

HOW OLD IS THE EARTH?

by

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In a time when most geologists peg the age of the earth in billions or even tens of billions of years, a Latter-day Saint scientist boldly speaks out for a Mother Earth so youthful that she's just beginning to show her wrinkles.

Dr. Melvin A. Cook, professor of metallurgy and director of the Institute of Metals and Explosives Research at the University of Utah, claims that the earth is about 13,000 years old--roughly the age chronicled for it in the Bible. Accepting the biblical admonition that ". . . one day is with the Lord as a thousand years . . ." (2 Pet. 3:8) Dr. Cook assigns 6,000 years to the creation, another 1,000 for the day of rest, about 4,000 years from Adam to Christ, and roughly 2,000 from Christ's day to our own.

He bases his views not only on a literal acceptance of scripture but also on some revolutionary interpretations of geological data and on a theory that certain "time clocks" are being read backwards by geologists.

Many of his colleagues differ with his conclusions, although they find it difficult to dispute Dr. Cook's overall scientific knowledge. He holds a world-recognized spot among a small handful of explosives experts. He uses his training in physics, chemistry, and metallurgy in his geological research. He takes opposition to his ideas in stride while digging into all available literature to support his thinking.

Central to his work is the theory of continental drift, a view first advanced in 1912 by Dr. Alfred Wegener, renowned German meteorologist. The continental drift theory deals with suggested ways in which the continents of the earth as we know them today broke off from one original land mass. This idea is consistent with scripture, since we read in Genesis 1:9:

"And God said, Let the waters under the heaven be gathered unto one place, and let the dry land appear."

Continental drift was long rejected by scientists, only to be revived in the last decade, particularly by discoveries made during the International Geophysical Year, 1957-1958. Many scientists now believe that until recently in the earth's history the continents were joined together in one continent, which they called Pangaea.

Several theories have been advanced to account for the fragmentation into continents, a process which some say took as long as 200 million years. Dr. Cook leans toward the theory that the ice cap of the Wisconsin Ice Age grew so tremendous that it developed a splitting force of 100 million billion tons. This force ruptured Pangaea, drove its fragments several thousand miles apart, twisted them in a manner consistent with gravitational and rotational pulls of the earth, and left them in new locations to form the earth into the continents known in

outline form to every school boy and girl. The ice cap melted quickly under the tremendous heat generated by such a cataclysm; its waters filled the chasm formed between the major continental blocks to give us our Arctic and Atlantic basins.

Instead of taking aeons, however, this event occurred quickly and according to Dr. Cook was precipitated by or occurred simultaneously with the great flood of Noah's day. While heavy rain could well have accompanied such a violent upheaval, the flood, as viewed by Noah, but perhaps not fully comprehended by him, accompanied the rupture of the ice cap and the land mass. The event is described biblically and accurately, Dr. Cook thinks, in Genesis 7:11.

"In the six hundredth year of Noah's life, in the second month, seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of heaven were opened."

Years later when it became apparent to Noah and his family that the earth had changed its appearance, they marked the event simply by giving one of the sons of Eber the name of Peleg, which means division. Moses, the chronicler of these early events, noted, "for in his days was the earth divided." (Ibid., 10:25.)

Dr. Cook readily admits that his ideas conflict with traditional thought on geologic time. Nor do they agree with the long-held theory of "superposition," the concept that the earth's sediments were deposited layer on layer in orderly and chronologically slow succession. Dr. Cook would compress time and speed up sedimentation. He believes that sedimentation is largely due to the effects of an original, rapid solidification of the Earth's crust, followed by a vast breaking-up and relocation of its upper strata under thrusts of ice sheets and the drift of the continents. He would agree that there has been a considerable amount of slow erosion and deposition but not as much, he believes, as conventional geological thinking might indicate. He uses examples of present-day measurable erosion to prove his point.

For example, the Mississippi River is now carrying nearly a cubic mile of sediments into the Gulf of Mexico each year. The Colorado River is currently moving at least a cubic mile of sediments from the Grand Canyon every five years. Niagara Falls has been cut by erosion during only the past few thousand years, beginning, significantly enough, about the same time assigned by the ice cap model to continental drift. This is based on the current rate of the wearing back of the falls. Dr. Cook is convinced that if the erosion process, as measured in these three key areas, had been going on at the same rate for as many years as his colleagues claim, the Mississippi River would have gorged out a deep mid-country chasm, the Grand Canyon would be far "grander" than it is, and Niagara Falls would have worn back to give honeymooners a much different sight than they now see.

To substantiate his thinking, Dr. Cook points to two ice cap "depression zones." One of these centers around Hudson Bay, the other around the Gulf of Bothnia between

Finland and Sweden. These areas are still readjusting vertically. This means that these areas are stirring noticeably as the earth tries to restore its own vertical balance following the break-up of continents. This process takes about 10,000 years. Since the "rebounding" process is still going on, Dr. Cook conjectures that the earth is still young.

Dr. Cook describes the situation graphically this way. Breaking a round flat-chocolate mint in half will make two half-moon shaped pieces. Since rock specimens from the widely-separated Hudson Bay and Gulf of Bothnia both match up under scientific tests, Dr. Cook concludes that these two areas once were fitted together in a neat circle centered near the North Pole. The force that split the "mint" came from the terrific ice cap load.

Mountains were thrust up by the sudden catastrophic action of continental drift, Dr. Cook believes. The Himalayas, tallest range in the world, piled up as India, moving up fast from the south polar region of Pangaea, drove into and under Asia to form a double continent. Arabia also crashed into Asia after moving up from near the south pole. As Africa rotated past Europe and collided with Asia during the drift period, the bends and compressions resulted in the folds we see as the Alps, the Balkans, and the Pyrenees. The Rockies and Andes were formed by the westward thrust of the continents under the ice cap drive. This continuous chain was affected by one more cataclysm which gives these mountains their "youthful" look. This, of course, was the violent natural upheaval recorded in the Bible and, in considerably more detail, in the Book of Mormon and The Pearl of Great Price at the time of the crucifixion of Christ, less than 2,000 years ago. (Matt. 27:51, 54; 28:2; Mark 15:38; Moses 7:55-56; 1 Nephi 12:4; Helaman 14:21022; 3 Nephi 8:6, 17; 10:19.)

Another remarkable piece of evidence that argues for a young earth comes from coal, paradoxically associated traditionally with long geologic time. Dr. Cook postulates that all major coal deposits were initially found in two well-defined circular bands concentric with the poles and ice caps of Pangaea like two narrow stripes on a child's rubber ball. Imagine these stripes, not near the "fat" equator area but rather in the diminishing areas of the ball, separate from each other and at opposite "ends" of the ball. He believes coal was formed, not over long years of deposition but by sudden thrusts of sediments over heavily vegetated areas. These thrusts produced great heat and pressure which helped carbonize the vegetative materials. This coal was formed during the fragmentation of Pangaea. That cataclysm touched off the shifting of continents like some gigantic jigsaw puzzle. The coal bands broke up and moved with their continental pieces to new positions. Dr. Cook puts the puzzle back together, with the coal of North America, Asia, and Europe fitting back into a circle around the north pole of Pangaea and the coal of South America, Africa, India, and Australia forming a similar band around the south pole of Pangaea.

Dr. Cook also buttresses his views on the relative youth of the earth with three physical-chemical explanations:

1. It is possible for scientists to measure the concentration of uranium in river waters and to determine how rapidly this element flows into the oceans. The amount of uranium so accumulated is less than the amount which would accumulate in 100,000 years, so the earth's ocean must be younger than this.

2. Radiocarbon is still building up in the earth's atmosphere. If the experiments of several well-known chemists, including Nobel Prize-winning Willard F. Libby of UCLA, are right, the rate of formation of radiocarbon should level off with its rate of decay in 30,000 years. Since the rate of formation still exceeds the rate of decay, the earth cannot be older than 30,000 years.

3. The same problem is involved in the matter of helium balance in the atmosphere. Only in this instance, helium accumulates rapidly enough to double in concentration in less than 20,000 years. Since the total helium in the atmosphere does not exceed the amount that would accumulate in this period of time, it is unlikely that the earth can be even 20,000 years old, Dr. Cook reasons.

But his detractors point to the so-called uranium-thorium-lead "clock" which, according to geologists, verifies an earth of great age. Dr. Cook's answer is that the conventional application of these tests is not only inconsistent with the conventional methods of analysis but also fails to take into account a basic principle used by metallurgists in the purification of metals. Impurities known as "trace elements" tend to remain in the liquid state until near the end of the solidification process. This is called "zone melting." If this physical law operated as Dr. Cook believes it did when the earth solidified, the trace elements--uranium, thorium, potassium, and rubidium--would have been the last to solidify and the crust of the earth would have been highly stratified in the process.

These trace elements, which are measured in uranium-thorium-lead testing, are concentrated at the surface of a young earth. If one were to attempt to determine age based solely on this distribution and on the conventional theory that distribution was uniform at the beginning, the result would be an apparently old earth even at zero age after solidification.

So, a fifty-two-year-old theory--plus the scientific knowledge and literal faith of a Latter-day Saint scientist have joined to raise questions about the concepts of geologists. All the answers are not yet in, of course, but the time could well come when the now-radical views of Dr. Melvin A. Cook will change and broaden geological thinking. This important step would expand man's knowledge and its application for his betterment and increased enlightenment about the earth he lives on, no matter how young or old.

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