CHAPTER THIRTEEN

NOVA OF SUPER URANUS AND EJECTION OF THE MOON

Ancient Mesopotamian accounts of gods tearing off each other's heads and limbs are not "baffling" (de Santillana and von Dechend, p303) in the context of early human existence. But these and similar stories in the Teutonic, Greek, Roman, Hindu, Iranian, Mexican, Egyptian, and archaic ("primitive") religions are baffling in regard to their positioning in time. Given an empirically established calendar, a general review of the early literature may assign a period to them. Tentatively, we assign these earliest theomachies to the period of Super Uranian instability and the climactic nova of Super Uranus that drastically changed the face of the Earth.

According to Hindu accounts (Brown, pp281-9), while Adityas and Vitras fought in that troubled first phase of the skies, Heaven and Earth, living together in a common house, bore Indra. At first concealed, he fed upon soma until he attained enormous size, whereupon he blew Heaven and Earth apart forever, filling the atmosphere by himself and exploding the Vitras in the process by thunderbolts. From the exploded belly of Vitra came the cosmic waters, acknowledging Indra (Super Uranus) as their new lord. Out of the waters came also the Sun. Varuna (Heaven as Super Uranus) presided, as order and truth emerged from primordial chaos.

This narrative is but one culture's account of mankind's witnessing of the explosion of a celestial body. An alternative, from the Vedic period, has a Cosmic Egg (here Super Uranus) floating for a thousand years in the primordial waters (our plenum) until it burst (as a nova) to reveal the Lord of the Universe, Purusha. It may be that Purusha is yet another phase of the troubled Super Uranus.

From the navel of Purusha sprang a lotus bright as a thousand suns (possibly the electric arc), whence came Brahma, who acquired Purusha's powers as Lord of the Universe (and whom we shall identify below as Super Saturn) (Cardona, 1978a, p43). The cracking of the Cosmic Egg may represent the sight of a fissioning Super Uranus in human memory.

The Hebrew Book of Genesis begins with a primordial light that did not have the company of the celestial bodies until "the fourth day". This may have been "lightness" or "a light". The deity may have been Super Uranus, who first gave "lightness" and then "a light" of himself. Some (e.g. Cardona, *ibid*.) place the deity here already into the Saturnian period, justifiably asserting the parallel names and qualities of Elohim and Saturn. We speculate that either Genesis begins after the Super Uranian nova, with Super Saturn, or that in the great expanse of time, Elohim in his Uranian role was merged into Elohim in his Saturnian role. Generalizing on this problem, Tresman and O'Gheoghan comment that "where there is descent (from father to son) it is obvious, otherwise the transition between the original deity and the later Saturn god is not too marked."

"The Sumerian ideogram for 'star', 'god', and 'heaven' (An) is one and the same, a simple eight-pointed star shape ✴ . This strongly suggests that they believed that the original "heaven" was a body that later became a star. It also strongly indicates that the first deity was this star-heaven god. (Tresman and O'Gheoghan, quoting Kramer, 1963 and Peter James, p36) The Egyptians defined Atum as "the incomplete one who became complete", says Lowery (*ibid*. fn., citing the Coffin Texts); we may surmise this as Heaven becoming a star; Atum was depicted by the Egyptians as a setting sun (Ions, p40).

"There is every indication that this original deity was at one time the only visible planetary body of the heavens. From the Hindu sources we have; 'In the beginning Prajaparti existed alone'. The Egyptian records tell that Atum 'was alone in the primeval watery abyss'. The deities An/Anu (Sumeric) and Ouranos (Greek) were both lone planetary deities, although their names translate literally as 'heaven'. In each case the successor to the original deity was a Saturn-type god." (Tresman and O'Gheoghan, p36)

In the *Edda* epic of Scandinavia, "The Spirit brooding over the dark, abysmal water calls order out of chaos, and once having given the impulse to all creation, the First Cause returns and remains for evermore *in statu abscondito*!" (Blavatska, citing Mallet and the *Edda* epic, pp160ff)

The star, in its pre-nova state, was apparent from the time of its emergence from out of the gloom into the now activated heavens. The interval from 14 000 to 11 000 years ago may be designated as the Age of Urania. The skies were falling upon the transformed primate schizoid, *Homo sapiens*. Children's fables like that of "Chicken Little", who led the barnyard animals in a search for an Authority to do something about the falling skies, are ancient and widespread and are not to be neglected as reflections of the ancient traumas imprinted upon the collective memory and sublimated into the first fictional literature alongside the sacred religious myths (de Grazia, 1978, 1984a).

When the heavens were broken open, as by P'an Ku, the Chinese creator god, Super Uranus appeared in the north, immense and egg-shaped, probably resembling a giant eye, too, atop the sky. At first the white of albumen, it became yolk-red, and radiated heat. It was probably the primordial light of the beginning lines of the Hebrew Genesis; as noted above, the present celestial bodies appeared only on the fourth day of creation.

To the south, less luminous because it was much more distant, was the Sun. There were now three sources of heat, the magnetic tube (powered by the arc), the Sun, and most prominent of all, Super Uranus, Depending upon the earthly observer's location, either Super Uranus or the Sun could be discerned through the thinning gases. In general, northern observers glimpsed Super Uranus, southerners saw the dimmer but larger Sun [86].

During its period of instability Super Uranus erupted regularly. The body of the star contained electric charges distributed internally to be in balance with the charge on the surface, which was transacting with the Sun and/or the Galaxy. The Sun via the arc had been robbing Super Uranus of electrons for almost one million years, a process that kept the surface of Super Uranus relatively drained of charge.

Super Uranus' charge-deficient surface could be altered in one of two of two ways: a sudden influx of Galactic charge, or a short-lived disruption of the arc. Both would "overcharge" the Uranian surface. The reaction would be to further concentrate the charges within Super Uranus. When the surface charge again became reduced (which would happen if the arc suddenly reconnected, allowing a burst of ions onto Super Uranus) the interior of super Uranus, now overly packed with charge, would respond by outbursting charged matter into space.

This outburst would not normally escape from the domain of the star which generated it; most of it would in time be reabsorbed into the star, returning the "released" charge. Charged debris falling back could help induce conditions for another electric compression and outburst. And so the star erupted cyclically.

The cycle of erupting away highly charged material and subsequently re-absorbing it follows directly the notion of a plenum of charged gases around the binary system itself and secondarily around each charged body of the binary.

The extent of each plenum is determined by the charge on the body it surrounds and by the charge in the plenum gases. When an eruption occurs the plenum gases increase in charge and expand their sac. Electric fields are set up which cause charges to flow, thereby decreasing the surrounding charge relative to that within the central body. The plenum then begins to collapse, pieces within the sac discharge and also fall back. In the Age of Urania each body might be said to possess an autonomous sac and plenum, immersed in the now diluted plenum of the whole system.

The plenum of Solaria had by this time become so tenuous that the individual bodies had established around themselves electrospheres - regions of charges, gases and, from time to time, solid matter. These spheres, or regional environments, were to their central bodies what the plenum had been to the system, in that they defined the limit of the body's influence upon nearby matter and charges. Vestiges of the electrospheres are found today in the electric sheaths surrounding the Sun and the various planets; the transition occurred mostly in the time of Jupiter (see ahead to Chapter Fifteen and Note B, fn.117).

The resorption of erupted pieces occurs so long as they do not exceed a certain critical size. Judging by today's Solar System, this would seem to be about 22 kilometers in diameter or a volume of about 6 000 cubic kilometers. Pieces that could not be resorbed could become satellites of their parent body - as had Super Uranus and the primitive planets - but in Solaria they could be transferred from the realm of one body to another whenever the two electrical plena involved were contiguous. In these special circumstances escape was possible; the smaller sacs could leak gases and pieces into adjoining sacs. This is how Super Uranus bombarded the planets. Its outbursts electrically charged the Earth's sac and filled it with debris of diverse sizes.

The cooling of the Earth, noted during the Uranian Period, could be accomplished by several means. As the plenum cleared, more and more of the arc's energy was transmitted directly to the Earth without involving the plenum gases as intermediary. Thus => *albedo* became more important in the energy transfer. Where earlier the heated plenum kept the Earth warm, now the light conveyed energy directly to the Earth. If the cloudy Earth reflected 52% of the radiation from the arc the Earth would cool to 270 K from its former warmer temperature (see behind, Chapter Six). Alternatively, if the Earth accepted more than half of the light but the arc cooled, the temperature would also drop [87].

In its climactic explosion, Super Uranus ejected a large chunk of its material down the magnetic tube towards the Sun. This element, to be termed Uranus Minor, was preceded and accompanied by gaseous blasts and water. Badly out of electrical equilibrium, both because of the electrical cataclysm which ravished Super Uranus and because the ejects now followed orbits taking them into regions of greatly different space - charge, a vast, brightly glowing space-charge sheath surrounded Uranus Minor as it hurtled towards the Earth (see Juergens, 1972, p12, for a discussion of these sheaths).

At the time of the eruption the Earth is revolving around the arc, moving counter-clockwise (viewed from Super Uranus). The globe is oriented with Africa (the old north) facing the explosion; the magnetic poles lie on the rotational equator, Greenland leading and Antarctica following.

At this time the Earth had a continental crust everywhere. The continents that survive today were bunched around Africa, then located at the north rotational pole. In Figure 27 the land areas of the world today are drawn schematically as they related in Pangean (all-Earth) times. They accord with the geophysical and paleontological findings of the continental-drift school of thought [88]. Uranus Minor, moving from Super Uranus towards the Sun, encounters the outside edge of the Earth (the Pacific side) in passing (see Figure 28).

An intense transaction occurs between the two. Electrical polarization distorts the shape of both bodies and their sacs, and the Earth's magnetic axis wrenches out of line, which causes the world to shudder. The sudden movement loosens part of the lithosphere; torrents of water (or ice) flow (or slide) across the surface. Fiery blasts strike the area which is now the West Central Pacific Ocean, opening massive craters, some deep enough to release mantle material previously thirty kilometers below the surface.

At perigee the transaction between Earth and Uranus Minor reaches a maximum. The crust on the side closest to the intruder cracks and fragments. Explosively, as much as half of the Earth's continental material rises into the sky, leaving exposed much of the upper mantle. This extraction initiates the reshaping of the lithosphere to produce the structure we study today. Whereas before this event the entire Earth was topped by a thick granite layer, basalt was now exposed. In its brief encounter with the Earth, which we estimate to have lasted many hours, Uranus Minor peeled a deep swath of crust (and some upper mantle material) from the Central Pacific and to lesser depth from the great seamount area west of the Americas.

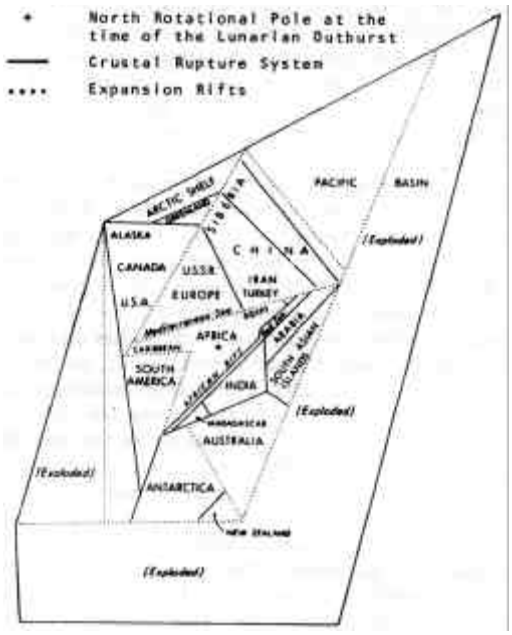


Figure 27. The Surviving Land from the Age of Urania (Click on the picture to view an enlarged version. caution: Image files are large.)

Prior to the eruption of Super Uranus, which hurled the large fragment Uranus Minor down the magnetic tube past the Earth, our planet was covered by a complete shell of granitic crust. Much of that crustal layer was lost when the Earth encountered Uranus Minor. That crust which remains was once clustered around the ancient North rotational pole, which then always faced towards Super Uranus. It was ruptured and rifted by the close passage of Uranus Minor.

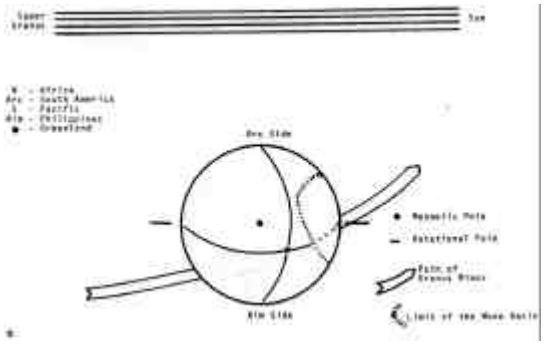


Figure 28(a) The Encounter of Uranus Minor with the Earth

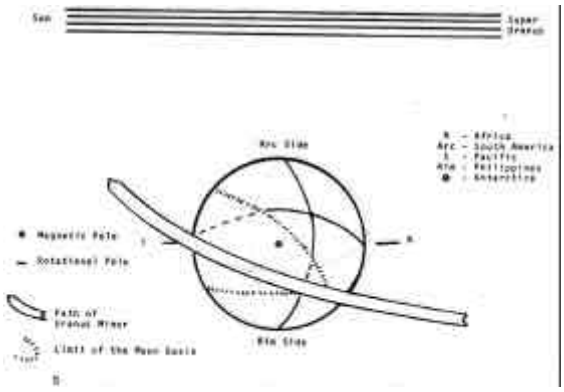


Figure 28(b)

The Earth was in orbit around the electric arc at the time when Uranus Minor passed close by it. Then the Earth's surface was irrotational with respect to the arc so that one point on the crust (magnetic south) was always leading on the orbit (see above) and the point on the opposite side (magnetic north) was always trailing (see over page). Though the crustal arrangement of that time placed the lands differently, the lands on the present globe, which did not take up their present positions until after the catastrophe described here, would be oriented as indicated on figures 28(a) and (b) relative to the arc and the Sun Uranus Minor met the Earth on the trailing side and departed on the leading side (compare with Figure 18), tearing away crust and creating the Moon Basin where shown.

The Earth wobbled eccentrically as mechanical, electric and magnetic forces acted upon it. Surrounding the wounded surface was a rampart of devastated granites. Within it were thousands of seamounts, unable quite to explode into the sky, and now frozen like pulled taffy. At its center was an abyssal plain where the surface of the Earth's mantle appeared scoured of its covering; it was then, and is now, the deepest basin of the Earth's surface. The blow-off was so great that it pulled the great central magnet of the Earth 436 kilometers towards it, making the shortest circle line of the Earth's magnetic field of today pass through the Society Islands. The Earth's center of gravity was pitched five kilometers towards the great Pacific depression (Baker, 1954, p5).

In this one brief event, the entire original Southern Hemisphere of the Earth's crust, was electrically ejected into the sky. The unbonding of the crustal granite and mantle from the subsurface magma involved a large transfer of energy. If the inter-body transaction is translated into thermal terms, the heat would have

been perhaps impossible for the Earth to support without vaporizing the biosphere and the globe itself. About 10^{32} joules are theoretically required to peel off the surface layer of the Earth entirely. Here, over half the crust was ejected, but the balance was loosened and set into motion.

However, the transaction consisted of a trade of material for electric charge. Uranus Minor, much more heavily charged, deposited charge upon the Earth. The new electrical energy was incorporated by the molecules of the Earth. Their internal (atomic) bonds were stretched. A very large amount of energy was required by the chemical bonds and supplied athermally [89] by a huge column or front of lightning bolts blasting a swath into the sky during the pass-by. That heating which occurred was concentrated at the interface of crust and mantle and at the bottom of the moon basin. In adjusting its figure following the ejection the remaining land mass fractured and the Earth expanded by about twenty per cent (de Grazia, 1981; see also Meservey, p611). This represented a radial expansion of nine per cent and a corresponding atomic expansion throughout much of the Earth.

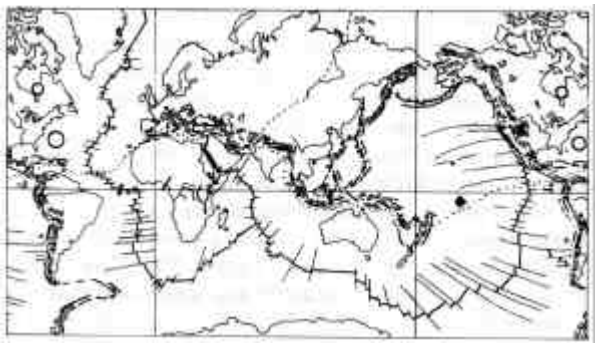
The remainder of the continental mass that had covered the Earth fractured into the complex ocean-ridge and land-rift system viewed today (see Figure 29). The separated blocks were electrically repelled [90] and squeezed apart. They rafted speedily towards the Moon basin. Lava welled up from below the fissures and widened them. Thousands of new volcanoes were instantly activated.

The constellation of fractures exhibited in the world map of Figure 29 probably occurred within a day's time (de Grazia, 1981; Manson, ch. 4). Tectonic plate theory today relegates the fractures to a remote unspecified era, with ocean basins always present. It invokes various mechanisms to accomplish over great stretches of time complex slow movements of a number of plates carrying continental crust. The theory is not only unnecessary; it is mistaken on the most obvious criteria. Melvin Cook (1966, p189), from the perspective of his research on explosives, points out readily the unified and simultaneous features of the global fracture system, finding in them what is ordinarily to be perceived in an explosive impact upon a globe. Possibly, certain

minor fractures branched out or lengthened in the following months or years. Some fractures were not fully consummated, such as the African-Near East rift and the trans-Asian rift. Others have been covered in part by subsequent torques of the crust, as in the case of the San Andreas fault, which was buried in the "westward" movement of North America, or the Red Sea-Adriatic-Rhine Valley rift, which was partially overridden by the Alps. It will be noted, too, how the Atlantic Ocean crack probably shot out from an Arctic base, traveled swiftly but against resistance, and then branched off to circumnavigate the south Pacific area, sending four continents on their separate journeys: South America, Africa, Australia and Antarctica.

A deluge of water fell from Uranus Minor as it passed. These waters more than replaced the water carried away with the lost crust, fell into the hot fissures and onto the volcanoes blasted into existence at the passage. There the waters exploded, expediting further cracking of the continents. The world, which shortly before had been heading for an icy end, now become hot and steamy and threatened by falling water and rock.

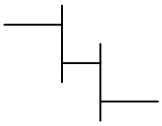
A cubic kilometer of Earth's atmosphere at present contains ten thousand tons of water. If the Uranian deluges were precipitated by electrical activity of the Earth's electrosphere (see ahead to Note B), only 540 tons of water per cubic kilometer would be required in order to achieve the oceanic levels that we estimate occurred in the Uranian Lunar periods. In the course of a millennium an annual rainfall of 1.2 meters depth would have descended upon the Earth's surface, a rainfall that a substantial section of the world's people enjoy today. This would be adequate to fill the basins up to the continental slopes, about half of the present ocean volume. Most of the rest of rainfall belongs to the story of Saturn (Chapter Fourteen).



Key to the map:

.....young fold mountains

.... troughs, deep-sea and continental



..... central rift of oceanic ridges with horizontal faulting

- - - .... suspected link under Asian continent

---- .... Tethys Welt

O .... astroblemes, suspected or confirmed

Δ
Δ .... zones of active volcanoes
Δ
.... Moon Basin

Figure 29. The Fractured Surface of the Earth (Click on the picture to view an enlarged version. Caution: Image files are large.)

Following the removal of the Moon from the bulk of the Earth by the action of the passing Uranus Minor, the surviving broken continental crust of the Earth shattered and rapidly scattered, taking up new positions around the crater surrounding the Moon Basin in what is today the Pacific Ocean deep. The troughs, ridges and faults of the current crust were sculptured as the Moon was torn from the Earth and as the Earth recoiled and recovered from that devastating encounter with Uranus Minor. The volcanic and mountainous rim around the Pacific Ocean was created in this same catastrophe. The most prominent astroblemes were also products of the Age of Urania, but not all of them were blasts accompanying the ejection of the Moon.

Areas were set on fire. Elsewhere, newly created basins were being paved with basalt. As floods descended from the high land, they were vaporized on the hot lava. The water recirculated. Torrents of rain fell upon cooler land, producing another flood, which, descending, was once more vaporized, and assembled to launch yet another torrent. The sky remained cloudy while the oceans formed.

With extra charge on the globe, the Earth's volume increased. The continental blocks fractured and sometimes folded as they conformed to the underlying shape of the Earth's body, and occasionally as they underwent collision. Thus the geography of the modern world was established: separated continents, ocean basins, global fractures and ridges, mountainous ramparts around the Pacific Basin and a global-circling welt (the old rotational equator), which forms the other great mountain chain of this planet.

The => *Mohorovicic* discontinuity, which is found beneath the crust throughout the world, marks the level at which the ancient crust was served from the underlying solid. The continents continue to float, moving today ever so slowly, but only eleven and one-half thousand years ago that motion was initiated in hours and rapidly completed. Three thousand years later the continents were almost at rest and located close to where they are now found. They came to a halt because an electrical equilibrium had been established among them, at both their prows and their sterns (see Harrison, 1966). The ocean basins by them held water roughly to the base of the continental shelves. Many seamounts (and present oceanic islands) were exposed and acquired biospheres in time. But another deluge, the Saturnian (or Noachian), was to come.

The sculpting of the ocean basins occupied a millennium. During all of this time, waters continued to descend onto Earth from the sky in rains and occasional small deluges. Both old and new waters traversed the continental masses in the gorges of the major fractures, converting them into rivers that poured over the continental shelves and into the abysses, forming slopes, too, from the large amounts of detritus that they transported. The slopes were largely formed from broad-sheeted run-offs from the continental blocks.

Within the basin, the heavy heat from continuous mantle extrusions evaporated the waters, forming dense clouds that filled and rose above the abysses into the atmosphere above the continental blocks. The early continents, until eroded, were large buttes surrounded by the new paved basins located five thousand meters below the surviving land masses.

There are indications that the drop of five kilometers into the abyss from the continental shelves was known to the ancients. Ouranos, the Greek Super Uranus, cast his rebellious sons into Tartarus, “a gloomy place in the Underworld, which lies as far distant from the Earth as the Earth does from the sky; it would take a falling anvil nine days to reach its bottom” (Graves, Hesiod a). One notes the gloom (the dense clouds below the habitable plateaux), the position (below the human world), the precipitousness (the metaphor of an unimpeded falling object). Ancient sailors spoke of falling off the edge of the world (a fear also present in the modern child). The concept of hell, which John Locke said was so persistent that it must have represented some human experience, may have arisen from the era of the great chasms; hell is straight down, is burning, is fulminating, is sulphurous. There was, too, a world of the antipodes that could not be reached, possibly across the abyss (Dreyer, pages:7, 37, 213, 220).

At higher altitudes on the plateaux and where the edges of the abysses were remote, snow fell and glaciers formed. Such appears to be the only scheme by which the heat needed to raise the waters can be supplied, while an area that can support ice caps may exist to receive the waters. The old ice-falls had been melted in the lunar eruption; the new ice persisted until the basins were filled up to the continental margins, and the ocean

cooled; then, in the "Golden Age of Saturn", the ice melted into the ample basins. Not until the Super Saturn nova was there another "Ice Age".

The disposition of the atmosphere is a crucial problem for our model. The atmosphere would have been sucked up under a gravitational model, and unquestionably much atmosphere, and also water, was lost in the eruption into space. However, the electrosphere was already operative, as indicated earlier, and was ionizing as well as electrically repulsing, and hence returning, the gases that sought to leave the Earth.

The reduction in atmospheric pressure was short-term but unquestionably fatal in a great many instances. Even at the antipode of the catastrophe, the air would have rushed towards the scene of the disaster. Some help would have been derived from counter-winds electrically repelled and driven to the antipode. The electrosphere, containing a mixture similar to, but richer than that of the weakened plenum, would have originated downdraughts at the antipode. Assuming that the pre-Lunarian atmosphere was three times the present density at sea level and taking as the short-term extreme the habitat of people in the High Andes today, the atmospheric pressure might have been reduced to one-sixth for a short time (see Gray, pp63ff, White, p763). This would not eradicate life.

The departing Uranus Minor is deflected slightly from its path by the Earth. It then crosses the binary axis so as to approach the Sun on the forward side (orbiting directly). Its passage by the Sun causes an electrical transaction which increases Uranus Minor's negative electric charge and ejects it into an orbit beyond the surviving binary pair. It now becomes the planet we know as Uranus, or possibly the planet Neptune (see ahead to Chapter Fourteen, p. 165, fn. 94).

The granite and mantle material removed in the passage of Uranus Minor past the Earth is strewn along an arc between the retreating intruder and the gashed Earth, there mingling with ejects from Super Uranus and travelling with Uranus Minor. A portion of this debris escapes with Uranus Minor, but most of it, amounting to about one-fiftieth of the Earth's volume, is left behind in the space near Earth. For a time some of it fell back upon the Earth as stone and dust. The rest, partly molten, was

assembled by electrical pressure into a rapidly cooling globule. The form of fission of a body in such a manner was foreseen by G. Darwin and Fisher; later Baker (1954, p20) constructed a simple instrument depicting the process: his drawing of the critical stage of the fission is reproduced in Figure 31.

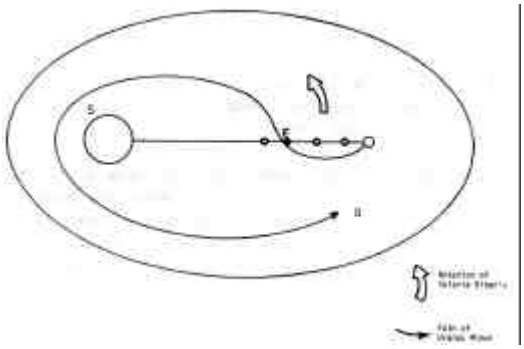


Figure 30. Fragmentation of Super Uranus (Click on the picture to view an enlarged version. Caution: Image files are large.)

In schematic form the relocation of Uranus Minor is shown after its explosive ejection from the solar companion, which to that moment had been Super Uranus but then had become the smaller Super Saturn. The released fragment, Uranus Minor, first traveled sunwards along the magnetic tube, where it passed close by the Earth (E), tearing crust away and forming the Moon in the process. Thereafter, the still electron-rich Uranus Minor moved into the vicinity of the Sun (S) before escaping into the outer regions of the system beyond the orbit of the new companion (O), where it is likely located today as one or the other of the two most distant major planets.

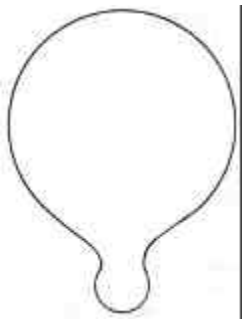


Figure 31. Fission of the Earth-Moon Pair (Click on the picture to view an enlarged version. Caution: Image files are large.)

This simple diagram illustrates the minuteness of the Moon compared to the Earth's bulk, despite its having removed half of the Earth's crust when it departed.

A new sky god/goddess, the Moon, is born, child of Mother Earth, Aphrodite-Urania. She is worshipped after her father retires from Earth's view.

Eventually the Moon orbited the electrical axis, repelled by its excessive charge to a greater distance from the axis than the Earth. From its removal as a piece of the Earth to the present, the Moon can never have been free of the Earth - if it had escaped it would now be an inner planet of the Sun, on an independent orbit and far from the Earth. This leads us to conclude that so long as the Earth remained in the magnetic tube, the Moon remained close by. It orbited then, as it does now, with the Earth. Though considerably closer to Earth than today, seen only in a daylight sky, the Moon was not a significant object in the sky. Likely it was larger than the disc of Super Saturn but it was incomparably fainter. It showed no phases, nor could it eclipse any body [91]; it probably was always oppositely positioned in the sky to the arc and at => *quadrature* with both of the brighter stellar bodies.

In the period of accretion, debris and lightning would be striking the Moon from the plane of the swath in large part. Far-flung cultures portray the goddess of the Moon as a spinner, the first spinner (de Grazia, 1981). In ancient spinning, as in its modern survivals, threads are held and fed from the one hand to the spindle held by the other hand (Suhr). The spindle grows fat and round. Such myths may represent the accretion of the Moon and its assumption of a globular shape (see Baker, 1954, p18). The process would have endured for generations and would have been most impressive at first, especially while the Moon was candescent. Afterwards, it may have been visible only on occasion during electrical discharges.

Tresman and O'Gheoghan quote *Midrashim* to the effect that the Moon fell, was less brilliant, "and tiny threads were loosed from her body". Also, "some of her parts fell off".

The legendary evidence of the birth of the Moon is discussed elsewhere (Darwin p510; Fisher; Bellamy, 1936, pp268-72,

1951, ch. 16; Baker, 1954; and de Grazia, 1981). Physical and astronomical evidence is abundant on the manner and recency of the Earth's parturition and the birth of the Moon. Here we cite only salient examples from several scientific disciplines.

The Moon's overall density approximates the density of Earth's mantle material; so it is natural that many scientists have suggested some connection between the Moon's origin and the Earth's missing crust. The similarity between the chemical composition of the surface rocks of the Moon and the Earth enhances the believability of this hypothesis, especially with regard to the amount of the noble metals - gold, platinum, nickel, etc. (O'Keefe, 1973). That the Moon rocks are more impoverished in the volatile elements (zinc, cadmium, lead etc.) than Earth rocks indicates that the Moon material has been subjected to more heating than has Earth material. The Moon rocks were formed under reducing conditions: ferrous iron is common on the Moon, while it is rare on the Earth, where oxidized ferric iron is found (Arnold). If the Moon agglomerates electrically in a depleted plenum all of these differences are explained. The lunar material is heated as it is wrenched off the Earth. In space it is dispersed into an oxygen-poor dilute gas, where it accretes electrically again, liberating heat. The forming Moon is unable to conduct this heat away efficiently (as had the Earth, which accreted in a much denser and more electrified plenum at an earlier time).

The Moon's internal structure testifies to the rapidity of its formation (Wood). Despite a high surface heat flow, the Moon's interior is relatively cool today (below 1300 K); the Moon seemingly accreted as a conglomerate, like stew chunks in sauce (de Grazia, 1981). Its sixty-five kilometers of anorthosite crust reveals that it was melted or, better, metamorphosed electrically, at the time of its agglomeration. Its over three trillion craters of one meter or greater in diameter (Short, p48) show that it underwent extremely heavy electrical blasting and debris bombardment after its emplacement. As a result we are not surprised that some rocks returned to Earth from the Moon show strong and fairly stable remanent magnetization (Strangway *et al*.) despite the weakness of the lunar global magnetic field. If electrical events magnetized the Moon rocks their *in-situ* magnetizations should be quite disorganized, sporadic, and of varied strengths.

Several *in-situ* observations testify that the Moon's formation was very recent. Lunar samples do not match modern theoretical expectations about primordial planet composition (Wood, pp71-5). The oxygen isotope ratio in lunar samples is identical to that in samples of terrestrial oxygen (Epstein and Taylor). The amount of Helium-4 (a product of radioactive decay) found in the Moon's rocks is exceptionally low (Heymann et. al.). Indicative of the Moon's youth (Cook, 1972, p18).

Cracked crystalline surface rocks show evidence of shock metamorphism and rapid cooling (Douglas *et al.*, 1970). The bombardment has been extensive and repeated, while some debris is of recent origin (Quaide *et al.*). Using the conventional time scale, recency means about one four-hundredth of the Moon's age; using our time scale it means very recently (de Grazia, 1981; Baker, 1954; Velikovsky, 1969). The thin lunar atmosphere is accumulating now; gases trapped when the Moon agglomerated are still escaping from orifices in its surface (Cook, 1972). Periodic eruptions are reported, notably in the craters Alphonsus and Plato, and within Schroter's Valley (Menzel *et al.*, p229; Wilkins and Moore, p235, p263). Moonquakes, frequent though weak, may be taken as evidence that equilibrium has not yet been attained within the Moon and within the Earth-Moon system (Latham). It is presently impossible, however, to distinguish which or how much of these several phenomena are attributable to the throes of the birth or result from more recent encounters between the Moon and other planetary bodies and comets.

Notes on Chapter 13

86 At some latitudes both bodies were visible, either together or alternately. We believe ancient accounts of two great lights in the sky refer to this era, or to the later Saturnian era (before the Deluge).

87 An Earth reflecting 30% of the light and an arc reduced by 32% would also cool the Earth to an ice-age condition. The actual mechanism by which the Earth receives its => *insolation* is open to question. Hanson notes that measurements made from space have necessitated lowering the Earth's global albedo from 45% to 29%, = irradiance values to the surface having been raised by up to 27%.

88 It will become apparent that our theory (cf. de Grazia, 1981, 1984b) posits a continental rapid rafting of a thousand years or so, rather than the usual 200 My drift.

89 That such an athermal encounter is possible is attested by the survival of a tree at Lugano, Switzerland, which did not ignite upon being struck by lightning. By a serendipitous coincidence the whole event was photographed by a scientist conducting research on lightning (Orville).

90 Each continent is currently located antipodally to an ocean (Harrison, 1966).

91 In support of our notion that the Moon did not orbit the Earth monthly we note that Vertes has criticized effectively the notion that certain Upper Paleolithic artifacts were lunar calendars.

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