above. Before the flood described in Genesis, the magnetic field may even have helped to suspend the firmament above the earth.

Is the Earth's field changing?

Scientists have made many careful measurements of the magnetic field over 150 years. These measurements show that the magnetic field is slowly shrinking. The intensity of the field decreases by half in 1400 years. This means that as time goes on we have less protection from cosmic radiation and the solar wind.

How strong has it been?

In 560 A.D. the field was twice as strong as it is now. In David's kingdom it was four times as strong. In Noah's time it was eight times as strong. There are limits to how intense the magnetic field could have been. If we assume that the field has been decaying at the same rate for 10,000 years, the field would have been more intense than that of a magnetic star. The heat and electrical extremes from such conditions would have made life on earth impossible.



History of Earth's Magnetic Field - Humphrey Model

This presents a significant problem for evolutionists and their belief in a 4.6-billion-year-old earth. Their answer is the dynamo theory, which assumes that the core of the earth is made of molten metal (iron-nickel mixture). Molten material inside the earth is far hotter than the Curie point, which means that the earth as a whole is not a permanent magnet; it must be an electromagnet. The dynamo theory is that slow, internal convection currents or planetary rotation generates the magnetic field, and that this mechanism has operated for the assumed 4.6 billion years. Since This theory also claims that the field reverses over extremely long periods of time.

Did the field ever change directions?

Of course, it's dangerous to observe a process for a relatively short period of time and then declare that the process has been behaving in exactly that way for all of time. This approach is routinely seen in traditional geology and paleontology ("...the present is the key to the past."). However, in this case uniformitarianism is denounced by the evolutionists. They point to paleomagnetic measurements in rock formations.

As sediment accumulates or as molten rock cools, the earth's magnetic field is believed to have aligned the magnetic domains within the material as it hardened, locking in a record of the orientation of the geomagnetic field at the time. Measurements of the magnetic-field polarity in ancient volcanic lava flows show that Earth's magnetic field gyrated wildly at one point in time. Other evidence for a change is that the residual magnetic fields in rock formed on the ocean floor where the great tectonic plates are pulling apart show a number of different orientations. The traditional assumption here is that these processes went on at the same rate in the past as we observe today. However, during the flood, when cataclysmic geologic events were occurring at a rapid pace, these processes may have been recording what happened to the magnetic field over weeks or months instead of hundreds of thousands of years.

Dr. D. R. Humphreys has studied the physical evidence of magnetic-field reversal and decay and developed a model that describes the magnetic field as having a high initial strength, a series of rapid reversals during the flood year, slower variations until the time of Christ's earthly ministry, then gradual steady decay.

The idea that the geomagnetic field could have rapidly reversed was rejected by the evolutionary community, even though a much larger body, the Sun, reverses its field every eleven years.

Recent discoveries have added more weight to Dr. Humphreys model. The April 5, 1995 edition (Vol. 14) of Science News reported on a Nature article that researchers are finding fresh evidence of extremely-rapid field orientation shifts, as much as six degrees per day. The article states that "if that happened today, compass needles would swing from magnetic north toward Mexico City in little over a week". The article quotes one geophysicist as saying "that shows the core to be violently active in terms of the magnetic field".

Violently active? "...on that day all the fountains of the deep were broken up..." Genesis 7:11, NKJV.

Will the field build back up again?

- Earth seems to have a broken generator. More of the observable facts support the model proposed by Dr. Humphreys. Whatever happened in the past, hard evidence exists for a

freely-decaying geomagnetic field now. A collapsing magnetic field encounters resistance, which generates electrical current, which generates more magnetic energy. The result is a slow decay unless new energy is released into the decaying system from an outside source.

“He who was sat on the throne said “Behold, I make all things new!”... Revelation 21:5, NKJV.

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Our Created Earth: Uniquely Designed for Life

by David V. Bassett, M.S., CEM Staff Writer

"Speak to the Earth, and it shall teach thee;...Who knoweth not in all these that the hand of the LORD hath wrought this?" Job 12:8a, 9

Of all the lessons which the Earth continually teaches us, perhaps the most obvious and profound is that it alone among the worlds framed by the Word of God (Heb. 11:3) is divinely crafted, sculpted, and engineered to sustain life. In fact the more we learn about our solar system and the universe, the more unique our Earth becomes. As home to over one million different species of life, each with its own special criteria for survival, the Earth repeatedly reinforces the fact that God orchestrated each detail necessary for terrestrial existence.

"For thus saith the LORD Who created the heavens, God Himself Who formed the Earth and made it; He hath established it, He created it not in vain, He formed it to be inhabited; I am the LORD, and there is none else." Isaiah 45: 18

The Creator's matchless formula for life on Earth involves a multitude of planetary parameters working together in a specific and delicate balance. So precise is this prescription, a mere absence or slight alteration in any one of the countless interrelated factors and mutually-dependent variables upon which life hinges could prove cataclysmic. Consider these more noticeable requirements upon which all life on our world depends:

(1) Abundance of Liquid Water --- This flowing treasure is unique in the combination of physical and chemical properties it manifests as the only possible solvent and medium for living cells. More than 70% of the planet is covered by some 326 million cubic miles of liquid water, enough to submerge a perfectly smooth and spherical Earth to a depth of 8,500 feet (over 1.6 miles!!). [Gen. 1:2, 10b / Job 38:34 / Ps. 33:7 / Rev.14:7b; see also Gen. 7:10 & Ps. 104:6]

(2) Cleansing Ocean Tides --- The ebb and flow of Earth's tidal circulation (in response to the lunar gravitational pull) purifies the world ocean and the continental shorelines which serve to enclose its waters. [Prov. 8:29a / Job 26:10; 38:11 / Ps. 104:9]

(3) Ideal Planetary Size and Mass --- With an equatorial diameter of 7,927 miles (Job 38:18 / Isa. 40:22a) and a mass equal to nearly 6.588 sextillion (10^{23} = billion trillion) tons, the Earth is able to provide the perfect gravitational attraction and optimum atmospheric pressure for living organisms. [Job 28:25 / Isa. 40:12]

(4) Life-Sustaining Atmosphere --- It has been said of the Earth that "the existence of its

inhabitants hangs upon a thin and delicate sheath of gas that envelops the planet like the skin of an apple." Though over 99% of our atmosphere (composed of 78% nitrogen, 21% oxygen, and 1% other gases) lies below 50 miles in altitude, it still is able to (a) provide the necessary oxygen crucial for animal and human respiration, (b) preserve acceptable temperature ranges while avoiding life-threatening extremes of heat and cold, and (c) protect from incoming extraterrestrial debris and (UV) solar radiation. [Gen. 1:20b / Job 37:18 / Ps. 104:3,13]

(5) Protective Magnetic Field --- Supplemented by the Van Allen radiation belts, the ionosphere, and the ozone layer as interior shields of defense, the Earth's magnetic field not only protects us from cosmic bombardment of harmful particles and high-frequency waves, it is also responsible for facilitating cellular communication and directional location. [Prov. 8:27; cp. Ps.5:12]

(6) Proper Orbital Shape --- With a circumference of almost 600 million miles, the Earth's orbit around the Sun is nearly circular in order to minimize extreme temperature variations. [Ps. 19:4b-6]

(7) Perfect Orbital Radius --- Earth's 93 million-mile-average distance from the Sun (typically referred to as one astronomical unit or 1 A.U.) allows our planet to have an ideal surface temperature of 58 degrees Fahrenheit and an average ocean-water temperature of 45 degrees Fahrenheit. In fact, in terms of insolation (i.e., incoming solar radiation), this orbital radius positions our world at the optimum location for life in the entire solar system. [Gen. 1:14-18 / Ps.74:16]

(8) Orbital Speed and Duration --- With an orbital period of exactly 365.256 days, which the Earth can accomplish by racing through space at an incredible 66,600 mph (over 18 miles/sec !!), our planet's seasonal length is conducive for agriculture. [Gen. 1:14]

(9) Angle of Rotational Axis --- Also playing a role in Earth's favorable pattern of climate, the 23.5 degree tilt on its planetary axis permits the four annual seasons and, in the northern hemisphere, increases the amount of suitable land area and fertile soil needed for summer cultivation of crops. [Gen.8:22 / Ps. 74:17]

(10) Rate of Planetary Rotation --- Earth's sidereal day of 23 hours, 56 minutes, 4.09 seconds allows for proper, uniform heating and cooling of its spinning surface (Job 38:14 / Gen. 8:22), as well as the re-circulation of its atmospheric winds and ocean currents in the global hydrologic cycle. [Eccl. 1:5-7 / Ps. 135:7 / Isa. 55:10]

The tolerances for life are extremely narrow, and if there are any other planets in the universe, it is very unlikely that any of them could have life, due to the extremely rigid conditions necessary for life to exist. The mathematical odds that all of these and other essential conditions happened by random chance are indeed astronomical -- in fact, beyond all probability. The ideal combination of prerequisites and requirements crucial to life observed only on Earth surely testifies to intelligent, purposeful design. "**The LORD by wisdom hath founded the Earth; by understanding hath He established the heavens.**" --- Prov. 3:19

To believe that this beautifully balanced life-support system is a mere accident requires invincible faith in the power of blind chance. Would not any honest observer have to admit that the Earth alone appears to have been designed for us to live on, just as the psalmist said?:

"The heaven, even the heavens, are the LORD's: but the Earth hath He given to the children of

men." ---Ps. 115:16

SCIENTIFIC PROBLEMS WITH MACROEVOLUTION:
(Karl Popper's definition of the scientific method)

1. OBSERVATION -steps of evolution have never been observed (Stebbins)

In the fossil record we view our data as so bad that we never see the very process we profess to study.(Gould)

2. EXPERIMENTATION -The processes would exceed the lifetime of any
human experimenter (Dobzhansky)

3. REPRODUCTION *impossible to reproduce in the laboratory. (Dobzhansky)*

4. FALSIFICATION -cannot be refuted thus outside empirical science. (Ehrlich)

RESEARCH PROBLEMS WITH MACROEVOLUTION:

1. ORIGINS -the chance of life originating from inorganic chemical elements by natural means is
beyond the realm of possibility (Hoyle)

2. DEVELOPMENT -to produce a new organism from an existing life-form requires alterations in
the genetic material which are lethal to the organism (Maddox)

3. STASIS -enzymes in the cell nucleus repair errors in the DNA (Barton)

4. GEOLOGIC COLUMN -out-of-place artifacts have been found in earth's sedimentary layers
which disrupt the supposed evolutionary order (Corliss)

5. DESIGN -irreducible complexity within the structure of the cell requires design (Denton, Behe).

(DNA REPAIR: The genome is reproduced very faithfully and there are enzymes

which repair the DNA, where errors have been made or when the DNA is

damaged. - D.H.R. Barton, Professor of Chemistry, Texas A&M University,

Nobel Prize for Chemistry)

*(CHANGE WITHIN GENETIC BOUNDARIES: Microevolution does not lead beyond the confines of
the species, and the typical products of microevolution,*

the geographic races, are not incipient species. There is no such category as

incipient species. Richard B. Goldschmidt)

(MUTATION ACCUMULATIONS RELENTLESSLY FATAL: Any random change in a complex, specific, functioning system wrecks that system. And living things are the most complex functioning systems in the universe. Science has now quantitated that a genetic mutation of as little as 1 billionth (0.0000001%) of an animal's genome is relentlessly fatal. The genetic difference between human and his nearest relative, the chimpanzee, is at least 1.6% Calculated out that is a gap of at least 48 million nucleotide differences that must be bridged by random changes. And a random change of only 3 nucleotides is fatal to an animal.

Geneticist Barney Maddox, 1992)

MAMMOTHS

by Robert F. Helfinstine

Vita:

BSEE, 1950 University of Minnesota

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Honeywell, Inc. 40 years in design and development of automatic controls for aircraft and spacecraft. Lead systems engineer on E1B/S2F automatic control system, lead systems engineer on Apollo command module control system – in addition to various aircraft and spacecraft systems. Independent research in ancient history, archaeology and dating techniques. Participation in excavation activities in Glen Rose, Texas and Hanson Ranch, Wyoming. President, Twin Cities Creation Science Association. Author of TEXAS TRACKS and ARTIFACTS.

Abstract: The secular view of mammoths centers on an Ice Age environment and extinction some 10,000 years ago. Some creationists view the mammoth remains as evidence from Noah's Flood. These large animals could never live in an Arctic environment such as we find in Siberia and northern Alaska, primarily because there is no food supply compatible with their needs. Scientific studies of these animals lead to the conclusions that they were from a temperate climate, there was a mass extinction of many of them, and many were buried along with trees and other vegetation after which the land became frozen by a sudden and permanent climate change. The cause of the extinction and burial appears to be a brief but massive flow of water from a post-Flood disturbance to the earth.

Introduction

The largest quantities of woolly mammoth remains are found in Arctic and sub-arctic locations. They had long hair and underwool, and those found with meat still on their bones showed a heavy layer of fat under the skin. From this evidence the secular view of mammoths is that these large animals, by evolutionary processes, were adapted to living in a cold climate. The frozen remains were attributed to the hazards of living in such a climate. But from earliest scientific studies of these animals, a different picture emerges.

I. Characteristics

Early research proved that the mammoth was distinct from modern elephants. Although related, it is a closer relative to the Asian elephant than the African elephant based on blood tests. It was not a tropical beast, neither was it adapted to living in the Arctic. Adaptation is supposedly based on thick skin, long fur and underwool, and fat deposits under the skin. Mammoth skin, essentially identical to that of the Indian elephant, does not have oil glands. Fur without oil glands is adaptation to a warm climate. The fat layer is not for insulation, but an indication of an adequate food supply. Preserved food found in the mouths and stomachs of several specimens contained temperate climate grasses which do not grow in the Arctic today, but 2000 kilometers farther south. Temperate climate plants and animals go together. The companions of the mammoth were woolly rhinoceros, bison, sheep, horses, bears, lions and deer.

II. Climate Conditions

The climate of Siberia and northern Alaska during the time of the mammoths was not the same as the present climate. Even Charles Lyell concluded that the mammoth Arctic climate was much warmer than it is today. The present tundra mosses and grasses which grow only about eight to ten weeks of the year are unpalatable and even toxic to large herbivores. Mammoths would be living in a practical desert under the present conditions.

Large rooted trunks of trees are found in beds containing mammoths. Large trees cannot grow over permafrost. Animals living with the mammoths, horses and bison, could not have endured the mires of Arctic summer which make travel almost impossible.

III. How Did Mammoths Die?

Some modern ideas of how mammoths died include falling into ice crevasses, falling over a cliff in a storm, falling through thin ice or being buried by a landslide.

Scientific analysis of bodies and other remains in the tundra provide the following information. Remains are for the most part just bones scattered about and piled together with trees, volcanic ash, vegetation and bones of other animals. Some animals were torn apart by violent action. Animals with preserved flesh are buried in the frozen tundra near its upper surface and usually at higher elevations. Decay began before the bodies were frozen, but once frozen they never thawed until exposed by erosion or excavation. The animals died suddenly in the late summer as indicated by food found in their stomach or mouth. Frozen mammoth remains and other animal remains increase in number the farther north one goes in Siberia, being most numerous in the New Siberian Islands.

The probable cause of the death of so many animals is described by H.H. Howorth.

"A great catastrophe occurred by which the mammoth and its companions were overwhelmed over a large part of the earth. This catastrophe involved a brief but widespread rush of water which not only killed the animals but also buried them under continuous beds of loam and gravel."

IV. Dating the Catastrophe

The big question is "When did it happen?" Based on Biblical history, the event happened after the Flood of Noah. Not all people agree with this conclusion.

But there were other effects of the orientation change. Great tidal waves were reported by the Chinese and North American Indians. The Sahara dried out and became a desert. Its present condition appears to have begun after 2000 B.C. The Tarim basin in China was once populated with

cities and settlements and forests. Now it is mostly desert. There is evidence that India, Pakistan and Iran all had abundant rainfall before the climate changed. Large areas of former agricultural land on the India-Pakistan border are now desert. American deserts once had abundant rainfall based on pollen and tree remnants found at archaeological sites. All the world's deserts seem to have started about 3500 years ago. This is the same period identified by Charles Ginenthal for the extinction of the mammoths. It is also the time of the exodus of the Israelites from Egypt.

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Creation Science Briefs

Subject: ***Carbon Dating***

A less-common form of the carbon atom, carbon-14, is used today by scientists as a method to date once-living organisms. Many people believe that carbon dating disproves the Biblical time scale of history. However, because of the difficulties with current C14 dating techniques, the dates produced have been shown to be faulty.

Carbon-14 is produced in the upper atmosphere by action of cosmic rays. Once the C 14 has been formed, by converting nitrogen-14 into carbon-14, it behaves like ordinary carbon-12, combining with oxygen to give carbon dioxide, and freely cycling through the cells of all plants and animals. Carbon-14 is used for a dating material because once it has been formed, C14 begins to decay radioactively back to nitrogen-14, at a rate of change that can be measured. As soon as an organism dies, the C14 atoms which decay are no longer replaced by new ones through respiration. Consequently, the ratio of C14 to C12 in that once-living organism decreases as time goes on. The problem with the carbon dating method is—scientists can not be sure of what the C14/C12 ratio was when the organism died. Carbon dating assumes that the ratio has remained constant; however, events, such as the industrial revolution, are known to have raised C12 levels. Other possible factors, such as the presence of a water canopy, would have lowered the amount of C14 in the pre-Flood world. Because pre-Flood specimens had so little carbon-14 in them, some might appear to have been decaying for tens of thousands of years. Also, the decay of the earth's magnetic field would have direct effects on C14 level, again, giving artificially old ages the farther you go back in time. Finally, carbon dating has been shown untrustworthy with some present day aquatic specimens that were concluded to be thousands of years old. For example, the shells of living snails' were carbon dated and showed that the snails had died 27,000 years ago. Other specimens have been carbon dated more than once, each time producing a different date varying by thousands of years. In overview, we see that the radiocarbon dating method is certainly no embarrassment to the Biblical creationist who believes in a young

earth. In fact, when all data, such as the decay of the magnetic field and the canopy, is taken into accord, carbon dating seems to support a young earth.

CEM Staff

EVIDENCE FOR CREATION

(as compiled by Creation Evidence Museum - Dr. Carl Baugh)

THE FOSSIL RECORD

Evolutionists have constructed the Geologic Column in order to illustrate the supposed progression of “primitive” life forms to “more complex” systems we observe today. Yet, “since only a small percentage of the earth’s surface obeys even a portion of the geologic column...the claim of their having taken place to form a continuum of rock/life/time...over the earth is therefore a fantastic and imaginative contrivance.”⁽¹⁾ “The lack of transitional series cannot be explained as being due to the scarcity of material. The deficiencies are real, they will never be filled.”⁽²⁾ This supposed column is actually saturated with “polystrate fossils” (fossils extending from one geologic layer to another) that tie all the layers to one time-frame. “To the unprejudiced, the fossil record of plants is in favor of special creation.”⁽³⁾

1. John Woodmorappe, *“The Essential Non-Existence of the Evolutionary Uniformitarian Geologic Column.”*

2. H. Heribert Nilsson, as quoted in Arthur C. Custance, *THE EARTH BEFORE MAN, Part II*

3. E.J.H. Corner, *CONTEMPORARY BOTANICAL THOUGHT*

DECAY OF EARTH’S MAGNETIC FIELD

Dr. Thomas Barnes, Emeritus Professor of Physics at the University of Texas at El Paso, has published the definitive work in this field.⁽⁴⁾ Scientific observations since 1829 have shown that the earth’s magnetic field has been measurably decaying at an exponential rate, demonstrating its half-life to be approximately 1400 years. In practical application its strength 20,000 years ago would approximate that of a magnetic star. Under those conditions many of the atoms necessary for life processes could not form. These data demonstrate that earth’s entire history is young, within a few thousand years.

4. Thomas Barnes, *ICR Technical Monograph #4, ORIGIN AND DESTINY OF THE EARTH’S MAGNETIC FIELD.*

THE GLOBAL FLOOD

The Biblical record clearly describes a global Flood during Noah’s day. Additionally, there are hundreds of flood traditions handed down through cultures all over the world.⁽⁵⁾ M.E. Clark and Henry Voss have demonstrated the scientific validity of such a Flood providing the sedimentary layering we see on every continent.⁽⁶⁾ Secular scholars report very rapid sedimentation and periods of great carbonate deposition in earth’s sedimentary layers.⁽⁷⁾ It is now possible to prove the historical reality of the Biblical Flood.⁽⁸⁾

5. Edward Blick, *A SCIENTIFIC ANALYSIS OF GENESIS*; p. 103

6. M.E. Clark and H.D. Voss, *FLUID MECHANIC EXAMINATION OF THE TIAL MECHANISM FOR PRODUCING MEGA-SEDIMENTARY LAYERING*.

7. Derek Ager, *THE NATURE OF THE STRATIGRAPHICAL RECORD*, p. 43 and p 86

8. John Anthony West, *SERPENT IN THE SKY: THE HIGH WISDOM OF ANCIENT EGYPT*, pp 13-14

RADIO HALOS

Physicist Robert Gentry has reported isolated radio halos of plonium-214 in crystalline granite. The half-life of this element is 0.000164 seconds! To record the existence of this element in such short time span, the granite must be in crystalline state instantaneously. ⁽¹⁰⁾ This runs counter to evolutionary estimates of 300 million years for granite to form.

(10) Robert Gentry –*CREATIONN'S TINY MYSTERY*)

HUMAN ARTIFACTS THROUGHOUT THE GEOLOGIC COLUMN

Man-made artifacts – such as the hammer in Cretaceous rock, a human sandal print with trilobite in Cambrian rock, human footprints and a handprint in Cretaceous rock – point to the fact that all the supposed geologic periods actually occurred at the same time in the recent past. ⁽¹¹⁾

(11) Carl Baugh, *Ph D –WHY DO MEN BELIEVE EVOLUTION ... AGAINST ALL ODDS?*

Majestic

SCIENTIFIC ALLUSIONS IN SCRIPTURE...

Dr. Henry Morris of the Institute for Creation Research has compiled an impressive list of allusions to scientific principles in Scripture. This list actually demonstrates that a matrix of scientific principles underlies the body of Scripture. These principles were not known to the leading minds of the day in which they were written; in fact, many of them contradicted what was being taught at the time. Such a list confirms that the Scriptures are scientifically credible. It further confirms that the Scriptures were supernaturally inspired.

(Compiled by Dr. Henry M. Morris, Defender's Bible)

Sciences	Phenomenon or Process	Scripture
Hydrology	Hydrologic Cycle	Ecclesiastes 1:7; Isaiah 55:10
	Evaporation	Psalms 135:7; Jeremiah 10:13
	Condensation Nuclei	Proverbs 8:26
	Condensation	Job 26:8; 37:11, 16
	Precipitation	Job 36:26-28

	Run-off	Job 28:10
	Oceanic Reservoir	Psalms 33:7
	Snow	Job 38:22; Psalms 147:16
	Hydrologic Balance	Job 28:24-26
	Springs in the Sea	Job 38:16
Geology	Principle of Isostasy	Isaiah 40:12; Psalm 104:5-9
	Shape of Earth	Isaiah 40:22; Job 26:10; Psalm 103:12
	Rotation of Earth	Job 38:12,14
	Gravitation	Job 26:7; 38:6
	Rock Erosion	Job 14:18,19
	Glacial Period	Job 38:29,30
	Uniformitarianism	II Peter 3:4
	Dinosaurs	Job 40,41
Astronomy	Size of Universe	Job 11:7-9; 22:12; Isaiah 55:9; Jeremiah 31:37
	Number of Stars	Genesis 22:17; Jeremiah 33:22
	Uniqueness of Each Star	I Corinthians 15:41
	Precision of Orbits	Jeremiah 31:35,36
Meteorology	Circulation of Atmosphere	Ecclesiastes 1:6
	Protective Effect of Atmosphere	Isaiah 40:22
	Oceanic Origin of Rain	Ecclesiastes 1:7
	Relation of Electricity to Rain	Job 28:26; Jeremiah 10:13
	Fluid Dynamics	Job 28:25
Biology	Blood Circulation	Leviticus 17:11
	Psychotherapy	Proverbs 16:24; 17:22
	Biogenesis and Stability	Genesis 1:11,21,25
	Uniqueness of Man	Genesis 1:26
	Chemical Nature of Flesh	Genesis 1:11,24-2:7;3:19
	Cave-men	Job 12:23-25; 30:3-8
Physics	Mass-Energy Equivalence	Colossians 1:17; Hebrews 1:3
	Source of Energy for Earth	Psalms 19:6
	Atomic Disintegration	II Peter 3:10
	Electrical Transmission of Information	Job 38:35
	Television	Revelation 11:9-11
	Rapid Transportation	Daniel 12:4

EVOLUTION AS ALCHEMY

By William A. Dembski

In its heyday alchemy was a comprehensive theory of transmutation describing not only transformations of base into precious metals but also transformations of the soul up and down the great chain of being. Alchemy was not just a physics but also a metaphysics. Alchemy as metaphysics attracts interest to this day, as in Carl Jung's writings about the soul and personal identity. As he noted, "The alchemists sought for that effect which would heal not only the disharmonies of the physical world but inner psychic conflict as well, the 'affliction of the soul,' and they called this effect the lapis philosophorum [i.e., the philosopher's stone]. In order to obtain it, they had to loosen the age-old attachment of the soul to the body and thus make conscious the conflict between the purely natural and the spiritual man." [1]

Alchemy's metaphysical pretensions aside, to include alchemy as part of the natural sciences is nowadays regarded as hopelessly misguided. The scientific community rejects alchemy as superstition and commends itself for having successfully debunked it. For scientists the problem with alchemy is that it fails to specify the processes by which transmutations are supposed to take place. An overused Sidney Harris cartoon illustrates the point. The cartoon shows two scientists viewing a chalkboard. The chalkboard displays some fancy equations, a gap, and then some more fancy equations. In the gap are written the words: "Then a miracle occurs." Pointing to the gap, one scientist remarks to the other, "I think you should be more explicit here." This is the problem with alchemy. To characterize a transformation scientifically, it needs to be specified explicitly.

Alchemy never did this. Instead it continually offered promissory notes promising that some day it would make the transformation explicit. None of the promissory notes was ever redeemed. Indeed, the much sought after philosopher's stone remains to be found. [2] Officially, the scientific community rejects alchemy and has rejected it since the rise of modern science. [3] Unofficially, however, the scientific community has had a much harder time eradicating it. Indeed, I will argue that alchemical thinking pervades the fields of chemical and biological evolution. This is not to deny that biological systems evolve. But unless the process by which one organism evolves into another (or by which nonliving chemicals organize into a first living form) is specified, evolution remains an empty word. And given that such specificity is often lacking, much (though not all) of what currently falls under evolutionary theory is alchemy by another name.

Alchemy followed a certain logic, and it is important to see the fallacy inherent in that logic. The problem with alchemy was not its failure to understand the causal process responsible for a transformation. It is not alchemy, for instance, to assert that a certain one-dimensional polypeptide will fold into the three-dimensional conformation thereby yielding a functional protein. How polypeptides fold to form proteins is an open problem in biology. Three-dimensional proteins "evolve," one might say (in the literal etymological sense of the word as in unfurling the potentialities already inherent in a thing), from suitably sequenced one-dimensional polypeptides in suitable cellular contexts. This happens repeatedly and reliably. We can describe the transformation, but as yet we cannot explain how the transformation takes place. Ignorance about the underlying mechanism responsible for a transformation does not make the transformation alchemical.

Things transform into other things. Sometimes we can explain the process by which the transformation takes place. At other times we cannot. Sometimes the process requires an intelligent agent, sometimes no intelligent agent is required. Thus, a process that arranges randomly strewn Scrabble pieces into meaningful English sentences requires a guiding intelligence. On the other hand, the process by which water crystallizes into ice requires no guiding intelligence -- lowering the temperature sufficiently is all that is needed. It is not alchemy that transforms water into ice. Nor is it alchemy that transforms randomly strewn Scrabble pieces into meaningful sentences. Nor, for that matter, is it alchemy that transforms a one-dimensional polypeptide into a functional protein, and that despite our ignorance about the precise mechanisms governing protein folding.

What, then, is the problem with alchemy? Alchemy's problem is its lack of causal specificity. Causal specificity means specifying a cause sufficient to account for an effect in question. Often we can specify the cause of an effect even if we cannot explain how the cause produces the effect. For instance, I may know from experience that shaking a closed container filled with a gas will cause the temperature of the gas to rise. Thus, by specifying the causal antecedents (i.e., a closed container filled with gas and my shaking it), I account for the container's rise in temperature. Nonetheless, I may have no idea why the temperature rises. Boltzmann's kinetic theory tells me that the temperature of the gas rises because temperature corresponds to average kinetic energy of the particles constituting the gas, and by shaking the container I impart additional kinetic energy to the particles. Boltzmann's theory enables me to explain why the temperature goes up. Even so, I do not need Boltzmann's theory to specify a cause that accounts for the temperature going up. For that, it is enough that I specify the causal antecedents (i.e., a closed container filled with gas and my shaking of it).

Alchemy eschews causal specificity. Consider the standard example of alchemical transformation, the transmutation of lead into gold. There is no logical impossibility that prevents potions and furnaces from acting on lead and turning it into gold. It may just be that we have overlooked some property of lead that, in combination with the right ingredients, allows it to be transformed into gold. But the alchemists of old never specified the precise causal antecedents that would bring about this transformation. Consequently, they lacked any compelling evidence that the transformation was even possible. Note, modern-day particle physicists can, in principle, transform lead into gold with their particle accelerators, smashing the lead into more elementary constituents and then reconstituting them as gold. But here the causal antecedents are specified and differ plainly from those considered by the alchemists (particle accelerators were not part of the alchemists' tool chest).

Causal specificity was evident in the examples considered earlier: Water cooled below zero degrees Celsius is sufficient to account for it turning to ice. A random collection of Scrabble pieces left in the hands of a literate, non-handicapped English speaker is sufficient to account for the Scrabble pieces spelling a coherent English sentence. A given sequence of l-amino acids joined by peptide bonds within a cellular context is sufficient to account for it folding into a functional protein, say cytochrome c. In each of these cases the causal antecedent is specified and accounts for the effect in question. We may not be able to explain how the cause that was specified produces its effect, but we know that it does so nonetheless.

But how do we get from causal antecedents like lead, potions, and furnaces and end up

with gold? The alchemists' conviction was that if one could find just the right ingredients to combine with lead, lead would transform into gold. Thereafter the transformation could be performed at will and the alchemist who discovered the secret of transmutation would be rich (until, that is, the secret got out and gold became so common that it too became a base metal). Discovering the secret of transmutation was the alchemist's deepest hope. The interesting question for this essay, however, is the alchemist's reason for that hope. Why were alchemists so confident that the transmutation from base into precious metals could even be effected? From our vantage, we judge their enterprise a failure and one that had no possibility of success (contemporary solid state physics giving the coup de grace). But why were they unshaken in their conviction that with the few paltry means at their disposal (particle accelerators not being among them), they could transform base into precious metals? Put another way, why, lacking causal specificity, did they think the transformation could be effected at all?

Without causal specificity, one has no empirical justification for affirming that a transformation can be effected. At the same time, without causal specificity, one has no empirical justification for denying that a transformation can be effected. There is no way to demonstrate with complete certainty that Dr. Jekyll cannot transform into Mr. Hyde by some unspecified process. Lack of causal specificity leaves one without the means to judge whether a desired transformation can or cannot be effected. Any conviction about the desired transformation being possible, much less inevitable, must therefore derive from considerations other than a causal analysis. But from where?

Enter metaphysics. It is no secret that the motivation behind alchemy was never scientific (as we use the term nowadays) but metaphysical. Alchemy is a corollary of Neoplatonic metaphysics. Neoplatonism held to a great chain of being in which all reality emanates from God (conceived of as the One) and ultimately returns to God. The great chain of being is strictly hierarchical, so that for any two distinct items in the chain one is higher than the other. Now consider lead and gold. Gold is higher on the chain than lead (lead is a base metal, gold is a precious metal). Moreover, since everything is returning to God, lead is returning to God and on its way to God will pass through gold. Consequently, there is a natural pull for lead to get to gold on its way to God. The alchemist's task is therefore not to violate nature, but simply to help nature along. All lead needs is a small suitable catalyst to achieve gold. The modest means by which alchemists hoped to achieve the transformation of lead into gold thus seemed entirely reasonable (in particular, no particle accelerators would be required).

Here, then, is the fallacy in alchemy's logic. Alchemy relinquishes causal specificity, yet confidently asserts that an unspecified process will yield a desired transformation. Lacking causal specificity, the alchemist has no empirical grounds for holding that the desired transformation can be effected. Even so, the alchemist remains convinced that the transformation can be effected because prior metaphysical beliefs ensure that some process, though for now unspecified, must effect the desired transformation. In short, metaphysics guarantees the transformation even if the empirical evidence is against it. Alchemy continues to flourish to this day in the fields of chemical and biological evolution. Whereas classical alchemy was concerned with transforming base into precious metals, evolution is concerned with transforming batches of chemicals into organisms and then organisms into other organisms. Now, I do not want to give the impression that evolution is a completely disreputable concept. The concept has

applications that are entirely innocent. Consider, for instance, finches evolving stronger beaks to break harder nuts or insects developing insecticide resistance. Evolution in such cases is non-problematic. Why? Because of causal specificity. Micro evolutionary changes like this happen repeatedly and reliably. Given certain organisms placed in certain environments with certain selective pressures, certain predictable changes will result. We may not understand the precise biochemical factors that makes such micro evolutionary changes possible. But the causal antecedents that produce micro evolutionary changes are clearly specified. So long as we have causal specificity, evolution is a perfectly legitimate concept

But what about evolution without causal specificity? Consider, for instance, chemical evolution as an explanation for the origin of life. For much of the scientific community, the presumption is that life organized itself via undirected chemical pathways and thus apart from any designing intelligence. Yet, unlike the causal specificity that obtains for micro evolutionary processes, origin-of-life researchers have yet to specify the chemical pathways that supposedly originated life. Despite a vast literature on the origin of life, causally specific proposals for just what those chemical pathways might be are sorely absent. Which is not to say that there have not been any proposals. In fact, there are too many of them. RNA worlds, clay templates, hydrothermal vents, and numerous other materialistic scenarios have all been proposed to account for the chemical evolution of life. Yet, none of these scenarios is detailed enough to be seriously criticized or tested. In short, they all lack causal specificity.

In the absence of causal specificity, the logic of evolution parallels the logic of alchemy. Evolution, like alchemical transformation, is a relational notion. Alchemy never said that gold just magically materializes. Rather, it said that there are antecedents (lead, potions, furnaces) from which it materializes. So too evolution does not say that organisms just magically materialize. Rather, it says that there are antecedents (in the case of the origin of life, it posits RNA worlds, clay templates, hydrothermal vents, etc.) from which life materializes. Thus, to say that something evolves is to say what it evolves from: just as for the alchemist gold "evolves" (again, in its literal etymological sense) from lead plus some other (unspecified) things, so for the contemporary origin-of-life researcher organisms "evolve" from suitable (albeit unspecified) batches of prebiotic chemicals. "X evolves" is therefore an incomplete sentence. It needs to be completed by reading "X evolves from Y." Moreover, the claim that X evolves from Y remains vacuous until one specifies Y and can demonstrate that Y is sufficient to account for X. Lowering the temperature of water below zero degrees Celsius is causally specific and adequately accounts for the freezing of water. On the other hand, a complete set of the building materials for a house does not suffice to account for a house -- additionally what is needed is an architectural plan (drawn up by an architect) as well as assembly instructions (executed by a contractor) to implement the plan. Likewise, with the origin of life, it does no good simply to have the building blocks for life (e.g., nucleotide bases or amino acids). The means for organizing those building blocks into a coherent system (i.e., a living organism) need to be specified as well.

Given the pervasive lack of causal specificity in origin-of-life studies, why are so many origin-of-life researchers supremely confident that material causes are even up to the task of originating life? (By a material cause I mean, in contradistinction to Aristotle, a cause reducible to matter, energy, and their law-determined interactions, with these interactions

being, in principle, describable by physics and chemistry.) The singular lack of success of science in elucidating the origin-of-life problem makes this overweening confidence all the more puzzling if we try to understand it light of the skepticism and tentativeness with which the scientific method tells us to approach hypotheses.

On the other hand, if, as I am suggesting, there is a precise parallel between evolution and alchemy, then this confidence is perfectly understandable, because in that case it flows from a prior metaphysical commitment that is both inviolable and nonnegotiable. What prior metaphysical commitment ensures that material causes, though for now unspecified, must effect the desired evolutionary transformations? In the case of alchemy, the prior metaphysical commitment was Neoplatonism. In the case of chemical and biological evolution, the prior metaphysical commitment is, obviously, materialism. Materialism is the view that material causes at base govern the world. Given materialism as a prior metaphysical commitment, it follows that life must evolve through purely material causes. But that commitment, like the alchemists' commitment to Neoplatonism, is highly problematic.

Proponents of materialism are, at this point, apt to note that life is here, life was not always here, and so some transformation from nonlife to life had to occur. Life has come about by a process of chemical evolution even if we cannot quite spell out the precise causal antecedents for life. The origin of life is a great unsolved problem, and origin of life researchers are valiantly trying to resolve it. For me to compare chemical evolution with alchemy will therefore strike the committed materialist as misconceived if not churlish.

To see why this dismissal of my position is itself misconceived, consider what it means to say that life has, as the materialist claims, originated from purely material causes.

Because the origin of life is an open problem, the reference to "purely material causes" lacks, to be sure, causal specificity. But there is a deeper problem, and that is the imposition of an arbitrary restriction. The problem with claiming that life has emerged from purely material causes is not that it admits ignorance about an unsolved problem, but that it artificially restricts the range of possible solutions to that problem; namely, it requires that solutions limit themselves to purely material causes. This is an arbitrary and metaphysically driven restriction. Life has emerged via purely material causes. How do we know that? In general, to hypothesize that X results from Y remains pure speculation until the process that brings about X from Y is causally specified. Until then, to impose restrictions on the types of causal factors that may or may not be employed in Y to bring about X is arbitrary and certain to frustrate scientific inquiry.

In this respect evolution is even more culpable than alchemy. Alchemy sought to transform lead into gold, but left open the means by which the transformation could be effected (though in practice alchemists hoped the transformation could be effected through the modest technical means at their disposal). Evolution, on the other hand, seeks to transform nonlife into life and then organisms into very different organisms, but -- when biased by materialism -- excludes any place for intelligence or teleology in the transformation. Such a restriction is gratuitous given evolution's lack of causal specificity in accounting not only for the origin of life but also for the macro evolutionary changes supposedly responsible for life's subsequent diversification.

Perhaps materialism will eventually be vindicated and the great open problems of evolution will submit to purely materialistic solutions. But in the absence of causal

specificity, there is no reason to let materialism place such restrictions on scientific theorizing. It is restrictions like these -- typically unspoken, metaphysically motivated, and at odds with free scientific inquiry -- that need to be resisted and exposed. Science must not degenerate into applied materialistic philosophy, which is exactly what it does at the hands of today's alchemists -- the materialistic evolutionists who hold their views not on the basis of empirical evidence but because of a prior metaphysical commitment to materialism. Science needs to be a free inquiry into all the possibilities that might operate in nature. Design, therefore, needs to be kept as a live possibility in scientific discussions of biological origins.

The origin of life is just one instance of evolution without causal specificity. The evolution of human consciousness and language from the neurophysiology of primate ancestors is another. The most widely debated instance is the evolution of increasingly complex life forms from simpler ones. Although the Darwinian mutation-selection mechanism is supposed to handle such cases of evolution, it encounters the same failure of causal specificity endemic to alchemy (see, for instance, my forthcoming book *The Design of Life*). The lesson of alchemy should be plain: Causal specificity cannot be redeemed in the coin of metaphysics, be it Neoplatonic or materialistic.

NOTES

[1] Carl G. Jung, *Mysterium Coniunctionis: An Inquiry into the Separation and Synthesis of Psychic Opposites in Alchemy*, in *Collected Works of C. G. Jung*, vol. 14 (Princeton: Princeton University Press, 1963). On page 114 Jung writes: "The alchemists sought for that effect which would heal not only the disharmonies of the physical world but inner psychic conflict as well, the 'affliction of the soul,' and they called this effect the lapis philosophorum [i.e., the philosopher's stone]. In order to obtain it, they had to loosen the age-old attachment of the soul to the body and thus make conscious the conflict between the purely natural and the spiritual man."

[2]Not only has alchemy failed as a scientific project, but also alchemy as a metaphysical

project seems not to be in much better a state. Consider the following admission by Carl

Jung toward the end of his life (apparently alchemy had not enabled him to resolve the connection between body and soul -- see previous note): "I observe myself in the stillness of Bollingen, with the experience of almost eight decades now, and I have to admit that I have found no plain answer to myself. I am in doubt about myself as ever, the more I try to say something definite. It is even as though through familiarity with oneself one became still more alienated." Quoted in Gerhard Wehr, *Jung: A Biography*, trans. D. M. Weeks (Boston: Shambhala, 1987), 416. According to Jung's biographer (407), Jung regarded it as speaking well for the honesty of alchemists that "after years of continuing toil they were able to produce neither gold nor the highly praised philosopher's stone and openly admitted this. To these men, failures in the popular sense, Jung compared himself. He too had in the end been unable to solve the riddle of the mysterium coniunctionis."

[3]Even so, it is worth remembering that Isaac Newton devoted a full half of his writings to theology and alchemy. See the introduction by Brad Gregory to *Baruch Spinoza, Tractatus Theologico-Politicus*, trans. S. Shirley, intro. B. S. Gregory (1670; reprint, Leiden: Brill, 1989), 9.