and Wood, 1999) who have confessed in print that currently accepted Egyptian chronologies should be reduced by several hundred years. Egyptian history is then found to nicely confirm the Biblical account of the Exodus.

I think David Down and your readers may want to add the following good news statement made by Willard Libby who received the Nobel Prize for developing the Carbon-14 dating method. Libby had used pieces of wood from historically dated Egyptian caskets as calibration samples and the following is the footnote to his article, 'Accuracy of Radiocarbon Dates':

> 'The Egyptian historical dates beyond 4,000 years ago may be somewhat too old, perhaps five centuries too old at 5,000 years ago.'[2]

I quoted this in the first edition of my book, *In the Minds of Men*, and added the following comment derived from Libby's article:

> 'It is of interest to note that Libby's reference to this statement was not a publication but a private communication with an authority (I.E.S. Edwards) on Egyptian dating. This confession completely vindicates Velikovsky's claim (*Ages in Chaos*, 1952) and brings biblical events and Egyptian history into line, but so far as is known, nothing has yet been openly published to this effect.'[3]

Thank you David for bringing some of these recently published confessions to *TJ* reader's attention. I trust that Willard Libby's confession will add a significant contribution to the documentation of this on-going 'revolution'.

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Biblically-based cratering theory

I would like to comment briefly on the interesting discussion taking place in *TJ* about Biblically-based cratering theory.[1]

Biblical passages like Genesis 6:13, 7:4, 7:10–12, and 7:17–24 could lend support to an astronomical interpretation concerning Noah's Flood. That is, the Earth just before the Flood was stable, and I assume this was true throughout the entire time that the pre-Flood world existed (using rounded figures, some 1,700 years). Then within a short period, the Earth was knocked out of equilibrium and into the Flood of Noah.

Such a description may fit the hypothesis that some type of extra-terrestrial matter passing through the ecliptic during Noah's period may have triggered the Flood. In this case, the Earth would come under the influence of another gravitational force different from the Sun and Moon's gravitational influence. We know today that gravitational tidal force stresses Io revolving around Jupiter, and Io is the most volcanically active body known in our solar system. Perhaps a similar situation developed on Earth during the time of Noah's Flood, giving birth to continental flooding by the oceans as well as more enhanced magmatic activity.

Part of the need I see with current discussions by creationists concerning the lunar and solar system crater record is quantification. Just what are the parameters that require fitting into the Biblical framework and a young-Earth Creation chronology?

On the near side of the Moon, there are about 300,000 craters larger than 1 km in diameter, including 234 craters over 100 km in diameter.[2] At the moment I don't have figures for the far side. At least on the near side of the Moon the really large craters are few compared to the vast majority, suggesting perhaps that very large objects striking the lunar surface were not abundant when the impacts took place. Some questions related to quantification are:

a. What was the maximum mass of the largest body that hit the lunar surface? My estimate is 10^{20}–10^{22} g. The Moon's mass is 7.352×10^{25} g.
b. What was the total mass that hit the Moon when the craters formed?
c. Following Wayne Spencer's approach, how many of the 300,000 or so craters on the near side were formed during the time of Noah's Flood?
d. Following Danny Faulkner's approach, how many of the 300,000 or so craters on the near side formed during the events of the 4th day of Creation?
e. How could creationists tell the difference between Wayne Spencer's and Danny Faulkner's hypotheses when looking at 300,000 or more craters on the lunar near side?

A further point I would like to make. The Moon's sidereal period is 27.32 days and its synodic month (new moon to new moon) is 29.53 days. The Moon rotates once on its axis for each revolution around the Earth. If the crater formation rate was rapid enough, perhaps many or most of the lunar craters formed in a single 40-day period (which fits with Noah's Flood).

I don't have answers yet to these questions but if 10^{22}–10^{23} g of extra-terrestrial matter was involved in forming the lunar craters, I don't see that a long time span would have been needed to clear this matter from the Earth-Moon system. Presently, the Moon orbits at a mean distance of 60.27 Earth radii.[3] If most of this matter passed the Earth-Moon system during Noah's Flood and some was much closer to the Earth than the Moon's current mean orbital distance, perhaps tidal force changes affected the Earth and oceans. How would such tidal force changes in Earth's past orbit alter present geologic interpretations of Earth history? It seems to me that whether the 234 large craters on the lunar near side formed during the 4th day of Creation Week or during Noah's

Flood, God would have had to spare the Earth from collisions with objects like this. Some thoughts to ponder. I am glad that *TJ* is publishing data on this important topic.

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The extinction of the woolly mammoth: was it a quick freeze?

Creationist literature contains many different ideas about the Ice Age, permafrost and buried woolly mammoths. Although some of these theories look credible in the light of the catastrophic Flood, most are only theoretical because they do not consider the real features of the permafrost or the stratigraphic position of the mammoth remains in the Cenozoic sediments.

For nine years I worked in the north-eastern Arctic region, prospecting for gold and tin placers, on the coast and inland to the south. The core drilling data allowed me to research not only the surface sediments, but also cross-sections of the Cenozoic sediments on the coastal plains and submarine shelf. My knowledge of the Cenozoic sedimentary sequence of the Arctic region, permafrost and the mammoth burial locations is based on field experience and not restricted to the geological literature.

Based on my practical field observations, I had planed to write a paper interpreting the enigma of the woolly mammoths and the Ice Age. However, after reading the article by Mike Oard I realize that this is not necessary now.[1] Although Oard based his conclusions on literature sources, his views on the extinction of the woolly mammoths agree completely with mine. Therefore I will simply add a few extra ideas and comments to his work.

According to my field observations, the permafrost containing the buried mammoth remains is stratigraphically the uppermost part of the non-lithified sedimentary rocks of the north-eastern region of Arctic Asia—the Upper Pleistocene (Q_3) division of the Cenozoic sedimentary sequence (Figure 1).

The sediments underneath the strata containing the mammoth remains also contain fossils of various mammals. However the greatest abundance of fossils (bones, mammoth tusks and even whole frozen carcasses) occurs in the Upper Pleistocene strata, especially in deposits known locally as *yedomas*. This consists of silt particles of aeolian origin in association with a large percentage of ground ice.

In order to interpret the post-Flood geological history of the region we need to consider the entire Cenozoic sedimentary sequence. My preliminary interpretation below still contains a number of puzzling and unproved points indicating that further work is needed.

The loose Cenozoic sediments sit on Mesozoic bedrock consisting of solid metamorphosed and faulted sandstones, siltstones and shales (Figure 1). These rocks contain fossilized ammonites and apparently are of Flood origin. Understanding the mechanism that folded and metamorphosed the rocks in the final stage of the Flood needs additional research.

On the surface of the Mesozoic bedrock sits 6–10 m of what has been interpreted as a residual soil, suggesting that the climate was warm and humid just after the Flood. Uniformitarians argue that residual soils are evidence of long time interval and they have assigned soil formation to a 30-Ma period from the early to middle Palaeogene (P_{1-2}). This point needs explanation in the terms of catastrophic theory.

On the coast (Figure 1, right side of column) immediately above the bedrock we find well-rounded gravel (often composed of quartz clasts) bedded with sand and clay. These sediments have been assigned to the Upper Palaeogene (P_3)–Lower Miocene (N_1). The sand, silt and clay with lenses of organic material overlap the surface of the gravel and often contain the trunks of trees. The majority of the gold and tin placers are associate with these deposits. Since placers form in conditions of decreasing hydrodynamic activity, I have proposed that these strata formed during the Recessive stage of the Flood or at the very beginning of the post-Flood era.[2] Using a mathematical model of placer generation I have estimated that the sedimentary strata hosting the tin commenced generation about 4,000–6,000 years ago which, given the precision of the estimate, is consistent with the timing of the Flood.[3]

The presence of the soil layer indicates that while the Paleogene and Lower Neogene strata were being deposited (just after Flood), the climate on the territory was very warm and damp (sub-tropical).[4] This supports Oard's idea of a warm climate in the period immediately after the Flood, during the Ice Age.

South of the coastal plains in the mountainous interior (Figure 1, left side of column) there is evidence of intensive volcanic activity. Thousands of square kilometres of land are covered with a complex of various volcanic rocks—rhyolite, andesite and volcanic tuff. In the uniformitarian geology it is called the 'Phenomena of Cenozoic volcanism',[5] which is observed not only in this region but all around the world. This is what Oard calls 'post-Flood volcanism'. As the atmosphere was saturated with dust and volcanic ash, the climate of the Earth became colder. Whereas the climate of Palaeogene was sub-tropical and the Neogene warm and temperate, the climate since the beginning of Pleistocene has been characterized (on the basis of palynology and mineral associations) as