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Recovering the Lost World, A Saturnian Cosmology -- Jno Cook Chapter 21: Day of the Dead.



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Blood and Alcohol

At this point I want to add some elements from the event of 2349 BC: the bloodbath by Kali, Hathor, and others, the intervention by Jupiter, and the worldwide celebration of the Day of the Dead.



... Kali

The Hindu Goddess Kali (Venus) goes on a blood-soaked killing rampage. Another God (Shiva) has to intervene to stop her. Kali is portrayed as black with black hair and black garments, if any. The same occasional hag-like appearances can be found among other descriptions of Venus as a raging madwoman, a witch, in Mesopotamia as well as in Mesoamerica. Venus would be a dark shape if the planet passed in front of the Sun during the daytime. The rotation of the Earth (plus the movement of a gyroscopic reaction) would make it look as if Venus raged across the sky a number of days.

Kali is black because she (Venus) was backlit by the Sun as it moved into a position of having the Sun, Venus, and Earth all in a line. The plasma tail directed away from the Sun would then point at the Earth. In that Venus has no magnetic field, the tail probably consisted of separate spikes diverging from the centerline of the Sun-Venus axis, as is also seen in cometary tails. If these streams moved about in adjusting to the Earth's plasmasphere that they were passing through, Kali would be seen with flailing arms and legs -- in effect Kali was dancing.

I suspect the compressive contact with Venus was made in a region north of India. This would have tipped the equatorial rings up to move Kali into the midst of the blood-red rings (although the red color may have developed the next day). This was followed within a half day or less by a disconnected plasmoid from Venus (followed by 9 lesser plasmoids over the next day).

The gyroscopic reaction torque to the initial compressive shock (and the tipping back of the Earth's axis) would have rotated the Earth's axis counterclockwise, so as to move Eastern Asia (Russia) to face the Sun and shorten the day in India and Southern Asia. This probably accounts for the fact that the plasmoid "dragon" from Venus was seen in the Middle East, but not noted in India. That suggests perhaps six hours of travel for the plasmoid. That would place Venus at a distance of 12 million miles (19 million km) from Earth during this incident, if the plasmoid traveled, similar to the solar wind, at a rate of about 2 million miles per hour. [note 1]



... Ku-Bau

From the Sumerian *King List* we have:

"After kingship was brought back to Kish again, Ku-Bau, the innkeeper, she who made firm the foundations of Kish, ruled for 100 years as 'king' before Kish was defeated."

Her occupation is also translated as "prostitute" or "barmaid" -- the last as yet another association with alcohol. She is probably Venus, but cannot be dated with certainty to the destructive appearance of the planet in 2349 BC, although her "reign" predates Sargon's conquest of Mesopotamia, which is listed somewhat later in the *King List*.

"In Kish, Puzur-Sin, son of Ku-Bau, reigned 25 years as king; Ur-Zababa, the son of Puzur-Sin, reigned 400 years."

Archaeologists date the barkeep Ku-Bau at circa 2400 BC (how amazing!). Puzur-Sin ("Moon"), her son, is estimated by archaeologists at circa 2360-2340 BC, and Ur-Zababa, the grandson at circa 2340 BC. Here is Venus as the barmaid, Puzur-Sin as the Moon, but I don't know who the grandson is (I suspect it may be the electrically active Moon stripped of its atmosphere). There was no 500-year

delay before Sargon's conquest of Sumer, however, as presumably indicated in the King List. It happened at the same time as Ku-Bau's appearance. Individual dynasties listed in the Sumerian King List often run simultaneously, or more likely list the extent of the lifetimes of the individual kings.

The association of what would be the smell of alcohol (or wild dancing) with some of the legends, and the association of the color red with all three of these tales (there are many more), might suggest an analysis of the possible chemistry of the gases and particulate matter of the Absu. It may have been a smell associated with brewing or fermentation. There will be similar suggestions of worldwide odors at much later dates, but these are recognized as sweet smells like the scents of flowers, or, as I would suggest, like diesel exhaust, and thus the burning of hydrocarbons like crude oil.

Ka-Bau (Kubaba) eventually is recognized as Kybele (or Cybele) in Anatolia, and is adopted by the Romans as a goddess 2000 years later.



... Anath

Continuing further west, in the Levant the Goddess Anath of Ugarit goes on a "drunken rampage" extending from the location of sunrise to the Mediterranean sea. Here, too, the local chief God (Baal) has to intervene. Baal, of course, is Jupiter. Here, as in other tales, the dragon or goddess (now the plasmoid, rather than Venus) is described as "wading" in blood or gore (and in other descriptions as slapping her tail through the "waters").

The people of the Eastern Mediterranean saw the approach of the plasmoid from Venus. This lightning strike was not instantaneous; this took time to travel. Leonard King wrote:

"We have long possessed part of another local version of the Dragon myth, which describes the conquest of a dragon by some deity other than Marduk; and the fight is there described as taking place, not before Creation, but at a time when men existed and cities had been built. Men and gods were equally terrified at the monster's appearance, and it was to deliver the land from his clutches that one of the gods went out and slew him."

"Tradition delighted to dwell on the dragon's enormous size and terrible appearance. In this version he is described as fifty beru (bêru) in length and one in height; his mouth measured six cubits and the circuit of his ears twelve; he dragged himself along in the water, which he lashed with his tail; and, when slain, his blood flowed for three years, three months, a day and a night. From this description we can see he was given the body of an enormous serpent."

-- Leonard King, *Legends of Babylon and Egypt* (1918)

The "beru," a footnote mentions, was the space that could be covered in two hours' traveling. The apparition is thus held to be 400 miles (640 km) long (assuming 8 miles are covered in two hour's walking), and 8 miles (13 km) in width. The head of the plasmoid may have looked larger, in that it was closer to the observers. The size of the object in the sky might have been estimated by comparison to distant mountains.

The Goddess Anath of Ugarit is described as extending in size from the location of sunrise to the sea. This is similar to what is suggested above for the dragon.

The dragon apparition was not Venus, since Venus would have (or might have) blocked the Sun, being in a direct line with the Sun. This dragon with its enormous head was a plasmoid launched from Venus, an object lighted by its own arc mode plasma. As the Earth rotated toward the east the "head" of the dragon, a round ball of plasma with what looked like tentacles hanging from the mouth (the classical depiction of a dragon in China and in Mesoamerica), would first be seen in the south and then pass by, headed toward the west with the "tail" following behind it in the east.

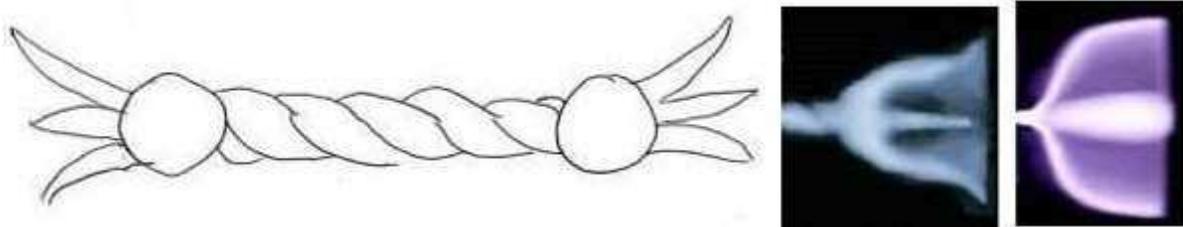


... Leviathan

One of the beasts of the Bible which Yahweh conquered is Leviathan, mentioned in Job 41, and referred to in Psalm 68:30, as "the beast of the reeds." The reeds, again, describe the Duat.

The whole apparition, being brilliant enough to shine through the dust and particles of the Absu, had the appearance of being within the rings, "in the sea." It would have happened in the course of a half a day, for the travel time of the plasmoid would not have lasted more than 6 hours. The Earth shock happened east of the region of the Eastern Mediterranean from which we have reports (and likely north of India). The contact with Venus would have been made as the Sun, Venus, and Earth were all in a line -- at noon local time. The plasmoid would have been launched very soon after the Earth shock, and was seen arriving by the people of the Eastern Mediterranean before night fell -- about 6 hours or sooner.

This was a time near the equinox, so that the day would normally have been about 12 hours long, but the reaction torque would have reduced the length of the day, moving the west part of the Earth faster toward the east, because of the swing made by the Earth's rotational axis. If the plasmoid traveled at a rate of two million miles per hour (3.2 million km per hr), which is the speed of the solar wind after leaving the Sun, then Venus would have been at a distance of about 12 million miles (19 million km) from Earth at the time the plasmoid was launched. At a higher speed of travel (as I will propose), Venus would have been separated from Earth at a greater distance.



[Images: Left: Plasmoid lightning bolt shown in its full extent. Illustration by J. Cook. Right: The end form is based on viewing the denser edge of the cup-like form and a dense central core. After David Talbott and Wallace Thornhill, *Thunderbolts of the Gods* (2005).]

The tail would have grown in size as the plasmoid was viewed at an increasing angle. As it closed in on Earth, the rear tines of the plasmoid would become distinct and look as if they were wading through the rings of the Absu like the legs of a giant animal. The slashing tail is the collapse of the main body of the plasmoid delivered almost broadside onto the rings of the Absu, and exploding on reaching the electric field surrounding the Earth. For this reason Chinese dragons are depicted as contorted and twisted snakes with legs.

The dragon, as Tiamat, opened its mouth and swallowed the winds, whereupon she burst. So reads the Babylonian *Enuma Elish*, which I'll address further below. The winds were real; but resulted from the heat of the expanding air mass originally centered on Asia. Additionally, the explosive blast, followed later by additional plasmoids, would have sent scorching waves of heat to the Earth's surface. This too added to the winds.



... Hathor

Associated with the fall of the Absu in 2349 BC is the notion of blood everywhere. The blood-red condition shows up in tales of the destruction of mankind recorded in Egyptian New Kingdom tombs (Tutankhamen, 1327 BC; Seti I, 1279 BC; plus others down to 1136 BC, although these dates are held by Velikovsky to fall in the 10th to 9th century BC), where Hathor (Venus), as the lion-headed Goddess Sekhmet, wades in the blood of men and in red beer.

These New Kingdom texts replicate the written style of the Middle Kingdom, that is, the era in Egyptian history after the demise of the Old Kingdom in 2193 BC, and would thus date from long before the time when they were recorded. Most likely the tales date from 2349 BC, the same event (the "flood of Noah" and the fall of the Absu) which was also replayed shortly after 2349 BC by Unas in his Pyramid Texts, where he threatens to cut the throats of the celestial gods and disembowel them.

In 2349 BC, when Hathor (representing the plasmoid of Venus) starts to destroy humans and drink their blood, Ra (Jupiter), who had ordered the destruction, managed to stop Hathor when she went out of control, by ordering the manufacture of 6000 jars of beer, dyed red with hematite (red iron oxide), to be poured out over the land. The Goddess drinks the beer, gets drunk, and ceases the killings. Ra retires soon after (which actually would have been 200 years later in about 2150 BC).

The story is recorded as the *Legend of the Celestial Cow*, so called because Ra also orders the creation of a celestial cow on whose back he then sits and leaves Earth. I have introduced the Hathor-cow earlier, in the chapter "The Gods Leave," related to the change in the electric field of the Sun. I suggested that the Van Allen belts would change to a glow mode display from the excess electrons spiraling back and forth along the magnetic field lines. After creating the cow's back, Ra next orders the creation of the cow's legs. (Is that a strange detail?) All this happens on the third day after Hathor's bloodbath. In this last detail the *Legend of the Celestial Cow* parallels other descriptions of the same events, as also in the detail that Ra then creates the southern stars. [note 2]



... Grendel's mother

In the Anglo-Saxon epic *Beowulf*, the hero Beowulf battles the mother of the monster Grendel in a cave under the sea (or a lake) over the course of three days. The mother of Grendel is yet another version of Kali, Tiamat, Anath, Sekhmet, and Ku-Bau. The "sea" (again) is the Absu. The cave is the Earth's shadow on the Absu. Beowulf rises out of the blood and gore of the lake at the ninth hour (3 PM) of the third day. It is strange that the poem actually mentions the time of day. This closely matches estimates elsewhere in the world of how soon after the earth-shock of 2349 BC Jupiter "rose from the dead."

The three-part epic recounts events of 3147 BC (Grendel's arm is torn off at his shoulder), 2349 BC (a bloody fight with a monster under water), and 685 BC (a battle with a fire dragon), aided in the last instance by one of his young cohorts, Wiglaf. Beowulf is played by Jupiter throughout, except perhaps in the last instance. The protagonists in all three parts are Venus or an associated plasmoid. Beowulf's display of the hilt of the sword which slew Grendel's mother is the southern polar plume seen from 55 degrees north latitude. Grendel's loss of his arm recalls the same detail as presented in the Maya *Popol Vuh*, where Hunahpu (Venus) has his arm torn off "at the shoulder" by Seven-Macaw -- the loss of the plasma connection of Venus with Saturn.

The alcohol seems to be missing from the Beowulf epic, perhaps because the tale was composed some 3000 to 4000 years after the events, although the central event, the attack by Grendel's mother, occurs after heavy feasting and drinking at Heorot Hall. For the more contemporaneous generation of the tales of Hathor, Kali, Anath, and Ku-Bau, there is a close association between the arrival of Venus in 2349 BC and alcohol, as well as intervention by the chief God. The Babylonian *Enuma Elish* records this last also. It could therefore be suggested that Jupiter again assumed its giant coma and tail within 2 and a half days after September 6, 2349 BC (the date of the equinox at that time) to be reestablished and remain as chief God for the next 199 years.

I should also note that the 400 Lost Boys, recorded in the *Popol Vuh*, who become the Pleiades (at the time of the "flood of Noah"), are also "dead drunk" at the time they are blasted into the heavens by Zipacna, the mountain giant Jupiter.

Where did the plasmoid land? I suspect that it never reached the surface of the Earth. I think that it dissipated at the equatorial rings, but not without massive return strokes of lightning from the Earth's toroidal belts (the Van Allen belts, located above the atmosphere at the equator) into the equatorial ring system. The *Chilam Balam* mentions the return lightning strokes, as does the Chinese legend of the archer Li.

The Ten Suns

Having been introduced at this point to the black Kali of India, Anath of Ugarit, and Hathor of Egypt (Tiamat of the Babylonian *Enuma Elish* will be discussed later) -- all wading in the blood of slaughtered humans -- it is perhaps appropriate to tie together these "legends" and attempt to establish a sequence of events for the days of the 2349 BC event which are otherwise known as the "flood of Noah." Details are scant, but the following sequence seems reasonable.

India saw the approach of Venus, initially as a black mass occluding the Sun. The initial compressive Earth shock in Asia north of the Himalayas, due to the electric fields of the planets, was instantaneous. The seismic aftershocks to the repulsive electric force north of the Himalayas would have made Kali dance. The details of a bloodbath were only added the next day when the Absu had broken up into a red bath.

The seismic shockwave traveled in all directions, causing great damage, noted mainly southwest and west of the shock impact site, among sites from the Caucasus through Anatolia and across Greece. This condition would have been aggravated if there had been attempts at charge equalization through lightning bolts reaching the surface of the Earth. There was a lightning bolt, but it took 6 hours to arrive, and then apparently dissipated at the Earth's Van Allen belts or the ionosphere. This was, on the one hand, a

peculiar interaction, and on the other, a grace for the Earth. We were spared the incineration of forests and prairies, and the loss of light for thousands of years. It is possible also, that the initial plasmoid landed in the Pacific. Water vapor in the atmosphere will not cool the Earth by blocking sunlight for hundreds or thousands of years. If the plasmoid was mostly absorbed by the ionosphere, it would have resulted in massive lightning strikes from the ionosphere or upper atmosphere to Earth's surface (under the condition of the upper atmosphere or ionosphere inducing an opposite voltage at ground level).

The surface lightning strikes to Earth were thus not from Venus. From Venus came one very large plasmoid, and some nine additional smaller ones. Except for the damage done to the Absu by the first plasmoid, it is difficult to determine where these bolts landed and what the damage would look like. More on this further below.

The date of the shock can be established as occurring on the day of the autumnal equinox. This will be discussed in a following section. At the fall equinox the axis of the Earth would have been inclined forward -- in the direction of travel of Earth along its orbit. As mentioned earlier, the jolt to the Earth, above the equator, would have caused the spin axis to tilt away from the Sun, followed immediately by a reaction torque twisting the axis back toward the leading position of Earth's orbit, but in a counterclockwise direction (as seen from above). The effect would have been to bring the equatorial rings up to face Venus and the Sun, a condition probably accomplished within a few hours. The travel of the Earth's axis in this loop would have kept the broadside of the rings of the Absu facing Venus for about a half a day or a day.

This action is important, because the twisting of the axis may have kept the Earth from being incinerated, for the very next event after the initial shock was the release of the plasmoid thunderbolt by Venus. But it took time to reach earth.

The people of the Eastern Mediterranean saw the explosion, which, if my sense of timing is mostly correct, most likely happened over North Africa or the Atlantic or even further west. At this time the Eastern Mediterranean was turning away from the Sun and Venus at a faster rate than normal (the result of the gyroscopic reaction), and it was in Central America where the next phase of the spectacle was clearly witnessed.

As the day dawned in Mesoamerica, the arrival of secondary plasmoids was witnessed and recorded by the Olmecs, to be transcribed to garbled narrative texts some 3900 years later on separate pages of the *Books of the Chilam Balam*. The last page of Book 2 reads:

"Our gods have grown!' their priests said (those from [of] the Sun). And then days of the year were introduced."

"Behold abundant suns come,' they said. And the hoofs of the animals burned and the edge of the sea burned."

"This is the sea of bitterness!' they said."

"And the face of the sun was corroded, and its face became darkened and was put out. And then, above, they became frightened. 'It has burned up! Our god has died!' their priests said. And they were beginning to think about making a picture of the figure of the sun, when the earth shook and they saw the moon."

-- Antonio Mediz Bolio, *Books of the Chilam Balam of Chumayel* (1930) [note 3]

This single page of the *Chilam Balam* obviously refers to 2349 BC, with its reference to a new calendar ("days of the year were introduced" -- the Tzolkin), the disturbance of the Absu ("the edge of the sea burned"), and the arrival of the Moon ("the earth shook and they saw the moon"). The first line may refer to the initial plasmoid from Venus, seen in the east, but the phrase, "behold abundant suns come," describes secondary plasmoids of lesser intensity which followed on the heels of the initial dragon-sized bolt. [note 4]

The darkening of the face of the Sun can be attributed to the fact that the Sun would have sunk toward the south horizon as the Earth's axis tilted away (up) from the direction of the Sun. On the remainder of this page of the *Chilam Balam* a war ensues, with whole armies being shot down with arrows. This likely represents the lightning bolts traveling up through the Absu on the same or following days. China records the same. [note 5]

Except for the clear reference to 2349 BC, some of this text would have remained inexplicable if it were not for the fact that an almost identical description exists in China, as the legend of the "Ten Suns" which are shot down with the arrows of the celestial archer Li and which is placed "after the time of Yao." Both the Mesoamerican text and the Chinese text mention the multiple Suns, the heat felt on Earth, and the arrows directed up through the Absu. Li might be the Moon or a narrative fiction.

In China, daylight would normally arrive nearly a half day after it was daylight in Mesoamerica. But as the Earth's axis spun away from the direction of the Sun and simultaneously started to lean in the lagging direction of the Earth's orbit (initially), daylight and the secondary plasmoids, would have appeared hours earlier than normal. Otherwise it would be difficult to maintain that secondary plasmoids from Venus continued for as much as a day. The many suns were seen as rising, that is, in the east, and likely followed each other. The lightning bolts were launched individually. Nine were shot down. The last, the real Sun, remained.

And then it stopped, except for the bleeding of the sky. In India black Kali was now wading in blood. It stopped, observers noted, because a God had interfered. A sudden reappearance of the coma of Jupiter, on the second night after the day of the event, was the sign that this had happened. The timing of this is not entirely clear, though. In Babylon, in the *Enuma Elish*, written hundreds of years later, the rescue of Earth is attributed to a complete plan devised by Marduk before the onset of the plasma contact. But in India, the Levant, and Egypt, the God who quells the raging goddess acts shortly after the start of the killings. If the plasma expulsion of Venus (the plasmoid) also traveled past Earth, down the extended tail of the Earth's plasmasphere facing away from the Sun, it would have reached Jupiter (with Jupiter in line with Earth) in about 6 days and caused it to switch to a glow mode coma. This assumes a speed of about two million miles per hour (3.2 million km per hr).

It could have been sooner, however, for coronal mass expulsions (a dense plasma) from the Sun have been known, in recent times, to travel on occasion at a rate of 200 million miles per hour (320 million km per hr), rather than 2 million miles per hour. At a somewhat higher speed of six million miles per hour, it would have reached Jupiter (at that time located at 4.5 AU from the Sun, and thus about 3.5 AU from the location of Earth) in two and a half days. The worldwide celebrations of the "Day of the Dead," which will be introduced below, almost uniformly last two and a half days. [note 6]

If Jupiter blazed, suddenly, two and a half days after the Earth shock, as the tremors from the shock lessened and the sweeping hurricanes abated, and after experiencing the plasmoids from Venus, Jupiter would have been understood as the savior of the Earth. Only the blood in the "ocean" remained.

The bleeding of the dragon lasted, one of the above sources notes, for 3 years, 3 months, one day and one night. The time for the complete fall of the Absu can be compared to the various times that flood survivors spent floating in their various boats and arks, which, of course, is nowhere near three years. In most myths the extent of the flood is much shorter, although these tales represent references to the flood of 3147 BC. Noah, in the Biblical story spends a much longer time afloat, but not three years.

I also do not know if the Absu was originally colored red, although it could be suspected that at least part of the rings may have been. Some low-density gases will glow in red when ionized and under electric discharge, as is seen today in the Aurora (and in the rings of Saturn). If the Absu had always been red, we would never have heard anything about it. More likely, it was a condition of 2349 BC due to a continual plasma discharge via the equatorial rings. The *Chilam Balam* claims that the whole world turned red at this time, and attributes the condition to Jupiter. Another page of the *Chilam Balam* claims that the condition only lasted past the ending of one Katun, and partway into the next -- 18 or 20 years.

Blood would have been everywhere in the sky. It was near the fall equinox, and at night the Absu would have been divided by the long shadow of Earth. Based on Maya iconography it appears that by coincidence Jupiter appeared in the very center of the gap of the Absu as it expanded into a giant form. As the rotation of the sky, due to the gyroscopic reaction, neared completion at about this time, then Jupiter would have been seen as rising from within the gap. Actually, the Absu lifted up again against the background of the stars as the Earth resumed its normal tilt -- at the same time that Jupiter suddenly developed a large glow mode coma and a giant expulsion of plasma below the coma, its mountain.

With the initial gyroscopic condition of the Earth tilted away from the Sun, the gap created by the shadow of the Earth would have closed to become a cave or doorway to a cave. Returning the Absu, or what was left of it, to its normal position against the backdrop of the stars, would also move the shadow of the Earth up against the rings. This would make it look as if the cave exploded open as Jupiter moved up and out.

This is confirmed from a number of Mesopotamian seals, dated to shortly afterwards, which depict Jupiter rising from between two mountains. This is correct for an alignment of the Sun, Venus, Earth and Jupiter. But there is much more that confirms this condition from throughout the world.

The Day of the Dead

Moe Mandelkehr, in *The 2300 BC Event* (2006), assumes that the events of 2349 BC and 2193 BC can be represented as a single incident of a fall of meteorites in about 2300 BC and the subsequent creation of a series of circumpolar rings which lasted some months. The book, in three volumes, includes a wealth of information, of which the details of a worldwide celebration of a "Day of the Dead," centering on the culmination of the Pleiades in the south sky, is the most interesting and bears directly on the topic of this chapter. (A culmination is when a star reaches the highest point in the sky directly above the south cardinal direction at midnight.) He opens with a quotation from W. T. Olcott which effectively sums up the information he presents. [note 7]

"Memorial services to the dead at the season of the year when the Pleiades occupied a conspicuous position in the heavens are found to have taken place, and to have been a feature in the history of almost every nation of the earth, from remote antiquity to the present day."

"The universality of this custom may well be considered one of the most remarkable facts that astronomical history records. ... A great cataclysm ... is in some way associated with the Pleiades, and some reference to such an event can be traced in many of the legends and myths surrounding these stars that have come down to us from nations far removed from each other."

-- W. T. Olcott *Star Lore of All Ages* (1911)

Mandelkehr provides details spanning all continents and both hemispheres. He records the festivals worldwide as celebrating new-year, fire-lighting, and commemorating the dead. He lists details for Britain, Scandinavia, continental Europe, Greece, the Middle East, Israel, Africa, Egypt, Iran, India, Central Asia, China, Japan, the Pacific islands, North America, Mexico (Aztecs), Central America, South America, and Peru. Not all the references are solid and convincing, and some have nothing to do with the topic at hand, but there are certainly more than enough to build a case for a "Day of the Dead" celebration worldwide which had its genesis in remote antiquity. Today this festival is institutionalized in the Christian world as "All Saints Day" and "All Souls Day," and celebrated in other forms, as "Halloween," for example, and as the "Day of the Dead" in Mexico. [note 8]

Mandelkehr associates the Pleiades with the autumnal equinox in 2300 BC, based on a retrocalculation from the current constitution of the heavens. As the Sun sets in the west, the Pleiades would have risen in the east. Six hours later, at midnight (sidereal time), the Pleiades would have stood at their highest point in the south sky, a culmination.

The same information is found in Book 10 of the *Chilam Balam*, which mentions that after the fall of the Absu ("the baptism from the center of heaven") the ecliptic and equatorial became visible (as "the crossroads") with the Pleiades ("precious things," as seed corn is called) above these. Details in the chapter "The Chilam Balam."

The fact that an ephemeris will show the Pleiades culminating in the south skies at the autumnal equinox in 2300 BC, is actually a nagging coincidence, for my supposition (developed in later chapters) is that the skies were different and invariant before 685 BC. As it happens, the condition of the sky before 685 BC can be simulated (except for the zero longitudinal line and the horizon) by selecting the year 2000 BC with an ephemeris. This is very close to the retrocalculated conditions for 2300 BC, so that the Pleiades indeed stand at their highest point in the south skies on our equivalent date of September 21 on an equivalent Gregorian calendar -- the autumnal equinox by our accounting. [note 9]

The shift of 15 days experienced in 685 BC almost entirely accounts for the coincidence of the Pleiades appearing at the autumnal equinox in 2300 BC by retrocalculation.

The festivals noted by Mandelkehr for earlier ages occur near the expected culmination of the Pleiades in the sky at midnight in late October or early November. These dates have drifted away from the equinox because the culmination of the Pleiades moved later into the fall of the year after 685 BC due to the precession of the equinoxes (after 747 BC). The dates for many of the "Day of the Dead" celebrations do not recognize the equinox, but only the dates at which the Pleiades stand

highest in the sky.

Yet it is also curious (as related by Olcott) that many of these festivals, where they are still celebrated today, start about 15 days early -- 15 days before the Pleiades reach their highest location in the sky. This agrees with what I will develop in the chapter "Modern History": that the equinoxes moved 15 days into the future after 685 BC. Before 685 BC the fall equinox fell on the equivalent calendar date of September 6th. (This also agrees with the earliest Mesopotamian records which inexplicably place the equinoxes in the constellations Taurus and Scorpio.)

This probably accounts for the 15-day discrepancy between when many of the "Day of the Dead" festivals are observed today and the actual calendar date of the culmination of the Pleiades. But whereas some people used calendar dates for the celebrations (15 days early), others followed the changing dates of the culmination of the Pleiades, and yet others kept the celebration at the date of the equinox, and in some cases, apparently, returned to the earlier date of September 6 of the equinox (noted by Mandelkehr). [note 10]

The information to be gleaned from Mandelkehr's book is unfortunately insufficient to make any determination of how these various dates for the celebrations may have developed historically, except in a few instances. Although he points to festival dates "around the end of October and beginning of November," he almost never makes note of when in the past these were celebrated. At best this might suggest that festivals seemed to have kept pace with the changing date of the culmination of the Pleiades over the last 2600 years.

It is, however, clear that at various times in the past some of the festivals were codified, that is, tied to a certain calendar date rather than continuing to follow the changing date of the culmination of the Pleiades. We see this in the Christian "All Saints" and "All Souls" days. These were set as a church feast day in about the year AD 700 or AD 1000, purposely coinciding with the "Day of the Dead" celebrations of the European tribes, celebrated, at that time, at the culmination of the Pleiades on October 31, Gregorian. Once tied to the church calendar, this feastday remained locked to October 31 and November 1, with allowances made by the church to continue the celebrations over two days. The pagan Halloween evening festival also kept pace with the church calendar.

A similar codification can be seen in Mesoamerica before the Spanish arrived. Mandelkehr, quoting Bernadino de Sahagún from a secondary source, notes that a "Day of the Dead" celebration occurred on October 20 in the 16th century AD. [note 11]

Interestingly, the primary God of the Aztecs, Huitzilopochtli, celebrated his "birthday" on November 9 (Gregorian), when the Spanish arrived in the 16th century AD, which was the actual day of the culmination of the Pleiades at that time. Huitzilopochtli is generally equated to the planet Mars, but the coincidence with the date of the culmination of the Pleiades would suggest that Huitzilopochtli may need to be equated with Jupiter, or that he was originally equated with Jupiter -- who, 3900 years earlier had reappeared from death on the day of the culmination of the Pleiades.

All the festivals honor the dead, light fires, and include torchlight parades. Many at one time marked new-year day. Invariably the celebrations last three days, or two days preceded by an evening festivity, even in Mexico of the 16th century AD. I think this is important in pointing to a series of closely related events, and I would suggest that the fall of the Absu, which was an absolutely terrifying event, would have been closely followed -- in fact, by two days and a night -- by the reappearance of Jupiter in his full

mountain-sized form. "After three days he rose from the dead." [note 12]

"Who died?" As I have suggested above, it may have been only Jupiter who died and rose from the dead. The giant coma of Jupiter had disappeared from the sky, as noted in the *Chilam Balam*, sometime before 2349 BC. Although Mandelkehr assumes millions died from comet fragments (ice cubes?) falling from the sky, I think few people died, excepting those in the regions struck by the electric repulsive shock and the traveling seismic disturbances which devastated the landscape -- possibly affecting a large portion of the Earth. Sodom and Gomorrah suffered their initial destruction in the collapse of buildings at this time (which were rebuilt). Some regions of Earth would have been absolutely devastated, as Claude Schaeffer has pointed out. But it was the "blood" seen in the "ocean" which would have convinced the rest of the world that indeed millions of people had died.

The Twin Peaks

The appearance of Jupiter three days after the dragon had arrived and turned the sky to blood, formed an image which entered Christianity and is retained to this day.

The image is one of Jupiter suddenly appearing, when he had been held as dead at an earlier time. He appeared in the center of the gap of the Absu, two days after the fall equinox. Jupiter's coma was at this time three times the diameter of the Moon (so says Plutarch), with plumes spreading out from the top of the coma, and an absolutely gigantic plasma outpouring below, as the three leaves of a flower, but much denser so as to look like a solid mountain. The Olmecs, with a view of the ecliptic much higher in the sky, depict Jupiter's body as the open mouth of a cayman or alligator (which have short tongues).

Because it was the time near the fall equinox, the Absu at this point had opened up and split into two mountains. The umbra of the Earth's shadow extended across the rings, becoming less wide further from Earth. But the penumbra widened with distance from Earth, in effect rounding the left and right halves of the Absu from the center. The result was to have two mountains -- twin peaks -- next to each other, with Jupiter centered on the valley between the mountains for some hours on the night of September 8th. Since this was the time of the fall equinox, Jupiter (on the ecliptic) would rise above the equatorial in the following weeks and months anyway, reinforcing the concept of rising up out of a depression.



[Image: Shamash rises from between the two mountains. Dawn and dusk, or east and west, are shown as flag standards. After E. A. Wallis Budge.]

In the print of an Akkadian cylinder seal, shown above, dated to slightly after 2349 BC, an absolutely giant Shamash (Jupiter) is seen stepping out of the gap between twin mountains, the left and right halves of the Absu. The symbols on both sides of Shamash are partially schematic and partially in script. The right symbol of a star, meaning "heaven" or "holy," is placed on a pole rising out of the glyph for "mountain." Schematically it represents the earlier polar configuration. The left symbol I do not know.

Cylinder seals are small cylindrical stones carved in intaglio, used to roll across a clay slab to be used as a marker of ownership on trade materials. These appear after 2350 BC, although there are also seals dating to shortly after 3000 BC.

The rays rising from the upper arms of Shamash represent the upper plasma of Jupiter as three separate plumes. At other times this resulted visually when the planet dipped below the top level of the Absu and its light was diffracted by the structure of the rings. It thus signified the brilliance of the planet. The same rays show in depictions of Venus, for the same reason.



[Image: Ishtar (Venus) and Ea (Sumerian Enki) aid in the resurrection of Shamash (Jupiter); circa 2308 BC. After crystalinks.com]

Flanking the twin mountains are flag standards (with small lions on top), held in place by two gods. The two flags are what was seen of the equatorial plasma toroid surrounding the Earth (the Van Allen belt), which showed up whenever it was energized to glow mode. This was thus a temporary phenomenon, and represents two of the four posts holding up the heavens. These would rise up from the east and west cardinal directions of the horizon, follow the curvature of the equatorial and be truncated by the shadow of the Earth at the time of the equinoxes. It thus reached considerably above the rings of the Absu, which everywhere appeared below the equatorial. These two forms did not move significantly, except that they may have fluctuated in density so that they seemed to waver. This would cause them to be represented as flags, just like in Mesoamerica they are held to be trees.

The lion shown on top is an interpretation (I suspect) of the cross-section of the toroid where the Earth's shadow fell across it. At later instances a circle is shown, which is closer to being correct, because the equatorial toroid would be densest at its outer edges. Because of this ring at the top, these forms are also identified as doorposts (the ring forming the upper "hinge"), and texts describing the appearance of Shamash refer to "the doors of heaven opening."

The above impression of a somewhat later cylinder seal (2300 BC) shows what really happened. Here the Goddess Ishtar (Venus) and Ea (Mercury) attend the resurrection of Shamash. The script at the left reads "place of purification." That puts a different twist on the event of 2349 BC, as if Jupiter is being baptized. The seal still represents the event of 2349 BC, although at this time the Absu has long since disappeared. The flag standards are gone also.

Within the next few hundred years the Babylonians will spin a new theology with the writing of the *Enuma Elish*, which will bring Jupiter forward as the main character in the event of 2349 BC, under the name of Marduk. The *Enuma Elish* retains the attack by the dragon (Tiamat) and the blood in the skies, but removes the resurrection of Jupiter. Despite the importance of this new retelling of the drama, the fact that Jupiter (Shamash, Zeus, Jove), the most important God of antiquity, had returned from the dead in three days was long remembered -- parts of this tale are replayed a thousand years

later in the telling of the Exodus story (the mountain, the sea split open), the resurrection of God is retold many times in many differing religions, and even 2300 years later it entered the Gospels.



[Image: *The Corn God (the First Father, Jupiter) rises from a crack in a turtle carapace, attended by Xbalanque and Hunahpu. After Freidel and Schele, "Maya Cosmos" (1993)* [note 13]

In Egypt Ra, Jupiter as the midnight Sun, is always shown as a giant red globe, at times depicted in the saddle between two mountains, or hovering in a valley between two mountains. The mountains, in turn, are shown covered by what looks like rows of reeds. Such depictions are quite late, during the New Kingdom (after 1500 BC), and thus a thousand years removed from 2349 BC. At that time Ra is shown without his lower mantle or the three-pronged plumes at the top -- just a red sphere.

Although in Mesoamerica the depictions are 3000 years removed from the actual event, the sculptures and engravings are based on very old records extant at the time of the Classical Era (AD 400 to 900), and at times uncannily accurate. The image above is of the resurrection of Jupiter from a crack in a turtle shell. It represents a mixture of events separated by thousands of years. Here Jupiter is shown as the Corn God or as the First Father.

The "image of the turtle" had first appeared in 10,900 BC. The nearest of the three plasmoids likely gave rise to the second and third ball plasmoid of remote antiquity, as if rising out of the nearest ball plasmoid. What is depicted here is the first appearance of Jupiter as the new ruling god in 3147 BC, and additionally his resurrection in 2349 BC. Hunahpu and Xbalanque are assisting him, even though their actions date from shortly before 685 BC. But in effect they are the same two gods in attendance as in the cylinder seal shown earlier -- Ishtar and Ea. The two monster heads below Hunahpu and Xbalanque represent the two-headed plasmoid from Jupiter of 685 BC.

A portion of many Maya commemorative stelae have reference to the completion of a previous creation. They read, "... on 4-Ahau 8-Cumku was (first) seen the image of the turtle." This is a reference to an ending of the first creation, which included the 2500 years of appearances of the ball plasmoids of the south, ending in 8347 BC. The appearance of First Father ("Hun-Nal-Ye," Jupiter) is dated (here) to the beginning of the current calendar round in 3147 BC, when Bolon-ti-ku, Jupiter, seized the reign from Oxlahun-ti-ku, Saturn, as told in the *Chilam Balam*.

Other references to the creation on the date 4-Ahau 8-Cumku point instead to the placing of the three hearthstones in the sky. These are held (with certainty) by archaeologists to be three stars in the constellation Orion (one belt star and his two feet, enclosing M-42 as the fire). I would suggest that the reference actually is to the start of the "first creation" of 10,900 BC when the three ball plasmoids first appeared in the southern sky.

Hunahpu and Xbalanque, on the other hand, show up in the 120 years between 806 BC and 687 BC, as the twins Mars and Mercury, except in the last instance when they are Venus and Mercury. Since the celestial twins, as told in the *Popol Vuh*, attempt to raise their father from the dead (although without success), an association is had here to the resurrection of First Father. The *Popol Vuh* does not allow success in the efforts of the twins to revive their father, but the theology of other Maya centers speak differently, as is shown by this imagery.

Marduk and the *Enuma Elish*

Jupiter had lost its tail and coma (had died) some time before the "flood of Noah." There is a passage in the Babylonian *Enuma Elish* which tells of this. The express purpose of the *Enuma Elish* was to establish Jupiter (Marduk) as the chief God and to resolve a religious crisis in Babylonia. In the *Enuma Elish* Marduk is installed by the other Gods and invested with power in order to fight common enemies of the Gods, among them Tiamat ("chaos") and Absu ("the abyss"). Marduk asks only that,

"... an 'unchangeable command' might be given to him -- that whatever he ordained should without fail come to pass, in order that he might destroy the common enemy. ... The testing of his newly acquired power followed. A garment was placed in their midst:"

*"He spake with his mouth, and the garment was destroyed,
He spake to it again, and the garment was reproduced."*

-- Theophilus Pinches, "The Religion of Babylonia and Assyria (1890)

The Akkadians (and Babylonians) changed their dress after circa 2500 or 2400 BC from skirts to shoulder-hung robes. The climate had become colder. The century marked the end of the Hypsithermal. (Or we are seeing a change in fashion, which is unlikely.) The Babylonian priests did not spin tales out of whole cloth. The reference to the disappearing and reappearing garment -- it was Marduk's own -- was remembered by everyone, or talked about by their grandfathers. "Mountain" and "skirt" are the same word in Akkadian. The reappearance of Marduk's mountainous plasma tail skirt coincided in time with the arrival of the plasmoid of Venus, the fall of the Absu, and the later arrival of the Moon.

The exploits of Marduk are briefly related as follows:

"Neither An nor his son Ea knew words of power strong enough to subdue Tiamat, but Ea's son Marduk, the patron god of the city Babylon, took on the task of fighting Tiamat in return for his being proclaimed king of the other gods."

Tiamat, whom Marduk is to battle, is the plasmoid of Venus.

"They gave him power to destroy things with a word and made him their king."

"He, in turn, took his bow, the rainbow [actually, the polar plasma plume] that arches across the sky, and his lightning arrows and made a great net to ensnare Tiamat, and riding the winds of seven great storms he went to do battle with her. When he threw his great net upon her, she opened her jaws to swallow him, and the winds that Marduk controlled rushed into her mouth and swelled her belly until it burst."

"Then Marduk cut Tiamat's body in half and raised up one half to make the sky, leaving the other half as the restless oceans."

-- quoted by L.C. Geerts at <http://Earth-history.com>

Tiamat is not an Akkadian or Sumerian Goddess -- but she is female. Tiamat is an invention of the Babylonians, but identified as a dragon. What a sight, to have Tiamat distend and blow up! Here Tiamat is the first plasmoid from Venus in 2349 BC. The Absu, of which nothing more is heard of in all of the *Enuma Elish* after initial mention, becomes one of Marduk's weapons, "the net," along with another, called "the flood." Obviously the *Enuma Elish* was written well after the actual facts had started to fade.

Marduk at this telling of the *Enuma Elish* has become a creator God. The relationship of the *Enuma Elish* to the time period of 2349 BC, however, is clearly indicated by the tasks undertaken by Marduk after defeating Tiamat. Theophilus Pinches, in *The Religion of Babylonia and Assyria* (1890), writes:

"Then came the ordering of the universe anew. Having made a covering for the heavens with half the body of the defeated Dragon of Chaos [Tiamat, the Venus plasmoid], Merodach [Marduk, Jupiter] set the Abyss [the Absu], the abode of Nudimmud[Ea], in front, and made a corresponding edifice above --the heavens -- where he founded stations for the gods Anu, Bel, and Ae."

"Stations for the great gods in the likeness of constellations, together with what is regarded as the Zodiac, were his next work."

"He then designated the year, setting three constellations for each month [an Egyptian decan, and thus 30 degrees], and made a station for Nibiru [Venus] -- Merodach's [Marduk] own star -- as the overseer of all the lights in the firmament."

"He then caused the new moon, Nannaru, to shine, and made him the ruler of the night, indicating his phases, one of which was on the seventh day, and the other, a /abattu/, or day of rest, in the middle of the month."

China

These activities duplicate what the Chinese Legendary Emperor Yao accomplishes in the same era: adjusting the calendar, revealing the planets and stars (now that the equatorial rings had fallen), and setting the Moon in place.

The Chinese *Annals of Shu* were subjected to chronography by the Han between 200 BC and AD 200, and possibly earlier by the Taoists (and there are also comments about estimates by Confucius's disciples). But many of the names on the lists of kings had missing reign lengths, so that averages were used. Dynastic lengths seem to have been better established.

The story of the mortals Khwan and his son Yu forms a parallel to the story of the gods Yao (Jupiter) and Shun (the Moon). We are told that Khwan started drainage of blocked waters on a commission by Yao. The *Annals of Shu* record that in failing to accomplish this, he was kept prisoner on a mountain until his death. His son likewise was hired by Shun for the same purpose and additional tasks; he was appointed to the throne by Shun and survives him to become the first king of the Xia.

Unas and the *Book of the Dead*

Unas, at the end of the 5th dynasty, 2345 BC, is the first pharaoh to add text of the *Book of the Dead* to the interior of his pyramid (as do all the following pharaohs), perhaps being no longer convinced that the recitation by the priests will suffice. If the dates for Unas are correct, then he witnessed the fall of the Absu in 2349 BC. [note 14]

Much Later, in 2193 BC the Old Kingdom will end because of the failure of agriculture. When it is finally reconstituted as the Middle Kingdom 200 years later, it is as if nothing had happened. Egyptian religious practices continue with the old traditions of Horus, Ra, and Osiris. It was Unas who introduced the full-fledged theology of Osiris with his pyramid inscriptions. The worship of Osiris was new at the time of Unas.

There are no literary references to Osiris before the time of Unas. It suggests that the texts of the pyramid of Unas were meant to promote Osiris. As Jane Sellers, in *The Death of Gods in Ancient Egypt* (1992), writes:

"At the beginning of the Sixth Dynasty another change took place. The religious fervor honoring the sun god [Re] which had marked almost all the efforts of the Fifth Dynasty, shifts its emphasis to the worship of Osiris. It is in the pyramid of Unas, last ruler of the Fifth and in the pyramids of rulers of the Sixth Dynasty, that texts were now inscribed, and it is in these Pyramid Texts that the role of Osiris is predominant."

"Sir Alan Gardiner has written that the Pyramid Texts had the sole aim of insuring the deceased ruler's identity with Osiris and insuring that the king would fare as Osiris had."

The reference is to Sir Alan Gardiner, *Egypt of the Pharaohs* (1961). There are references in the pyramid texts of Unas to the bloodbath of Hathor of 2349 BC, although not directly, but displaced as actions by the dead pharaoh.

Sellers again:

"In the Fifth Dynasty some of the kings began a use of a name compounded with that of Re [Note: this actually started during the Fourth Dynasty], and the nomen was now used less often on the monuments; concurrently the building activities now centered on sun temples. By the end of the Fifth Dynasty, however, the worship of Osiris (as evidenced in the Pyramid Texts [of Unas]), appear to rival the worship of Re. From these changes Egyptologists have concluded that competing groups worshiped Re and Osiris."

Sellers quotes J. Gwynn Griffiths, from *The Origins of Osiris and His Cult* (1960), as:

"While there is every likelihood that the Osirian material in the Pyramid Texts derives in part from a much earlier date, so far it has proved not possible to track down the god or his symbols tangibly to the First or Second Dynasty."

Let me: Osiris is always shown as a mummy, and consistently colored green. Although depicted as a green mummy in the middle kingdom, the actual green color dates from after 3147 BC to about 2914 BC. This is the green mummified creation-god Ptah of Memphis. He lived forever and is first king of Egypt. Why have the experts not noticed this? He is equated with Hephestus (who is Venus) by the Greeks and married to Sekhmet (who also is Venus), and wears the Osiris crown. I could add more aspects identifying him with Osiris. How could Sellers have missed this?

This is the same green that describes the mountain form of Jupiter in the *Popol Vuh* -- where he is simply known as "Mountain" (and as the "green tree of the center" in the *Chilam Balam*). Osiris thus is Jupiter, but in a form only recalled or recorded by one or more of the Egyptian temple domains. It is the form assumed by the planet Jupiter until it entered the asteroid belt in circa 2914. The mummy form of Osiris also recalls (or is) Min, the delta God from circa 3100 BC. Both are shown as ithyphallic. Min is thought to be the first pharaoh of the first dynasty, Menes -- "mn" in Egyptian, "he who endures" -- and thus Jupiter.

I am pointing out the sudden interest in Osiris because it was not new at all, and interestingly, the recollection from an earlier time is correct. The Osiris tale can certainly be tied to the reappearance of Jupiter directly after the arrival of the plasmoid from Venus. Additionally, at a later time, a day in the calendar is designated as the commemoration of the death of Osiris, with a day three days later as the date Isis brought him back from the dead, although temporarily. There is an inversion of sorts of

closely related events, as is not untypical of a number instances in antiquity. But here again is the interval of three days (two days and a night) between the sky turning blood red and the sudden reappearance of Jupiter with a lower plasma mountain.

Jupiter probably had lost its coma before 2349 BC, that is, had "died" earlier. Thus in the narrative "legend" of Osiris there is a temporal connection for which there is only a tenuous claim in reality, based on what we know or have been told. All the same, this particular claim -- the death of God followed by his resurrection after three days -- will resound in other legends and in religious claims throughout the ages. The God Marduk of Babylon and Ashur of the Assyrians each also die and are resurrected.

As I mentioned above, Unas, whose tomb walls were inscribed with the texts and spells of the *Book of the Dead*, most likely witnessed the fall of the Absu and the blood in the sky. This is almost certain from consideration of the following engraved Pyramid text. E. A. Budge, in his introduction to the translation of *The Egyptian Book of the Dead* (1895) notes a section of the Pyramid Text from the tomb of Unas which is totally out of character with the other texts dealing with the material and spiritual enjoyments of the deceased. He writes:

"... the most remarkable passage in this connection is one in the pyramid of Unas. Here all creation is represented as being in terror when they see the deceased king rise up as a soul [ba] in the form of a god who devours 'his fathers and mothers'; he feeds upon men and also upon gods. He hunts the gods in the fields and snares them; and when they are tied up for slaughter he cuts their throats and disembowels them. He roasts and eats the best of them, but the old gods and goddesses are used for fuel. By eating them he imbibes both their magical powers, and their 'khu's.'"

Budge quotes the actual passage, of which I will only reproduce the opening line:

"The heavens drop water, the stars throb, the archers go round about, the bones of Akeru [mythological guardians of sunrise and sunset] tremble, and those who are in bondage to them take to flight when they see Unas rise up as a soul [ba], in the form of the god who liveth upon his fathers and who makes food of his mothers."

Unas has here been transformed into the plasmoid of Venus at the fall of the Absu, just as, in other retellings, Hathor had appeared as the lion-headed Goddess Sekhmet in the form of the eye of Horus. Unas here also wades in blood and gore, while the sky fills with water and fire, and arrows are launched, as also on a page on the "third creation" of the *Chilam Balam*. There is little doubt that the priests took advantage of the event of 2349 BC to offer an additional spell to be added to the texts (these were carved before the pharaoh died). It is also certain that the sudden change in religious emphasis -- especially in the worship of Osiris -- was initiated by this absolutely stupendous cataclysm.

Chronology of the 24th and 23rd Century BC

At this point we can collate some dates. The dates below concern four events:

- the fall of the Absu,
- the first appearance of the Moon,
- the "death" of the Moon or the time when it settled into a regular orbit around the Earth, and

- the extinction of Jupiter.

We have these dates from the following sources:

- the *Annals of Shu*,
- the *Chilam Balam*,
- Ussher's chronology, and
- the inscriptions at Palenque.

I have added the four suspected passes of Venus, assuming an interval of 52 solar years. (See Appendix B, "Celestial Mechanics" for the validity of the 52-year cycle during this era.) In the following, read "sb" as "should be."

Fall of the Absu, appearance of Jupiter (Yao)

- 2349 BC - first contact with Venus
- 2349 BC - Ussher: flood of Noah
- 2286-2266 BC - Chilam Balam: The second baptism (see comments)
- 2357 BC - Annals of Shu: Yao takes the throne
- 2357 BC - Annals of Shu: Khwan on the inundation
- 2360 BC - Palenque: the three planets born (sb 2336.8 BC)

The Moon (Shun) appears in orbit

- 2297 BC - second approach of Venus
- 2325 BC - Palenque: Moon lets blood (sb 2302.3 BC)
- 2318 BC - Annals of Shu: Birth of Shun (Moon)
- 2305 BC - Palenque: Moon becomes ruler (sb 2282.6 BC)
- 2287 BC - Annals of Shu: Shun joins Yao on throne

The Extinction of Jupiter (Yao)

- 2245 BC - third approach of Venus
- after 2247 BC - Ussher: "Tower of Babel" (may be 2150 BC)
- 2257 BC - Annals of Shu: Yao dies

Fall of Akkad and the Old Kingdom

- 2193 BC - fourth approach of Venus (electric contact)
- 2207 BC - Annals of Shu: Shun (Moon) dies
- 2205 BC - Annals of Shu: start of the Xia dynasty
- 2193 BC - fall of Akkad and the Old Kingdom
- 2128 - 2108 BC - Chilam Balam: "fire on high" (sb 2167-2147 BC)
- 2155 BC - Annals of Shu: Celestial Phenomena
- ca 2150 - Cylinder of Gudea: splendor of Ningirsu

- 2150 BC - extent of Abraham's lifetime
- 2150 BC - likely "Tower of Babel" event

The records of Mesoamerica as reflected in the *Chilam Balam* accurately record dates, which in deep antiquity probably consisted of Baktuns (periods of 400 solar years) and Katuns (periods of 20 solar years). These can be converted to solar years, if we can guess the Baktun associated with any recorded Katun. Unfortunately, some dates around 2349 BC seem to be in purposeful disorder.

The dates from the sculptures at Palenque of AD 700 will require conversion to solar years (equivalent Gregorian years) on a somewhat different basis, for the Maya at this time calculated in Long Count measures identical to how we use these today, that is, by assuming that the year was 365.24 days long. [note 15]

The Chinese *Annals of Shu* record estimated reign lengths. Because many were missing when these records were compiled, dates were estimated in about 200 BC by Chinese historians. If we equate the date of 2357 BC from the Chinese *Annals of Shu*, the date Yao takes the throne, to the date of 2349 BC (the "flood of Noah"), then the first few dates of the Chinese *Annals of Shu* should be moved 8 years into the future. Dates concurrent with the Xia dynasty can probably be taken as correct.

There may be better concordances of the dates than what I have presented here. One of the really suspect dates is Ussher's Tower of Babel event, which he casually places a hundred years after the completion of the "flood of Noah" at "after 2247 BC" -- it should be set in 2150 BC.

To adjust the dates derived from the records of various peoples, I am using Ussher's date of 2349 BC for the "flood of Noah" as an anchor. This is the fall of the Absu which happened because of the electric contact by Venus and which caused a change of the Earth's orbit to near the Moon. The change of the orbit of the Earth is even noted in the Bible when it is suggested that men's lives were shortened after the flood -- the year had become longer. In the *Annals of Shu* Yao takes on the task of calendar reform at this time. In the Babylonian *Enuma Elish*, Marduk (Jupiter) also establishes a calendar after battling Tiamat. Book 11 of the *Chilam Balam* claims "*and then days of the year were introduced*" as an aspect of the Third Creation. The Third Creation is the event of 2349 BC. [note 16]

The date for the fall of Akkad is archaeologically well-established as 2193 BC, 156 years after the "flood." The period of 156 years is three times the 52-year interval between approaches by Venus -- an interval still seriously observed by Mesoamerica in AD 1500, but in Tun years instead of solar years. I have calculated estimates of the changing intervals in the appendix "Celestial Mechanics." [note 17]

Recap and Reactions

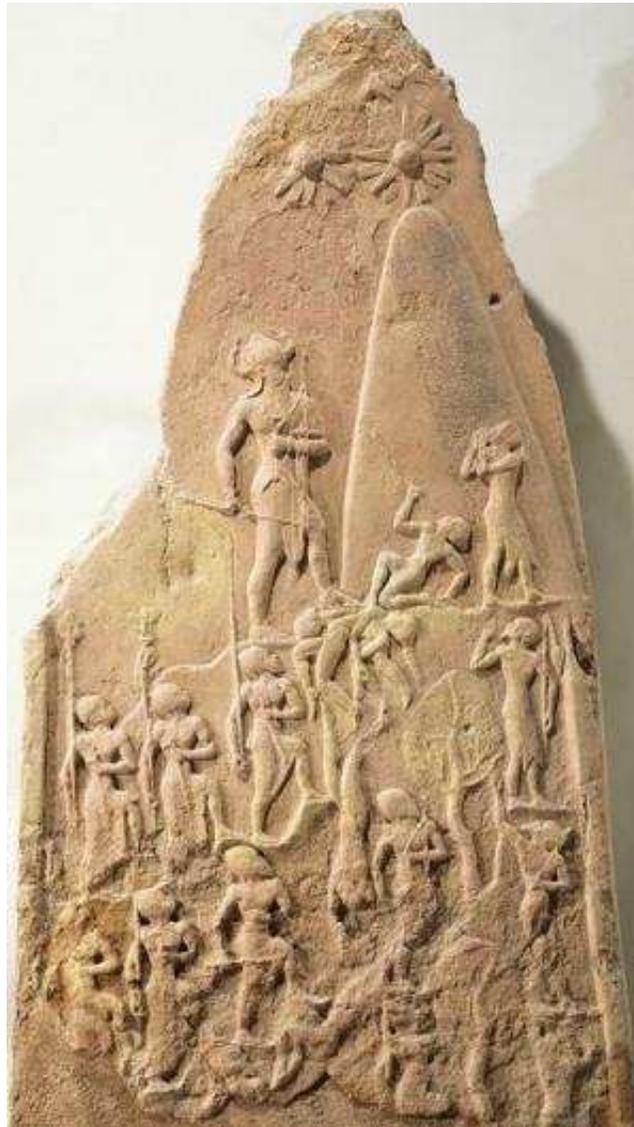
The 24th century BC was important. The second break with the elder Gods took place during this time, and it happened in the course of a hundred and fifty years. To recap:

- Before the first pyramid was completed at Giza, after circa 2527 BC, Jupiter had cleared the asteroid belt and again developed a coma and tail. "Re" was added to the pharaohs's names. The first six pharaohs of the following dynasty, the 5th (2490 to 2350 BC), built separate sun-temples dedicated to Re -- modeled on the mountainous lower plasma outpouring of Jupiter (the shape of which is called a Benben).

- Before 2349 BC Jupiter seems to have lost its coma tail, perhaps on entering the last outlying clump of asteroids. The Egyptian pharaohs lost interest in monuments to Re. This was followed in 2349 BC by an electric contact with Venus which brought the Earth to a larger orbit, near the existing orbit of the Moon. The *Chilam Balam* claims that Jupiter did not have its lower plasma form ("he was not crying"), when the Moon showed up. This suggests that the Moon showed up later than 2349 BC, although by the content of the *Enuma Elish* this could be questioned
- In 2349 BC the Absu fell, causing a period of extensive rains and storms on Earth (Noah's flood). The *Chilam Balam* places the "second baptism" (the "descent of water from the center of heaven") a hundred years later, but the text clearly deals with the fall of the Absu in 2349 BC. The date selected in the *Chilam Balam* was retrocalculated at a late date to match a unique Mesoamerican calendrical consideration: it had to fall on July 25th.
- The Palenque inscriptions of AD 700 claim that the three planets, Venus, Jupiter, and Mars were "born" in the newly cleared skies (corrected to 2337 BC), that is, they were clearly seen on the ecliptic, no longer obscured by the rings of the Absu. This is 10 years after the fall of the Absu.
- The plasma mountain of Jupiter returned very soon -- within three days -- after the fall of the Absu. The *Annals of Shu* claims that Jupiter, as Yao, took the throne in 2349 BC (corrected from 2357 BC). Yao will reign as supreme God (emperor of all the world) for another hundred years in China (it should be 199 years). One of Yao's first acts is to correct the calendar, since the length of the year had changed.
- The Palenque inscriptions record that the Moon crowns herself as ruler in 2305 BC, which should be corrected to 2282.6 BC. It is possible that the "crowning" does not mean anything. In the *Annals of Shu* Yao selects Shun, the Moon, to join him on the throne in 2287 BC.

Humans are now ruled by two large globes in the sky, Jupiter and the Moon, possibly of equal size. One is steady and slow, the other is forever busy on a survey of the land (as said in the *Annals of Shu*). The *Chilam Balam* reads, "the entire world was proclaimed by Uuc-yol-zip." Watching the daily changes in the movement of the Moon will convince anyone that the Moon spends considerable time above other parts of the land.

- The *Annals of Shu*, state that Yao dies after a long rule. The Chinese scholars of the second century AD estimate the date as 2257 BC, but it should probably be a hundred years later, in 2150 BC -- matching the death of Abraham. (It is uncertain as to what was actually seen.) Ussher places the Tower of Babel incident after 2247 BC. But it was Jupiter which went up in flames in 2150 BC and not Mercury. The *Chilam Balam* places the "fire on high" in the (corrected) double decade dates of 2167 to 2147 BC. The *Chilam Balam* also ties the event directly to Jupiter.



[Image: a victory stele of Naram-Sin, the great grandson of Sargon. He is named after the Moon, Sin. Erected after 2250 BC. The two gods shown at the top as stars are the Moon and Jupiter. Jupiter is shown on his mountain. Collection of Louvre Museum.]

- There was an additional intersection of Earth's plasmasphere with the tail of the plasmasphere of Venus in 2193 BC, causing another Earth shock, a change in the orbit, and a loss of sunlight lasting 200 years. The Second Kingdom of Egypt collapses, as does the Akkadian Empire. The flaming of Jupiter in 2150 might not have been noticed at the latitude of Mesopotamia and Northern Egypt. It is suspected that the shading of Earth by nano-sized carbon particles in the stratosphere may have differing effects at different latitudes.

From the mix of these four records -- the *Annals of Shu*, the Bible chronology of Bishop Ussher, the inscriptions at Palenque, and the *Books of the Chilam Balam* -- it is clear that there is little agreement on when the Moon first showed near Earth, or when it was considered to be established on a regular orbit. There is closer agreement on a date for the fall of the Absu, although the *Chilam Balam* places the event much later, but on purpose. There is more agreement on the date of the last event, the "burning tower." This concludes a century busy with celestial events.

Different people interpreted the events differently, but all of them needed stories and histories to reflect what they had experienced and how things had changed. Most of the "legends" came forth in the years following 2200 BC, although some were further delayed by the 200-year drought which followed immediately.

... Egypt

The Egyptians remained faithful to the elder gods, although they no longer confused celestial apparitions with rulership of their lands as they had a thousand years earlier after 3147 BC. The pharaohs of the 5th and 6th dynasty institute a worship of Re, then seem to change it after 2349 BC (for Osiris), to be picked up again later. After Jupiter extinguishes two hundred years later, a new supreme God is added in Egypt, or rather, named. It is Amun-Ra -- "Hidden Ra" or "the hidden sun," as archeologists have it.

Amun-Ra is also spelled "Amen-Ra" and "Amon-Ra," and is also known simply as "Amun." Amun is almost universally identified with the Sun by archaeologists, even though there is not a single indication of this in all of Egyptian writings and inscriptions. The Moon is never seriously added as a God, although today the Moon is almost universally confused (by archaeologists) with Thoth, who is Mercury. In the Ptolemaic era (after 300 BC) the Moon seems to have taken over the identity of Thoth, although the Greeks of that period still equated Thoth with their Hermes. So do I. The Moon also goes by the name of Aphrodite ("foam born" according to Hesiod, meaning the foam of the sea), and is female. [note 18]

... Babylon

The priests of the city of Babylon, under the dynasty which might have included Hammurabi, and probably after 2100 BC (but possibly a lot later), wrote the *Enuma Elish*, a creation account which raises Marduk (Jupiter) to the status of chief God, by agreement (says the text) of the elder Gods of Akkad and Sumer. The text relates events which had been witnessed (but not recently) as proof of the change: the disappearance of Marduk's garment and its reappearance at his command, the battle with the dragon Tiamat (the plasmoid of Venus), the removal of the Absu (the net), the clearing of the skies in the south, the sighting of the southern stars, the delineation of the zodiac, the placement of the Moon, and the revision of the calendar.

For the Babylonians, and for the older land of Akkad and Sumer, to recognize Marduk as chief of the Gods resolved a crisis in faith, and gave proof that the large red globe in the south, previously standing on a mountain of plasma, along with the Moon which had now appeared, was there by destiny and in agreement with older traditions. Marduk became the most widely recognized God in Mesopotamia, from Assyria to Elam, and retained his status as chief God for two thousand years. Not a little of his status was due to the central political position assumed by Babylon after 2200 BC -- but also because he could be seen yet at that time in the skies.

Because it was probably written 500 years after 2349 BC, the text of the *Enuma Elish* is out of order, even though all the individual elements of the event of 2349 BC are included.

... Bible texts

In the Bible texts Jupiter has become Abraham, who receives a son, the Moon, only in old age, and then nearly sacrifices him on a burning mountain. Similarly to the *Annals of Shu*, Jupiter is held up as the model of good behavior. [note 19]

... Mayan texts

The *Chilam Balam* certainly is the most strangely different from the other texts mentioned above. Even though relating events from 4000 years earlier, it is also consistently the most accurate. It is mostly different in not having an obvious didactic agenda. We are presented instead almost solely with natural history, and a few complaints about the kings and leaders of the past. In the face of the new Christian religion, the *Chilam Balam* only seeks to prove that the older worship of "these stones" might simply have been a mistake.

"Very rightly they worshiped as true gods these precious stones."

"These stones" were volcanic concretions, noted in the *Popol Vuh*, which were held to be the spirit containers of the earlier Gods which had roamed the skies. One section of the *Chilam Balam* even equates the planetary Gods before "creation" as stones inhabited by the spirit of the Christian God.

... China

The Chinese would recall Yao and Shun as exemplary figures who instituted good government. Nothing is said of the burning of Jupiter. The Xia dynasty, which followed the reign of Yao and Shun (after 2205 BC), took control of the land and the people, and made it through the period of bad weather.

China turned secular, although it remained nominally monotheistic, but never again concerned itself with signs in the sky. All the subsequent rulers were "kings." The title of "emperor" -- a ruler over all the Earth -- was not used again in China for the next 2000 years.

The Moon Dies

In 2193 BC Venus made electric contact with Earth again, the last time in this era. As I noted in the previous chapter, both Akkad and the Old Kingdom of Egypt come to a close. There is very little else we hear from the Eastern Mediterranean region, or nearly anywhere else, about this event, except for the failure of agriculture.

We have only very slim chronological data which point to what actually happened. The contact by Venus was not accompanied by impressive celestial events, and nothing was recorded in legends and stories, unlike the earlier contact of 2349 BC. What I believe most likely happened in 2193 BC, is that Venus, in this instance being considerably closer to Earth, made a compressive contact to land,

followed quickly by lightning strikes to land which resulted in large blazing forest fires which in turn lofted ashes and particulate matter into the stratosphere, blocking sunlight for the next 200 years.

The Earth's orbit again increased, to 270 or 280 days (I suspect 273 days). At the same time the Moon relocated further from Earth, taking 28 days to complete one rotation (month) around the Earth. The records of the Xia dynasty tell of the removal of the Moon (Shun) from nearer to Earth to higher up at the conclusion of his tasks, suggesting that he died.

"In the thirtieth year of his age, Shun was called to employment. Thirty years he was on the throne (with Yâo). Fifty years afterwards he went on high and died."

"Going on high" is not likely to be the sudden disappearance of the coma of the Moon, although this should be kept in mind as a possibility. The Moon may have had an atmosphere at an earlier time, before meeting up with Earth. But I do not think the Moon ever supported much of a coma, being a small rocky planet without a magnetic field, and having spent perhaps millions of years at the same distance from the Sun. (The Moon is older than the Earth.)

If, in effect, the Moon became smaller, it would be because it moved further up into the sky. Adding the 30 plus 50 years to the date when Shun was called to employment, 2277 BC (corrected from 2287 BC), places the "going on high" of the Moon in 2197 BC. This is four years before 2193 BC, but, given the guesswork at chronology by the Han dynasty (and me), it is close enough to suggest that this can be linked to the fourth approach by Venus in this era.

The reason for suggesting a year of 270 or 280 days with ten months of 28 days, is that a ten-month year and a 28-day month start to show up in this era. The Shang dynasty of China (although after circa 1700 BC) records 28-day months and 27-day months. I suspect from this, that the year may have been at some value in between, and suggest it may have been 273 days (which also solves some problems with the Olmec calendar). Ten lunar months would likely have been in use.

We have little information on the ten-month year, except that even today some people count only ten months in the year, stretching the last month of each year to 90 days. Additionally, a few calendars kept counts of 10-month cycles, even when there were 12 lunar months in the year. In India the sky was mapped to 28 "lunar mansions" a concept still in use today. (For additional information see Appendix A, "Chronology.")

In the following years the southern stars were mapped, calendars were adjusted, commerce and trade were expanded, and histories were created. Politics changed and developed as they always had, but the relationships with the Gods remained stable.

The Return of the Axis Mundi

Since in 2349 BC the Earth increased its orbit, it would again have to equalize its charge to match the new orbital location. And do so again in 2193 BC. Again this would be accomplished through an influx of electrons at the magnetic poles. The plume of plasma in glow mode which had appeared directly after 3147 BC, would return, and probably at both poles.

After the battle with Tiamat, Marduk sets his bow (classically identified as "a rainbow") up in the heavens as a sign of triumph. The bow is the south polar plasma plume. It is a bow standing up, not hung horizontally across the sky from pegs like a rainbow.



[Image: Shamash (Jupiter) with his banded head wrap, seated on his temple seat and holding a "shen." The "shen" dates the iconography to after 2914 BC. The south polar plume rises above Jupiter (and thus the ecliptic), dating the image to after 2349 BC. A small figure at the end of the plume controls the rotation of the southern stars. The terminating ball or ring of the plume is here interpreted as a manikin. The end of the plume moved with the rotation of stars. The table and pillar likely are architectural details, like the God's seat, which latter reads "temple." The humans are identified and place this Babylonian cylinder seal in the 9th century BC. Collection of the British Museum.]

The Maya *Chilam Balam*, which lists the four trees which hold up the heavens in each instance after a recreation of the world (a change in the orbit), speaks directly to the tree of the south as part of the event of 2349 BC (the "flood of Noah," and the Maya "third creation").

"The planted timber was set up. Perishable things are assembled at that time. The timber of the grave-digger is set up at the crossroads, at the four resting places."

-- Ralph L Roys *The Book Of Chilam Balam Of Chumayel* (1933)

The text is not exactly lucid, but see the chapter "The Chilam Balam" where this is further explicated. The first "planted timber" may be the plasma plume at the north magnetic pole. The second one, set up at the "crossroads" is the plume of the south (viewed from north of the equator).

The "crossroads" is the intersection of the ecliptic and the equatorial, both of which were visible, and thus the equinox. The "perishable things" are the Pleiades, held to be celestial seed corn by the Maya. The "grave-digger," Roys notes, can also be understood as "hider," someone who hides objects. I would suggest this as applicable to the Absu. Note the phrase "at that time." A new condition is being described. From the further context of the *Chilam Balam*, it is, without a doubt, the event of 2349 BC.

It is further of some interest to recall that this event, the sudden appearance of a southern plasma plume, is described in the *Popol Vuh* as the attempt by the Four Hundred Boys to impale the mountain giant Zipacna in a grave he has inadvertently dug to hold the center post to their house. Zipacna is Jupiter. He appeared in the depression of the Absu on about September 8th (two nights after the fall equinox). Once the Four Hundred Boys are thoroughly drunk, Zipacna enlarges himself and "blows up the house."



[Image: Egyptian: Flames of the four cardinal directions; brazier glyph detail.]

The "house" shape of the Absu would result because the Earth's axis had initially bent away from the direction of the Sun when the shock was received from Venus. This should be remembered, it is integral to any recollection of the 3-day event. The image of the Absu would thus have been rounded again like a hut, with the Earth's shadow creating what looked like an arched doorway to this hut. On the third day, with the axis of the Earth sufficiently recovered from the application of the gyroscopic reaction torque, this imagery would have changed back to a gap -- as if the house had exploded. The Four Hundred Boys become the Pleiades, now seen among the stars directly above the gap of the exploded house and above Jupiter which is seen to rise from the gap also. See the chapter "The Popol Vuh." The rising or resurrection of Jupiter from a cleft in the Earth -- the old Absu at the time of the equinox -- reappears in Maya iconography, as Jupiter rising from a crack in a turtle carapace.

References to the polar plasma plumes show up also among the spells of the Egyptian *Book of the Dead*.

*"Who then is it?"
 "Those above their braziers -- it is,
 the image of the Eye of Re, together
 with the image of the Eye of Horus."*

*"Others say:
 It is the two mighty and great cobras
 on the brow of thy father Atum."*

*"Others say:
It is his two eyes which are lacking in his head."*

*"Who then is he?
It is Horus with the Two Eyes."*

-- E. A. Budge, *The Egyptian Book of the Dead* (1895)

This describes the two ball plasmoids (as eyes), which existed at the ends of the polar plumes. Sycamore trees seem to have been used for the "plumes" of the east and west cardinal points, at times as dual trees. The guardians of the east and west, the Akeru, are depicted as lions (not only in Egypt, but also in Akkad). The implication of these texts is that the chief God of the Egyptians is absolutely gigantic in size; he spans all of the heavens.

"Lacking from his head," refers to Jupiter in his later form, when the "eyes," originally formed by the equatorial toroid are no longer visible at the much greater distance after leaving the asteroid belt.

The flaming braziers, with smoke which curves back to point down, are usually presented as four in number, but at times as six. There are also depictions of six braziers at the edges of a rectangular "lake of fire." This last, the lake of fire, remains as an obstacle to reaching the underworld throughout all of the Book of the Dead. There is no physical analog for the "lake of fire."

In Southern Mesopotamia depictions of the east and west plumes appear on cylinder seals as flags (vertical banners), mounted to poles which are bent back somewhat, with a circle at the top (called "ring-topped standards" by archaeologists). These forms appear regularly, and have also been called "doorposts" both in original Akkadian texts and by archaeologists.

On one cylinder seal the plumes are depicted adjacent (left and right) with a reed hut with rays emanating from its roof. They are "associated" with Inanna (Venus) in that the cuneiform symbol for "Inanna" has been added. The house is likely the Absu, so that in this case the "circle plumes" represent the plumes of the east and west cardinal directions.



[Image: Mesopotamian circle plumes, depicted on a vase.
After H. W. F. Saggs, "Babylonians" (2000).]

The Tower of Babel

An incident, and possibly this very incident, following about 200 years after the fall of the Absu, generated the initial version of the "Tower of Babel" stories throughout the world. The Tower of Babel story is interesting because it occurs everywhere in the world. A "Tower of Babel story" was told to the invading Spanish in Central America in AD 1500. It was known also among North American tribes. Around the world, the stories all have the same three elements: a burning (or collapsed) tower whose construction is attributed to humans, a confusion of languages or loss of memory, and the dispersal of peoples. It seems almost certain that the Tower of Babel event was the last spasm of Jupiter before diminishing to just a star-like pinpoint of light.

However, quite a few of the stories attribute the burning tower to the planet Mercury. This might be correct and I'll discuss this below, even though the incident involving Mercury happens 2000 years later. There are, however, only hints in mythology that it might have been Mercury. Surely the *Chilam Balam* would have had reference to Mercury, since the story is widespread. The *Chilam Balam* says nothing. It only reports that "the face of the sun" -- the midnight sun -- was "taken from

earth." "The Sun" is Jupiter. The Maya or Olmecs would not have made a mistake in identifying this planet.

Ussher dates the Tower of Babel event to "after 2247 BC." According to Velikovsky, the medieval chronographer Abraham Rockenbach, in *De Cometis Tractatus Novus Methodicus* (1602), places it in 2060 BC, but attributes it to a comet seen over Egypt.

"In the year of the world one thousand nine hundred and forty-four [2060 BC], two hundred and eighty-eight [288]years after the Deluge, [which calculates to 2348 BC] a comet was seen in Egypt of the nature of Saturn, in the vicinity of Cairo, in the constellation of Capricorn, and within the space of sixty-five days it traversed three signs in the sky. Confusions of languages and dispersals of peoples followed. On this the text of the eleventh chapter of Genesis speaks in more detail."

-- Abraham Rockenbach *De Cometis Tractatus Novus Methodicus*, in Velikovsky, unpublished documents, at [www.varchive.org]

The Tower might have been a comet, but it is not Jupiter. Jupiter does not traverse three zodiac signs in 65 days. The date of 1944 AM is based on starting a count in 4004 BC. The date 288 years earlier is the Deluge of 2349 BC or 2348 BC, the classical date of the flood of Noah. Both of these match Ussher's chronology.

Velikovsky, in a footnote to an unpublished document ("Mercury"), quotes from the *Bhagavatamrita* that "Buddha [Mercury] became visible the 1002nd year of the Cali yug." The Kali era (Cali yug) started in 3102 BC, as retrocalculated as a conjunction of planets. The 1002nd year is 2100 BC. This is likely the second showing of Mars and Mercury (to be detailed in a later chapter) in 1936 BC, which caused the destruction of Sodom and Gomorrah.

Rockenbach's date of 2060 BC does not match Ussher's estimate of "after 2247 BC" for the Tower of Babel incident, nor a Mesoamerican date for the "fire on high" which I have placed with some confidence in 2150 BC -- in Katun 8-Ahau (2.10.0.0.0) dated 2167 to 2147 BC (corrected dates). This last date, however, together with the Kali yug date, correspond to additional dates for the extinction of Jupiter: the mention by Gudea in a tablet or prism of the "brightness of Ningursu," dated to circa 2150 BC, and the historical notice in the *Annals of Shu* written during the Xia dynasty of a celestial event in about 2155 BC. Details of the mention in the *Annals of Shu* follow.

Of the four records of the Xia dynasty in China (2205 to 1767 BC) listed in the "The Books of the Hsia [Xia]" (of the *Annals of Shu*), there is one, the last, dated to 2155 BC, which mentions a "celestial phenomenon." We should ask why, from among the hundreds of eclipses which (may have) happened in China during this long period of history, only this single event, "a celestial phenomenon," was deemed noteworthy enough to record and transmit to the future. [note 20]

Although Mesoamerican and Chinese sources speak to a crisis of Jupiter, almost all sources on the "burning tower" speak of an incident involving the planet Mercury. In the Americas, at first contact with Europeans, stories of a "Tower of Babel" event were extant. Elsewhere, in Mesopotamia, Greece, and Egypt, there are dozens of documents in antiquity, plus additional tales and legends spanning four continents, which all relate the loss of memory or changes in languages to Mercury -- the Gods Hermes, Thoth, Nebo, Odin. In fact, the status of Mercury as an important God dates from

remote antiquity (around 2100 by the estimate of de Grazia).

Velikovsky placed the event "after the flood which ends the age of Jupiter" -- by which he would likely mean the Noachian flood. In the late legends of Egypt, which recall the flood of Noah as the bloodbath (and beer bath) of Hathor, when the God Ra abdicates he turns his duties over to Thoth. That would have been, as best I would guess, after 2150 BC. That date agrees with the first appearance of Mercury as a God to which attention needed to be paid -- in the 1002nd year of the Kali era, 2100 BC, and certainly coming close to Earth starting in 1936 BC. The "first appearance" is thus likely to be the coincidence with the flaming and extinction of Jupiter, when Jupiter's duties are turned over to another planetary God.

Let me point out the obvious: Velikovsky's choice of a date was influenced by Ussher's chronology. Ussher's pick of a date was in consideration of the Bible story of the Tower of Babel. The Bible in turn could not admit that Abraham had gone up in flames 199 years after the flood, or, for that matter, that Abraham was born two days after the flood of Noah, so that the Tower of Babel text as presented in the Bible ended up being based on a much later event: the real Tower of Babel event which is dated to 686 BC.

Why was the Tower of Babel story included in the Bible at all? Mainly because it was part of the sacred history of the world, of which the Hebrews were the recognized keepers. But, perhaps more importantly, everyone (at the time of the final composition of the Bible) knew it had happened: a tower to heaven was built, it caught on fire, and it burned. Other people and other tribes would hold the Jews accountable for an accurate history of the world, especially with their claim that only their God was the true God of all history. In antiquity the books of the Torah were used as valid sources about the past by a number of other nations.

Mercury

I will now turn to Mercury, and introduce some facets of this planet. Although only somewhat larger in diameter than the Moon, it has 4.5 times the mass. Mercury is half the mass of Mars. We know that Mars in 747 BC nudged the Earth to a larger orbit and longer year, by 930 thousand miles (1500 thousand km) and 5.24 days. It is quite possible that Mercury, with half that mass, never "hit" the Earth with a repulsive electric shock serious enough to move Earth in its orbit. At least, we have no calendrical record. But it could have involved a change in eccentricity. This would change the kinetic energy of the Earth without changing the orbital period.

It seems certain, also, that Mercury overran the orbit of Earth since remote antiquity. That Mercury was seen on a wildly eccentric course is almost certain for several reasons. First of all, Mercury still has the most eccentric of all planetary orbits. Mercury is the one planet which nearly doubles its distance from the Sun over the course of its 88-day orbit. No other planet comes close to having such an eccentric orbit, and we could be assured that, if Mercury had been seen in both the northern and the southern skies 3000 years ago, when the orbit of Earth was still 30 percent less than it is today, Mercury would have regularly reached beyond the orbit of Earth. This corresponds to the fact that Mercury was assigned in antiquity, almost universally, the duty of messenger of the distant Gods Saturn and Jupiter -- the planets remaining on the ecliptic of the southern sky.

Secondly, the God Mercury had the "wings" and "snake tail" of the "caduceus" -- an indication that it moved on a highly elliptical path, behaving like a comet which loses and regains a surplus of electric charge with each turn around the Sun. The disk with wings and the extrusion at the end was a glow mode plasma discharge generated as Mercury traversed the electric field of the Sun. But, whereas Venus sported an immense tail (30 million miles, 48 million km, today in dark mode discharge), Mercury, which is much smaller (only 40 percent larger in diameter than the Earth's Moon), would most likely have had a relatively short plasma tail but with wings as the north and south plasma plumes at the poles (which, by the way, were seen sideways as Mercury passed close to Earth: one above, one below).

The "disk" of the caduceus is likely to be its spherical coma, which could be supported by Mercury since it had a substantial atmosphere (it still has a remnant atmosphere today). Mercury has only a very weak magnetic field, but apparently it was enough in the past to allow the part of its plasmasphere facing the Sun to light up in glow mode. It looked like a musical instrument, and music is attributed to Mercury. It also looked like a bow strung with an arrow. Mercury was identified by the Greeks as Apollo, "the archer God who shoots from afar." The name Apollo was transferred to the Sun after Classical times. [note 21]

And lastly, again, we have the many descriptions from antiquity that Mercury was the messenger of the Gods -- swinging from aphelion beyond Earth's orbit to perihelion with the Sun after passing by Earth. If Mercury were on an orbit which reached from the Sun to a location beyond the Earth, it would look as if he were visiting the departed Gods in the far reaches of space. It would have been logical to assign Mercury the role of messenger. As such, Mercury was charged with the task of caretaker of mankind.

As I will suggest in the chapter "Exodus," when it was certain that all the Gods had left, Mercury as the caretaker God was acknowledged as the intermediary between the distant Gods and mankind, a God who was charged with all the arcana of magic, special materials, writing, and language. That God was the Egyptian Thoth, Sumerian Enlil, Greek Hermes (originally Apollo), Roman Mercury, and the Norse Odin -- each of which can be identified with the planet Mercury.

In Roman times, some Northern European tribes declare Odin as their primary God. That is really strange if Mercury had always behaved as today -- only seen infrequently for a few minutes per night above the east or west horizon near the rising or setting Sun. Mercury was the last planetary God, except for Mars and Venus, who still visited long after the other Gods had retreated. But, unlike Venus, he seemed immensely busy, crossing Earth's orbit every year and a half. But when Mars was still active in coming close to Earth, the destructions by Mars (especially in the Eastern Mediterranean) completely eclipsed notice of Mercury when both showed at the same time.

The Burning Tower

Since there are universal memories of the Tower of Babel event, it was either an absolutely stupendous event, or a recent event. The blood in the sky and the fall of the Absu in 2349 BC was a stupendous event and was universally remembered for 4300 years. The Tower of Babel, if assigned to Mercury, could not have been at all remarkable by comparison. I would therefore suggest instead that the event was recent and, in fact, much more recent than Ussher's estimate of "after 2247 BC" -- it happened on March 23, 686 BC. The basis for this date will be developed in a later chapter.

In identifying a plasmasphere contact in 686 BC, I am continuing my claim that every catastrophic event of the past should be able to be clearly identified, graphically visualized, mechanically reconstructed, dated, and located by a consideration of orbital parameters. This is not to say that tales, stories, and myths were not recycled, so that the extinction of Jupiter in 2150 BC became a foretelling of the event of 686 BC, and the fire on Mercury in 686 BC provided the details for the Bible's description of a similar event 2000 years earlier.

Where does the "burning tower" enter into the picture? It was likely a plasma discharge between Earth and Mercury. I would assume that, after the plasmaspheres touched, and a shock was exchanged, a charge imbalance between the planets induced a stream of plasma in glow mode to reach from the ionosphere of Earth to the cloud cover or surface of Mercury -- in effect a lightning strike. (The southwestern prairies of the US burned up directly after the shock.)

The shock between Earth and Mercury happened as Mercury passed in front of Earth between Earth and the Sun. The distance between the planets was likely equal to the distance between Earth and the current aphelion of the orbit of Mercury. That represents a distance of 48,000,000 miles (77,000,000 km). That is the location that Mercury returns to today with each orbit around the Sun.

There would have been physical effects, an Earth shock and earthquakes and fire falling from heaven, but not nearly to the extremes of what was experienced when Venus made electric contact in 2349 or 1492 BC. Since the mass of the Earth is 20 times the mass of Mercury, it is unlikely that the Earth's orbit would be significantly affected. And, in fact, we have no record of a change in the length of the year.

Mercury, however, would likely have received a shock which might have thrust it far away from Earth. The shock location of 686 BC on Mercury can be identified; it has been known since the first spacecraft flyby in 1970. The contact location on the Earth is on the North American continent. The chapter "Destruction by Mars" will pinpoint the contact location.

The plasma charge exchange would have been limited because Earth had been in its present location from the Sun for a thousand years, except for the minor change in orbit of 747 BC. Mercury similarly had moved on a course from near the Sun to the asteroid belt for nearly 3000 years. In the case of Mercury, its charge would have been normalized to a value close to what was held by the Earth, since Earth was located about halfway along the elongated orbit of Mercury.

The plasma contact (exchange of charge) might have involved arc mode exchange, but Mercury would quickly have distanced from Earth and the plasma exchange would have switched to glow mode. At that stage it probably would have assumed the shape of a steep triangular mountain -- similar to the pyramid-shaped "mountain" of plasma between Earth and Mars at the time of Horus after 3100 BC -- but at this time the mountain was understood as a man-made tower that could be seen as being constructed over a period of time (perhaps only a day or so) as it extended upward.

The tower would eventually have reached to the aphelion location of Mercury's orbit, 48 million miles (77 million km) from Earth. The tower could be seen to grow from Earth as the plasma stream changed from dark mode near Earth to glow mode further away. Possibly the "tower" was constructed in the reverse direction (that is, constructed from Mercury to Earth). The stream of plasma would increase in density on approaching Mercury -- an increase in electric current -- so that the mode changed to arc mode on reaching the surface of Mercury. There was the start of the fire.

During the earlier visits of Horus, no man-made pyramids or ziggurats had been built yet, and the very similar phenomenon at that time was described as the mountain built by the god Horus -- "who rises on *his* mountain." But towers or pyramids and ziggurats had already been erected by the time of the approach of Mercury and the idea that this was a tower constructed by humans was well within the imagination of those who were watching. In Mesopotamia the destruction of the tower had precedent in ziggurats which had been destroyed by massive lightning strikes.

The tower burned and collapsed. The tenuous atmosphere of Mercury still holds vast amounts of hydrogen and helium, as well as oxygen and sodium (which, because of its small size, would not be the case if Mercury were billions of years old). Hydrogen gases might have burned when the plasma stream connection from Earth turned to arc mode at the strike points on Mercury. The burning might have extended long past the time of the initial plasma contact.

The burning tower legends worldwide hold that people everywhere lost their memory or changed their language or both. The ubiquity of this detail suggests that it was fact. If we take this universal story at face value, it would suggest short-term amnesia, perhaps due to some sort of electro-shock, induced by the sudden change in the electric potential of the Earth's surface. Perhaps the plasma contact with Mercury fried our brains.

Mercury also is the only planet with a (slight) magnetic field to have made a close approach with Earth (even though its magnetic field is weak, and should not exist at all). This fact may explain why this incident was physiologically different from earlier and later approaches and plasma contacts with Venus and Mars, neither of which have a magnetic field. The effect of an imposed planetary magnetic field will not be felt, because planetary magnetic fields are weak. But the flow of electricity toward the Earth's crust creates a magnetic field also.

The electric contact with Mercury was (possibly) at a closer distance to Earth than any of the half dozen contacts by other planets, with the exception of Mars. Mars completely entered the Earth's plasmasphere, and came so close that the devastating effects were local, extending perhaps only a few hundred miles north and south of its path. Mercury's contact, by comparison was global.

It is perhaps also likely, however, that during the plasma contact with Mercury, a time-varying electric or magnetic field was experienced. A varying magnetic field is known to have physiological effects. (See the endnotes to the chapter "The Start of Time.") This would also suggest another possibility for the "loss of memory" or "loss of speech." The plasma contact with Earth may not have been an event which took away memory, but which instead caused speech and memory to falter, thus bringing these to awareness in people worldwide. Perhaps this also brought an awareness that other people speak differently. [note 22]

The experience with the failure of speech may have forced people to write down their stories which previously had been passed along by word of mouth. The stories could thus be rendered correctly with future retellings. They might have also become aware that "old stories" could be "placed" in an imagined "earlier time." With books of recounted stories we immediately jump to the matter of primacy -- there are earlier and later events. That forces a new consideration of historical time.

It is also interesting to consider that shortly after the event of March 23, 686 BC, the output of the Sun changed radically after June of 685 BC. Within two or three generations after 685 BC we start to see the first attempts -- worldwide -- of a separation from a mythological past. This happens in physics, in

philosophy, and in religions.

The dispersal of people in the Tower of Babel stories may or may not have happened. A few stories (as with some from North American Indians) do not include the details of a dispersal. It may have been that, instead of a dispersal, people were suddenly able, for the first time, to imagine the whereabouts of others.

The dates of 2060 BC or 2247 BC for the Tower of Babel event are incorrect. The date of 2150 BC represents the extinction of Jupiter, and became only a pre-telling of the Mercury event of 686 BC.

The First Histories

The suggestion made above follows from consideration of the onset of the development of subjective consciousness, nominally placed in circa 2000 BC or 1500 BC.

It is from Egyptian, Mesopotamian, Indian, and early Greek and Roman sources that we can extract the most details about the celestial dramas and the corresponding human activities. Egyptian sources are primarily from tombs, since texts on papyrus have not lasted (although we have some papyrus texts dating back to 2400 BC). Egyptian sources have a continuity over more than 3000 years -- a continuity unequaled anywhere else. This is so because Egypt was the least affected by the worldwide floods which accompanied the three major catastrophes, and its land has retained productivity in the face of permanent climatic changes elsewhere.

Mesopotamian texts were inscribed on clay tables, more stable than papyrus (or bamboo slivers, as in China) and even more permanent when inadvertently fired to baked clay due to the burning of a palace or town. The clay tablets date back to 2700 BC and earlier.

The remaining sources elsewhere are textual recollections made after 700 to 500 BC from earlier verbal retellings. Indian sources are plentiful but are poetic representations of past events, recorded for their exemplary religious value and not transcribed to texts until very late. For China almost identical conditions are true. Greek and Roman sources also date exclusively from the period after 650 BC.

Inca sources in South America are silent. There is some evidence suggesting that literature may have been suppressed before the arrival of the Spanish.

Mesoamerican sources at one time graphically recounted the complete history of the world dating back 40 thousand years, including the birth of the Gods and their abandonment of Earth, but the records are clouded by a displacement of thousands of years, awaiting the invention of a script by the Olmecs and its full development by the Maya. The texts are now lost, destroyed by the Spanish invaders. Only recopied snippets survive. Yet the *Popol Vuh*, written circa AD 1500 in Central America, and thus 13,000 years after the "first creation," frequently recounts events with an unrivaled clarity.

For the rest of the world, however, many of the specifics of the genesis of the Gods and their abandonment of Earth are forgotten and today, thousands of years after the Gods left, we are presented with a confused set of oral histories offered as creation myths and tales of the stupendous deeds of forebears from hundreds of separate and isolated societies throughout the world. The actors in these dramas are varied, and the actions seldom make sense and offer no lessons, but they all involve the same themes, and the consensus in the remaining details, even after the passage of thousands of years, is

astounding.

Almost everywhere the legends and records of the past date from after the fall of the Absu (2349 BC), and after the extinction of Jupiter (2150 BC). It may have been the loss of these last images of the "Era of the Gods" which created the impetus to start an historic literature. These events fall at a watershed in historical consciousness for it is followed soon by a profusion in the composition of legends and records everywhere. At least, this is true of Mesopotamia, but also of India and China.

In Egypt, vernacular narratives about previous earth-shaking events appeared much later. These narratives only show up in texts on tomb walls during the New Kingdom (1327 BC through 1136 BC), rendered as fashionably "old," that is, in the style of the Middle Kingdom, 2000 to 1500 BC -- the period following the events of the fall of the Absu. They are stories of previous destructions of mankind, not unlike the epics being written in Sumer, but unlike any text ever created in Egypt up to that time.

The composition of the earliest Hindu scripture, the Rig-Veda, can be placed before 1900 BC from geographic references to a location in Northwestern India adjacent to the Sarasvati river, which is said to have dried up over a period of 300 years after 2200 BC. The Sarasvati is held as the center of civilization in the Rig-Veda, although it may have been a mythological river.

The records of China were collated circa 550 BC as the *Annals of Shu*, transcribed from older sources. Only the first two sections of the *Annals of Shu* are recollections, dating back to 2357 BC. All the remaining sections of the *Annals of Shu* were written contemporaneously with the events they describe, and all these date to after 2200 BC. The first record is "The Speech at Kan" which can be dated to the period of 2188 to 2160 BC.

The script of Sumer, which had been used only for the most mundane record-keeping for 5000 years, was suddenly, after 2200 BC, used to record older extant stories like the *Epic of Gilgamesh*, to compose in Akkad (almost out of thin air) the *Enuma Elish* creation myth, and to write lengthy declaratory texts like the Code of Hammurabi (circa 1700 BC, in revised chronology). Although the texts of the narratives are often attributed to much earlier times because of their contents, they all date from within a few hundred years of 2200 BC to 2000 BC.

With the composition, in about 1750 BC, of the Babylonian *Enuma Elish*, Jupiter became the first conceptual -- philosophical -- God. Except, of course, that he could still be seen, and remained the brightest star-like object in the sky. This is still so today. [note 23]

The Return of Mars

The Early Bronze Age is a generic name for the period of about circa 2000 years BC, but the date varies from one region to another because the "Early Bronze Age" depends on what people were manufacturing. For our purposes, we can take it to mean approximately 2000 BC to 1800 BC, for the region of the Middle East which includes Canaan, Anatolia, Syria, and Mesopotamia. Dates this far back are not well established.

My interest in this period stems from the suspicion that perhaps Mars had again cruised close to Earth and caused extensive destruction, like it had between 3067 BC and circa 2750 BC. This is, in fact, testified to, and not only in the Middle East, but apparently worldwide.

"... almost every one of the flourishing Palestinian cities was destroyed at the end of the Early Bronze III period. The succeeding era, Middle Bronze Age I, ... was characterized by a non-urban pastoral society."

-- Damien Mackey, in "The Old Kingdom From Abraham to Hezekiah, A historical and stratigraphical revision" (2002) http://www.specialtyinterests.net/old_kingdom.html

Damien Mackey is here pointing up information originally compiled by Claude Schaeffer in *Stratigraphie comparée et chronologie de l'Asie occidentale* (1948), a source mentioned earlier.

After mentioning 2400 to 2300 BC, Schaeffer records a date of 1700 BC when many urban centers in the Middle East were destroyed. The date of 1700 BC is one from his series of dates which cannot easily be moved to a later period by imposing our knowledge of the fictional Greek "Dark Ages."

To be included in Schaeffer's compilation the disturbing elements had to include earthquakes and firestorms. This would signify close contacts with Mars -- very close. This had been the case for a period of 300 years some 1100 years earlier starting in about 3070 BC. This would happen again for a period of (only) 120 years, some 1100 years later, starting in 806 BC during the time of the prophets of Israel (detailed in a later chapter).

Schaeffer's dates have been summarized, expanded upon, and corrected by a number of people. I will give examples, starting with Geoffrey Gammon, writing in "Bronze Age Destructions in the Near East" (*SIS Review*, 1980).

Gammon notes that for Ugarit, the first incident of destruction is dated to 2300 BC. Schaeffer claims for this, and many subsequent destructions, that earthquakes were at cause, despite the fact that earthquakes do not extend (as he even notes) over distances of 600 miles (1000 km) with equally destructive results. They do not extend even 100 miles. Gammon points out fire, too:

*"As Alfred de Grazia has argued in a highly original and challenging article published in **Kronos** a few years ago, the severity of the conflagration which destroyed Troy II, to which the thickness of the layer of calcined debris or burnt ash 15 to 20 feet thick [5 to 7 meters] bore eloquent witness, indicated that whatever natural disaster overwhelmed the city must have been of massive, even catastrophic, proportions."*

Gammon here references Alfred de Grazia in "Paleo-Calcinology: Destruction by Fire in Prehistoric and Ancient Times", *Kronos* I:4 and II:1 (1976). De Grazia has detailed this also in *The Burning of Troy* (1984).

De Grazia notes that the evidence of fire..

"... has sometimes, with less than complete evidence, been interpreted as the work of torch-bearing invaders. For example, James Melaart uses the convenient phrase 'whether by accident or by enemy action' to describe the destructive combustion of Troy IIg. Earthquakes, too, are invoked with some frequency, although a determination that a fire is an effect of an earthquake is by no means simple."

Another who has expanded on Schaeffer's original data is Moe Mandelkehr, writing in "An Integrated Model for an Earthwide Event at 2300 BC" (*SIS Review* 1983), and three additional articles to 1999. Mandelkehr's first article is completely shrouded in caveats, one of which reads as:

"... there is no intent on my part to argue that all site destructions or cultural changes took place simultaneously at 2300 BC, or at any other specific point in time around 2300 BC. Even under conditions of wide area crustal stresses, earthquakes still occur fairly locally so that site destructions would be expected to be spread in time."

This last quote would have been added by anyone who considered the destructive Earth shock of 2349 BC, or would have been added as a warning to any other collection of similar data. Any sensible person would do this, and of course it would be phrased exactly as presented above -- that earthquakes might be many, but *certainly* would be expected to be distributed over time.

But that is completely wrong in this instance. In 2349 BC, the destruction everywhere was simultaneous.

The Earth shock of 2349 BC, which I have already presented, was so outstandingly frightful and impressive, that it was recorded in nearly identical "legends" worldwide, and long afterward, so that in AD 600 the Irish still weave it into their history of St Patrick, and the medieval epic poem *Beowulf* recounts the timing of the event with precision. The shock of 2349 BC and the following shock of 2193 BC were singular and instantaneous over a very large area, encompassing perhaps as much as half the circumference of the Earth. The initial shocks would have toppled cities and citadels, and would have been followed with lesser aftershocks for some time.

This was followed some 250 years later with additional nearly instantaneous events, probably at intervals of decades. These resulted from destructive sweeps of Mars close to Earth between 1936 BC and sometime in 1700 BC. (These dates will be developed below.) These were also nearly instantaneous over very large spans of territory. The cities where Mars passed close by -- perhaps a few hundred miles north or south of its path -- were given only minutes notice. Mars passed the Earth's surface at the speed of rotation of the Earth, which would be about 500 miles per hour (800 km per hour) at a mid-latitude. Along the path underneath Mars there would have been a gigantic moving fire storm, spreading flames left and right (north and south), which incinerated everything, even melting the very surface of the Earth, and sucked the burning material up into a hurricane-sized tornado. The agent of the fire most likely consisted of ionized and electrified blazing dust from the surface of Mars.

The traveling electric arc of the tornado would have paused on high places, which is where citadels had been built. The pause would be caused by the fact that the next location after an elevated spot would represent a longer electric conduction path for the arc. In pausing the arc might have extinguished locally, to start up again further along. Where it stopped and extinguished, the suspended debris of burnt material and soil would dump. In the case of Troy, at a later date, this reached a depth of 15 feet (5 meters). To assign such fire evidence to marauding aliens is sheer lunacy.

What is instructive about Mandelkehr's articles is that he assigns the destruction primarily to fires. However, he relentlessly dates all of his destruction to 2300 BC. I'm certain that this is incorrect. It confuses the event of 2349 BC with other and later disturbances. I have discussed Mandelkehr's book *The 2300 BC Event* earlier in this chapter. [note 24]

Sodom and Gomorrah

Let me now introduce Sodom and Gomorrah with a quotation from E.J. Sweeney, "Abraham in Egypt" in *SIS Workshop* (1986):

"Genesis informs us that shortly after Abraham's expulsion from Egypt, the world witnessed a terrifying natural catastrophe. Fire and brimstone, it was said, fell on the Earth and consumed large areas of land in a general conflagration. The cities of Sodom and Gomorrah were obliterated from the face of the Earth; not one stone of them was left on top of another. Genesis imaginatively portrays the catastrophe as a punishment from God on the immoral inhabitants of these cities."

It was as bad as it sounds. Five cities were completely obliterated. There are only scant traces left today. These include an extensive cemetery of 500,000 graves at what is assumed to be Sodom, and others elsewhere. Archaeology has determined destruction by earthquake in 2350 BC, followed by a destruction by fire in circa 1700 BC.

"Paleoethnobotanists found in Bab'edh-Dhra[Sodom] traces of wheat, barley, dates, plums, peaches, grapes, figs, pistachio nuts, almonds, olives, pine nuts, lentils, chick peas, pumpkin, flax seed, and watermelon. It was a gourmand's delight. The healthy diet manifested itself in the physique of the inhabitants: skeletal remains indicate that a height of 5'9"-6'4" was quite normal."

"The date of the destruction of Sodom and Gomorrah according to Biblical chronology was a year before the birth of Isaac, which was in 1712 B.C.E."

-- Biblical Archeology (on line), www.aish.com/ci/sam/48931527.html

Other causes have been voiced, of course. A press release of the Cambridge Conference (a SIS event), headlined the following on March 30, 1997:

"Comet Destroyed Sodom And Gomorrah"

"Sodom and Gomorrah may have been destroyed by debris from a comet, startling new archaeological and astronomical research suggests."

The article places all the destructions in 2200 BC, 150 years after the earth shock (and "day of the dead") of 2349 BC, and 250 years before the more likely date of circa 1936 BC (by my calculation, shown below). The press release was prepared by Benny Peiser, who is given to cometary causes, and who added (<http://abob.libs.uga.edu/bobk/ccc/cccmenu.html>):

"Previous explanations, like a massive earthquake or volcanic eruption, could not account for destruction over such a vast area. The meteorites would have exploded above the ground with the power of scores of nuclear bombs: one devastated a vast area of Siberia in 1908."

Peiser is here extending the explosive effects to the catastrophic ending of the Egyptian Old Kingdom, the failure of the Akkadian Empire, the demise of the Harappan civilization, and the end of the Xia Dynasty of China. Victor Clube of the Clube and Napier team who wrote the unlikely *Cosmic Serpent* (1982) joined the bandwagon and announced that (quoting the press release) "He [Benny] has calculated that the Earth passed through a cloud of debris -- the Taurid meteorite stream -- thought to have resulted from the break-up of a comet 40,000 years ago, between 2200 BC and 2000 BC." I don't know where they get these dates, always conveniently placed at one catastrophe or another. The meaning here is that Earth passed through debris in 2200 or 2000 BC. of a meteor which broke up in 40,000 BC.

I doubt almost all of this. But an earthquake which destroyed the five "cities of the plain" in 2350 BC is certain. A BBC story, "The Destruction of Sodom and Gomorrah" (February 17, 2011), reported an estimate of 6 on the Richter scale. That is sufficient to topple a city of mud-brick buildings. The epicenter, we know, was in Tibet. The second destruction is certain also -- the evidence is in plain sight -- but it came 400 years later, in 1936 BC. This consisted of a fire which reduced the stones and walls to a powder.

Now for a determination of the most likely date. Adding the known starting date of 3067 BC for the earlier close passes of Mars, to the start of close passes in the 8th and 7th century BC, 806 BC, and dividing by two, results in a starting date of 1936 BC as a most likely start of a set of "contacts" by Mars at the close of the Early Bronze Age which resulted in the destruction of Sodom and Gomorrah. In an article in *Aeon*, Donald Patten writes that Talmudic source materials pinpoint the destruction to the day of Passover. [note 25]

The Return of Mercury

Standard Bible chronology places the destruction of Sodom and Gomorrah at one year before the birth of Isaac in 1712 BC. But this is likely to be incorrect since all of it is tied to the lifespan of Abraham, who is Jupiter, and who is badly misplaced in time for the sake of a coherent timetable which places Abraham after Noah, rather than before. I have detailed all this earlier.

We should look instead at other sources. First, it has been noted by others that the local name for the planet Mercury, which (I claim) was a constant companion to Mars, became a faddish personal name after about 2200 BC. De Grazia notes that Mercury "was assigned a period of heavy worship between 2200 and 1500 BC." He writes, in *The Disastrous Love Affair of Moon and Mars* (1984):

"M. Mandelkehr has more recently informed me of several additional authoritative sources who found Thoth [which is Mercury] active throughout the Old Kingdom of Egypt, and points out that his ibis symbol existed even before dynastic times." [note 26]

It should also be pointed out that there is a progression of latitudes where Mars passes by Earth. I had supposed that the first set of close passes by Mars may have happened above the Earth, or at least away from Earth. Manetho, however, identifies some catastrophes in Egypt after 3067 BC, the first

period of close approaches by Mars

The second contact involves the destruction of Sodom and Gomorrah. Schaeffer, on the other hand, identifies sites of destruction for this second time period at about 40 degrees latitude.

The third set of passes by Mars, to be discussed in a following chapter, happened at 35 degrees north latitude.

Last, the Bible story of Sodom and Gomorrah is not easy to read and is easy to misread. Two angels visit Lot, reads the King James bible, but the Hebrew bible calls them kings. The very fact that there are two angels makes me suspect that they represent the twin planets Mars and Mercury. Too bad that descriptions are missing, unlike for Esau and Jacob. Jacob is smooth, Esau is red and hairy. What we do have is the stated fact that the angels blinded the Sodomites before destroying their city. This might be the magical abilities of angels, but I am more inclined to understand this as a celestial explosion, an explosion not unlike the blast at Tunguska.

The birth of Esau and Jacob is also most likely the reappearance of Mars and Mercury in time for the destruction of Sodom and Gomorrah, at their birth date or a decade and a half later. Esau and Jacob are sons of Isaac, who is the son of Abraham. Estimates of the destruction of Sodom and Gomorrah in about 1700 BC are thus probably about correct (my starting date is 1936 BC).

Also not to be neglected is the curious condition of Lot sitting at the gate to the city when he encounters the two angels. Although this tale of Sodom and Gomorrah is 400 years after the fall of the Absu, here again we encounter a doorway to another place. It is the doorway of the Absu. If it can be told that Samson could tear out the city gates of Gaza 700 years later, and carry them off, then certainly the tale of Lot sitting at the city gates should be allowed at the same mythological level of retelling. Bible commentators, since antiquity, have attempted to make much of Lot sitting at the gate, assigning Lot the mayorship of Sodom, with the task of greeting all visitors. Similarly much is made of the licentiousness of the inhabitants.

It would seem that something ought to be made of the fact that the orbit of the Earth was different in each of these three cases -- 3067 BC, 1936 BC, and 806 BC. But the circular geometry has little effect on the interactions between the planetary orbits. It will change the calendar dates of the interference slightly, and it might affect how close Mars came. Only the rotation of the second nodal points of the two orbits would in each instance have brought the interactions to a halt to be repeated 1150 years later -- excepting the last time, as I will show, which ended in an accident for Mercury.

Special thanks to J Brookes for questioning the red look of Sirius.

Special thanks to J West for interpretation of Sodom and Gomorrah.

Image credits: Kali after Richard Wikinson; Ku-Bau (Ku-baba), after Wikipedia, Georges Jansoone, public domain; Anath, after JBL Statues; Leviathan, after Gustave Doré; Grendel, after Lynd Ward.

Endnotes

Note 1 --

The reaction of the spin axis of the Earth to a torque applied off-center to the equator is discussed in Appendix B, "Celestial Mechanics" and illustrated with diagrams.

A better estimate of the travel time of the plasmoid from Venus would be based on a speed of 6 million miles per hour (9.5 million km per hr). This is detailed in the text.

[return to text]

Note 2 --

There is a 1000-year gap between the event of 2349 BC and its retelling in 1350 BC and after. But the appearance of Hathor as the Celestial Cow had happened again in 1492 BC and 1440 BC. The name of Marduk, the chief god of the Babylonian empire, is spelled in the Akkadian language with the Sumerian glyphs "AMAR.UTU" which reads "calf of the Sun."

[return to text]

Note 3 --

I am using the translation to English by Suzanne D. Fisher from the Spanish original made by Bolio in 1930. This text, along with a later translation of the Mayan original to English made in 1933 by Ralph Roys, is discussed in the chapter "The Chilam Balam." In this instance the text by Bolio makes a little more sense of the original than the more secular interpretation by Roys.

[return to text]

Note 4 --

The words "and" and "then" of the phrase "and then days of the year were introduced" are both from the same base Mayan word, and do not imply the time-order of words as in Indo-European languages, where "then" means "after" and "and" implies simultaneous. I hope this will hint at why quotations from the *Chilam Balam* are to be taken in with some caution, and why the translations are often so choppy.

[return to text]

Note 5 --

Warfare weapons in Mesoamerica included spears, halberds, and dart throwers, not arrows. Only game animals were hunted with arrows. This war, however, is described as using arrows.

[return to text]

Note 6 --

If the plasmoids from Venus traveled at 6 million miles per hour, Venus would have been within a distance of over 20 million miles (32 million km) from Earth in order for the arrival of the first plasmoid to have been delayed 6 hours. The travel delay to Jupiter, at 6 million miles per hour would be $(4.5-1)*\text{AU}/(6000000*24) = 2.26 \text{ days}$. The switch to glow mode by Jupiter would have been seen

on Earth about 30 minutes later -- **2.28 days**.

Although it is not at all certain how long "a day" was reckoned to be (most days during this period still started at sunset), the time delay could be counted as twice from midday to midday, plus 12 hours to midnight. At some locations the celebration of the "Day of the Dead" uses full daylight days and an evening, although in other locations it starts with a nightfall event.

The distance of 20 million miles may be an overstatement. If the eccentricities found by Lynn Rose and Raymond Vaughan for Venus and Earth for the 7th century BC, 0.15 and 0.10, can be applied to the era before 2349 BC, the difference between the perihelion of Venus and the aphelion of Earth is 17.5 million miles (28 million km) under the assumption that both orbits were 0.75 AU before 2349 BC; **$0.75 * (1-0.10) = 0.675$ AU**, and **$0.75 * (1-0.15) = 0.6375$ AU**, thus **$(0.675 - 0.6375) * AU = 17,437,500$ miles**.
[return to text]

Note 7 --

I cannot agree with the circumpolar rings, for a number of reasons. First, a circumpolar ring of dust or ionized gases would be electrically unstable. Mandelkehr assumes that these would be ice particles, following the "snowball" notion of comet composition.

Second, there is the standing problem of needing to radically change the speed and direction of material (whether meteors, asteroids, or fragmented "icy comets") coming in from outside planet Earth in order to be "captured." In all of recorded history, while millions of meteor-like objects are intercepted by the Earth each year, not a single object has ever been "captured." The Moon was not captured; it is a planet sharing Earth's orbit. It would be more correct to say that the Moon captured the Earth.

Third, Mandelkehr suggests that the rings would only have lasted some months. I have no opinion on that. What strikes me as strange, however, is his compilation of some 450 gods and their attributes, gathered from mythological sources from around the world. All of them, even sets of a half dozen from a single culture, are "associated" (to use his phrasing) with rings, circles, fires, horns, bows, mountains, and streams and serpents surrounding the Earth. I find most of this severely decontextualized from the mythologies I am familiar with, and I would suggest that it is very unlikely for 450 gods and goddesses to align themselves with the iconography of a celestial phenomenon which lasted only a few months.

Fourth, although Mandelkehr's rings are nominally circumpolar, he places them at an angle of about 70 degrees to the equator, so that they pass between Ursa Major and Ursa Minor (as seen from Earth) near the Earth's North Pole. This conclusion was apparently reached on the basis of frequent references to Ursa Major in antiquity. But this location, between these two constellations, happens to be the location of the Earth's rotational axis if this is retrocalculated on the basis of today's conditions -- using the "precession of the polar axis" -- to 2300 BC. This condition would not define a set of rings at an angle of 70 degrees to the Earth's equator, but a set of rings at an exact circumpolar position, at right angles to the equator. This seems like an oversight.

The "rings" were seen and noted by the people of antiquity. But the rings had always been there, not circumpolar, but below the Earth's equatorial in the south sky. After 2349 BC, this was reduced to a single ring at a great distance from Earth but still below the equatorial in the sky -- which seems to have lasted to AD 400 or 600.

[return to text]

Note 8 --

Alfred de Grazia made note of the ubiquity of the Pleiades in mythology in *Chaos and Creation* (1984), writing:

"Many places around the world mark the beginning of November as the Day of the Dead; it is All Saints Day; Halloween; All Souls Day; etc. The time is associated with the Pleiades for reasons not clearly understood yet. The coincidences of time, mood, ceremony, and stellar assignation is so great as to exclude independent invention except in particulars and to insist upon a common experience of explicit quality."

De Grazia follows this by some comments on the possibility of diffusion, but diffusion is negated by the existence of a "Day of the Dead" festival in Mesoamerica before the invasion of the Spanish. De Grazia could not date or place the event.

[return to text]

Note 9 --

In addition to the invariant skies before 685 BC (actually, the lack of a precession of the equinoxes before 747 BC), I will develop in a later chapter that the equinox moved 15 days forward in 685 BC. Thus the equinoxes happened earlier. This is born out with data from the horizon setting angles of the Sun for Mesoamerican ceremonial centers, where 6 alignments out of 13 that were checked, point to an equivalent Gregorian calendar date of September 8th, two days after the earlier autumnal equinox date of September 6. See the chapter "Olmec Alignments."

The Pleiades were seen directly above Jupiter, because they are located about 6 degrees in elevation above Jupiter (which is on the ecliptic). Even if the coma of Jupiter was as large as Plutarch suggested in AD 200, "three times the diameter of the Moon" (and thus about 1.5 degrees in diameter), this would not have obscured stars located 6 degrees above the ecliptic. By the following year the Pleiades were used as the marker to celebrate the event. Jupiter would not return to this location against the background of stars for 9 years. The period of Jupiter at 4.3 AU is $\sqrt[3]{(4.3^3) \cdot (12^2) / (5.2^3)} = 9.02$ years, compared to the current 12 years at the location of 5.2 AU. On a retrocalculated ephemeris Jupiter will not appear in the night sky on September 21, 2300 BC.

Among 13 Mesoamerican ceremonial sites I investigated there are 20 alignments using horizon locations (to a mountain or volcano) for the setting of the Pleiades. See the chapter "Olmec Alignments."

[return to text]

Note 10 --

To return the "Day of the Dead" celebrations to September 6th, the old day of the equinox, is astounding!

Mandelkehr, by the way, notes that the Pleiades culminate on about November 1 today. They do not. Culmination happens on November 14th today.

[return to text]

Note 11 --

Bernadino de Sahagún recorded his observations of Aztec culture from native sources after AD 1527 in *Historia de las cosas de Nueva España* (translated in AD 1829). The culmination of the Pleiades for Mexico City, equivalent to the ceremonial center of Teotihuacan, is as follows.

I think that the date of the "Day of the Dead" may have been established by the priests at Teotihuacan at about AD 200, when the city was built. At that time the Pleiades culminated between October 20 and October 22, Gregorian (October 20 to 21, Julian). Teotihuacan was the undisputed primary religious center until circa AD 700, and set the standard for most of Mesoamerica. Its influence lasted into the Aztec era. The Aztecs still celebrated the "Day of the Dead" on October 20 or 21 in about AD 1550.

Culmination of the Pleiades -- Mexico City, 19.25 deg n latitude					
			midnight	--westerly setting--	
year	Julian	Gregorian	culmination	azimuth	deg n of w
original	Oct 9*	Sep 22*	76.1 deg	275.6 deg	5.6 <--
685	Oct 15	Oct 8	83.5	283.3	13.3 <--
600	Oct 16	Oct 10	83.8	284.6	13.6
200	Oct 17	Oct 14	86.5	285.8	15.8
100	Oct 18	Oct 16	86.2	286.7	16.7 <--
AD 100	Oct 19	Oct 18	87.3	287.1	17.1
200	Oct 20	Oct 20	87.7	288.1	18.1 <--
400	Oct 21	Oct 22	88.1	288.7	18.7 <--
700	Oct 23	Oct 27	89.5	290.7	20.7
1000	Oct 25	Oct 31		292.0	22.0
1550	Oct 30	Nov 9		294.2	24.2
2008		Nov 14		295.3	25.3

* -- using the current location of the equinox.
Frequent alignments are marked.

-- The entry "original" can be used for all years before 685 BC, where the dates should be reduced by 15 days to reflect the earlier location of the equinox.

-- The westerly settings of the Pleiades marked "<--" appear with great frequency among the significant alignments at Olmec and Valley of Mexico ceremonial sites. In all, for the 13 sites I looked at, there were 25 alignments with the setting location of the Pleiades. More details can be found in the chapter "Olmec Alignments."

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Note 12 --

Ussher paraphrases from the New Testament as follows: "*He told them it was necessary for Christ to suffer and to rise from the dead the third day.*" This is attributed by Jesus to "Moses and the prophets" and thus from very old sources. In Mark 12:26 Jesus speaks of the Books of Moses, and, speaking of God, says, "Yet it is of living men, not of dead men, that he is the God." This is in distinction to Osiris, the Egyptian God of the dead.

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Note 13 --

The front of the turtle is on the left. Hunahpu and Xbalanque appear as headdresses of two monsters or gods peering out of both ends of the turtle, not unlike the heads showing out of the two mouths of the celestial serpent bar. The face on the side (center) of the turtle names the crack as "Precious Torch Death." A footnote (48 on pg. 465) in Freidel and Schele, *Maya Cosmos*, suggests an extended name from another source of "Yellow Torch Death Skull." "Yellow" is the south directional color; the "torch" may be in reference to the "image of the first turtle" which appeared in 10,900 BC as a brilliant torch.

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Note 14 --

The *Book of the Dead* is a collection of unrelated spells which never follow the same order, and are often unique. These include the spells engraved in pyramids from Unas's time on, spells painted on coffins, and later written scrolls included with coffins.

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Note 15 --

If my estimate of the travel of Jupiter through the asteroid belt is correct, then Jupiter would have entered a separate "clump" of asteroids at about 4 AU, in about 2400 BC. After that a change in the plasma of Jupiter to dark mode could have existed for a period of 50 years, only to return to glow mode with the electric activity of Venus in 2349 BC. This would be almost coincidental, but it was held as very significant, religiously, worldwide.

From the dates recorded in the sculptures at Palenque, it could be suggested that the Moon arrived about a decade after 2349 BC, in 2337 BC.

However, the *Chilam Balam* states that Jupiter was not "weeping" when the Moon arrived. This could mean that Jupiter was located behind the Sun (on the other side of the ecliptic), so that the plasma tail could not be seen, or that there was no plasma outpouring.

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Note 16 --

Although I would, at first thought, tie the first appearance of the Moon to 2349 BC, it seems almost certain that it would take some time before a regular orbit was established. In fact, from some sources it seems that the Moon did not show up until a decade later. With the Earth on an elliptical orbit, and

the Moon on a different but nearly identical orbit, it would take time before the Moon's orbit stabilized. The Maya *Chilam Balam* takes note of an Earth shock and the first sight of the Moon, but no dates are even hinted at. It might simply be part of a panoply of associated events. That includes the first note on the establishment of a calendar, "days were added."

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Note 17 --

Velikovsky originally established the 52-year interval. This interval has been confirmed by many researchers from other sources, at times as 104-year intervals. In Mesoamerica the interval is confirmed from the "52-year celebrations" recorded at the time of the Spanish invasion, although based on Tun years of 360 days, and specifically from the apparent intervals when the "primacy" of religious centers passed from one location to another after about 1400 BC.

But the actual interval of approaches of Venus did not remain the same after 2193 BC. It became shorter by a few years. Mesoamerica celebrated the "52 years" as an interval based on a Tun year of 360 days, not solar years. This has caused considerable confusion among researchers.

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Note 18 --

Amun first appears at Thebes (in Egypt) after 1985 BC, in the Twelfth Dynasty during the Middle Kingdom. Amun appears to be a reconfiguration of Ra as the Midnight Sun, who had disappeared from view over 200 years earlier. Only after circa 1550 BC (at the beginning of the New Kingdom) does Amun become widely recognized in Egypt (as Amun-Ra). After this time he starts to assume the attributes of the older Gods. He was called, "the king of the Gods," by the Thebans.

Jupiter appears under a number of other names in Egypt at this time, which combine "hidden" with the original name for "sun," although the original "sun" designation universally referred earlier to Saturn at the North Pole. In Canaan Jupiter is known as Baal Tsaphon, the Hidden Lord. In 500 BC Herodotus claims that the Egyptian Amon is Zeus, that is, Jupiter.

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Note 19 --

With the fall of the Absu the "gate to the other world" is removed. At a later date, both Hercules (Mars) and Samson (of the Bible) in legends carry away the gates of a city.

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Note 20 --

See Book 2 of the Shu and the introduction by James Legge to *The Sacred Books of the East, Volume 3, The Shu* (1879).

Of the Books of the Xia, Legge notes:

"Of the still earlier dynasty of Hsiâ [Xia], there are only four documents, and we have no evidence that there were any more when the collection of the Shu was made in the times of Kâu. ... In the last of them a celestial phenomenon is mentioned, which has always been understood to have been an eclipse of the sun in Fang, a space of about 5 1/2 degrees from pi to sigma of Scorpio, on the first day of the last month of autumn. P. Gaubil thought he had determined by calculation that such an eclipse really took place in the fifth year of Kung Khang, B.C. 2155. Doubts, however, have been cast ... on the accuracy of his calculation."

Others have demonstrated that the eclipse could not have been seen in China. Scorpio, however, is two houses over from Capricorn, although retrograde of normal planet travel in the ecliptic, where Rockenbach places the comet of 2060 BC, "in the constellation of Capricorn, and within the space of sixty-five days it traversed three signs in the sky." This suggests a comet outside the orbit of Earth, fairly close by, and seen in retrograde motion, as would happen since Earth would be traveling at a faster orbital speed (which is meaningful only if we assume that these two events are related).
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Note 21 --

That Mercury had a substantial atmosphere can be surmised from two facts. First, that in remote antiquity, when Mercury stood between Saturn and Mars, it appeared as white, and looked much larger than Mars (which, however, was closer to Earth). In Mesoamerica it was misidentified as Venus from the perusal of ancient codexes. So in the *Popol Vuh's* recollections from the most ancient narratives (10,900 BC to 8347 BC) Mercury is called "Sovereign Plumed Serpent," a name otherwise reserved for Venus. Venus only came into existence after 4077 BC.

Second, in the earliest diagrams of the standing stones of the Neolithic Avebury monument in England, there are two interior circles of equal diameter, which most likely represent a large Mercury and much closer Mars. Since Avebury probably dates to after 3100 BC, the construction of these two smaller circles is probably schematic and from memories. This is duplicated at Stonehenge, and one other location that I was aware of (but cannot place). The small planets shown below Saturn are remembered, rather than actual. This would not have been Venus, which is twice the diameter of Mars.

The side view of Venus figurines of the late Upper Paleolithic also render two lumps offset from each other and located below Saturn -- depicted as if the figurine had large buttocks and was pregnant to boot.

The misidentification of Mercury as Venus has carried forward to the current era, where Talbott claims that the white globe between Saturn and Mars was Venus. The misidentification is partially due to the fact that Mercury simply has never been considered as part of the "Polar alignment."

Talbott claims multiple plasma streams in glow mode as impinging on "Venus" (Mercury) in a circular form, making the planet look like a petaled flower or a seashell. The form of multiple streams would be correct for a planet with a magnetosphere. The separation of the glow mode plasma stream from Saturn would not be expected to separate into distinct bundles (making it look like a petaled flower) unless the planet had a magnetic field. That eliminates Venus.

What is also clear, is that Mercury should, because of its atmosphere, be practically devoid of so-called "impact craters" -- as the Earth is also -- so that in losing most of its atmosphere (at a late date) this would show. And it does. The cratering of Mercury is noted by astronomers to have a look of freshness unlike the craters of the Moon or Mars. All of the cratering happened in June and July of 685 BC. This was a year after the atmospheric fire on Mercury.

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Note 22 --

James E. Strickling, in "The Tower Of Babel And The Confusion Of Tongues" in *Kronos* volume 8, number 1 (1982), suggests interference of the faculty of speech, not in creating new languages, but in causing a garbling of speech so as to make it incoherent. He sources M. A. Persinger, *ELF and VLF Electromagnetic Field Effects* (1974).

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Note 23 --

The *Enuma Elish* is completely new; it has no precedent among older Akkadian or Sumerian texts except for incorporating the Sumerian flood event.

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Note 24 --

Mandelkehr blames the movement of people to a climatic downturn, which I blame on an increase in the orbit of the Earth. Mandelkehr blames it on dust generated by a comet of the Taurid complex, something, by the way, totally overlooked by the astronomers Victor Clube and Bill Napier, in their book *The Cosmic Serpent* (1982), or in any of their later talks. I will blame the 200 year climatic downturn after 2193 BC on nanometer dust in the stratosphere.

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Note 25 --

"The 108-year Cyclicism of the Ancient Catastrophes" in *Aeon* (1990). I would expect such hard-and-fast dates because planetary orbits can be expected to remain the same. Planets do not leave their orbits. It is not as Stephen Jay Gould wrote, in *Ever since Darwin* (1977): "Mars then left its regular position and almost collided with the earth in about 700 BC." That's just nonsense.

An intruding planet would repeat an earlier appearance except to be perhaps a few hours earlier or late compared to the previous overflights. This is because the planetary orbits are first of all circular, and a path of a planet on an elliptical orbit drawn across these circles will not deviate by more than a day in crossing an orbit currently from the date of crossing an orbit at the same inclination to the equator of the Sun at an earlier time.

However, the orbit of an intruding planet which crosses the path of another planet is governed by apsidal precession. All the planetary orbits are ellipses, which thus have two nodal points: one at the Sun, and the other some distance away from the Sun. This second nodal point slowly revolves around the Sun, and thus the whole shape of the orbit revolves around the Sun -- counterclockwise as seen from above the north pole of the Sun. This rotation is called apsidal precession.

The Moon's period of apsidal precession around the Earth amounts to about 19 years. The Earth's orbit takes 112,000 years to rotate around the Sun today (estimates vary). What I have already suggested is that the orbits of Mars and Mercury were extremely elliptical. Perhaps because of this, the orbits of Mars and Mercury caught up with the orbit of Earth every 1150 years. The interference of overrunning the orbit of Earth would therefore only happen periodically.

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Note 26 --

I doubt the use of the Ibis symbol as indicating Thoth before dynastic times. Mandelkehr may have reference to the Narmer Macehead of 3050 BC which shows an Ibis above a temple structure, thought to be the temple of Buto in the delta, which, however, was under water at that time. Buto may be a reference to Saturn in the northern "sea above" with the Ibis representing Uranus seen above Saturn at an earlier time.

De Grazia lists as his sources for Mercury the following: E. A. Budge *Osiris, The Egyptian Religion of Resurrection (Book of the Dead)* (1895, 1961); J. Bonwick *Egyptian Belief and Modern Thought* (1878, 1956), Theosophical literature, reviewed, however, as "tripe"; R.T.R. Clark: *Myth & Symbol in Ancient Egypt* (1959, 1991); D.B. Redford "The Sun-Disc in Akneton's Program: Its Worship & Antecedents I", *Journal of the American Research Center in Egypt* (1976); and *Cambridge Ancient History*, Third Edition, Vol. 1, Part 2 "Early History of the Middle East."

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*Calculations are in Unix bc notation, where ^ denotes exponentiation; the functions a(rctangent), s(ine), and c(osine) use radians; angle conversions to radians or degrees by the divisors rad=.0174 and deg=57.2958; other functions are shown as f(); tan()=s()/c()
units: million == 1,000,000; billion == 1,000,000,000;
AU == 93,000,000 miles.*



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