some time, namely, that there are still more fossils of new creatures to be found which only serve to confuse the evolutionary story. In other words, the fossil record as discovered, while still unimaginably rich, is far from fully explored, and our knowledge of past creatures is woefully sketchy.

And if relatives of this new tiny creature may yet be found on every continent, where did the mammals evolve? On every continent at the same time!? Why should we creationists then be berated for believing that all the land mammal baramins (kinds) were created instantly all at once, each individual fully-formed and fully-functioning from the hand of the Creator on the sixth day of that first week when time began? After all, the evolutionists are looking at the record of the Flood and they have still not found the evidence to refute what the Creator has told us about the true history of the world.

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A. A. Snelling

The 100,000-year Milankovitch Cycle of Ice Ages Challenged

The August 18/August 25, 1997 issue of **U.S. News and World Report** published a special edition on the mysteries of science. Such mysteries include: How old is the universe? Is there life on other planets? Were dinosaurs cold blooded? What causes ice ages? And even why should males exist? Some of these mysteries appear to be puzzles only because of the evolutionary paradigm. In writing about what causes ice ages, Traci Watson admits:

> *'Yet despite efforts of marine geologists, atmospheric chemists, oceanographers, and more, no one knows what caused the ice ages*'.[1]

Interviews with researchers produced comments that the mystery is *'a killer'* and *'It's embarrassing*'. Watson goes on to add:

> *'If they tried, scientists could hardly invent a more difficult mystery to crack.*'[1]

Although scientists cannot explain what caused the ice age, they believe they know the periodicity of multiple Pleistocene ice ages.[2] This periodicity is mainly based on statistical correlations between oxygen isotope ratios from micro-organisms down deep-sea cores with northern, high-latitude, solar radiational changes. These radiational changes are produced by periodic differences in the Earth's orbital geometry. This is the Milankovitch mechanism. The comparison was accomplished by applying spectrum analysis to time series of oxygen isotopes and radiational changes. Spectrum analysis is a technique that finds the main frequencies of the fluctuations in a time series. The timing of ice ages was 'verified' in 1976 when deep-sea core variables matched the Milankovitch periods of 100,000 years (the eccentricity cycle), 42,000 years (the change in the tilt of the Earth's axis), and both 23,000 and 19,000 years (the precession of the equinox).[3] Since 1976, ice ages between 2.5 million years and 1 million years ago in geological time have supposedly followed the tilt cycle, every 41,000 years, while ice ages over the past 1 million years occurred every 100,000 years, correlated to the Earth's eccentricity cycle.

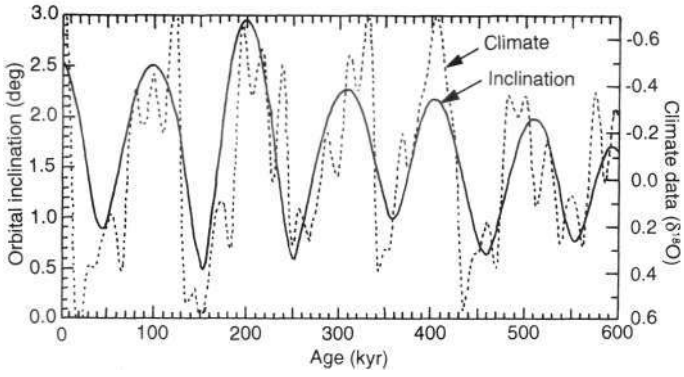

Figure 1. *Comparison of orbital inclination (solid line, lagged by 33 kyr) and $\delta^{18}O$ climate data (dotted line) from SPECMAR*[7]

Interestingly, the Milankovitch theory thrives in spite of enumerable difficulties.[4-6] Perhaps the most serious problem is that the eccentricity cycle has almost no radiational effect on the Earth! Scientists recognise the weakness of the Milankovitch mechanism, especially the eccentricity cycle:

> *'The problem is that the orbital changes in themselves are not big enough to make or to melt ice sheets.*'[2]

For over 20 years, scientists have been casting around for a secondary boosting mechanism to aid the Milankovitch mechanism.

Recently, Richard Muller and Gordon MacDonald have not only challenged the eccentricity cycle as the cause of the 100,000-year periodicity, but also find that the other Milankovitch periods sometimes do not show up in deep-sea cores (see Figure 1).[7-9] Analysing Ocean Drilling

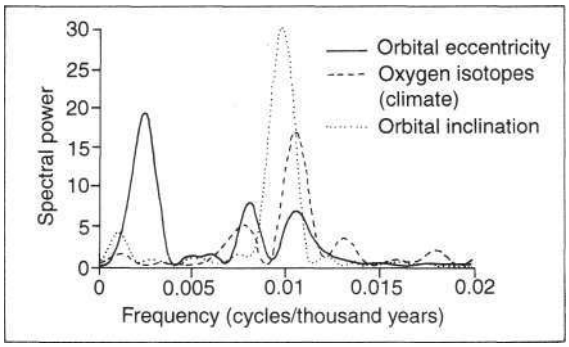

Figure 2. *Conflicting curves. The single cycle of Earth's changing orbital inclination (clotted line) seems a better match to climate (clashed line) than the multiple cycles of orbital eccentricity (solid line).*[11]

Project (ODP) core 659 for the past 900,000 years of geologic time, they found a strong peak in the spectrum analysis at 100,000 years and no significant peaks at the tilt or precession frequencies.[10] They compared their strong peak to the Milankovitch eccentricity rhythm, which is actually composed of three cycles:-

(1) a 400,000-year cycle,
(2) a 125,000-year cycle, and
(3) a 95,000-year cycle (see Figure 2).

The strongest 400,000-year cycle has never shown up in any Pleistocene time series,[11] but is supposedly rather common in pre-Pleistocene time series of cyclic sediments.[12] Researchers have always assumed the 95,000 and 125,000-year cycles were blurred into the 100,000-year cycle. However, Muller and MacDonald find a sharp, thin peak at 100,000 years, which could not be a blend of the two frequencies. They conclude that the Milankovitch eccentricity cycle is not driving the ice ages.

Instead, Muller and MacDonald claim that ice ages march to another mechanism that has been ignored — variations in the inclination of the Earth's plane of revolution around the Sun with respect to the orbits of the other planets. Over recent geologic time, the Earth's plane of revolution has shifted by 2.5° from the plane of the other planetary orbits with a period of 100,000 years. Muller and MacDonald have shaken up the believers in the Milankovitch mechanism and naturally have come under heavy fire. The controversy is showing that the Milankovitch mechanism and the change in inclination are both weak. For instance, when questioned how such a small change in the Earth's plane of revolution can cause such dramatic climatic changes, Muller and MacDonald state that during the inclination cycle the Earth passes through an extra thick cloud of interplanetary dust. This dust blocks out sunlight causing an ice age. However, the effect is admittedly quite small, and Muller and MacDonald candidly admit they really do not have a real mechanism; they just have a good statistical correlation.[13] Muller in defending his lack of a mechanism points out:

> *'The only real defense I have is that if you look carefully at the Milankovitch model, the physical mechanism there was always hand waving, too.'*[14]

The maximum inclination is also out of phase with ice ages, maximum inclination preceding each ice age by 33,000 years.[11]

Hardly anyone believes Muller and MacDonald, but the controversy highlights many cracks in the Milankovitch paradigm. In reading the commentary on this dispute, we discover that the last ten ice ages really do not vary with a frequency exactly at 100,000 years, as we have been led to believe, but vary between 85,000 and 125,000 years. Ice age researcher, George Denton, is quoted as admitting:

> *'It's not clear what is causing this cycle in the last million years. I would say it is one of the great puzzles of Earth sciences'*[15]

A mathematician and specialist in time-series analysis even stated that he has never been impressed with arguments based on spectrum analysis, mainly because the length of time is usually too short to resolve a frequency of 100,000 years.[11] Imbrie even admitted that with spectrum analysis different people can calculate different peak frequencies with the same time series. What does this say about the influential research of Hays, Imbrie and Shackleton in 1976 that 'verified' the Milankovitch mechanism? This time series was only 400,000 years long.

In a nutshell, scientists still really do not know and understand the periodicity of the ice ages. But the reason why is because they assume there was more than one ice age, when the Bible clearly records only one ice age, and that was after the Flood (Job 38:29-30).

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