CHAPTER ELEVEN

ASTROBLEMES OF THE EARTH

The first experience of Super Uranian instability on Earth would be a quick succession of light and darkening and a relatively more pronounced illumination from the South (Sun) and the electrical arc. The dark would come from the expulsion of dust and debris down the sac towards the Sun (see Figure 23). Pandemonium would be let loose and frightful specters abound as fragments would rip through the plenum and encounter Earth.

Instability of Super Uranus periodically expelled from that body a halo of debris whose nature depended upon the intensity of the particular outburst. It is conceivable that the process could persist over several millennia with frequent small eruptions occurring at intervals similar to an active volcano or to a recurrent nova (Chapter Ten). Mild outbursts might only cause ejection of superficial material -gases and fine solids. Violent ejections could send massive chunks of solid material away from the star. Because the binary is nestled in the cavity, the ejecta does not escape the system. However, its fate is dependent upon its electrical state and the direction of ejection.

In its outbursts Super Uranus mimicked, but with diminished intensity, the nova eruption which the Super Sun underwent early one million years earlier. Electrical instability between the skin of Super Uranus and its interior, probably produced by the transition between one mode of transaction and another (Chapter ten), led to explosive ejection, in all directions, of layers of the star. Much of it was captured by and funneled down the magnetic tube. Its penetration towards the Sun was governed by its inertia and charge (see Note C). This material, possessing greater charge density than other parts of the binary system, caused havoc as the pieces (atoms to irruptives) encountered the plenum gases and the planetary bodies.

The electrical, meteoritic, and gaseous disorders attendant upon the initial instability of Super Uranus are largely deduced from the dynamic model of the collapse of Solaria Binaria. Direct proof of the falls associated with system derangements extending over a period of perhaps three thousand years is lacking. In an extreme case it may be postulated that most of the damage of an extraterrestrial meteoritic character belongs to this period, as opposed to damage inflicted by planetary size bodies to be discussed later.

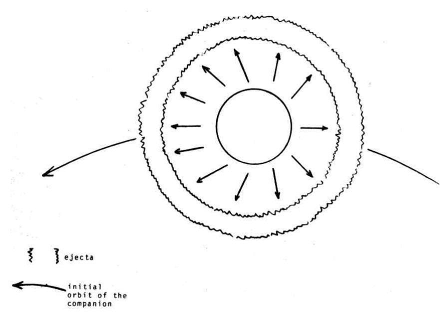

Figure 23. Explosive Eruption from Super Uranus. . (Click on the picture to view an enlarged version. Caution: Image files are large.)

At the period when the galactic transaction to Solaria Binaria was shifting from the gases of the outer plenum to the gases closely about the two stars, electrical instability developed within Super Uranus. This instability caused Super Uranus to shed explosively material and gases from its body. Much of the ejecta became trapped in and funneled down the magnetic tube, bombarding the planetary components of Solaria Binaria.

Probably impacts were rare during the period of stability following the first accretional stage of the Earth. Evidence for this in rocks and depressions would have been metamorphosed, granitized or erased under sedimentary aggregation and erosion.

We suggest that most extraterrestrial deformations of the Earth's surface would then have occurred at the end of the stable period, that is, from fourteen thousand years before the present onwards, during the period of Super Uranus instability. The lunar episode, to be discussed in Chapter Thirteen, would have provided most of the remaining meteoritic features, or astroblemes. Here the material itself would have been mostly a fallback and possibly identifiable as Earth-crustal material by physical and chemical techniques if its nature would not be later modified to conform to Earth. Subsequent disastrous showers of meteoroids, as we shall explain, would have been experienced in Apollo and Venusian times, that is, around 5000 and 3500 years ago.

Lately the term "astrobleme", meaning "star-wound" in Greek, has come into scientific use along with the renewed interest in things coming out of space. Generally it refers to detectable craters dug, supposedly, by meteorite falls. Here, our discussion of astrobleme includes a whole class of effects of extraterrestrial transaction with the Earth's surface; "meteoritic" craters and mounds, irruptives (collisional intrusions that may turn out to be soft-landed meteorites); "meteoritic" craters and mounds, irruptives (collisional intrusions that may turn out to be soft-landed meteorites); meteoritic dust; => *barads* and field cobbles; till (consolidated clay and pebbles); metals ash; waters; ice; vaporites (fall-back of exploded and extremely heated meteoritic and terrestrial material); fulgerites (fused soils of lightning origin, whether terrestrial or extraterrestrial); and biospheric transformation. Controversy and a paucity of identified materials makes this list hypothetical; certainly it is not complete, because extra terrestrial collisions, small or large, must convey many lost effects. Before long, for example, it will be difficult to detect, even guided by a precise hypothesis, the eighty million trees blasted down in the Tunguska region of Siberia in 1908, probably by a meteoritic air-burst; the animals and few persons killed in this obscure wilderness disaster have long disappeared into dust. Mutated flora has been reported from the spot; such plants would have merged into the plethora of ordinary species if there were not a search party alerted to their possible quantavolution.

Distinguishing among astroblemes of the various episodes 14,000 to 11,000; 11,000 to 10,000; *circa* 5,000; and *circa* 3,500 BP; and all others, even though perhaps a minor concern, is probably impossible because of the heterogeneous nature of the Earth's crustal material and the similar processes occurring in each case of a strike.

Legends and history will afford some assistance and could afford more were these now to be reviewed in search of incidents. For some time Australian Caucasians disbelieved the reports of Australian Aborigines that McConnell Bay had suddenly appeared where before there was no water. Late studies have changed the date of origin of the feature from millions of years BP to a few thousands (Kondratov).

Meteorites were often incorporated into places of worship, as sacred relics of the vitiation of, or a message from, a god. The Temple of Artemis/Diana at Ephesus in Asia Minor contained a meteorite (Acts 19-35); the image of Diana was reputed to have been sent by the god Jupiter. Velikovsky (1950, p289) cites other examples. The best-known surviving meteoritic object of worship is the Black Stone (30 centimeters in diameter) now encased in silver and embedded into a corner of the Kaaba (Ka'bah) in Mecca (Abdul-Rauf, pp584ff). A local legend attributes the stone to he Archangel Gabriel who is associated with Venus (Velikovsky, 1950, p291), Moslems believe that the stone is the only extant piece of Abraham and Ishmael's House of God (Abdul-Rauf).

The geophysics of crater identification is in its infancy; the very idea of the Earth having suffered extraterrestrial encounters has been resisted until lately (Ninniger), Craters from smaller than seven kilometers to seven hundred times that diameter are discernable under various geological formations at widely separated locations in continental North America and elsewhere (Saul). Ancient meteorite craters may be the source of many circular features of the Earth, but few of such topographical formations have been given more than a superficial look (Norman *et al.*, p692) Figure 24 shows an area of broken terrain in Arizona from which Saul's analysis revealed a set of overlapping and eroded astroblemes as shown drawn over the map. Notably, metal and mineral deposits are distributed among these astroblemes, lending support to our suggestion elsewhere in this book that most if not all useful minerals and metals are deposited and produced by quantavolutionary processes.

Beals and Halliday outline criteria used to identify meteorite crater remnants after erosion, and possibly glaciation, have attacked the exposed circular or oval structure. Critical is the presence of a lens-shaped layer of broken rock under the crater. This is often extremely difficult to reach by drilling. They note that fragments of the meteorite usually are absent; this they attribute to removal by glaciation. However, we maintain that no fragment need have fallen to produce such a crater. A crater produced by the shock from an explosion resembles one produced by material impacting at high energy, both exhibiting phase transitions that produce high density crystals from the resident minerals. Glasses produced by heat also are common in both settings. Craters satisfying Beals and Halliday's criteria result when great electrical discharges reach the surface (Juergens, 1974;1974/75).

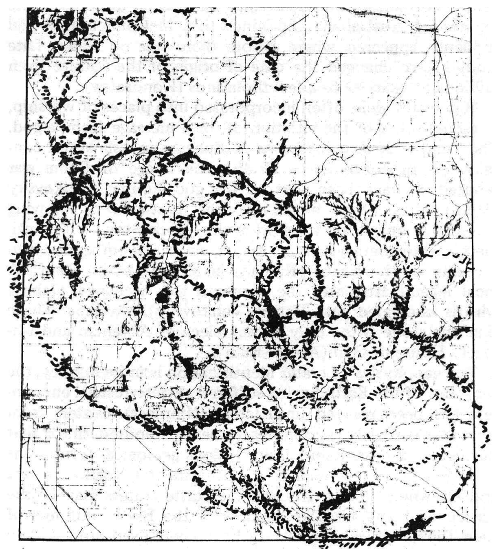

Figure 24. Possible Astroblemes in Arizona. (Click on the picture to view an enlarged version. Caution: Image files are large.)

A section of an official relief map showing a portion of Arizona at a scale of 1:2 000 000. The rectangle encloses the land between 110° and 112° West longitude and 33° and 35° North latitude. The city of Phoenix is located on the west margin of the enclosed area about one quarter of the distance from the bottom to the top corner of the map. The circles representing the remnant astroblemes have been drawn over the map: they are based upon the analysis of Saul. Extensive mineral deposits have been discovered at sites on the rims of these features.

Vsekhsviatskii, speaking about the origin of the Moon's craters, notes that "the magnificent achievements of the Apollo astronauts... leave no doubt that most of the processes affecting the surfaces of the planets were determined by endogenous forces." He favors eruptive genesis, because of the basaltic nature of the ejecta surrounding the Moon's craters. In our opinion, he is incorrect in attributing these eruptions to processes originating within the Moon (and the planets), but is correct in his observation that only local material is present. The same is true for Earth craters.

Only rarely do large meteoroids contact the Earth, because of electrical repulsion between the charged Earth and the invader (Figure 25) [77]. Some overcome the repulsion and go on to impact (trajectory 3); others do not and deflect back into space. Many meteoroids become unstable and discharge electrically (trajectory 4); the discharge can explode into the Earth's surface, producing a "meteorite" crater, or it can produce an atmospheric shock wave which devastates the surface features. More commonly, a bolide is produced that discharges harmlessly well above the surface; only audible shock - waves reach the surface (trajectory 2).

Then dusty débris or a few small rocky fragments, splintered off the meteoroid, may reach the ground (Milton, 1982). Most meteoroids "burn up" at high altitude (trajectory 1), the smallest of which are noted to decelerate as if repelled by the Earth [78].

Hughes (1979) commented that certain meteor swarms observed within the Earth's magnetosphere behaved as if they were electrically charged. This conclusion is consistent with the surprising finding that the rate of encounter between Earth and fainter meteors correlates negatively with increased solar and geomagnetic activity (Lindblad). Other charged particles encountering the Earth from directions away from the Sun's show a similar inverse correlation with solar activity, which lends support to the concept of charged meteoroids.

Motion of ejecta, like the motion of the principals, would have been dependent upon the relative charge densities of the transacting pieces. Under stable conditions, the gases and material within the magnetic tube were close to being in electrical equilibrium with the flow along the electric arc. Thus material encountering the Earth should normally have a charge density approximating that of the Earth and would be repelled in encounter. Penetration into the Earth's electric domain (a space much larger than the body of the planet) would be determined by the combination of mechanical inertia and electric attraction/repulsion (see Table 5). Most meteoroids would reverse their trajectories and fling them away into the plenum; alternatively the electric transaction between the meteoroid and its surroundings would consume the encountering body before it could be repelled.

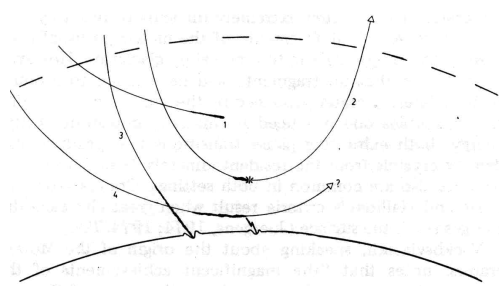

Figure 25. Meteoroid Trajectories. (Click on the picture to view an enlarged version. Caution: Image files are large.)

Objects from space that penetrate the Earth’s electrosphere and enter its atmosphere transact strongly as they approach the Earth. For bodies larger than a grain of sand a visible trail, a meteor, is produced during the passage through the atmosphere (1). Frequently a meteor will explode harmlessly high in the atmosphere, to produce a bolide (2). A very small fraction of incident meteoroids overcome the electrical repulsion by the Earth and impact with the ground: these are the meteorites both ancient and modern, the majority of which are small and thus can become equilibrated with the Earth’s electrical state during their short falls. The largest meteoric pieces can impact explosively (3) or discharge to the ground, damaging the terrain indirectly(4).

This transaction arises because particles of different sizes possessing the same charge density have different electric potentials at their surfaces (see also note C); thus they must transact if in proximity. The larger body has the higher potential and gains charge from the smaller. This heats the meteoroid and may vaporize it. If the potential difference is great enough, lightning-like currents may be induced between the meteoroid and surrounding charges, explosively stabilizing the charge levels; such discharge would be expected only for large meteoroids.

TABLE 5

MODES OF METEOROID ENCOUNTERS

Charge \ Inertia	Low	Moderate	High
Repulsion	"Faint meteors"	Evasive skip	Air explosion
Neutral	Drift down	Small intrusion	Rafted irruptive
Slight attraction	Ballistic meteor	Fireball	Bolide
Strong attraction	Soft fall	Hard fall	Explosion crater

In the disruptive environment, when the binary began to be electrically unstable, large amounts of meteoritic material could encroach upon the Earth's domain, arriving in an electrically inflamed condition (at very different charge density). Some of this material would be strongly attracted towards Earth and could blast explosively into its surface. Even when a near miss occurred, the passage could alter the Earth's protective electrical sheath (as solar wind outbursts, produced by solar flares, do today), great thunderbolts would be generated, and again produce explosions at the surface.

When a tremendous bombardment, or large-body encounter, would occur, most of the matter could not overcome the electrical repulsion of the Earth; but vast sporadic falls from above could dot the Earth's surface. Remnants are found buried under the fallout from later catastrophes (Velikovsky, 1955, p55, pp96-9, pp104ff).

Repeated impacts (material and electrical) would disturb the Earth in its orbit within the magnetic tube. The globe would wobble, the magnetic axis would constantly seek realignment, only to be subjected to another disruption as another megalith fell (Dachille, 1963) or a gigantic thunderbolt struck. The assault would crack the crust in many places (Norman *et al.*, p691), cause local uplifting, and alter the electric current in the outermost region of the Earth's conductive core.

Meteoritic fallout would range from microscopic nodules, similar to those found in the seabeds of later eras, to colossal intrusions of rock and/or metal. The Sudbury irruptive in Canada is an example. It is an elliptical ring sixty kilometers by twenty-seven, enclosing an asymmetric basin up to three kilometers thick. Along its boundary are large quantities of broken native and irruptive rock. This intrusion is judged to be younger than the rock surrounding it (Douglas, 1970).

The existence of ore mountains (isolated metallic deposits of mountainous size) like Marampa in Sierra Leone is also evidence of celestial fallout (Bellamy, 1951, p196). But the Sudbury basin and Mount Marampa are far from being the only examples of celestial intrusion: these are found on every continent, and certainly more astroblemes will be discovered.

Whereas the larger irruptives devastated local features upon which they fell, smaller pieces merely bombarded the surface without exploding, like artillery duds. People can survive intensive explosive barrages, as did most defending soldiers and civilians on Iwo Jima and at the Abbey of Monte Casino during World War II; pre-historic populations were no less survival-prone. Much of the smaller debris simply dented the surface and lay there exposed as testimony of a perplexing celestial activity.

When a material impact occurs, electric fields are produced, causing electric charges to flow (generating an intense magnetic field). Dachille (1979) asks:

> What mechanisms account for the changes in crater forms from the simple bowl to the awesome mare?

And then he replies:

> It should be noted that the microcraters observed on crystal faces or glass beads in lunar samples do not differ significantly from the Arizona crater or its lunar equivalents; the impact energies involved span at least *twenty* orders of magnitude. However, on progressing from bowl through the terraced-, peaked-, and melted-floor craters to the maria,

> the total energy difference amounts *only to six* [more] orders of magnitude [79]. This marked change in behavior can be related quantitatively to the reaction of the EM fields with the magnetic and dielectric properties of the target as a function of the duration of EM pulse and the passage of the much slower shock wave pulse; in the upper range of energies the EM processes overwhelm the mechanical ones and thus determine the physical, chemical and petrological character of the resultant craters.

Spotting the Earth's surface are tektite fields. The large Australasian tektite field covers over five million square kilometers. From this field over 20 000 specimens have been examined.

Tektites are glassy spheres, of refractory materials, erosion due to air-friction melting as they fell through the atmosphere having depleted them of their less-durable components [80]. Tektites have rained down upon the Earth episodically since late Mesozoic times (presumably the Cretaceous), according to Baker (1960, p293).

Chemical studies show that tektites resemble both terrestrial sediment and lunar soil, but significant differences distinguish them from both. To explain their deficiency in volatile material, the tektites must fall to Earth at velocities sufficient for friction-induced melting and scouring to cause chemical changes to their incipiently silicic composition; heating to 1475 K would produce sufficient such ablation (O'Keefe, 1978). Accordingly, O'Keefe has conjectured that the tektites were fired at the Earth by a hydrogen-powered lunar volcano. Equally, they could be products of the electric arc, or ejecta from the breakup of Super Uranus; more likely they were generated in cosmic thunderbolt strikes to Earth which occurred at intervals while Solaria Binaria disintegrated.

Tektites have been unearthed along with the fossil bones of Java man. Likely their falls were witnessed by prehistoric and ancient man and the spheres treasured as sacred. The experience would be remembered. In China, they were known as "fire-pearls"; and it is a "fire-pearl" that is pursued, in traditional representations, by the dragon, associated by Cardona (1976, pp42ff) with the memories of comets, possibly proto-Venus of *circa* 3,450 BP.

Most of the meteoritic debris encountered by the Earth today is in the form of microscopic dust. Estimates vary a millionfold, but the Earth sweeps up a *minimum* of one tonne of dust per day (Singer, 1967). Daily falls of 44 times this amount are considered to be realistic (Hughes, 1976). A nine-year annual average gave 1.04 x 10^{11} grams (285 tons daily) in New Mexico sampling (Crozier, 603) [81]. In two years the annual fall averaged 685 tons daily. Depending upon the influx and upon the timescale, the amount of meteoritic sediment can be calculated. Some scientists consider that a considerable fraction of earthy sediments (what amounts to about 3 x 10^{18} tons) are estimated to be meteoritic in origin (Niemann).

Most of this extraterrestrial dust must have fallen during outbursts in Solaria; at the present rate of influx, even allowing hundreds of millions of years since the Cretaceous, only one-million of the required meteoritic dust would drop: hence the estimate gap above. We conjecture, to conclude this set of guesses, that the Earth, from its primordial seed, could accrete from the plenum its present volume, less its sediments, in a millennium; its sediments could have been laid down in some generations of late binary times by extraterrestrial and turbulent surface events.

The observation in the infrared that some nova outbursts produce a significant silicate dust shell (Ney) leads us to suspect that the eruption of Super Uranus deluged the Earth with “meteoritic till”, vast intrusions of dusty débris. In a short outburst the débris, which in some geologists’ minds must have taken millions of years to sift down, might be plunked down upon the lithosphere. Donnelly (1883/1970) argues that vast fields of till scattered over the world are cometary fallout and not the remains of ice ages. It is more likely that both ice and till were of superterrestrial origin.

The first pre-nova eruption of Super Uranus probably rained down megaliths, rocks, glass, gravel and sand, but ice and water also fell from the sky in great amounts. The Earth was inundated with water condensed electrically from the plenum. Typhoons formed in explosions and towered into the plenum (de Grazia, 1981). They might occasionally be seen - roaring, stumbling pillars of smoke, water, electrical discharges and debris:

veritable automotive disasters. New winds blew the waters across the face of the land. Since there is no compelling reason to suppose that great basins existed on Earth such as collect today's oceans, the flooding was severe. Some of the water drained into the craters blasted by meteorites and by electric bolts. Other waters slipped into the numerous fractures that appeared and into ponds fashioned by local thrusts and folds of the sediments.

An annual rainfall of two-and-a-half meters (not uncommon in coastal areas today) would dump over one million cubic kilometers of water onto the Earth's surface. This amounts to about 10^{18} tons of water, or about 1/3850 of the present oceans. Cherrapunji (India) receives 11 meters of rain in 159 days, which extrapolated (at the mean daily intensity) would yield 26 meters of rainfall annually. Hurricanes deposit rainfall at over seven times the rate at Cherrapunji; globally, such hurricanes could fill the ocean basins in five decades!

By current standards, a Deluge would constitute a more extensive rainfall than this. But for a biosphere used to Pangean conditions, where rain had been supplied by mists, the new kind of heavy rainfall would be traumatic.

The blast of material moving down the magnetic tube from Super Uranus created shock waves in the plenum. Where rarefaction occurred, water vapor froze, producing ice. Some of this ice fell onto the Earth. Within a short time ice sheets formed and grew all over the globe. Those were not polar ice caps. The ice caves of the intermountain plateau of the Pacific North-west region comprise millions of tonnes of ice (Patten), sandwiched between layers of lava. They are a surviving example of ice which fell from the sky. Clumps of ice avoided the numerous hot spots and lower altitudes of the world. As the ice continued to fall, electrical processes funneled most of it towards the magnetic poles, where large ice caps accumulated - this was the first ice to accumulate in what today we consider high latitudes. These polar caps grew and joined onto the sporadic patches, spreading rapidly towards the magnetic equator. The ice would probably have covered the globe and exterminated the biosphere had Super Uranus not erupted again.

Notes on Chapter 11

77 The first documented meteoroid repulsion was made in August, 1972 (Jacchia).

78 These faint meteors decelerate at rates up to one hundred times greater than that expected for a solid body penetrating the Earth's upper atmosphere (the ballistic meteors).

79 Bracketed word is ours.

80 The tektites seem to have encountered the atmosphere (with present properties) moving at ten kilometers per second along shallow trajectories (Faul).

81 Spherules used in the counting measured 5 to 60 micrometers in diameter.

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