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Recovering the Lost World, A Saturnian Cosmology -- Jno Cook Appendix H: Other Cosmologies.



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"The ingenuity of such nonsense is breathtaking."
-- Wal Thornhill, 2004

Speculative Cosmologies

Following are some alternative cosmologies which do not explain or do not hold together, even though many are well researched. I have added my comments only as needed. Most are not so much complete cosmologies as they are explications of catastrophic events in the era from 10,000 BC to the 7th century BC. Most take for granted the current state of the Solar System and the handed-down narratives of its genesis. That will do, although, as described on these pages, it is seldom correct.

[An added note, May 2015] I have had to drop a number of these for they completely disappeared off the internet. Others which were originally listed in this Appendix are covered among the endnotes of Chapter 2. I have kept some classic catastrophists.

Even a complete mythological fantasy would retain the physics of the universe. That is the basis for fantasy: it has to play out within the realm of the possible, and thus the basics of physics are retained.

Or not. The basics of physics are all too frequently misunderstood or just rewritten. If it seems right, it is assumed to be right. The audience for alternative catastrophic cosmologies often consists of people who cannot tell physics from commonly held misconceptions, and, in fact, seem to misunderstand basic geometry.

But don't let details get in the way. As remarked by Kurt Gödel, "Concepts indifferent to the details of their formulation are absolute." There are broad concepts among the various catastrophic cosmologies which are inured to the details of different retellings, which fare much better on a scale of "intuitive speculation" (as Tom Van Flandern calls it) than String Theory or Dark Matter. One of

these cosmologies, or some of these, or various parts of some of these, are absolute and will represent the true history of the past.

And who would want to rewrite physics and astronomy? I think the real question is, Why are we afraid to enter the imagination of the ancients? Certainly we should be able to make sense of what lies behind "How the ancients perceived the universe." Could we not exercise *our* imagination to find possibilities without rewriting physics?

The following is a sampling of the work of others who believe this to be true, ranging from bizarre to sublime. I started to understand "fringe" as a border of loose threads, rather than "outer edge," although I respect the work that went into these. Some are followed by comments. Others require none.

If I have misrepresented anyone, it is an oversight. I will gladly correct the capsule descriptions below, although my evaluations will (probably) remain the same. I have excluded the works by Immanuel Velikovsky, David Talbott, Wallace Thornhill, Tom Van Flandern, and a number of others. See the Books Appendix and Links Appendix for more.

=== Zecharia Sitchin ===

From an article in *Atlantis Rising Magazine* describing the work of Zecharia Sitchin, *The 12th Planet* (1976) and additional books, *The Stairway to Heaven* (1980), *The Wars of Gods and Men* (1985), *The Lost Realms* (1990), *When Time Began* (1993). The official website is at [www.sitchin.com] but less lucid.

"... According to Sitchin, mankind owes most of its ancient legacy to visiting extraterrestrials. The Russian-born Israeli resident and ancient language expert has indeed come up with some very intriguing, if not compelling, data. Indeed, few can match Sitchin's scholarly credentials. One of a handful of linguists who can read Sumerian cuneiform text, he is also a recognized authority in ancient Hebrew as well as Egyptian hieroglyphics."

A single mention of "extraterrestrials" is enough to turn me away entirely. Such insanity can only be sustained by someone who has not the slightest concept of the dimensions of space and who lacks an appreciation of the span of time it has taken for life to achieve the complexity we experience.

=== Eric von Daniken ===

Eric von Däniken's book *Chariots of the Gods* (1968) is alive at the site where the "Archaeology, Astronautics & SETI Research Association" publishes the quarterly *Legendary Times* on the web. To quote from their opening page:

"The A.A.S.R.A. is determined to prove whether or not Extraterrestrials visited Earth in the remote past. In his ground breaking book Chariots of the Gods, Erich von Däniken brought forth a revolutionary theory: Extraterrestrials visited Earth thousands of years ago."

"They left clues behind in the form of mysterious, enigmatic monuments, curious artifacts, misunderstood technologies, and especially stunning descriptions of flying machines and other curiosities in ancient texts, holy scriptures and tales of mythology. What really happened in the

past?"

What really did happen in the past? Conceive of humans as being as clever and industrious as we are today, and no extraterrestrials are needed. [www.legendarytimes.com]

I do not buy any of this, and fail to see the "message behind those mysteries." The "mysteries" are all the same stuff anyway. Writers: Erich von Däniken, David Childress, Peter Fiebag, Robert Bauval, Ulrich Dopatka, Luc Bargin, Giorgio Tsoukalos.

-== Mars-Earth Wars ==-

Donald W. Patten and Samuel R. Windsor *The Mars-Earth Wars* (1996). The authors are physical scientist and engineers, making their theories a little more solid. The authors are sincerely enamored of the "dirty snowball" theory of comets, however:

"This new model of cosmology accepts the evidence of planetary catastrophes surrounding us. It is a model of recent orbit changes among Venus, the Earth and Mars. While not an 'original thought,' the claim is that a reorganization occurred within the cultural memory of numerous groups of the Earth's inhabitants, who recorded their experiences."

-- [www.creationism.org/patten/PattenMarsEarthWars/index.htm]

Don't let the domain name scare you, this is a reasonably well-written piece about the intersection of the orbit of Earth and Mars through the 8th century BC. But the backtracking through well-mannered calculations does not constitute a confirmation. It offers a single and what I think is a rather simple solution, much too rigid and invariant in its mechanics, of the near-contacts with Mars during this time period, extending back to Mars being hit by some (watery) asteroid. It fails to give an account of any previous celestial history, or suggest a closure.

Although momentum and energy equations are carried out to many decimal places, the difference in orbital inclination to the equator of the Sun is not taken into account. Patten and Windsor hold that the orbits of Earth and Mars were coplanar (which is more or less correct).

I disagree also with their selection of 701 BC as the date for the terminal event of Mars, which enlarged the Earth's orbit. There is just too much evidence that this happened in 747 BC, from calendar considerations -- such as the start of the Era of Nabonassar and the start of the Olmec Long Count.

A major objection is that Patten and Windsor have Mars pass between Earth and the Moon in order to increase the orbit of Earth and reduce the orbit of the Moon -- both by gravitational attraction. It also forces them to have Mars pass significantly closer to Earth; the evidence of Hesiod's *The Shield of Hercules* is used in partial support of this. The possibility of a "shove" instead of a "tug" is not considered, probably because much of the plasma theory as applied to planets was still undeveloped at the time of their initial authorship. Mars could have "shoved" the Earth with an electric field repulsive force from a much greater distance. Even though Mars would not have had a large plasmasphere, it still would have had a tail, an electrical shadow, on the side away from the Sun. The intersection of this with the plasmasphere of the Earth would have sufficed to provide the shock.

Despite my reservations, I found *The Mars-Earth Wars* to be interesting and I have used it as a resource in my own analysis. Patten and Windsor agree that there was no precession of the equinox before 701 BC, but for different reasons from mine (I use before 747 BC), and also failed to recognize the 15-day offset in the calendar in 685 BC. We agree on periodic flybys of Mars, but use a different interval from my selection (I follow the suggestion by Velikovsky, which can be verified from Mesoamerican sources). Lastly, I adopted Patten and Windsor's value for the synodic period of Mars, and managed to verify it through rather arcane Mesoamerican calendrical measures, the 819-day calendar rotation.

-== Ackerman's Firmament ==-

John Ackerman ("Angiras") in *Firmament: Recent Catastrophic History of the Earth* (1996), *Chaos: A New Solar System Paradigm* (2000), and *Peleh: Hidden Knowledge* (2006) establishes the repeated meetings of Earth and Mars (and Venus) primarily from Vedic sources. Ackerman is a physicist who talks plasma without a single concepts of what it is.

"Prior to 4000 B.C. there existed only two terrestrial planets, what I call priori-Mars and the Earth. That is, Mercury and proto-Venus were not present in the solar system. Priori-Mars, the more ancient of the two by some 800 million years, was in an orbit similar to that of Venus today. It had a thick atmosphere, lots of surface water, rain, and a myriad of life-forms similar to those found on Earth. The entire planet was covered with vegetation."

My estimate of the age of Mars and Earth is exactly the reverse, as I have pointed out in the appendix "Notes on Chronology." If Mars had been subjected to repeated electrical arcing from Saturn impinging on its northern hemisphere, all life-forms (if there were any) might have been burned to a crisp and obliterated. But that's just my opinion.

"One of the most profound ideas suggested by the Velikovsky/Ackerman (V/A) scenario is an understanding of how a higher power may have only recently regenerated the Earth to enable its population by billions of human beings. ... The V/A scenario makes it possible for us to understand how major changes in a solar system were activated by small physical actions leveraged by a level of intelligence far beyond our own."

The tip-offs are "a higher power" and the "level of intelligence far beyond our own." I do not see the need for any of this. Ackerman eventually proposes that Earth is populated by Martian life. His third book reveals him as a dyed-in-the-wool uniformitarian and Christian fundamentalist with Rapture leanings. He also largely follows Sitchin, combining it with ideas from Velikovsky.

Ackerman has Mars stand still over the Himalayas for 15 years at a time, thus raising the mountains to great heights. The iron core of Mars leaks out of the Valles Marineris, which is thought to be a giant crack in the surface of Mars. The iron core bundles up, and starts revolving about the Sun independently, eventually to enter Mars again at the end of the 15-year period. At the very last instance of this repeating cycle it fails to return, and now circles the Sun as the planet Mercury -- magnetic, dense, and smaller than Mars. This supposed scenario requires a magnetic field for Mars. Another feature is long tubes of lava which extend from Mars towards Earth. During these many visits all the Martian oceans and vegetation leak out and are cast onto Earth.

What is amazing is that the detailed information, presented over three books, forms a close fit to what I think is a completely unjustified cosmology. It should be a warning for any other neo-catastrophist who attempts to put all of mythology together into a singular cohesive system: It can be done, but means no more than filling in a crossword puzzle with random words.

-=-= Clube and Napier's Snake =-=-

The Cosmic Serpent (1982) by Victor Clube and Bill Napier is a slipshod and unconvincing book which attempts to suggest a basis for ancient catastrophes in supposed meteors (or comet) strikes. Clube and Napier are astronomers, but show an incredible ineptitude when it comes to antiquity, mythology, and perhaps especially when it comes to astronomy. *The Cosmic Serpent* deserves extensive comments, because it is held in high regard by many people, perhaps because it "looks so scientific." I will start with a short description by Bob Kobres, from his website (which promotes the cause of explaining all of the past in terms of meteor impacts)..

"Clube and Napier suggest that Jupiter and Saturn occasionally divert giant comets into the inner solar system into short-period orbits. Debris from the resultant disintegration of these giant comets can adversely affect the environment of the Earth. Dusting can block sunlight, resulting in globally cooler conditions."

-- <http://abob.libs.uga.edu/bobk/>

As has been pointed out by others, we have traveled through the tails of comets in modern times, with no harm or notice of the effect. On the other hand, a few lobbed atomic bombs would probably reduce sunlight for decades -- due to persistent nanometer-sized dust in the stratosphere. But raging wildfires would have the same results. There has been both "mythological" as well as climatological (archaeological) evidence for extensive fires in the remote past. Kobres goes on:

"Impact events in the Super-Tunguska class may result in not only heavy localized destruction but also the occasional 'impact winter' or dust veil with global climatological effects. Clube and Napier identify the progenitor of the Taurid complex as such a giant comet whose injection into a short-period (about 3.3 year) orbit occurred sometime in the last twenty thousand years."

"The effects of the disintegration of this object in an Earth-crossing orbit should appear in the geological and climatological record as well as in protohistorical and historical records."

"Clube and Napier ... also seek evidence of catastrophic events in ancient mythology. Their contention is that the great Taurid progenitor was the basis for much of the mythology associated with 'sky gods' and themes of generational conflict along gods."

It seems rather highly amazing if ephemeral phenomena like meteors or even repeating meteor showers formed the cast of the theater of "sky gods" of antiquity, most of which have unique identities and many of which persisted for 3000 years. To go on with Kobres..

"Clube and Napier note that many of the themes Velikovsky ascribed to 'comet Venus' rightfully belong to the Taurid progenitor, and at least some of those ascribed to Mars by Velikovsky rightfully belong to Halley's Comet."

-- Bob Kobres

The authors Clube and Napier, in fact, completely dismiss Velikovsky's work as "wildly improbable" and "absurd speculations," except when a single observation by Velikovsky fits their thesis.

Alfred De Grazia wrote, in *Cosmic Heretics* (1984),..

"Like many others working on catastrophism, the two Edinburgh astronomers find themselves isolated, both because of the extremity of their ideas and because they need much material from fields like mythology and linguistics that they cannot grasp themselves nor command expert consultants to provide for them."

They do not need "expert consultants." Anyone with a brain and some study time can acquaint themselves of the facts. But I think "cannot grasp" is a well placed critique. It is probably precisely because of the overall ineptitude and cluelessness that this book has stood as a monument to overactive imagination. Nothing much can precisely be negated because nothing much is asserted with anything backing it up except a sort of spongy foundation.

The persistence of this counter-myth is amazing. However, the specificity of the infrequent electrical contacts with Venus and the coincidence of dates in the eastern Mediterranean region with records in Mesoamerica cannot be explained by Taurids or Halley.

Meteors do not cause Earth shocks, or send the Earth to a new orbit, or turn the sky blood red for days, shoot arrows upward into the sky, suddenly show up the Pleiades, send tsunamis across the Pacific, boil up oceans of water, scar the land with traveling arcs, dump yards of incinerated trees and soil on hilltops, or cause a thousand years of constant earthquakes. In fact, they cause **none** of these.

I do not doubt that meteor swarms have been recorded since 34,000 years ago (as I have pointed out). But I seriously doubt if meteors have ever had any significant impact on mythology, or, for that matter, even on the weather.

The book of Clube and Napier is held in high repute (by some, and rather unqualified at that) because of the qualifications of the authors (they are, after all, Edinburgh astronomers), but moreso because the subject matter is totally inarguable. Comets are ephemeral, and just about anything can be said of them, especially in the past tense. The Yucatan Chicxulub "impact crater" has lent its reputation to the tales of comets.

Walt Thornhill at his website, [holoscience.com], makes note of the ease with which writers of catastrophism tracts, and even, as we see here, professional astronomers, imagine a "fanciful" past that never happened. He writes..

"...[there is a] crucial distinction between the planetary catastrophism of the Electric Universe and that of neo-catastrophists who attempt to explain the evidence for planetary encounters in terms of cometary phenomena. Modern comets simply do not fit the descriptions from the past. Nor can they account for abundant evidence of fresh looking planetary cratering and scarring. Besides, in an Electric Universe comets are not the apocalyptic threat to the Earth imaginatively portrayed by artists. Such pictures are entirely fanciful because a comet would be disrupted electrically by a cosmic thunderbolt before it hit the Earth. The only visible evidence remaining would be an electric arc crater."

Note that Kobres touts the contents of the book as "evidence," but evidence it is not. All of it, end to end, is speculation dressed up with tables and graphs; the primary subject is one of pure avoidance. The books represent the absolute cluelessness of mainstream astronomy: Comets are snow balls; stars and galaxies are generated from clouds of dust; dust in turn result from exploding stars; sothic dating is held as real; the invariant length of the year is fact; the dark ages of Greece are affirmed. A new chronology for antiquity is introduced, based on selecting a few elements from a single "study" while the remainder is rejected. Then every notion in mythic antiquity, questionable dates, and unrevealing graphics is paraded out to account for the complete pantheon of Egypt, Babylon, and Greece as comets, plus Typhon and Phaethon, and, of course, the celestial snake Apep.

... comets are snow balls

[p 23] *"We must seek to avoid total commitment to a particular scenario."*

You would expect this cautionary note near the beginning of the book to set the tone for all that follows. But it does not. It is only said with respect to the generation and description of galaxies, where the authors know for certain they are not treading on solid ground. But galactic matters, however speculative, have to be set in place, because, just as galaxies are made of dust, so are stars and planets, and so too must be the comets, so they claim.

From this point the book proceeds entirely by suggestions and innuendoes. Often the diverse current views (but none too radical) are given on an astronomical topic, yet when an opinion ("study") of a single individual is found which confirms some implications of the book, it is offered as fact. It is absolutely amazing how the authors segue from one topic to the next, as if a syllogism were being constructed, whereas only a loose collection of contiguous statements is used to insinuate a set of causal connections in a theory of cometary catastrophism.

[p 35] *"Comets are conglomerates of ice and dust, perhaps with large boulders."*

The source of the comets is here placed in the spiral arms of galaxies, composed of planetesimals, a word (I presume) for "rocks." Then an opinion is offered on the makeup of comets, based on the initial suggestions from Whipple, the originator of the "dirty snowball" theory of comets in 1950 and 1951:

[p 43ff] *"Evidence has accumulated, however, in favour of the dirty snowball model developed by the American astronomer Whipple, in which the nucleus is seen as a lightly packed ball of ices including ammonia, methane, carbon dioxide but about 50 percent water ice. Imbedded in the ice are solid particles about 0.01 percent of a millimeter in diameter, that is, about the size of interstellar grains."*

No evidence has been accumulated at all. All of the above information is shear conjecture. The nucleus of comets, in fact, look and act like solid rocks. "Interstellar grains" have never been seen or measured.

... stars are generated from clouds of dust

[p 35] *"The traditional view has been that stars are made by the collapse of huge, relatively hot masses of gas under their own weight. ... individual regions of the cloud are able to collapse separately, until they themselves fragment and so on, down to the point where the gas is so dense and opaque that further contraction initiates nuclear fusion, and stars are born."*

Laplace is mentioned in passing, and his nebular hypothesis, a notion which has never been affirmed and has frequently been disproven.

[p 58] *"... solar nebula, a disk-shaped region the extent of the planetary system, from which not only the comets but also the asteroids, planets and Sun condensed"*

... dust in turn result from exploding stars

[p 47] *"Inevitably, then, with this picture, the interstellar medium is steadily enriched by heavy elements produced in supernova explosions."*

The knowledge of supernovas has, of course, changed radically over the last decades. Although not yet admitted by astrophysicists, these are electrical in nature, or we would otherwise not be seeing repeating novae of the same star. Heavy elements are spat out continuously by the Solar Wind. This is sufficient to account for all except a few of the radioactive elements.

... and now for the comets

The authors also offer an unsupported opinion on asteroids..

[p 65] *"There are strong grounds for considering that most of these [asteroids] are degassed comets."*

Things have changed since 1983, and especially in the last 5 years. Comets are rocks, asteroids are rocks, and the interactions we see are electrical. The hydroxyl (OH) molecules detected in the tails of comets are not from sublimed water, but from solar wind protons (H+) and cometary Oxygen (O-) ions released from silicates. The silicate (rock) source has not been recognized yet by NASA, but the fact that the "water" in the cometary tails is due to other sources than subliming ice, has been noted. NASA still produces a lot of "ice" talk, perhaps because the press releases of NASA and other organizations are still written by PR crews who received their education 30 or 40 years ago.

[p 67] *"The essential point is that the asteroid system ought to look like the rings of Saturn rather than a doughnut. It [the asteroid belt] has too much internal energy, and ad hoc mechanisms have to be added to the conventional picture to puff the system up. One such proposed mechanism is the gravitational stirring of asteroids by massive planetesimals which were once scattered into the belt, but have since vanished." [numerical examples are given]*

This is a typical case of Clube and Napier connecting disparate dots in the data to graph their way through a series of statements and reach a "conclusion" favorable to their thesis. Amazingly, here we see the suggestion of bad ad-hoc emendations (admitted by the authors) to faulty theories (also admitted by the authors), but then the authors accept these as fact. Anyone in their right mind would suggest that the bad theories which have to be patched ought to be dropped.

... meteors are launched into the inner planetary space

[p 88] [about meteorite dates] *"Most of the ages cluster around 4.5 billion years"*

Where did they get this? The *Encyclopaedia Britannica*, 15th edition, which has the same publication date as this book, disagrees completely. The statement might be slightly correct in that some meteorites are quite old, but only the iron meteorites, which are a distinct minority of one percent, have been dated to 4.4 and 4.6 billion years. Most are quite recent in comparison -- to under 700 million years, with some under 100 million years. "Clustering" presumes an equal portion with ages greater than 4.5 billion year, suggesting that some are as old as the accepted age of the Universe. Most are 3.5 million (note: not billion) years old, with a spread to 40 million years. A far stretch to 4.5 billion.

[p 146] *"The significant feature [of comets] is not collision with comets themselves but with their debris. For comets spread dust and rocks along their orbits; and as we have seen already, they are often observed to split and sometimes disintegrate."*

As I have pointed out earlier, the idea of "collisions" leaves a lot to be desired, considering that comet and all the parts of comets are traveling at the same speed. Reducing the colliding objects to dust is just absurd.

... Sothic dating

But first, dates offered by 16th-century researchers are dismissed.

[p 220] *"Rockenback's sources are lost and the merging of Exodus and Typhon might still be apocryphal...."*

Rockenback is actually fairly specific in differentiating between his historic sources. Some of the church fathers came to the same conclusion: Typhon appeared at the time of Moses.

[p 227] *"So the Sothic calendar stands today virtually unchallenged, and with all the authority that its successful use for nearly eighty years can provide."*

Let me point out the Sothic dating is entirely bogus, and, although the notion is endlessly repeated in text books, it has today been abandoned. Peter James (among others) notes, at [<http://www.centuries.co.uk>].

"The Sothic theory depends on a number of assumptions which do not stand up to close scrutiny. Since our first published criticisms (James et al. 1987, 71-74) there has been a sea-change in opinion as to the reliability of this astronomical dating."

"As there are no longer any reliable astronomical fixes, Egyptologists have, by and large, abandoned their reliance on Sothic dating -- although they have been rather slow in admitting it in public."

To continue with Clube and Napier..

[p 228] *"Thus, although archaeologists have come to depend totally on the validity of the [sothic] cycle, it remains to this day a very disturbing fact that there is no known reference to the Sothic cycle in Egyptian texts."*

No kidding! There are Egyptian sources, but these refer to Sothis (female ending) as Venus, rather than Sothis (male ending) as Sirius. Both mean "bright." Clube and Napier next proceed to revise the dating of antiquity to meet their particular needs.

... the set length of the year

Clube and Napier next [p 226] take selections from R. A. Parker, "The calendars of Ancient Egypt," in "Studies in Ancient Oriental Civilizations # 26" (1950), which suggests an intricate system for an Egyptian lunar calendar, based on the current length of the year, sothic dating, and a 30-day month (although I cannot follow this at all), to come up with a date of 1369 BC for the year of the Exodus (and thus for the appearance of Typhon). (Here they neglect to mention that they had dismissed Rockenback's "apocryphal" identification of Typhon with Exodus.)

This analysis includes repeated calendaric corrections instituted by various pharaohs (Parker). Clube and Napier accept some of Parkers analysis, and out of hand reject other portions. The Giza Pyramid construction phase is dated to 2196- 1687 BC, rather than 2590 to 2500 BC [p 236]. I could not believe I read this!

The revised chronology which has been devised by Clube and Napier is then justified in reference to the access shaft of the Great Pyramid at Giza, as follows..

[p 237] *"... the Descending Passage, which slopes steeply downward for over 100 metres into the Great Pyramid, was aligned precisely on the then Pole Star, Alpha Draconis [Thuban], about 2160 BC before it precessed away from this position. This and other arguments led Piazzi Smyth [in 1867] to favor 2170 BC [for the construction]. Such dates agree very closely with that of the Great Pyramid construction on the revised chronology [by the authors] but have no relevance to the date of 2600 BC implied by the standard chronology."*

I can't believe I am reading this: "aligned precisely." And this is written by astronomers! Forgive them for the absurd dates, but ask, Have they ever looked at the sky? Let me note that a retrocalculation based on the current measure of the precession of the polar axis, in the winter of 2170 BC, Thuban was not the pole star, but turned in a circle about the north celestial pole. As Thuban passed the north meridian (at 7 pm at the winter solstice) it dropped down to an elevation of 26.4 degrees above the horizon. It passed through the elevation of 26.4 degrees nightly for hundreds of years. This is not a "precise alignment" at all.

At no time was it ever at the required 30 degrees above the horizon. At the latitude of Giza, the center of the sky, the location of the polar axis, is at 30 degrees above the horizon, not 26.4 degrees. Thuban was never a pole star.

The downward sloping shaft of Khufu's pyramid, reaching an unexcavated chamber below bedrock, is at an angle of 26.5 degrees, a nice coincidence with the lowest point Thuban's rotation in the sky.

The access shaft angle of 26.5 degrees is found from a slope of 2:1. This angle has nothing to do with the elevation of the polar axis above the horizon, which is 30 degrees at the latitude of Giza. It is a convenient sighting measure for boring an extended passage. All pyramids since Seneferu used this angle, or a measure close to it, despite their geographic location.

The other pyramids differ from 26.5 degrees, even though built at the same time and at the same latitude. Khafre's is at 25.9 degrees; Menkaure's is at 21.6 degrees. Pyramids for the next thousand years, in fact, all have access shafts which vary from 22 to 28 degrees. Let me note that a half degree is equal to the diameter of the Moon in the sky. The access shafts of the three Giza pyramids pointed to locations in the north sky differing by 8 diameters of the Moon.

And what is the point of this? Perhaps I have missed something in my close reading of "The Cosmic Serpent." The justification of a new dating system perhaps? Maybe it is to show that they also are researchers on par with Velikovsky, who also identified a similar (but later) 400-year gap. I see absolutely no other reason for this diversion. If, however, they were out to demonstrate their abilities as astronomers, they missed the boat.

This diversion has the flavor of Robert Bauval and Adrian Gilbert's book *The Orion Mystery* (1994). But they use an air shaft instead, and as a result place the construction date in 2600 BC.

... a new date of 1369 BC for the Exodus

Of course, since the date of the Exodus is still in dispute today, even the very event, Clube and Napier are free to make yet another suggestion. What enters the equation is, however, about as hokey as can be imagined. We start with the following assertion..

[p 237] [1369 BC is justified on the basis of Greenland ice core data] *"Many historical [volcanic] eruptions have recently been dated from Greenland ice cores, one of them being the Thera eruption in the Aegean Sea which some have associated with the end of the Minoan civilization [at 1388 BC]."*

I should point out that the 1369 BC eruption of Thera has been shown to be incorrect by Peter James in "Centuries of Darkness" (1991). See his website, [<http://www.centuries.co.uk>]. Clube and Napier continue..

"Several layers of volcanic tephra from cores taken from the eastern Mediterranean sea bed have also been examined recently. These can be dated, and for the Minoan ash a date of 1390 BC has been found. These absolute dates differ greatly from the radioactive carbon dates of the Thera event adjusted to the standard scale, the latter being assumed to be in agreement with conventional Egyptian chronology. On this scale, the date is 1720 +/- 50 BC and there is an implied discrepancy of 330 +/- 100 years in adjusted carbon dates of this epoch."

"These independent lines of evidence seem then to lead to the same conclusion: there is a major error in the standard chronology...."

The "absolute dates," "radio carbon dates," "standard scale," "conventional chronology," and "implied discrepancy" of the "volcanic tephra" and "Minoan ash," in the above paragraph make absolutely no sense.

But what is the point of all this? The point is that this claim will allow Clube and Napier to furnish a new chronology for the past and date the Exodus to 1369 BC, rather than the well-established dates from 16th-century chronographers -- 1492, 1493, 1495 BC -- and even Josephus in AD 100. And the point of the new chronology will be to fit the dates numerologically to other dates and periods that they have discovered. Numerology is everything here; it has a certain charm, like reading an electric meter.

[p 255] *"It is only speculation at the moment but the near-coincidence in time between the Thera eruption, the decline of Minoan civilization and our proposed date of Exodus [1369 BC] suggests that these events may have been interrelated."*

The speculation remains, although over the next pages this embarrassing admission is forgotten.

... megalithic missionaries

Clube and Napier next take time to discuss barrows and henges.

[p 259] *"In France, Ireland, and Britain, the building of graves and cairns was a relatively small and local scale until about 2400 b.c."*

And they warn that..

"in this section, we use uncorrected carbon dates"

I don't think so. A look at the dates of the constructions at Carnac -- the mounds, barrows, the Grand Menhir, the five causeways, and the now sunken henges -- will show that most of the construction started one thousand to three thousands years earlier than 2400 BC (from 5800 BC). It was so long ago that the melting glaciers have raised the ocean to inundate some of the works near Carnac.

They quote one author [E. Mackie "The Megalith Builders" (1977)] who refers to the activity in "2400 through 2000 b.c." as..

[p 259] *"...an astronomy-practicing theocracy, exactly paralleling, it seems, the main phase of pyramid construction in Egypt [although the authors date the Giza pyramids to 2196 -- 1687 BC]. Accurate surveys of many stone circles in Britain by Thom [Alexander Thom, not referenced, who published in 1951 to 1967] and others have been interpreted to show that a proportion [portion?] of them could have been used as solar and lunar observatories."*

"Could have been" leaves a lot to be desired. The "others" which might have suggested astronomical alignments is Gerald Hawkins, who found so many astronomical alignments for Stonehenge that it became a joke. I should also point out that the date range "2400 BC through 2000 BC" is not valid.

Most of the megalithic activity came to a sudden 300 year halt worldwide after 2400 BC. After that date only single inhumation barrows are constructed.

The authors have more to say about henges, some of it inaccurately rendered, including a misreading [p 260-261] of William Stukeley who wrote about henges 250 years ago, in AD 1740.

[p 261] *"... it is now known that their constructed shapes [of henges] were evolving from purely circular amongst the earliest to elliptical and egg-shaped configurations among the latest. The reason for this development of patterns are not yet understood."*

The phrase "not yet understood" is typical in the sciences for "we do not know" -- as if they will sooner or later figure it out. The evolution of circular to elliptical (noted by Alexander Thom, "Megalithic Sites in Britain" 1967) has no bearing on anything that follows, except perhaps to suggest that the people of these regions became more stupid over time, and thus proposing that perhaps they would have need for outsiders to set them straight. In fact, the earliest circular shapes of placed stones, at the ends of the rows of standing stone causeways at Carnak, are elliptical, not circular. But these date from 5000 to 4000 BC. Many of the henges date from before 3000 BC. All the later henges are circular.

[p 260] *"The plan layout of the early earthworks at Stonehenge, for example, was a circle out of which led an avenue toward the eastern horizon."*

Like the elliptical henges, this is another data point which connects to nowhere. What is the point of mentioning this? The avenue, in fact, leaves the henge in the northeasterly direction (not "the eastern horizon"), then turns east, and after a while turns southeast to meet the river Avon.

[p 265] *"The advance of the civilization prior to 2400 BC shows much more the signs of a steady infiltration of a new culture into a previously existing primitive society. MacKie [sic, E. Mackie is meant] leaves the sources of this culture quite open, but suggestively deplores the lack of solid evidence for any infiltration or diffusion from the east."*

"The Phoenicians seem perhaps the most likely candidates, but the evidence unequivocally focuses attention on the Atlantic front."

What does "focuses attention on the Atlantic front" mean? The Phoenicians migrated to the western Mediterranean in ca 800 BC, not in 2400 BC.

"We will not speculate further but leave the reader with the inevitable thought: that around 2400 BC, the time of the Flood if our analysis is correct, saw the arrival of what seems to have been a stream of more sophisticated immigrants very conscious of what caused the calamity they survived and who rapidly took over the administration of the Atlantic border."

I have broken the original paragraph up into three parts, so that the reader can have a feel for how two professional astronomers blather like drunken sailors with wild tales, and otherwise make little sense.

The notion of invaders, called the "Beaker People" (and the "Battle Axe People") two centuries ago, has been removed from archaeological theory in the last century. This is "analysis?" Next, of course, there will be reference to Plato and Solon, and maybe to Atlantis?

Having suggested that the intruders were Phoenicians.... But wait, this was a favorite *cause célèbre* early in the 20th century: Phoenicians as missionaries from the east who proselytize the western European coastal tribes to a religion of large stones and beer. I have already discussed this elsewhere in this text.

Now the two are tied together.

[p 265] *"If short-period comets were indeed sky-gods, and the comet which we are now calling the Cosmic Serpent came spectacularly close to the Earth at intervals, then the desirability of predicting the returns would be clear: astronomy would grow out of theology. Obviously no extreme or exclusion claims can be made for the role of comets, as agricultural and navigational requirements provide their own impetus for observing the heavens. Nevertheless...."*

Give me a break! Astronomy and agriculture? Nevertheless, the argument is not sustained. The suggestion that Phoenician missionaries, who were traders and merchants and interested in little else, induced the coastal French, British, and Irish tribes to build huge "observatories" when a few sticks in the ground would have done the same, is just plain nonsense. Why did 20-ton rocks have to be set up in circles, again and again and again, to look at the incomprehensible stars? What would possibly signal a return of the flood? Having experienced one flood, why, indeed, was there even the suggestion that a flood would ever return again? How dumb is it to believe that?

... calendars are conformed to their needs

Next the Maya Tzolkin is disassembled to their use..

[p 266] *"It happens that twice 260 days [the Tzolkin cycle] is the mean interval between oppositions (i.e. the synodic period) of any object in a direct orbit whose orbital period is 3.35 years. This is remarkably close to the orbital period of comet Encke." [which is 3.30 years]*

Not all that "close."

[p 267] *"Now 73 periods of 260 days equals 52 years almost exactly [51.96 years, 13 days difference]: no smaller number of these periods gives a whole number of years so closely."*

The above totally ignores the relationship between the Tzolkin and the Haab calendar in Mesoamerica, where there is an **absolute** coincidence -- exactly to the day -- between 73 Tzolkin cycles and 52 Haab cycles. A Haab cycle is a 365-day year after 747 BC (exactly), and a 360-day year before 747 BC. Clube and Napier seem to have missed this entirely. I suspect they know nothing about this subject except what they may have read somewhere about 260-day calendars in Mexico.

[p 267] *"European and Asiatic calendars were unquestionably lunar and solar and tied to agricultural needs."*

They were certainly lunar after 1492 BC, but only some were solar. None of them, though, none at all were "tied to agricultural needs." Farmers do not need a calendar to plan farming. They need to take note of the weather. Farmers would be poorly assisted by calendars. The calendars of antiquity were primarily, emphatically, and universally for the purpose of religious observances.

By Classical Greek times the calendars were given over to tax collection, initially also a religious function. They became fiscal administrative calendars. Which is why there were dozens of differing calendars in use among the Greek city-states. This happened to Rome by Republican times also. There was no coincidence with seasonal agricultural tasks. Julius Caesar was lauded in 40 BC for rationalizing the calendar which had been altered repeatedly by the Senate, and which had become completely out of sync with the seasons. Egypt by Ptolemaic times uses two (or more) calendars, one religious and administrative, another that was seasonal, and thus agricultural.

[p 267] [early Roman calendars quoted as:] "... *twelve months plus extra days to make up a year of 354 days*", and "*a year of ten months and 304 days, which makes no sense in terms of agriculture or planetary movements. As it happens, four such years amount to 3.33 solar years.*"

The authors are desperately reaching. I am not sure where these Roman calendars came from, unless mandated during late Republican times for tax collection purposes -- in which case they are temporary fiscal calendars. The authors then suggest that four of "these" make up a 3.33-year period, even though the Encke period has previously been declared as 3.30 years. The paragraph continues..

"The number four seems arbitrary but ... the Greeks ... [later] set up a twelve-month year, they also chose to celebrate a major event [not mentioned, but it is the Olympic games], whose primary symbol was the torch of Olympus on a four-year cycle. Speculative though this is, the numerology is sufficiently striking to suggest that a deeper investigation of these early calendars might be rewarding."

I think not. I will consistently claim that calendars can be justified in terms of the number of days in the year (which was not invariant), plus a large measure of conservatism. All the calendars of antiquity can be rationalized on this basis, not on numerological notions.

The authors, by the way, hold "Olympus" to be the name of a comet, and "Zeus" too. "Speculative though this is," it is even more striking to suggest that readers of this book take all this drivel in without question.

A look at what we have at hand as a calendar since 747 BC will indicate that there were no "extra days to make up a year" for Rome, but it requires knowing that the Earth's orbit, and thus the year, was different in the past. The calendars of antiquity then assume an even more "striking numerology."

... the dark ages of Greece are affirmed

[p 181ff] [Re: Homer] *"The Greeks themselves also systematized a mass of local and particular mythology ... to form the mythological prehistory leading up to the large-scale Dorian invasion and settlement of the Peloponnese around 1000 BC, the time also of the return of the Heraclids to Mycenae."*

Not to be picky, but there is no evidence of a "Dorian invasion" and the Heraclids are the sons of Hercules which is Mars. They were seen in the sky, not on Earth, and are properly placed in the 8th and 7th century BC, not in a "Dorian invasion" time of 1000 BC. The third generation returned in 761 BC to destroy much of the Peloponnesus. There is, in effect, no history in Greece before this time.

The chronology of Greece, in being matched to a faulty Egyptian chronology, has a gap from 1200 BC to about 800 BC during which time nothing happened, and civilization stood still for 400 years. Homer's fiction was written after 650 BC. Does Homer ever concern himself with a Dorian Invasion, when all of the "Iliad" takes place in 56 days?

But what is really amazing is that these Edinburgh astronomers missed an Encke moment, for the Heraclids who invade Greece are indeed the meteor swarm which Clube and Napier have been meaning to identify. So, of course, are the cattle stolen by Apollo, and the horse herds driven off by Hercules.

... the flood of Noah based on 19th century data

[p 209] *"Not far below the level of the first royal tombs at Ur, probably constructed around 2500 BC, archaeologists have discovered material evidence for a vast flood. It has been confirmed that there exists throughout the extent of the Tigris-Euphrates valley, a clay deposit several meters thick."*

This is simply not true. The "vast flood," at first thought to be the "flood of Noah," was an early 20th century notion (based on the excavation at Ur by Leonard Woolley), which was soon entirely disproven from the fact that it was very local and mostly absent elsewhere. Some British archaeologists still adhere to this. The "royal tombs" are Scythian Kurgans of the 8th century BC.

... the pantheon of Egypt, Babylon, and Greece

[p 180] *"... the Egyptian mythology placed him[Horus] on the prow of the solar barque, watching for the other great enemy of Ra, the Sun-god, namely Apepi [Apep], the god of darkness. Apepi was not apparently of Nut's family but was pictured independently as a snake or dragon, one of its roles being to eclipse the Sun. However he did this, he does not seem to have been related to the Moon-god, Thoth."*

That Apep was "not apparently of Nut's family" is entirely correct. Apep [Apophis] was the last remaining red-colored ring after the Absu fell, seen in the sky since 2349 BC. This is clear from how it made the star Sirius look red in antiquity. There are Mesoamerican references to this equatorial river in the sky also, still recalled in the 19th century. Clube and Napier perhaps also did not notice that there are few references to Apep in Egyptian mythology or iconography until Ptolemaic times because Apep never did anything. Spells to prevent Apep from attacking the Sun (the real Sun, btw) only occurs in one very late papyrus. Apep is not the snake Typhon. Ra, when Horus rides in his bark, is Jupiter, the "night sun." Thoth is Mercury, not the Moon.

[p 256] *"The aspect of Velikovsky's thesis that seems to have generated the most steam is his identification of the planet Venus as a gigantic comet that swept past the Earth before moving into its present orbit. Wildly improbable though this is for dynamical as many other reasons, there is no doubt that Venus did eventually assume a particular significant place in many early astronomies. If undue reliance is placed on the mythological rather than the scientific evidence, the absurd speculations about Venus [by Velikovsky] can at least be understood if not forgiven. How the confusion of blame between Typhon and Venus arose in some myths, assuming indeed it did, is obscure."*

I have discussed the "wildly improbable" dynamics. Could Clube and Napier get this any more wrong? I do not think Venus came closer than 9,000,000 miles. It never left its orbit. Planets do not leave their orbits, although orbits change and reshape -- due to exterior electric field forces. Venus today still has a cometary tail. Velikovsky may not always have been completely correct, but his main thesis stands unimpeded by particulars. It is, in fact, a "concept indifferent to the details of its formulation." The mythological evidence is solid and overwhelming, and hardly absurd. Of course Clube and Napier use exactly the same mythological evidence to buttress their speculation, but selectively dismissing what they cannot use or comprehend.

... the windup

After an earlier wholesale dismissal of Velikovsky, he is suddenly given credit for one item. One item only, even though Velikovsky in this case has the agent wrong, and waffled on the exact date, as I have pointed out, and the effect, an Earth shock, which did not change the orbit of Earth.

[p 269] *"... if one takes a dispassionate look at the mythological evidence assembled by Velikovsky for example, setting aside his singular astronomy, one may conclude that there was a widespread anticipation of an encounter of the Earth with a comet or its debris in 687 or 686 BC."*

"This event could have been, as he suggests, a significant turning point in the history of civilization, releasing new visions of the nature of the gods, perhaps finally weaning man away from sacred calendars and the view of life in which the world progressed through catastrophe, fire and flood from one 'great year' to the next."

The year 687 or 686 BC for an uncertain electrical contact due to Mars (actually with Mercury) was also the only date that Velikovsky was uncertain of. The last part of the quoted text ("the great year") should be attributed to vd Waerden rather than Velikovsky. Velikovsky never made note of a "great year." The authors here have reference to "sacred calendars," something neglected earlier (when they were used for astronomical and agricultural services). In the following text (waiting for the next catastrophe in AD 0), however, the information is used to segue a "684 year period" into the derived date of 1369 BC.

But first, returning to more mundane claims of meteor impacts..

[p 270] *"Among the early [?] 'planetary' periodicities that emerged from the Babylonian observations was one significantly related to eclipses of the Sun and Moon for which van der Waerden has been unable to find any really satisfactory explanation. It was a period of 684 years. .. the figure occurs several times in astrological texts, yet there is no combination of known lunar periods capable of explaining it."*

The authors now suggest that Velikovsky's uncertain catastrophe of 687 or 686 BC is 684 years after their derived date for Exodus of 1369 BC; $686 \text{ BC} - 684 = 1370 \text{ BC}$. Similarly, $686 \text{ BC} + 684 = 2 \text{ BC}$, a date in the era when apparently another catastrophe was expected in the eastern Mediterranean region. The authors add to this some loose facts, for example, that a prograde motion of Mars repeats every 171 years, one fourth of 684 years, and that nine returns of Halley take 684 years. So what.

There was no "widespread anticipation of an encounter" in 687 or 686 BC. Instead, there was the delivery to the Sun of an absolutely stupendous plasmoid thunderbolt in 685 BC, which concluded 121 years of destruction in Persia, Anatolia, Greece, and Italy.

And there was no catastrophe in AD 0 or AD 2. The reasoning presented here -- the 684-year period -- might have served as a suggestion for a time interval, and could be used as an introduction to the "Sibylline Star Wars" texts of the first century AD.

There is no need to move the date of the Exodus up by 100 years. The time span of 684 years is easily derived from the accepted 1492 BC date of the Exodus and 806 BC, the first year that Mars blasted Persia, Anatolia, Greece, and Italy with lightning strikes (686 years). The periodic destructions lasted 121 years and came to an end when the "thunderbolt of Zeus" toppled Phaethon from his chariot in 685 BC. On what was thought to be the first day of spring of the following year (it had actually changed by 15 days) was seen a conjunction of seven planets -- what in antiquity was called the start of a "great year," even though these happen quite frequently. Nice coincidence: the world, recreated, started over. You will find the same notion in Vedic texts.

None of these various dates have anything to do with the Taurids, and the return of comet Encki. But without the single data point from Velikovsky, which the authors understand as the "widespread anticipation of an encounter of the Earth with a comet" in 687 or 686 BC, they would be unable to explain the supposed cycle of 684 years, even though in AD 2, at the completion of a second cycle, nothing happened.

I find this extremely selective use of data bothersome. As annoying is the constant juxtaposition of unrelated facts and suppositions, as if by their contiguity these go to prove some extended theory. There is no extended theory. The authors are entirely out of their field when it comes to calendars, archaeology, and mythology. They are reading school texts from the 1950s, and accepting these as the bearers of fact.

As a final note: What about Clube and Napier? people will ask. An interesting book of no substance. It is doubtful if meteors ever posed a serious threat in antiquity, or today -- the Tunguska event notwithstanding. I would bet almost all the "meteor craters" which have been found are the "anode marks" of electrical arcs, and not due to bolides falling from space. It is also amazing how few "craters" have been identified on the surface of the Earth. The few date, in fact, to millions of years ago, not to the time of the Exodus.

On the other hand, meteor clusters are not to be neglected. As I have shown, the early European Cro-Magnon were absolutely obsessed with passing comets for some 20,000 years. They appear still during the 300-year period after 3067 BC when Mars cruised close to Earth, accompanied with a retinue of warriors (or cattle) to be recorded on the Palermo stone, and depicted on palettes and knife handles, and after 1936 BC, and then again in the 8th and 7th century BC. Most of the famed battles fought by the Egyptians in the intervening time span are meteoric troops seen in the sky. For 3000 years the Pharaoh consistently won every battle, until the very real Assyrians showed up after 750 BC, after which they consistently lost every battle.

There are still six asteroids closely following Mars. There are still dozens of comet streams which regularly intersect Earth's orbit today, sometimes with spectacular displays -- but all of it from the electrical flashing of dust -- dust, not rocks, not icecubes either.



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