PART TWO

EXOTERRESTRIAL DROPS

Reasoning from exoterrestrial exploration and the shapes and chemistry of the Earth's crust, and with a strong assist from early human legends, the origins of some material of the Earth's surface is assigned to fall-outs. They range from invisible gases to giant meteoroids. The geophysical column commonly displays exoterrestrial products and their effects.

We stop short of using exoterrestrial fall-out like a magician pulling everything out of a hat. If still we appear extreme, it is well to recall that the physicist Alfven theorized that the Moon was at first a much larger aggregate which broke up, showering upon the Earth the whole of our continental masses.

CHAPTER EIGHT

FALLING DUST AND STONE

When Alexander the Great asked some Celtic leaders in 325 B.C. what they most feared, expecting them to reply Alexander himself, they said it was that the skies might fall. Somewhere along the line of history, this story lost Alexander but became attached to the Celtic Gauls; the schoolbooks universally read by French children until lately began by telling them that their earliest ancestors were the Gauls whose eyes were blue, who feared nothing but that the heavens would fall on their heads, and whose huts had holes in their roofs to let out the smoke. Were the Gauls known for nothing else? The naive, simplistic image lets the children be amused. But the insistence with which this particular canard is purveyed says something about the fear of falling skies, which absurdly seems to grip even the savants in their obsession with foisting it upon their perceived ancestors and their descendents.

In the most ancient legends it is common to find references to more than comets and deluges of water. Deluges from the sky consist also of dust, loess, stones, glass, tar, oil, salt, gold, iron, ashes, carbohydrates - all of them sometimes hot and sometimes aflame. They are invariably tied to catastrophes.

Donnelly collected some of the stories:

> We read in the Ute legends... that when the magical arrow of Ta-wats struck the sungod full in the face, the sun was shivered into a thousand fragments, which fell to the earth, causing a general conflagration."[1]
>
> [One is cautioned to read "sun" with reservations; foreigners who pass along legends are likely to make the word "sun" out of any brilliant great body in the sky.

> That the Sun is only one of such historically manifested bodies is the thesis of a number of studies.]

Further :

> It is a belief in many races that the stone axes and celts (chisala) fell from the heavens. In Japan, the stone arrow-heads are rained from heaven by the flying spirits, who shoot them. Similar beliefs are found in Brittany, in Madagascar, Ireland, Brazil, China, the Shetlands, Scotland, Portugal etc. [2] (And the Greek Apollo is famed for discharging clouds of arrows and plagues from afar).

Also from the Aztec prayer to Tezcatlipoca :

> Hast thou verily determined... that the peopled place become a wooded hill and a wilderness of stones?.. Is there to be no mercy nor pity for us until the arrows of thy fury are spent? Thine arrows and stones have sorely hurt this poor people [3].

And, of course, the Bible (*Deuteronomy* xxviii)

> The Lord shall make the rain of thy land powder and dust; from heaven shall it come down upon thee, until thou be destroyed..."

Thus, in *Deuteronomy;* but more too in *Joshua x*:

> And it came to pass, as they fled from before Israel, and were in the going down to Beth-horon, that the Lord cast down great stones from heaven upon them unto Azekah, and they died: There were more which died with hailstones than they whom the children of Israel slew with the sword.

This, it may be recalled, was the day when the Sun "stood still", a swing-back of cometary Venus, according to Velikovsky, 52 years after Exodus, and at the least he shows that this hail was not ice but of stone [4].

The student of geology today is realizing that what falls from the sky is not only nickel, iron or stone fragments. There is a continuity of materials. P.M. Millman writes:

> ... physical theory, applied to the observed heights, velocities, deceleration, and luminosities, indicates that in most cases the mean densities of the meteoroids may be below that of water and that they have a fragile structure with a tendency to crumble and fragment. A small fraction, probably 1 or 2 percent, consists of denser, compact particles corresponding more closely to meteorites. These latter are either nickel-iron, with densities about eight times that of water, or heavy stone, with densities between three and four times that of water [5].

Where does all the dust and stone rest today? It may be, as Donnelly said it, the main constituent of the so-called glacial till and in heaps called mistakenly glacial moraines. It may be in much of the clay of the Earth, in red loams of many countries, in abyssal clay of varied red and blue hue. The geologist Johan Kloosterman tells a story from Brazil :

> Early this year, Professor Doeko Goosen in Enschede, Holland, told me that there was something odd about the iron content of the early-Holocene coversands of the Netherlands. These sands are thought to have been formed through a combined fluvial and aeolian activity. But in many of their soils, the amount of iron is much too high for such an origin. Moreover, the present loss of iron by seepage water, observable along many ditches, demonstrates that the original iron content must have been higher still. Weathering of minerals (loss of Silica and relative accumulation of iron) does not satisfactorily explain this anomaly. Could the iron have come from above, as a sort of ferruginous loess?
>
> A few months later in Mato Grosso, Goosen's remark led me to look more closely at laterites profiles. I noticed an inch-thick layer of hard laterite between two layers of unconsolidated gravel; its undersurface was *smooth*: it had obviously been formed prior to the deposition of the

> top gravel. I traced the layer for several kilometers, and later found it in places tens and even hundreds of kilometers away, on different deomorphological levels. The only possible explanation for these observations seemed aeolic precipitation on a barren, moist surface [6].

Doeko Goosen has gone well beyond the ordinary unsatisfying explanations of soil formations commonly employed."Not so long ago soils were considered to form in materials derived by weathering of the underlying rock. Over several decades there has been a growing recognition that much of the mantle of soil is allochtonous."[7] But where does it come from? Few are the regions where soil can be shown to have aggregated as humus from the vegetation above. The large areas of Europe and Asia covered with loess are now considered all or in part by Russian scientists as non-aeolian. This is conveyed forcefully to their minds by the presence in the loess of numbers of angular stones. Promptly we are recalled to the pages of Donnelly's old book where he insists on the exoterrestrial origin of the angular stone typical of "glacial till" and of loess.

Now Goosen advances the argument with respect to the soils that sit atop the loess. He claims that humus does not form except in waterlogged area, presently and historically unlike the Kazakhstan (U.S.S.R.) area he discusses. Furthermore, the "Chernozems," the aforesaid soil, is rich in hydrocarbons. Presumably, some of it was combusted, too. The incident of its formation was most likely a cometary encounter.

Goosen goes farther, in what approaches in fact a general theory of soils formation. Slickensides (common in cracked vertisols and related to mass movements of ash and clay), and latosols, along with much other soil with a high iron content are assigned catastrophic origins, with tides and floods in the first case, and heavy hematite exoterrestrial fall-out in the second as the mechanism.

"Dust thou art, and to dust thou shalt return." From dust to dust, goes the pathetic saying about man's fate. "To dust" we know from experience. "From dust" - what does geology say? Nothing, of course. Does mythology have something to say?

Yes. One of the most popular creation legends has man being made from clay, Hebrew *Genesis*, for example. The Greek Promethean creation, for another. Moreover, the "Cree Indians believe that the flesh of those who perished in the waters of the Deluge were changed into red pipe-clay. Similar myths or echoes of myths are found in the tales of almost every nation. "So reports Bellamy [8] "We are all made from common clay," say egalitarians.

Why clay? Because, according to ordinary surmise, clay is malleable; early people would made images of clay and, projecting their desire for omnipotence onto the gods, would imagine that the gods could fashion real people from clay. Is this adequate reason? Is there additional reason to believe so?

Bellamy also asserts that the enormous and unfamiliar loess deposits, which must have formed such a striking feature of the new Earth, were regarded by the survivors as the dissolved bodies of their unfortunate brothers and sisters [9]. It is noteworthy that loam deposits do surround the remains of Peking man at Choukoutien and human tools of the Lower Paleolithic in Europe and Tadzhik (U.S.S.R.) The loess is a fine undifferentiated loam of brownish or reddish color that makes eerie standing images by its vertical pipe structure when eroded. The logical divine action, in magical theory, is to create people from the same material, especially if its origin is celestial.

To conclude our reasoning, the myth and the magical reasoning press a hypothesis upon the geologist. The origin of loess may be in an immense fall-out of dust from a comet or an explosion of Earth material into the highest atmosphere whence most of it fell back to form loess and clay covering many hills and valleys to this day. Since humans seem to recall such an event, the time might not be far off.

Donald Cyr, a California amateur and devotee of the Canopy Theory of Isaac Vail, has studied loess. He has a story to tell too.

"Loess is mixture of silica and clay, with particle size ranging from 0.1 mm down to 0.005mm . Where loess in unoxidized, it

has a greyish color, but may also be yellow, orange, or brown because of presence of ferric oxides. Deposits of loess occur in North America, Europe, Russia, Siberia, China, and also in Argentina and New Zealand...."[10]

The State of Kansas is estimated to be overlain by more than 50,000 cubic miles of loess. There is little glacial outwash in Kansas, Cyr writes, and he does not see how glaciers had the power to grind down sufficient rock within the Pleistocene age, wherein it is placed, to supply the loess. He estimates the worldwide deposits at 7,000 cubic miles per degree of longtitude per hemisphere. And he suggests that the ocean "blue" mud may be part of it.

A few more words are owing on the origins of the drift or till, before letting the abused author Donnelly stand in his solitary majesty. Many accounts of stone falls are acceptable; Corliss has compiled and introduced some of them. Velikovsky has analyzed several cases, while rejecting Donnelly as to the cometary origins of the drift. For instance, he points to 28 fields of blackened, sharp-edged and broken stones (*harras*) in Arabia in strewn fields of many thousands of square miles; they are not igneous; they are referred to in ancient Arabic and Hebrew literature; they originate from the sky in early historical times [11].

Till is a stiff clay full of stones varying in size up to boulders; conventional science says it was produced by abrasion and carried along by the ice sheet as it moved over the land. So Geikie said in 1863, and the definition is still useful. Donnelly pointed out that this till, which he called drift, is not in all places where the ice was said to be and exists in other areas where no ice was supposed to have been. Till is common "over much of the most important mineral producing terrain of the northern hemisphere. Till occurs ubiquitously in Canada and Scandinavia and is present as well over significant areas of the United States, U.S.S.R. and United Kingdom." [12]

But why, argued Donnelly, was there a "driftless region" is Wisconsin, Iowa, and Minnesota [13]. And why is very little found in Siberia; there exist " the great river-deposits, with their mammalian remains, which tell of a milder climate than

now obtains in those high latitudes, still lying undisturbed at the surface." So wrote James Geikie [14]. And why are "glacial" pebbles and a "terminal moraine" found on hills and in valleys of the Southern Appalachians, and where the ice was not supposed to have reached in Eastern Kentucky [15]. Why do glaciers today not produce true ancient-type till, that is, striated stones, drift clay, mountain-top till, and how could glaciers form sheets over 30% of the Earth's surface a million years ago, not to mention pushing boulders up thousands of feet in elevation [16].

Crossed trains of drift occur, and are rationalized into successive advances and retreats of ice under different climate and morphological conditions. The till is not fossiliferous. Where drift and till have been found in Australia, India, and deep beds of older rock in Scotland, they were attributed to more ancient ice ages, thus scholars might conveniently dispose of all material appearing to be till. It is not difficult in historical geology to use time freely to make place for anomalies and to create events, even the greatest types of events, such as ice ages.

Using the ordinary theories of glacial geology, even though he is an exoterrestrial catastrophist, the Soviet geologist Salop has pointed out "that the Precambrian glaciations occurred under very unfavorable physical-geographical conditions. The glacial deposits are interbedded between strata indicating a hot climate, such as red-beds, dolomites, phytolite-bearing limestones (at present only found in warm, usually mineralized waters along the seashore or in tropical lagoons and hot springs), evaporites, kaolinitic sandstones and bauxite." This association of tillites with formation of warm and hot climates is typical of the Paleozoic Ice Ages too [17].

But Salop also demonstrates that nine ice-age pre-cambrian "intervals vary from 40 to 125 (or 180) MY and no evident periodicity can be observed." He then associates "biologic revolutions with the epochs of excessive climatic cooling usually resulting in glaciation." Tillites are taken as the signal of an ice age; whatever the climate above and below the till, whether cold or hot, the till is supposed to designate cold.

Some association may be found among tillite beds and a) low sea-water temperatures as measured in the differing gas and mineral concentrations of stratified sea-shells, and b) "coeval strata" that "attest to the influence of a cold, almost glacial climate." All correlations are subject to variations and even to possible basic flaws in radiometric dating. The association is loose enough to permit the argument that tillites may not be associated with cold climates, hence the tillites are not deposits of ice sheets and glacier, and, further, that tillites may be exoterrestrial deposits occurring in both hot and cold climatic period, wreaking quick destruction upon the biosphere.

Cyr and Sun point out that tektites are chemically similar to loess. This would suggest a possible exoterrestrial origin for loess and a coincidence of the two substances. Tektites are jets of fused silica. They range from microscopic size to large chunks. They are strewn around the world in enormous fields. They are found in the waters and soils of Central Europe, West Africa, Australia, Indochina, Thailand, the East Indies, the Philippines, Japan, China, and the Caribbean [18]. Heezen and Hollister estimated an Indian Ocean deposit of a billion tons that they think occurred upon a reversal of the Earth's magnetic field 700,000 years ago.

Billy Glass and R.N. Baker of the University of Delaware, with D. Storzer and G.A. Wagner of the Max Planck Institute of Heidelberg, studied intensively the Caribbean-North American strewnfield [19]. They estimated the total tektite field at 10^{17} grams of material, dated stratigraphically at Middle Upper Eocene. Some 6000 such glass microspherules were found in the sediment of one thin core at a depth of some 250 centimeters below the Caribbean Sea Bottom. The falls apparently came either at different times, or from different phases or portions of a gigantic single incident, because there are chemical differences among the tektites coming from different strewnfields of the world.

The writers claim different times, for they hold few reservations about their dating techniques. If from different times, a Moon origin is suggested, for there could have been large meteoroid explosions upon the Moon that would have splashed debris onto the Earth. Or, since the tektites are of a

material akin to the Earth's crust, they might have been a fall-back from large explosive impact encounters with Earth.

Glass and Heezen differentiated three forms of tektites found in the Far East. One was melted twice, one melted once, and a third little melted. They deduce a massive cosmic body breaking up upon atmosphere entry into two or several pieces. Of these, one would explode in the upper atmosphere, another closer to the ground and a third close to the ground [20].

Faul says "it is an established fact that tektites fell from the sky," but show too little cosmic-ray interaction to have spent much time in the sky [21]. Although he allows a possible lunar origin for some tektites, he shows that some tektite fields are too concentrated spatially to have been flung from the Moon and that, in Germany and the lvory Coast, a similar composition can be ventured for large astroblemes and nearby tektite fields.

No writer has considered the possibility of an origin from the fission of the Moon and Earth. If the present author's theory of lunar fission were postulated, then the composition, distribution and occurrence of the specified forms of tektites would be consonant with the event.

I think that legendary streams of cosmic arrows shot by the gods upon hapless but offensive mankind might refer to the glassier kinds of fall-out. Tektites resemble somewhat obsidian, a popular igneous stone for fabricating arrowheads. Tektites may fall like showers of needles, or arrows, or as arrowheads in size, weight and hardness.

The same tektites are called "Dragon Pearls" in China. Carter Sutherland in 1973 traced dragon art in China back to its apparent origins around 1500 B.C [22]. That reinforcements of the horrendous (but sometimes beneficent "Lucky Dragon") image have been supplied by various comets through the ages was documented by Dwardu Cardona (1975) [23].

Invariably the Chinese dragon is chasing a "chuh," or globe, or sphere, and "chuh" also means "pearl". "Huoh chuh" is "fiery sphere" and "fire pearl." Moreover the Chinese also call the

tektite "huoh chuh". Indians, Javanese, and Tibetans also call the tektite "fire pearl". Long before modern science became interested in tektites, the ancient Chinese (the *T'ang Annals*) knew that these 'fire pearls' originated in space." They were esteemed by priests and emperors.

The tektites fell from the sky [24]. Aerodynamic ablation experiments with tektite glass have simulated their shaping upon entry and passage through the atmosphere. They are found in recent sediments and on the surface. The tektites were not long in space, they display no cosmic-ray interaction. They are easily eroded [25] but still exist in abundance and cannot be found in fossilized beds, another sign of youth. But other tektites have received old ages, 20 to 45 M/Y, as reported by Barnes [26]. Many are around the million-year mark (Heezen Glass, Chaprian)[27]. and ages of 5000 years were found by George Baker and Edmund Gill [28]. Gentner's dating by fission-track suggests a million years or less for certain groups, much longer times were assigned to others.

The tektite falls have been associated by Billy Glass and others with magnetic reversals and faunal changes [29]. A syllogism emerges: a heavy-body impact explodes tektites high into the sky; it causes reversal of the Earth's magnetic field; as the EMF hits zero point, cosmic particles, ordinarily deflected, pour down and cause mutations and extinction. Contrasting with this theory are opinions such as Lyttletons's that tektites fell from a passing comet train. However, Urey and Spencer argue that they reflect a splash from a cometary or meteoroid impact on the Earth. Moreover E.A. King: "the answer is now clear: tektites are produced from extraterrestrial rocks melted by hypervelocity impacts of large, extraterrestrial objects."[30]

Erratic bits of an exploded planet from the Mars-Jupiter interregion often fall to Earth. Some of them may also be surviving, uncaptured, terrestrial material. The tektite fields on Earth could also be fall-back from the lunar eruption. Rittmann writes : "The chondrites (of meteoric falls) correspond genetically to the terrestrial sima, and the tektites to the protosialic upper crust of the primeval earth."[31]

James Sun proposes that half a million years ago, a snowball comet laden with flammable gases approached Earth from the Northwest [32]. It shattered by gravitational force, and part crashed while part continued on. Loess was thus laid down, and in some place melted by impact into glass. Loess has a chemical composition very much like the tektites, as I have mentioned above. Aerial explosions created innumerable small glass blobs that fell to Earth.

The investigators generally agree that tektites are earth-like and moon-like in composition. Probably, the loess and tektites arrived within the same time span after passing into the upper atmosphere following their explosion from the Earth. Either a passing large body exploded the Earth's crust to make them or a meteoroid impact did the job.

John O'Keefe links the North American strewn field of tektite and microtektite falls with the terminal Eocene (Tertiary) event, when radical climatic change can be perceived in floral abundances and radiolaria were devastated [33]. His theory calls for the tektites to assume, before final descent, a ring-like structure around the Earth. The ring might have lasted a million years and cast a blighting shadow over the biosphere.

It is apparent here, once more, that earth scientists are becoming ever more daring in their suggestions of mechanisms to satisfy the resultant state of geological facts. Just under a century ago, Issac Vail received short shrift from academicians for proposing a Saturnian ring canopy system for the globe and arguing that it was known to early civilized man and fell apart before his very eyes [34].

Reporting systems on natural phenomena have gradually become more complete, regular, and valid. Nevertheless, the Edinburgh Philosophical Journal in 1819 issued an enchanting list of "meteoric stones, masses of iron, and showers of dust, red snow, and other substances, which have fallen from the heavens, from the earliest period down to 1819."[35] Among the exotic items were: a great fall of black dust at Constantinople on November 5-6, 472 B.C. accompanied by burning heavens; a kind of red matter like coagulated blood in the middle of the 9th century; a burning body that fell into Lake

Van, Armenia, turning the waters red and cleaving the Earth in several places (1110 A.D.); gelatinous matter in India with a globe of fire; and a mixture of red rain and snow whose dust contained silica, aluminum, lime, iron, carbon and loess and was coincidental with a shower of meteoritic stone over central and southern Italy in 1813. Red rains, often associated with meteors, were common. William Corliss, in his compilations, has educed much additional literature on peculiar fall-outs. Peter James [36], Donnelly, Velikovsky and others have demonstrated the frequent occurrence of red falls in proto-history.

Much meteoritic dust falling upon the Earth is invisible and immeasurable. Meteoritic falls have been estimated at 4000 tons per year by Saukov [37]. Hughes (1976) arrives at a figure of 16,000 tons per year. Schmidt gives an average for all of geological time at $8x10^{11}$ tons per year, very much larger and based upon an exponentially leveling off of initially vast drops of material [38]. At the last rate, with a geological age of $5x10^{9}$ years, one would have a total of $40x10^{20}$ tons dust dropped on Earth from space. This is not far from the total mass of the Earth, $6x10^{21}$ tons. But if Pettersson is correct, the rate of accretion of cosmic dust may be about 10,000 tons per day [39].

Micrometeorite dust has been estimated by Fred Singer[40] to fall at a median rate of 1250 tons per day or 456,250 tons per year (the rate may actually be 10 times more or less, he estimates). The calculation is from the detection of aluminum 26 abundance ratio in Pacific Ocean bottom cores. This is $4.5x10^{11}$ grams per year today, but Schmidt's estimate is only 400 tons per year today.

If any exponentialism is part of Singer's scheme and it should be, a fairly considerable portion of the Earth's crust should be composed of gathered-in planetary dust, achieved in a fairly short time. If, for example, we had a measure showing this figure to have been 10^{20} grams per year in 500 B.C. and 10^{25} in 2500 B.C., the subsequently plotted curve would give us the mass of all of the continental crust except for the basic granite within a few thousand years. We do not have such figures, but if we consider the obsession of ancient voices with days and

years of darkness and ascribe half of this to fall-out of dust, the required substantial deposits would be quickly forthcoming.

Between 1956 and 1964, W.D. Crozier collected exoterrestrial black magnetic spherules from atmospheric fall-out at two New Mexico stations, of a type noted around the world and in sedimentary rocks of great ages. These were accreting at an average annual rate of 1.04×10^{11} grams for spherules in the diameter range of 5 to 6. David Hughes considers the interplanetary dust to originate with comets and arrives at a figure of 16,000 tons per year of all sizes.

Hans Petterson, reporting upon the oceanographic expedition of the *Albatross*, disclosed a high nickel content in the Pacific Clays. Since basalt, the bottom material contains little nickel and meteoritic dust, meteoritic showers hundreds of times greater than presently observed were required to explain the abundance. The nickel abundance is also 5.5 times that in continental igneous rock; hence an exoterrestrial source is invoked [41]. Assuming the average of nickel in meteoritic dust to be 2%,he arrives at the aforesaid figure of 10,000 tons of dust per day, 3,650,000 tons per year (3.6×10^6), hence, especially if any kind of exponentialism is introduced as we go back in time, we should have the sediments of the ocean receive their quota of nickel laid down in a few thousand years.

McSween and Stolper, in their study of basaltic meteorites, which were definitely not of earthly or lunar origin, abstracted a type of shergottite meteorite. This material they assign originally, not to comets, or asteroids, but to the planet Mars, which has many extinct structures and surface rocks with a known resemblance to the shergottite [42].

The electrician, Eric Crew, has analyzed confirmed reports of ice and stone falls associated with lightning; many such were collected by Charles Fort (1874-1832) who wrote once, "we shall have a procession of data that Science has excluded... a procession of the damned."[43]. Crew ascribes both pick-up and fall-out phenomena sometimes to high-speed jet occurring in and about air-to-ground fast electrical discharges [44]. Dust storms and volcanism greatly augment the fusion of particles. There may be posited that in large meteoroidal and cometary

encounters, the Earth will be subject to considerable material exchanges by the electrical discharge channels occurring between Earth and the intruder.

The "White Cliffs of Dover" and other immense chalk beds elsewhere are a mixture of tiny spheres, a formless chemical mass, and organic debris, which contains some marvelously unattrited marine skeletons. How were they formed? Conventional science pleads continuing longtime deposits, but the stratification and water-current markings attesting to such are missing, nor can the preserved shapes admit to this mechanism [45]. A great updraft and precipitation is suggested, or else a dust-laden electric discharge penetrating the waters, followed by an upheaval or expansion of the bottom terrain.

A study by L. and W. Alvarez, Asaro and Michel describes a fall-out of dust 1000 times that of Krakatoa from a meteoroid crash, which, they claim, darkened the Earth for years [46]. The crash was deduced from the presence in Italian, Danish, and New Zealand limestones of the fossil break between the Cretaceous and Tertiary periods of iridium, 30,160 and 20 times its normal background level in terrestrial rocks but characteristic of meteoroids. Spain and Holland were added by Ganapathy to the locations bearing the tell-tale chemical signals. Fish-clay analyses by Kyle and others in Denmark agreed with the limestone findings. A number of additional rare elements were also in long supply, 5 to 100 times their normal abundances.

The correlation of a fossil index set with a distinctive chemical element marks an important advance in geological investigation. A sure layer is now presumed to exist worldwide; even were it not to signal an age boundary, it would permit a tightening of identifications of relative and absolute dates of strata and species. We know that we are dealing with a uniform world-wide event, something that is only hoped for when correlating fossils and rocks. We know that the event is limited in time.

We know further that if the event is not denoted in the strata, the reason is not that the event did not occur. That is, some stratum capable of containing the iridium (or other element)

must at the stipulated time have existed everywhere. Where not found, conditions for its prompt removal must have existed, or later removal must have occurred. Alternatively, the fall-out was erratic and initially directed only to certain spots by the presumably catastrophic winds and tides of the moment. Despite all this, with a dozen such exoterrestrial chemical markers, historical geology and paleontology would undergo a quantavolution.

What conclusions can be drawn from the material of this Chapter? At the least, a considerable part of the Earth's crust is exoterrestrial and has fallen as dust and stone not long ago. There is reason to accept in general terms the multitude of legends speaking of heavy falls. Even the most bizarre material has descended during historical times and every indication points to an exponential increase in the quantity and perhaps the variety of matter with the regression of time from the present. All the seas and continents contains heavy deposit of suspected exoterrestrial origin.

Yet there is also some indication that the time of heavy falls may have been concentrated in a catastrophe or set of catastrophic climates. The "ice ages," for instance, may have been a period of combined ice and stone deluges from outer space, explaining thereby a number of inconsistencies in the terrestrial pure theory of a central focus and outspreading therefrom. The absence of fall-out stratigraphic formations in older rock formations bespeaks a primeval peace.

A question arises as to what constitutes outer space or exoterrestrialism for dust and stone falls. Under certain conditions of large meteoroid or cometary impact, and heavy multiple volcanism, exploded material can achieve extreme heights and even be lost into space. Such would be the case, for instance, were the Moon to have been exploded from the Pacific Basin. In such a case, a prolonged fall-out period of a great many years, perhaps centuries, might result. Pebbles, dust, loess, tektites and other types of matter might separately collect in orbit and shower down homogeneously, while simultaneously, volcanism would pave large stretches of the globe.

Once more, we find the gradual fall rates of the present and the more credible exponentially higher fall rates of the recent past so productive of mass and volume for the Earth's crust that a young age for the Earth or a very young age for the catastrophized Earth suggests itself. Whatever the properties of fully exoterrestrial falls to explosion and fall-back, the fall-out even will wreak havoc: darkness, lightning, winds, possible interruption of Earth motions, and biosphere destruction, plus excitation of seismism and volcanism; holospheric transactionism, that is.

Notes (Chapter Eight: Falling Dust and Stone)

1. *Op. cit.*, 258.

2. *Ibid*., 258-9.

3. *Ibid*., 186-90.

4. *Worlds in Collision*, 42-3, 51-3.

5. "Meteor," 12 *Ency. Brit*. (1974), 36.

6. I *Catas. Geol.* (1976).

7. Unpubl. mss., 1980, Soil Dept., ICT, Entschede, Netherlands.

8. H. Bellamy, *Moon, Myths and Man* (London: Faber and Faber, 1936), 241, 243.

9. *Ibid*.

10. D.A. Cyr, *Annular Space Dust* (Thousand Oaks, Calif. Annular Publs., 1968).

11. *Earth in Upheaval*, 96.

12. W.W. Shilts, "Glacial Till and Mineral Exploration," in R.F. Legget, ed., Glacial Till (Ottawa, Royal Soc. Can., 1976), 205; Also Dreimanis, *Ibid*., II, 14-5, 42.

13. *Op cit*., 28-31.

14. *ibid*., 121-2.

15. John Bryson, 4 *Am. Geol*. (1889), 125-6; W.R. Jillson, 60 *Science* (1 Aug. 1924), 101-2.

16. Chester A. Davis, 19 *New World Antiquity* (Mar-Apr. 1972), 27-43; Donnelly, *op. cit., passim.*

17. L. J. Salop, "Glaciations, Biologic Crises, and Supernovae," 2 *Catas. Geol.* 2 (Dec. 1977), 24-5.

18. John A. O'Keefe, "The Terminal Eocene Event..." 285 *Nature* (1980), 309-11; Heezen and Hollister, *op. cit.*, 254; O'Keefe,ed., *Tektites,* (U. of C. Press, 1963) and Tektites and Their Origin (N.Y., 1976).

19. B.P. Glass *et al.*, "North American Microtektites from the Caribbean Sea" 19 *Earth and Plan Sci. Ltrs* (1973), 184-92 (N. Holland).

20. 217 *Sci. Amer.* (1967), 35-6.

21. 152 *Science* (3 June 1966), 1341-5.

22. C. Sutherland, "China's Dragon," 4 *Pensée* 1 (Winter 1973-4), 47-50.

23. "Tektites and China's Dragon," I *Kronos* 2 (Summer 1945), 35-42.

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CHAPTER NINE

GASES, POISONS AND FOOD

That "all things come from heaven" may be untrue, yet even in these last peaceful centuries the quantity and variety of things reported to have fallen upon Earth is astonishing. For two hundred years, scientific establishments sought to resist the flow of accounts, making out those who appeared with such claims to be culturally retarded and childish, clowns, cranks and religious fanatics. Now the door is open to claims, and some scientists are tripping over each other's footnotes in their eagerness to go to through it. Since most chemical elements and compounds can be either found beyond the Earth or conjectured to have once formed from the thermal and electrical conditions that occur exoterrestrially, scenarios of past events to explain present processes are becoming as common, prolonged, and disastrous as the "soap operas" of radio and television.

Contemporary man is motivated to come to grips with the sky by economics, politics, militarism, and the need to survive. Poisonous hydrocarbon, radiation, aerosols, carbon dioxide, acid pollution, radio microwaves, ion disturbances, acoustical turbulence, supersonic stresses in flight, and civil and military thrusts into outer space amount to a major challenge to human modes of existence. To cope with such developments, ever more scientific knowledge is required and this in turn leads to discoveries of processes occurring in outer space that influence the Earth, and thereupon present new problems and possibilities - solar energy, weather control, incursions of hitherto unrecognized chemicals and particles, and even, say some, life forms contributing to evolution and diseases. A modern pragmatic preoccupation with the skies, it would appear, is now being laid on top of the age-old preoccupation with the forces and gods believed to dominate the celestial sphere.

The gases that we discuss are mainly effective in the biosphere. We address not only their chemical qualities but their behavior in mixtures and their propulsion by winds. The poisons we discuss are cell destroying chemicals. The food consists of the rare occasion of the descent of digestible cell-building chemical compounds. Hydrocarbons are considered here as poisons; petroleum deposits are dealt with in a chapter to come. Radiation is treated as a poison, though it may be a creator at times. Electricity, as was said earlier, is everywhere and can go onstage with a number of the processes involving gaseous behavior.

Comets and meteoroids, like volcanos, can emit gases. Explorer and scientist Humboldt thought it probable that the vapor of the tails of comets mingled with our atmosphere in the years 1819 and 1823. When, on March 24,1933 a fireball of six miles diameter sped across the American South, it trailed a tail one mile wide that carried a thousand cubic miles of dust. The people who were beneath its passage smelled a peculiar sulphurous odor for hours and for several days suffered from throat irritation [1]. If the intruder is admitted, one may grant the occurrence of gases. An actual impact is not necessary.

Can a gas cloud descend through the atmosphere without exploding or burning? It would have to be charged oppositely to the Earth's surface and buffered during descend by a plasma. Even under normal conditions, the positions of light and heavy gases are sometimes reversed in the disorderly atmosphere. The Great Chicago Fire, and forest fires which burned out millions of acres of land in Wisconsin, Michigan, Western America and Canada broke out on the same day in the fall of 1871. E.K. Komarek speaks of a peculiar fire weather and cites this case; Donnelly claimed that all were due to gas drifts from the tail of Biella's Comet which had not been seen on its expected three previous visits but was glimpsed without its tail in 1872, a year later, at which time a spectacular meteoritic display occurred [2]. Donnelly offered a number of testimonials that the fires referred to leaped incessantly from different locations above the houses and forests and behaved as electricity in some ways (fusing without burning) and as a gas in others (asphyxiating people away from the blaze).

A few years later another comet neared Earth and the Earth passed through its tail. The comet broke up on September 9, 1882. Krakatoa exploded on August 26, 1883, after months of eruption. A great many people were burned, smothered in the choking gases, and nearly blinded. We should recall how the Krakatoa ash is negligible in the sea today when compared with the layers described in earlier pages. Mass asphyxiation would be a logical deduction from the conditions cited.

Just as research has shown sunspot gaps to be connected with climatic disaster, and has correlated planetary-solar conjuctions with earthquakes, it may establish that cometary passbys have occasioned violent volcanism - all of this during the uniformitarian Solarian period. All the more may have happened, then, during ancient periods of catastrophes.

Cosmic dust can be struck by particles from the Sun or stars and emit gases. David Tilles explains only 20% of the argon 36 and 38 on Earth as an effect of the solar wind upon space dust and debris. The balance he believes to be derived from an unquiet sun of long ages ago acting upon then larger dust clouds surrounding the Earth [3]. However, argon has been unexpectedly detected in the thin atmosphere of Mars, and if Mars has been recently in gaseous exchange with Earth, as Velikovsky wrote in 1950, it would have given argon to the Earth or taken it away [4].

Gibson and Moore, investigating subsoil samples from the Moon, found so many differences in volatile elements between North Ray Crater and other sampled locations that they concluded it to be the site of a cometary impact. They agree with Kopal that "the total amount of gas which can be acquired by the Moon in a catastrophic encounter with a comet is far from negligible."[5] The Earth is a bigger target for comets than the Moon. We would expect the Earth, then, to have also picked up many elements from foreign sources. Traces of gases and hydrocarbons were found some distance from the crater. Gases emitted by an impacting body would probably cause significant surface phenomena on Earth as well.

In the year 687 B.C., at a time when natural phenomena, attributed to Mars, were verging upon the catastrophic in many

places on Earth, the great army of the Assyrian king Sennacherib was destroyed as it was preparing to assault Jerusalem. "The angel of the Lord" is credited with the deliverance from the enemy by the Bible. The angel is identified as the Archangel Gabriel. He is connected with divine fire, with the founding of Rome, with the planet Mars. It was "a consuming blast" that rabbinical sources say burnt the souls of the Assyrians but not their bodies.

An analysis is contained in Velikovsky's *Worlds in Collision* (230-41) in several fine passages. The grotesque incident was coincidental with several other documentable events around the world, and with a probable interruption in the Earth's movement. As happens when a mega-force is operating, one force incites another: the destruction might have been occasioned by gas and "celestial fire" acting together.

A charged gas would have descended, possibly lured by the concentration of metal weaponry and myriad campfires. The gas cloud would have sent an electrical leader to the camp grounds and the subsequent exchange of potentials would have killed the Assyrian host. Sennacherib the king escaped, he was probably camped high and far from the multitude of soldiers. Even in modern times of untroubled skies, verified reports of flocks and herds being annihilated by a lightning blast occur.

The destructive meteoroid in this case would have been a plasmoid, preserving its integrity as it passed through space and the atmosphere by the repulsion of its surroundings, but driven down to Earth's surface by decrease in the repulsion, until ultimately a "soft explosion extinguished the oxygen available to human and replaced it by methane, carbon dioxide, carbon monoxide or these together.

We turn next to the famous case of the mammoths, not waiting for the chapter on extinction [6]. One almost should say the "deathless" case, for it has endured the whole battle between catastrophists and uniformitarians, two hundred years - except that now it may even become the case of the "deathless" mammoth, for a late news report tells us that certain Russian experimenters are seeking to unfreeze and clone a mammoth cell with an existing elephant to give birth to a live mammoth.

Were the original mammoths gassed into extinction? Instant death, fractured limbs, destroyed sometimes in herds and sometimes alone, discovered on hills (not in river channels), some found with their skins and innards intact, several found with food in their stomachs, even their mouths, often associated with an incongruous assembly of other species, they lived and died where they were found, several still standing, one with a rooted tree buried with it. The mammoth and almost all other large animals of the same period were extincted between 5,000 and 30,000 years ago over the face of the globe. The extinctions occurred from over practically the whole arctic area and down to the southern part of the United States, Europe and Middle Asia, where their close relatives, the mastodon, now-extinct elephants, and modern elephants browsed. It is strange that no human skeletons have yet been found, since we have their drawings of the mammoth.

Obviously if the date of each specimen were to be taken seriously, we would have, as one writer argued, a series of local catastrophes. All over the world, he might have added. Nor were the frozen elephants found encased in ice, but rather in a muck of pebbles and clay, which is the same kind of muck that is widespread over hundreds of thousand of square kilometers in the frozen arctic regions and contains the mangled remains of millions of animals and plants. It is hard to dispute claims of a sudden, widespread, simultaneous, and single catastrophe.

The assigned dates are hardly defensible. In the preliminaries of such a catastrophe, valid carbondating would be extincted along with the large animals. The supplemental dating is provided by the complicated ice age series, of which more later, but which, we can say, is something of a muck itself. With the unreliable dating shunted aside, a global scenario can be provided, an extravaganza, to be sure, but one is driven to it by the facts.

One may speculate that a large body passed by the Earth perhaps 6,000 years ago. It drew up tides of water and air below its path by hundreds of meters. It drew along and up, then, water and atmosphere from the extreme northern and southern latitudes. It tilted the globe at the same time. Most

animals were asphyxiated during the hours of the withdrawal of air. Simultaneously they were deep-frozen by temperatures reaching in directly from outer space in the range of -150°F.

The intruding body departed. The columns of air and water collapsed, and rushed up to the north and south. The winds and tides collected most of the dead animals, tore up the ground, and finally deposited the remains in a muck that sometimes reaches to 1,000 feet of depth, even to 4,000 feet in one that the Soviets have excavated. Much of the air never returned; the supply from the larger envelope around Earth was depleted and the immediate atmosphere was thinned. As the legends say, it was now the bitter, cold age of the "God of the Bright Skies", Jupiter. The mammoths, dry frozen in a vacuum, rested in their packages of muck until the present day.

After relating so dramatic a story, it would be excessive to speak of the dinosaurs and other mass extinctions, and these shall be saved until the appropriate chapter. Other issues remain to be discussed here relating to gases and poisons.

One has to do with human experiences with atmospheric pressure, not only in moments such as asphyxiated the great mammals, but time and time again in primeval history. Sudden electrical events, not encounters alone, must have raised and lowered the air pressures under which humans lived. At times, mankind must have endured miserable headaches. Anthropologist Kennedy once referred briefly to "certain ritual practices like trepanation (which also developed obsessive proportion in Late Neolithic and Beaker time in Western Europe)." The practice extended in North Africa from the Canary Islands through the Berber lands at least as far as Egypt. It was performed in Mesoamerica as well. George Sarton writes in his history of science of prehistoric skulls that have come down to us with evidences of trepanation (trephination) performed upon them in life. The trepan is a saw for cutting holes in or removing pieces from the skull. It is a dangerous operation, hardly on a plane with piercing the nostrils to hold decorative devices. (But why are these devices so near the sinuses, too?) Extreme headaches and fury can thus be relieved. Trepanning, we surmise, was an indication that some considerable part of the population could not cope with a

periodical fluctuation or definite change in atmospheric pressure.

A second issue has to do with ozone. Having discovered that aerosol devices and supersonic transports might destroy the ozone layer, several scholars have ventured to say that such events have occurred in the past. Ozone, or atomic oxygen, exists in a thin layer in the upper atmosphere, where it blocks solar and cosmic particles from penetrating to the Earth's surface, here to cause innumerable mutations and cancers. Ozone, too, is a poison in itself.

Associating ozone layer destruction with the periods of a reversal in the Earth's magnetic field and these with the extinction of a number of species, discoverable in ocean bottom drilling, Reid, Isaksen, Holzer and Cruzen theorize " that current concern about possibly anthropogenic destruction of stratospheric ozone may be well-founded since it is possible that major depletions occurring in the distant past have had profound effect on the development of life as we know it."[7] Anticipating again what is to be developed later, we can give credence to the theory, but would add that the destruction of the ozone layer will have occurred during any catastrophe involving turbulence in the stratosphere, especially with the passage of a large body.

Furthermore, the authors say, "the harmful effects accompanying polarity reversal, whatever they may be, form only one component of the total environmental stress on a given species." Beland and Russell point out that solar flares of extreme power, of a kind never observed and perhaps occurring once in 200,000 years by probability theory, would have to coincide with the reversal of GMF in order to account for a large number of species extinctions [8].

The Sun might well have become agitated by changing movements of large bodies within its field and add a heavy dose of radiation to what might be occurring on Earth in reaction to an intruding body or bombardment of meteoroids. Ozone problems would have to take their place among many disturbing chemical and radiation changes. As Waddington

pointed out in 1967, particle radiation increases inversely with magnetic shielding [9].

Presently one speaks of background radiation, or low-level radiation, and a pressing problem of the future is how to keep radiation at the same low level at least. Sternglass finds even now indications of birth defects, infant mortality, and old-age respiratory problems traceable to low level radiations [10]. Evidently both long-term increases of level and single bombardments can cause damage to most people. Latest medical reports (1983) are more ominous.

Prehistoric cases can exchange ideas with future cases. J.W. Gofman has predicted that "a nuclear-based (U.S.) economy with 99.9% perfection in plutonium containment could mean a 25% annual increase in total death rate from this source alone," amounting to over 25 million extra cases of lung cancer over 50 years [11]. One must evaluate prehistoric indications of abnormal radiation and high-energy explosions in this light.

Vera Rich, reviewing knowledge of the Tunguska (Siberia) meteor of 1908, brings forward evidence of scabrous infection of the local reindeer in that year, a great acceleration of tree ring growth beginning then, and an increase in the radioactivity of surrounding trees [12]. Another report has it that certain plants mutated as well. The event was exoterrestrial in origin and probably is of the category of "gas-bag" explosions, since scarcely a ton of exogenous particles has been recoverable from the immense scene of destruction.

Perhaps the body entered the Earth's atmosphere with great speed, electrically attracted as well as driven by inertial differences, and thoroughly ablated until it became a gas projectile without a casing, that exploded before striking. Or perhaps it was a "Sennacherib plasmoid" from its inception. Generally speaking, the radiation effect of a single meteor or cometary train passing through the atmosphere would be heavier than many hydrogen bombs (unless these latter are deliberately "dirtied" by cobalt or other chemicals) because of its great heat, its compression of the ambiant air, its wide path of fall-out, and deep and large explosive cratering.

During the disasters of Exodus, several documents give indications of radiation effects. The widespread "leprosy" effect may denote radiation disease, as I have explained in my study of Moses. Eating fallen quail killed many persons, reports Jewish legend. The manna, too, had to be eaten under supervision; to argue that it was"holy" and thus had to be treated ritualistically is a modern sociological notion overlooking that it might have become "holy" for several reasons, one being that priests, the savants, were called upon to distinguish the edible from the poisonous manna. The Egyptian Ipuwer papyrus conveys the impression that women became barren and that people lost their hair. The cattle herds died of scabrous diseases. The most substantial theory of Exodus times regards them as part of a much larger, a global, event, involving the close passage of a comet, so that radiation effects are logically to be expected.

Recent studies have discovered high levels of radiation in fossil flora and fauna, going back far in conventionally dated geological time. Kloosterman writes of " anomalous high radioactivity" in a fish from the same Old Red Sandstore beds in which the Pterichtyades occur, "fishes often invoked by catastrophists..." and quotes Hugh Miller (1841) on a quiet but potent agency of destruction erasing "innumerable existences of an area perhaps ten thousand square miles at once, and yet the medium in which they had lived left undisturbed in its operations."[13] We mention the case again when discussing extinction; electric shock probably accompanied the poison, and was succeeded immediately by great tides of slurried water. In 1975, Bramlette described deep fossil beds a plankton in the sea bottom that he tied to cosmic radiation storms [14].

Radiology is a new field of knowledge, whose development is producing a new attitude toward what can be transformed, in biology, geophysics, meteorology, and geology. Oparin some time ago began to call upon it to explain the long chain of chemo-biological events leading up to *The Origin of Life.* He wrote of inorganic meteoric material suffering far-reaching transformation from inter-stellar radiation before arriving upon the Earth, of transmutations, for instance of iron and nickel into aluminum and silieni and of these into magnesium, sodium, and helium.

An instance of how rapidly old problems can be tendered new solutions by seemingly remote scientific developments occurs in the case of perhaps the most famous of fall-outs , that of manna, ambrosia to the Greeks, soma to the Hindus, and other names to other peoples. The insistent claim of the ancients takes on enhanced validity in the context of operations of modern technology.

The bits of suggestive evidence come from all quarters. We begin with a famous 1945 experiment of S.L. Miller (in consultation with H. Urey) and ask Bernard Newgrosh to describe it for us:

> On the suggestion of H.C. Urey he took a mixture of water, hydrogen, methane and ammonia (which were then thought to be the constituents of Earth's primordial atmosphere but which are now known to be the constituents of cometary matter), boiled the water and ran an electrical discharge through it continuously for a week. The end products were an assortment of organic compounds, including some sugars, cyanides and small quantities of amino-acids. It was the latter which evoked the most interest and sparked off a whole new avenue of research into "the creation of life on Earth." Miller had boiled his liquid only to prevent the growth of (and therefore contamination by) micro-organisms. Later experiments used far less energy, and it transpired that the shorter and smaller the amount of heat used, the greater the yield of amino-acids obtained since these are denatured by heat. Other workers tried different mixtures of gases including, in some cases, oxygen and hydrogen sulphide. As long as the mixture was basically reducing in nature, the organic compounds and aminoacids were produced [15].

M.G. Reade and Wong Kee Kuong have more recently discoursed theoretically upon methods by which carbohydrates, such as the manna which fed the ancient survivors of the Exodus disaster, could be produced with the aid of cosmic lightning [16]. Formaldehyde (a compound of carbon, hydrogen, and oxygen) is a partially combusted gas, of which

"there will be no shortage.. in a burning fiery cloud, almost whatever its origin." In mixtures of free oxygen, carbon, hydrogen and nitrogen, this is the only product. It has to be synthesized into sugar in an alkaline environment (already done) which is not poisonous and can be converted into starch, rolled into "coriander seed" sizes and dropped at dawn. So goes the argument of Reade, himself a confectioner and engineer. The necessary procedures and formulas are presently at the threshold of laboratory chemistry, he asserts.

On the processes required to produce edible carbohydrates in the form described by the ancient sources, all are present in the environmental setting described by the same sources, although without making the scientific connection that present knowledge affords. The analysis of Reade is especially literal in matching edible product and the natural "chemical apparatus" within the Bible.

In a yet unpublished manuscript on the Vedas of India, Ziegler brings forward many ancient statements about dust and gases pervading the skies, including the fact that the dust was falling and carrying the dew of heavenly waters (soma) with it.

In Hindu rite, the soma-devi are celebrants of sacrifices using soma. As a libation to Agni, soma is now superseded in India by *ghi.* Now the deva is a goddess practically identical with Venus, and the devi are her cohort. Venus, east and west, is worshiped at times in the form of a cow, the sacred cow of India, for instance. *Ghi* is clarified butter. The "golden calf" of the Hebrews in Exodus is the equivalent Baal-Venus image. These few (from a great many) observations are made solely to point out and complete the coincidence of a great celestial presence (a cometary body), a turbulent atmosphere full of dust and lightning, the availability of carbon dioxide, hydrogen, oxygen, methane, formaldehyde, and water in large amounts, the presence too of many enormous laboratory vessels from which would fall not one but several products, and, of course, the desperate survivors who would eat anything (regardless of its nutritional value) and reverence the imagined donor.

At the same time as the Hebrews, Hindus, Mexicans, Greeks and others were munching manna, they were vitally concerned

with a certain redness in their environment. The most astonishing and fearful color had fallen out of the skies and penetrated the surface. Again we take leave to quote copiously from Newgrosh:

> Dr. Velikovsky has produced numerous citations from ancient sources to show how falls of a blood-like substance occurred when a "new" comet (later to become the planet Venus) came into catastrophic contact with the Earth: the Manuscript Quiche of the Maya, the so-called Papyrus Ipuwer from Egypt and the Book of Exodus all record the fact that the water in the rivers was turned into "blood". In addition to these examples, Dr. Velikovsky refers to the Greek myth of Zeus and Typhon, the Finnish epic Kalevala and the lore of the Altai Tartars. However, a more exhaustive survey of such legends would include the Sumerian myth of Inanna (a Venus goddess) who filled the wells of Sumer with "blood", the Egyptians story of the goddess Hathor (also Venus) whose visits to Earth were associated with the covering of the land with a blood-like "beer", and the Norse legends of the "raining of blood" associated with the Valkyries. These myths are widespread and all tell the same story. There can be little doubt that something looking like blood fell from Venus during its close contacts with Earth.
>
> What was its nature? Dr Velikovsky noted that it was a soluble pigment: "In sea, lake and river this pigment gave a bloody coloring to the water. These particles of ferruginous or other soluble pigment caused the world to turn red." Moreover, the accounts of Exodus 7:24 and of Ipuwer lamentations agree that this bloody colored water was unpleasant and maybe poisonous. It is recorded of the Nile that "the river stank" (Exodus 7:21). There was disease among the cattle which, Dr. Velikovsky claimed, was due to dust of an irritant nature.

Another writer, Peter James, asks whether legends of red falls from periods before 3,500 years ago might not refer to geological occurrences that deposited red sands or ferratites around the world [17].

> In Greek myth the Sky-god Ouranos, the first ruler of the universe, was castrated by his son Kronos and his blood fell to the Earth, impregnating it with a number of dreadful deities. To turn to Roman literature, we have a very graphic description of fall of blood in Ovid's "Metamorphoses" in his account of the fall of the Giants. "The terrible bodies of the giants lay crushed beneath their own massive structures, and the Earth was drenched and soaked with the blood of her sons." Egyptian myth tells a tale of the Sungod Re similar to the Greek myth of Ouranos - it was said that Re mutilated himself and that new deities sprang from his blood as it fell. In another Egyptian myth, Re decides to punish mankind by sending down the Goddess Hathor/Sekhmet. She performs her task enthusiastically, gorging herself in the blood of men, but Re does not want Man utterly destroyed, and he has to devise a stratagem to stop here in her path of destruction. He mixes red ochre with beer, and pours a vast quantity over the Earth during the night, to a depth of three palms (about nine inches). The goddess sates herself on this "blood", and intoxicated she returns to heaven having forgotten her task.

Newgrosh refers back to the Miller experiment, for a crucial detail that has long gone unnoticed.

> Miller wrote: "During the run the water in the flask became noticeably pink after the first day, and by the end of the week the solution was deep red and turbid. Most of the turbidity was due to colloidal silica from the glass. The red color is due to organic compounds absorbed on the silica."

To conclude, electric discharges between the intruder and Earth synthesized organic compounds in the cometary gases, including an edible component and an inedible red silicate that showered down to color the Earth and water a turbid red. Newgrosh adds, "being organic compounds, they would be speedily denatured, leaving no trace - except, that is, in the memory of mankind." Also, an iron compound of partially hydrated $FeCl_2$ has been reported present in heavy

concentration in the clouds of Venus today [18]. Considering that a possible source of Venus is the "Great Red Spot" of Jupiter, together with the material already mentioned, if this analysis remains valid, this is a significant quantavolutionary indication, perhaps a better test than the hotly debated question of hydrocarbon clouds.

On many occasions in the past several centuries, falls of gelatinous material have been reported in connection with meteors. The literature in part has been compiled by Corliss [19]. Luminous and therefore probably electrified while falling, the stuff is transparent and colorless, texturally a jelly, stinks when disintegrated, and dissolves into a few grains of residue after some hours. One may guess that the Earth's reducing hydrogen-rich top atmosphere is carried into contact meteorically with an oxidizing lower layer, gathering dust particles and vapor, including metallic catalysts, to form a semi-solid type of formaldehyde glob the size of a drinking cup. These are certainly poor imitations of manna, but a similar process is entailed.

To portray its relation in volume to a smallpox virus, a single crystal of salt would have to be enlarged to a five-meter cube, on a ratio of one centimeter to 1 micron (10^{-4} cm) for the virus to be visible [20]. There is certainly room for viruses to ride on cosmic dust. There is not yet a definite answer to the question whether meteoroids and comets do now carry or ever have carried organic molecules and primitive life forms. Brigham, in 1881, following Hahn and Weinland, reported a collection of some six hundred specimen of fossil life obtained by analysis of meteorites [21]. Their work was discarded as imaginative to the extreme, for they were discovering corals, sponges, and crinoids. In the thirties, Lipman and Roy debated the former's findings of rods and ovoid cells in meteorites [22]. Recently, Claus, Nagy, and others have discovered inherent organic compounds, carbonaceous chrondrites, in meteoritic material.

Hoyle and Wickramasinghe have tackled the problem vigorously over the past few years and emerged with two relevant hypotheses: one that life forms originated in space and a second that plagues also descend from space. Comets carry the appropriate chemicals and can carry on the necessary

varying experiments naturally, over millions of years, until "photosynthetic bacteria, able to oxidize hydrogen sulfide anaerobically," emerged.

> If a cometary impact led to the start of life, the question arises: would subsequent arrivals of cometary material carry biological or prebiological material which might affect terrestrial biology? The boldest answer must be yes; that is to say, extraterrestrial biological invasions never stopped and continue today. These invasions would take the form of new viral and bacterial infections that strike our planet at irregular intervals, drifting down onto the surface in the form of clumps of meteoritic material probably similar to those studied by Dr. Rajan and his colleagues [23].

The authors propose a perpetual vigil and a screening of stratospheric contents for microbes. If their theory is correct, one might expect veritable plagues to have had a hand in the great extinctions of species that have marked geological history. The causes of death would not only be mechanical - flooding, wind, hailstones etc. - and radiation, but also should include "biological warfare" against the Earth. Actually there is yet another dread possibility, chemical poisons, such as cyanide.

Iridium, osmium and arsenic occur in quantities hundred of times above the normal in strata of the cretaceous-tertiary when the dinosaurs and many other species, both terrestrial and marine, extincted. Kenneth Hsu discerns at the same time a double blow to the biosphere in the form, first, of heavy atmospheric heating owing to a cometary pass-through and explosion, which killed off large terrestrial animals, and cyanide poisoning that wiped out calcacerous marine plancton [24]. The cyanide effect would be stressed by a catastrophic rise in calcite-compensation depths in the oceans after the cyanide was detoxified.

During these disastrous events, which may have happened on several or more occasions, not one alone, the ground forces would be highly energized. Velikovsky found it impossible to determine whether, in the plagues of Exodus, "the comet Venus

infested the Earth with vermin," or "the internal heat developed by the Earth and the scorching gases of the comet were in themselves sufficient to make the vermin of the Earth propagate at a very feverish rate."[25] That many forms of life are comfortably buried below ground surface is well-known. But a thermal rise, flooding, earthquake, volcanism, and electrical discharging, will bring them out in incredible numbers. Thus the frogs of Exodus, the locusts, and the vermin also. One need only retroject modern reports, and raise the scale of intensity, to imagine the succession of events. In the area of the Krakatoa explosion, the nether world of animals was stirred up even while the gases burned, choked, blinded, and smothered people.

There is normally more in the soil than the erosion of terrestrial rocks: this has become apparent. Equally, new elements are discoverable that convey surprise, mostly unpleasant. The Dow Chemical company of Midland, Michigan, has been for several years in a quarrel with local authorities and environmentalists. The latter claim that Dow has manufactured chemicals that deposit dioxins, a carcinogen, in the soils. Dow says " we now think dioxins have been with us since the advent of (fire). It is perhaps uninformed to discount the company's research, that is apparently discovering dioxins everywhere. Adding more dioxins to the ground, of course, makes matters worse.

A parallel can be cited from the research into "Polycyclic Aromatic Hydrocarbons is Soils and Recent Sediments," conducted by Blumer and Youngblood, on behalf of the Woods Hole Oceanographic Institution [27]. Samples were drawn from "depositional and chemical environments ranging from continental and coastal soils to marsh and subtidal marine deposits, and from high to low oxidation-reduction potentials." The PAH component is significant; PAH is carcinogenic; ancient burning may be producing some of today's cancers; it would be well to perform statistical correlations on populations, cancer incidences, and "background PAH" of soils. PAH are formed at elevated temperatures by incomplete combustion.

> Our interpretation would imply that carcinogenic and mutagenic hydrocarbons occurred on the earth's surface

> during geological times spans. This raises the question whether these compounds might have contributed significantly to the processes of natural selection of mutation, and to the evolution of species.

The scientists assess the possible origins of the PAH deposits. They exclude weathering, seepage and spills, they exclude biosynthesis; they doubt early diagenesis in process of formation; they settle upon pyrolysis. This burning might be thought to occur on the site, but "the consistency in the PAH distribution among our samples suggests a predominant single mode of origin;" the sites are distant from one another. The chemistry does not permit regarding the PAH as "urban air particulates." Forest fires are "possible but unproven:" low temperature burning could provide the homology among the samples and air transport of PAH carbon ash from a great central fire somewhere might preserve the similarity. The ash layers are not noticeable, however.

The authors do not consider typhonic meteoric explosions and fall-out. This could raise to great heights the combustion residue of large vegetal areas and drop it around the world. Nor do they consider a cometary pass-through with a burning hydrocarbon tail that could deliver the PAH where and how found today. The time would be recent, for the PAH are in surficial sediments.

In sum catastrophes, especially if exoterrestrially invoked, display much chemical creativity. Great typhonic explosions on Earth, probably exoterrestrially induced, will behave more modestly, but similarly. Numerous gases, poisons, and foods have fallen out in natural history, and very recently. Precarious life situations have been widely and abruptly generated. Multiple reports of gaseous and fall-out processes in space and atmosphere challenge the credibility of radioactivity rates that have been established under guidelines consistent with presently observable rates.

Notes (Chapter Nine: Gases, Poisons, and Food)

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2. Donnelly, *op. cit.*, 102-6.

3. David Tilles, "Atmospheric Noble Gases...," 148 *Science* (21 May 1965), 1085-7.

4. L.M. Greenberg, "The Martian Atmosphere," II *Pensée* I (1976), 5-9.

5. 179 *Science* (5 Jan. 1973), 69-71.

6. W.R. Corliss has compiled and reprinted numerous extracts from the scientific literature, *Strange Planet* (Glen Arm, Md.; Sourcebook Project, 1975), section EBM. An important update and new material is contained in L. Ellenberger, *et al.*, "Catastrophism and the Mammoths," VII *Kronos* 4 (Summer 1982), 62-96.

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11. Report prepared for the Committee for Nuclear Responsibility (Yachats, Oregon).

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18. G.P. Kuiper, "On the Nature of the Venus Clouds," *Planetary Atmos.,* Intl Atmos Union, Symposium 40 (Dordrecht: Reidel, 1971).

19. See W.R. Corliss, *Strange Phenomena*, (Glen Arm, Md., 1974), 2v.

20. Kees Boeke, *Cosmic View: The Universe in 40 Jumps* (NY: John Day, 1957).

21. F. Brighan, 20 *Pop. Sci*. (1881), 83-7.

22. Work by C.B. Lipman; S.K. Roy; E. Anders *et al*. and R.L. Levy is extracted by W.R. Corliss ed., in *Strange Universe* (Glen Arm, Md.: Sourcebook Project, 1977), 2v.

23. "Does Epidemic Disease come from Space?" *New Sci.* (17 Nov. 1977), 403.

24. 285 *Nature* (22 May 1980), 202.

25. *Worlds in Collision*, 192-3, 268.

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CHAPTER TEN

METALS, SALT AND OIL

Iron-working is siderurgy, a word out of ancient Greece and Rome. It translates properly as the working of star-iron. The Greek word for anvil, on which iron was worked, was close to the word for a meteoric stone. The Eygptians called iron "the bones of Typhon" and "a gift from Seth," both names corresponding to bodies crashing into the Earth, devil-monster and devil-god. Meteoritic iron was known to the early dynasties. "The Jews called iron ore *nechoshet*, which literally means the 'droppings of the (cosmic)serpent,' a nonsensical term unless our interpretation of it is allowed."[1] The Jews forbade the use of iron in chiseling stones for the construction of an altar. "A similar taboo was observed in Greek and Roman cults, it was and still is widespread."[2]

But, whereas the Egyptians held an especial taboo of iron, the Assyrians did not, and M. Sieff has described how Egyptian power waned when it lacked iron and waxed, on occasion, when foreign workers and allies such as the Greeks and the miners of Zimbabwe brought in iron and worked it. The Assyrians achieved their greatest conquests at a time of grave natural disasters (the Mars-associated events between -776 and -487) [3]. South and north of Egypt, iron in large quantities was found and used; in Egypt it was neither found nor used. Query: why was no distinction made between meteoritic sacred iron and mined iron? Possible answer; because all iron was known to be meteoritic. Much may have fallen in association with the activity of the great war god Mars-Ares-Nergal. Adequate metallurgy was known for thousands of years before the iron age; increased temperatures could have been devised if the will--and the material--were present.

In conventional works of human history, iron is placed as a late discovery. The "iron age" comes after the "bronze ages" which follow the "Stone-ages." These terms and divisions now only

perpetuate confusion in anthropology, history, philosophy, and perhaps even in geology. Thus, a common reference, the *Columbia Encyclopedia*, thinks that meteoric iron beads existed in Egypt as early as 4000 B.C. but iron smelting not until 1900 B.C. and later [4]. Some confusion is admitted on the matter and Velikovsky's reconstruction of Egyptian chronology has added dismay to confusion [5]. Some even say that iron may have been used before bronze, since isolated iron artifacts of very early dynasties have been recovered. By the end of the second millennium, iron was in general use in Palestine and probably also to the North. A Soviet excavation has reported a metallurgical industry between 3000 and 2000 B.C. in Medzamor [6] with steel tweezers dated at about 1000 B.C. Several experts now assert that there was no clear functional superiority of iron in the first centuries of its use; bronze was adequate even for weapons.

This all would signify a concurrent use of iron, lead, tin, copper, gold and silver by 2500 B.C. in the Mediterranean and Middle East, also perhaps elsewhere in the world. The question arises why mankind did not use metals and invent metallurgy earlier. Could all the workable surface metals of the world have arrived from exoterrestrial sources within a brief period of late proto-history, and so vividly that the ancients even could assign separate periods for their arrival, as Hesiod and Ovid did when reporting a golden age, succeeded by a silver age, and ending in an iron age? I cannot attempt a full answer here, but would support the case for human-witnessed exoterrestrial falls.

Bellamy can again be quoted [7]:

> Gold, platinum, uranium, radium, mercury, bismuth, and other heavy metals are not detected in the surface layer of the Sun, nor of any other star. As we cannot suppose that they do not exist in those bodies they must logically be present in their cores--and hence also in the cores of the smaller cosmic bodies, planets. Therefore the presence of heavy metals on, or near, the surface of our Earth points to strewing from without. Without such cosmic strewing no ores would probably be found on, or near, the surface of our Earth at all.

> In the south of the Belgian Congo (now Zaire) there is a zone, about 180 miles long by 25 to 30 miles wide, which contains great deposits of ores--chiefly copper, iron, tin, uranium, and cobalt. In Angola and Rhodesia, as well as in South Africa, there are smaller deposits.
>
> Indeed, many geologists are of the opinion nowadays that the great rich ore deposits at least must have been brought into being through strictly localized, exceptional, and briefly operative causes.

Iron, the ancients believed, was meteoritic in origin. What would they have believed if they had seen the now exposed great iron mountains of Minnesota or Venezuela? Could such mountains have fallen from the sky? Unquestionably. Asteroids exist in the size of iron mines and contain as much iron. Would they not have exploded and dissipated into dust upon landing? Some would and some not.

A not-well-understood feature of meteoroid falls is that they can accomplish soft landings as well as hard crashes. In hard crashes, such as at Campo del Cielo (Argentina) where a number of meteoroids fell, "large masses of meteoritic iron and shale have been found in its vicinity."[8] Heide writes, "the 60-ton meteorite from the Hoba farm near Grootfontain, South West Africa, the heaviest of all known meteorites, imbedded itself in friable limestone at a depth of only 1.5 meters. The iron meteorites of Cape York in Greenland, weighing up to 30.875 tons, lay on solid gneiss rock, or were barely imbedded in moraine rubble, without any trace of an impact. Here we may guess that they fell on a thick layer of ice or snow and sank to their final location as the snow or ice melted [9].

However, as the Mass and Velocity of the meteoroid increase, its Energy of impact increases, according to the formula $E = 1/2\ mv^2$. The atmosphere cannot brake the body in time. Therefore, no iron masses of over 100 tons have been deemed to be of exoterrestrial origin; where such have actually fallen, and few doubt this, they have been vaporized by the impact.

In the face of this formula and the visible facts of meteoritic iron, it would appear that the large iron ore masses on Earth

cannot have originated exoterrestrially. The negation, if any, depends upon variable velocity. If the falling iron mass is electrically charged, or gathers a charge, so as to render it less attractive to the Earth its velocity would diminish. Theoretically, it could waft down in a soft landing in one piece. If it crashed upon landing, it would possibly assemble itself into the form of an iron ore deposit as deluges of water and dust would fill the interstices. Strange objects have been found in the midst of iron ores being mined, such as wood of recent date [10].

Much that is meteoritic may not be discovered. On an Antarctic ice field, Japanese explorers found over 1000 meteorites, of which only one was composed of iron [11]. Were the field of stone, instead of ice, the stone meteorites would probably go undetected. Obviously we could not test all the Earth's rocks for exoterrestrial origin, especially since the tests themselves might beg the question.

Masses of iron were found lying upon a Disco Island (Greenland) shore with a great gneiss erratic boulder and associated with the talus of a basalt cliff which itself contained similar bits of iron. All the iron was termed meteoritic which led the investigators to wonder, especially since the basalt fragments were found even embedded inside the iron of the beach, whether the meteorite shower "occurred while the basalt was in a state of pasty eruption."[12] But, too, the range itself, though immense and tall, might have been the rim of a great impact collision and was permeated by and interacted with the exploding body.

Suppose all known meteoritic material in the world were assessed for its proportion of iron. Suppose then that one calculated the proportion of iron ore to the amount of drift, loess and homeless clay. If the two ratios were similar, the exoterrestrial thesis would be expanded to embrace the materials of both ratios. Iron in one form or another composes about 5% of the Earth's surface rocks; here is a thoroughly homogenized relationship of iron to rock. This ratio turns out to be closer to the ratio of iron to stone in meteoroids. Both ratios would be far removed, no doubt, from the ratio of iron ore to drift and loess, which would probably be one in thousands.

We can imagine, as have several scientists, that the meteoroids fallen upon Earth are those of a late planet explosion in the region of the belt of asteroids and therefore we have been sampling a planet composed as the Earth is supposedly composed, with iron and nickel core, sima mantle, and sial crust. Calculations, given this simple idea, are complex but not enough. There is too much evidence of exoterrestrial dumping upon Earth by other bodies, more of the nature of Jupiter and Saturn, to carry out this algebra of ratios with confidence.

Generally, "terrestrial" iron bodies are distinguishable in composition from meteoritic iron in that they contain either smaller amounts of nickel (about 3 per cent) or larger amounts (about 35 per cent). The meteoroids also contain some cobalt. The distinction is hardly foolproof. Generally, too, the meteoroids have encrustations attributable to their experiences in space, although this is statistically discoverable and not an absolute distinction.

Perhaps somewhere in the literature, unknown to the present writer, exists a systematic examination of the boundaries of a very large metal body demonstrating a lack of exoterrestrial experience. Nor is there a great iron body embedded in precambrian rock; nor has anyone come upon intrusive pipes of iron ore that would have conveyed metal from the core or mantle, by some combination of electrical and volcanic force.

If an alternative to an electrically-assisted soft landing were sought, one might better conceive of a welding process; gigantic lightning strokes from iron bodies in space lasting for a minute would cast molten iron ore down their path to where they now rest in heaps. Again, a study of ore body boundaries is needed. Schaeffer has written of the layers of ashes and cinder scories close in to a huge pure copper mine of Cyprus [13]. One recent theory has the same copper distilling from a hot spot of a northern fork of the great African rift. To this author, the exoterrestrial notion is as convincing.

Like Bellamy, I am impressed by the fact that "there are, scattered over the Earth, a number of ore-mountains which are evidently foreign to their surroundings. At Eisenerz, in Austria, there is a huge mountain, consisting altogether of iron ore .... On

the island of Elba, in Sweden, in Russia, in India, and elsewhere we find more or less considerable hills consisting of pure iron ore, mineral wonders of the world. In Orissa, India, in the jungle near the village of Sakchi, is a hill consisting of iron ore which is so rich that it yields almost 65 per cent of pure metal." Elsewhere he writes that such mountains would, upon investigation, probably prove to be 'rootless.' He describes others.

"At Gellivara in Sweden there are enormous deposits of iron ore whose special characteristic is that they are found in floelike masses, as if they had been 'pancaked' down. At Kirunavaara and Loussavaara, in Lapland, there are similar deposits of iron ore. The 'Kursk Anomaly' in Russia consists of a mass of iron ore estimated to contain about a cubic mile of high-grade material. In the Ural area there is Gora-Blagodat, the 'Blessed Mountain, 'an iron ore mountain 520 feet high, situated in a plain. In Russia too is the Wyssokaya Gora, a deposit of rich magnetite ore, littered over a strip 40 miles long by 9 miles wide." [14]

As with iron, so with other metals: many legends have them falling from heaven. The Chinese sky dragon's "breath descends as a rain of water or of fire. Gold is the congealed breath of a White Dragon, but a Purple Dragon's spittle turns into balls of crystal; glass is regarded as solidified dragon's breath." (The tektite allusion is plain). "The dragons of mythology are often described (among the Teutons, for example) as guardians of hoards and givers of wealth." The dragons are wise in metallurgy [15].

Donnelly says the same. He describes "Beowulf, when destroyed by the midnight monster, rejoicing to think that his people would receive a treasure, a fortune by the monster's death." [16] Further, now Humboldt writes, the Scythians had a sacred gold which fell burning from heaven. "The ancients had also some strange fictions of silver which fell from heaven, and with which it had been attempted, under the Emperor Severus, to cover bronze coins." [17] An image of a rattlesnake with a tail of gold, and descended from heaven, was worshipped by the Inca as the god of riches. In the Bible *(Job* 21) it is said of the horrendous dragon Leviathan, "he shall strew gold under him

like mire." And Chan reports that in ancient Mesoamerica "yellow was the color of gold, the *teocuilatl* or excrement of the gods."[18] The dragons that are the substance of most ancient myths and of children's fairy tales today tortured and enriched both the Earth and the minds of men.

Cores drilled from Antarctic sediments of pleistocene age contained iridium and gold in anomalously high proportions. "A sizeable fraction of the noble metals is contained in vesicular, millimeter-sized poly-mineralistic grains that closely resemble ablation debris from chondritic meteorites, and there is little doubt that the noble metals resulted from the accretion of a large extra-terrestrial object."[18A]

About the same time as this expedition, the largest American gold strike in a century was occurring on the Thornton-Ash ranch in Nevada. The gold was not in nuggets, but in microscopic sizes like the Antarctic find. It is extracted by crushing and leaching its host rock. Large tracts of land are being scooped out and many millions of tons of rock processed to obtain the gold. In the absence of a comparative examination of the Nevada and Antarctic discoveries, one may suspect an exoterrestrial origin of the Nevada gold as well.

Conventionally, studies of the origins of metals and their cultural recognition do not mention any exoterrestrial contribution to their chemistry, appearance or use. Instead, they are looked upon as components of igneous intrusions. Speaking of gold, silver, copper, lead and tin, Clair Patterson in his exceptionally important study of "Native Copper, Silver, and Gold accessible to Early Metallurgists,"[18B] declares:

> The primary igneous minerals of the 5 anciently used metals were generally mixed with a large number of unwanted minerals in the vein or lode. Useful igneous minerals of the 5 different metals were not generally mixed together, however. Except for close relations between lead and silver, deposits of the 5 metals were more unrelated than related in a specific region (Noble 1970). The different metals were generally successively deposited over a period of time in adjacent regions (Noble 1970). The common characteristic which bound the

> deposits of all 5 metals together was the fact that they were emanations derived from igneous intrusions in mountainous belts, sometimes occurring together, or nearby, or not at all.

He reports that the ratio of copper to silver to gold mined from all types of deposits in the entire world from 3800 B.C. to 1925 A.D. was 3,000 to 11 to 1, and believes the ratio not to be far removed from their natural incidence as ores. These are largely surficial, he says, even though he expects the same metals to be found in highly dispersed, fine grains throughout the crust, where their bulk would be perhaps seven million times that of the ores. "The lower the grade of ore, the more there is of it, until finally we include the entire earth's crust in our consideration."[18C]

> It is likely that the greatest masses of copper, silver, gold, tin and lead ores were emplaced in the upper several kilometers of the earth's crust rather than throughout the total 35 km thickness of the continents or the thicker upper mantle. Governing agents in this vertical distribution were abrupt decreases in temperatures and pressures near crustal surfaces. It is unlikely that there are any large deposits of the kind we commonly recognize as ores at great depths in the crust, although there are very large amounts of copper, silver, gold, tin, and lead dispersed down there.

It seems that ores are found in a highly confused and diversified state that does not let one assume any neat intrusion of pure metal. Nor even is the intrusiveness manifest; the term seems to define itself, as simply something differing from its surroundings, not a clean belt or stratum, but as a conglomerate chemically, physically, and morphologically.

Ore is the valued part of minerals, including metals. The modern processes used to isolate ore are imitations of nature. Crushing is first, where the pressures and grinding of water, wind, and rock movements are emulated. Mineral separation follows. Minerals of different sizes are shaken through sieves. A hydrocyclone may be used to segregate particles by their response to varying winds. Flotation is employed to separate the crushed particles

according to their density. The material may be conveyed along jigging tables under running water so that high density, then afterwards lower density material, settle. A magnetic wheel can collect from poured minerals the magnetic ores and cast off the less-magnetic ores. Minerals that accept water-proofing can float in a froth while non-proofed minerals and rock sink. Once minerals have been chemically created, by high-energy forces, the same or a varying mix of quantavolutional forces can segregate them.

Under these circumstances, a person of our persuasion is likely to see exoterrestrial intruders smashed, crushed and exhibiting metal here and there; or, secondly, rims of hardly discernible craters containing segregated elements of the Earth's rock mixed with exoterrestrial elements that have been subjected to the immense heat and pressure of a crash; or, thirdly, effects of massive electrical discharge plus fall-back of exploded earth. (Regarding this last, and considering the unusual conductivity of metals, have they been prepared for conductivity, like quartz semiconductors? Are we dealing with homeopathy or homology?)

The distribution of metals in the world is associated somewhat with folding and thrusting, but this may be a finder's help, not a random sample of ore distribution. More significant is the lack of correlation of these metals with volcanism or even with great faults. Why should metals congregate near circular features and basins, suggestive of astroblemes?

Flint is found that has undergone controlled heat treatment, with pressure retouching as revealed by spectroscopic experiments; this is at least Solutrean in age, 22000 B.P by conventional dating [19]. The skill is as complex as and less enjoyable than metalworking by heat; why then did man wait another 15,000 years to begin his work with copper, tin, lead, gold, silver, and iron? Perhaps they were not available. Or, perhaps the dating is too long and, soon after the flintworking, metalworking began, which is one logic for preserving the conventional origin of metals by casting aside the conventional chronology.

Before the ages of the metals, so-called stone age man existed. He used many different kinds of stone, bone, wood, and grasses.

He designed, cut, heated, and molded them. He domesticated animals, grew cereals, performed anatomical operations with stone knives. He built cities and great monuments. He painted, danced, and sang. Coal and peat were burned. Obsidian and flint were mined; Greek myth portrays Saturn castrating his father Uranus, using a jagged-edged sickle of flint. If any amount of terrestrial iron had been present on the surface and outcroppings, why would it not have been employed? Gold, silver, copper, tin and lead were mined and used.

Mankind was ready to work and even to melt and purify iron, it seems, long before it was available. If only in order to supply the type of hypothesis that may lead usefully to historical research on the subject, I would suggest that most metals occurred around the period of the great Deluge and in the transition from Saturn to Jupiter worship, about 4200 B.C., and may be connected to a cosmic explosion that I have in *Chaos and Creation* assigned *to* a planet with the legendary traits of Apollo. It is noteworthy that the ancient metal mines of Attica had two favorite names, *Artemisiakon* and *Hermaikon*, both siblings of Apollo [20].

John Saul drew circles corresponding to rounded features, possibly ancient exploded craters, on a topographic map of a portion of Arizona. He independently marked the location of mineral deposits on a similar map. When one overlaid the other, there appeared a significant relationship between craters and mines, with the deposits generally occurring on the rims of the circles. One circle was abundantly supplied with minerals, indicating that a certain small percentage of craters, and hence their originating body, may be heavily mineralized [21]. R.S. Diez is cited by Pauwels for arguing the origination of the immense Sudbury (Canada) nickel mines from a meteoroidal impact of pre-Cambrian times.

One can conjecture, then, about a possible ratio of large stone meteoroid impacts to large mineral meteoroid impacts corresponding to the experienced ratio of small stone to small iron-nickel meteoroid impacts. Since historical experience has been limited (explainable by the negative exponential principle), one would hardly expect historically the fall of the rarer metals such as gold, silver, and copper.

Walter Sullivan has presented in the *New York Times* of Nov. 2, 1966 a map of the world's most productive gold field below Johannesburg, which shows a large primary "bulls-eye-formation" rimmed by gold-bearing formations and a much larger 200-mile-diameter, secondary, cratered, rim-like area, also bearing gold, and asks "Did a comet create a South African gold field?" Unless the gold was alchemized on the spot, it might have been part of the meteoroid that crashed.

Most metals, in conclusion, may originate exoterrestrially. If an alternative must be found, it may be suggested, although hardly discussed directly here, that special thermo-electric events might produce the metals. This would constitute electrolysis on a huge scale, in a dense catastrophically formed atmospheric plasma, before or after striking.

The metal, manganese, is exceptionally terrestrial in origin. Its growth out of underseas volcanos is particularly explosive and rapid. Pure manganese is found in cones near the Mid-Atlantic Ridge. Hot water and steam percolate through lava segregating the metal and depositing it in molten pools where it cools shortly. The French-American Mid-Ocean study, "Project Famous," found manganese geysers along the Ridge in the 1970's.

Manganese is also found in nodules on the ocean floors. These, by contrast with the geyser type, are supposed to have required much time to grow. Scott and his colleagues estimated that nodules grow at rates of 1 to 10 mm/million years. They are supported by Ku, Burnett and Morgenstein, using both radiometric and nonradiometric techniques of dating. But Goldberg and Arrhenius reported finding a 50-year old naval shell with a ferromagnesium oxide coating 30 mm thick, indicating a rate of 60,000 mm/m years [21A]. Heezen and Hollister point out that the rate of accumulation of manganese is a function of its concentration in water and the availability of a nucleus in the water [21B]. Conventional gradualist theory cannot explain the "mystery" so well as quantavolution.

Nodules abundantly litter the deep abyssal hills. They form around a particle, tephra, a pebble, an animal tooth, a bone, or on the surfaces of volcanic or drifted rocks. The nodules should

require a very short time to form, if supplied with nucleus, warm water and a manganese rich soup emerging from fast flowing and erupting volcanos. The manganese adheres to any object and rafts to its ultimate destination far from its birth place with fast-spreading lava, which also boils out manganese accumulations as it spreads, and by swirling currents of newly forming seas around it, the same currents that hold the nuclear objects in suspension for a time. The process 'proves itself as turbulent and swift by the nuclei, which would otherwise sink in the abyssal muck if there were such and by the availability of manganese only at the hot spots of the ridge. Thus, contrary to the long-time theory of manganese formation, the very presence of the manganese nodules goes to demonstrate how rapid was the paving of the ocean basins, a topic to be treated later on.

Sodium chloride is of course a mineral compound, and not a metal. The salt domes of the world, averaging 30 cubic miles each, may carry 100,000 cubic miles of salt, about three-tenths of all the salt of the seas. Salt is not found in pre-cambrian rocks, which are said to embrace most of the time since the Earth was created. Basalt of the ocean bottoms contains no salt and salt could not have been precipitated from the melting of mantle rock [22]. Granite is also deficient in salt.

The presence of salt, like the metals, in living tissues, and therefore the need of it, does not prove its terrestrial origin. Nor should one gullibly receive the story that since salt is in our tissues, it must be part of the ancient waters that bore the first life, hence giving us proof of most ancient salt oceans. Life digests salt-free water, even ocean life. If all the water of the world were to receive all the salt deposited in domes, life as we know it might become precarious--except insofar as we constructed desalification factories to sustain it. The miracle is that salt has not killed life already, like many ancient settlements had their land sown with salt by their enemies, and thus were extinguished. Species closely resembling one another are to be found both in oceans and freshwater lakes and rivers. Salmon live in both oceans and rivers during their individual lifetimes. Paleontology may not be able to demonstrate the precedence of saltwater over freshwater life forms. Too, the medium of early marine life may have been brackish.

There is no apparent earthly source for salt. A Head Curator of Geology at the U.S. National Museum, George P. Merrill, long ago wrote that sodium chloride (at least the latter) must have come like meteorites from outer space and been caught up first in the atmosphere and then dumped in the oceans. By the atmosphere is implied a canopy sky. From the canopies, salt would descend with water deluges, which we shall be considering later as a quite recent event. The canopy or set of rings may have been a momentary affair or endured for centuries. The rings and body of Saturn may contain sodium chloride or its elements; the rings contain millions of small mineral objects. Legendary evidence exists on this account.

Once salt in solution strikes the ground it must run off into the basins that have water, making it salty, and also contribute with its host water to new seas. If it sinks into the ground in solution it will form a reservoir, either exposed or folded under or trapped in a cavity. In these cases, the water will boil out as steam: or it will percolate into underground and above-ground branches flowing to the sea. The salt residue will then form domes.

Cook argues that the salt domes were created in the same set of events as the deep burial of organic material of which petroleum is composed, for many salt domes act as oil traps, keeping oil from dissipation. Avalanching ice from collapsing ice caps, and sediments pushed by these, suddenly thrusted and folded salted waters that were swirling around the great movements, containing them under high heat and pressure. The trapped waters were squeezed out of insoluble sediments into their own cavity. There they evaporated quickly, leaving salt deposits. But it is unlikely that the waters of the Earth were so salty as to provide, via tides, the salt domes and still leave the run-off waters with the present heavy component of salt in solution. Furthermore, as later chapters here will argue, the bulk of the ocean waters and ice came exoterrestrially and the salted waters mostly arrived later.

The salt may have descended both as a solid and in acqueous solution. Salt domes exist beneath the sea floor as well as below the land. Salt domes containing oil have been discovered beneath the floor of the Gulf of Mexico at 12,000 feet of depth

(2000 fathoms) [23]. Great salt domes have been discovered below the Mediterranean floor as well, giving rise to an idea that the Mediterranean once, 12 million years ago, became a dry basin. Why salt should not then be evaporated and laid in even layers of sediments rather than in intrusive pockets is unanswered.

In South and East Texas many cylinders of salt (with nearby anhydrite, gypsum, oil and sulfur deposits) penetrate the Earth to depths of a thousand meters and more. Kelly and Dachille ask "What could have caused these tremendous beds of practically pure rock salt?" And they write: "Our inevitable answer is the same, collision-flood. We should guess that this pan of the earth was struck by a body or bodies of sufficient size to evaporate great quantities of ocean water, both by the Kinetic energy released by the impact and by the great pool of molten lava that must have been formed in the crater. This evaporation of ocean water would have left the salt provided that it was not connected directly with the main ocean, otherwise the salt would have gone back into solution."[24]

The Gulf of Mexico does seem to have vague characteristics of a gigantic meteoroid impact. Since other salt domes have been also discovered beneath the gulf itself, one may wonder whether the meteoric body itself may not have been composed largely of salt and injected its own salt tubes into its crater basin. This would seem a more realistic scenario than the Kelly-Dachille vision of a typhoon lifting salted waters into the air, evaporating the waters, and having the salts precipitate in favored sequence and locale in a pure state. The fact, as they recall it, that salt is so free from contaminants (less than 0.4%) argues for the solid integrity of the salt from its initial appearance on Earth.

Legends imply my theory. Saturn was the first Lord of the Mill, a grindstone round like the revolving vault of the sky. It ground salt into the sea and was sunk in the ocean during the great maelstrom and deluge that brought the golden age of Saturn to an end. In Hindu myth, the gods churned the celestial ocean and the mill ground out salt into the sea. Norse myth has the heavenly mill churning out gold, then salt, then, sunk in the sea, sand and stones. The unhinging and failing of the Mill implies,

too, a tilting of the axis of the globe, a likely accompaniment of the cataclysm.

A South American legend supplies significant detail. "The Arawak of Guyana call the Galaxy 'the Tapir's Way.' This is confirmed in a tale of the Chirignano and some groups of the Tupi-Guarani of South America." According to Cuna tradition, "the Tapir chopped down the 'Saltwater Tree', at the roots of which is God's whirlpool, and when the tree fell, saltwater gushed out to form the oceans of the world."[25] The Cuna cosmology thus unites the idea of the tree-of life found in many places, including *Genesis,* with a Tapir-god, Saturnian-Elohim divinity, and, as the tree of life is destroyed (the old order ends), saltwaters deluge the Earth. (In *Solaria Binaria,* Earl R. Milton and the present author identify this tree of life with the legendary and philosophical axis of fire and this with the presence, until a nova of Saturn, of an electric arc-current flashing between a then-larger Saturn and the Sun, and visible to man.) In sum, various legends independently agree that the salt of the oceans came with an aquatic cataclysm in a time when mankind was an intelligent witness.

That salt came down upon the doomed "Cities of the Plain" at a later time as well is argued by Dwardu Cardona. Yahweh threatens his people with "sulphur and salt and burning, so that its whole land will not be sown... like the overthrow 3f Sodom and Gomorrah, Admah and Zeboiim, which Yahweh overthrew in his anger and in his wrath;...."[25A]

In the same work, Milton and I propose that the Noachian Deluge occurred in cyclonic form, with the salty waters hosing or jetting down at thousands of locations. If this were correct, some of the characteristics of salt deposits would be explained, such as their common cylindrical shapes and great depth below the surface of land and seabottom. The saltwater would bore through the surface rocks under great pressure and with enough time to penetrate deeply. The water would vaporize promptly in the ambiant heat and what was left of it would leak through a multitude of fractures on the margins of the deposits.

In Manchester, England, a process of making petroleum from garbage has been announced (1982). "We can do in ten minutes

what nature has taken 150 million years to do," asserts a proud engineer. The oil costs half the prevailing price of natural crude oil. This price does not consider the original devastation of the biosphere that occurred with the natural production of oil. Conventional belief interprets oil resources according to an idyll, that organic rot was deoxidized, accumulated over long periods of time, roasted slowly at a deep warm level in the rocks until it turned into oil, then seeped into rock reservoirs where it was trapped to await the oil explorer of today. There is little use in our discussing this story, inasmuch as the reader will have ready access to it in many books. Here it is argued that oil is a catastrophic product and the major questions concern the catastrophic mechanisms of its formation.

The "ten-minute oil" suggests that there may be no inherent guarantee that natural oil is old. Recently discovered hydrothermal vents in the Gulf of California are producing from sediments a petroleum that is close to commercial standards. Several C 14 dates of oil offshore California and from the Gulf of Mexico range from 5000 to 20000 years. Still petroleum generally is dated from two to six hundred million years; a common age given is fifty million years. One group of scientists suspects that solar ultraviolet polymerized the methane atmosphere of primeval Earth to form an oil slick of one to ten meters' depth all over the globe [26]. T. Gold believes that methane, composed of carbon and hydrogen, erupts from primeval reservoirs in the mantle; they sometimes explode from electrostatically induced sparks [27] However, the presently continual explosions would indicate to this writer a recent origin of the methane, probably from biomass deep-buried by catastrophe. A.T. Wilson produced hydrocarbons out of electrical discharges on methane and ammonia, and claimed in 1962 that the Venus atmosphere held hydrocarbons [28]. Oro and Hart maintain a case for current hydrocarbon production on Jupiter from methane; they manufactured hydrocarbons from methane in their laboratory [29]. Libby has theorized that oil is raining down upon Jupiter today [30].

Max Blumer, a pre-eminent paleo-geochemist, lately of the Woods Hole Oceanographic Institution, used the conventional age estimates given above in making a calculation of some social significance. Reminiscent of the Dow Chemical

Company's claim about natural dioxins mentioned in the previous chapter, oil shipping interests have protested that only half the ocean's petroleum content comes from polluting practices and the other half comes from natural leaks and seepage. In 1970, Blumer, following this logic, estimates the amount of seepage at 5×10^6 tons. Quoting then high estimates of offshore oil resources at $100{,}000 \times 10^6$ metric tons, he points out that all of this would have leaked out in less than 20,000 years. But, taking the average age of oil as above, 50 million years, and the claimed seepage rate, "the average offshore oil-field would have lost to the ocean 2500 times the free flowing oil or more than 1500 times the total oil existing in situ before commercial offshore oil production started."[31]

Obviously, in Blumer's view, and the publicity attendent upon the brief article indicates a wide acceptance of it, the estimate of natural seepage is ridiculously high; the polluters are responsible for the oil in the oceans. The same is true on land. Seeps are negligible because "oil reservoirs are well sealed even on the continents where uplifiting and erosion should have bared oil-bearing strata more extensively than on the ocean floor." Oil leaks are frequently sealed by natural asphalt.

The quantavolutionist can address three comments to Blumer's line of argument. First, the age of oils in the sea may be grossly overestimated. Possibly the oil resources of the world are under 20,000 years old; in this case, the allegations of the seepage advocates would have to be disproven by other evidence, if at all. Second, Blumer does not deny seepage, but wishes it reduced. But he does not estimate seepage, or else, I guess, he would have to name a figure, such as one-tenth of the seepage claimed. In this case, the age of the "average oil" would drop by a factor Of ten; all oil resources would be exhausted by leakage in 200,000 years. Surely he would not insist upon the fifty million years age and therefore be compelled to argue that true seepage is hundreds of times less than claimed. In other words, he is walking right into the quantavolutionary door; no significant seepage is satisfactory if conventional oil ages are to be defended. This is especially so, given that strict uniformitarian rates are not likely; no matter how oil is made, early seepage must have been at a faster rate than today's seepage. Even just the transfer from factory to reservoir cannot

occur without large losses. Again the age of oil must drop. And of course if a quantavolutionary theory of oil formation is adopted, the exponential principle come into play: oil is made, not in ten minutes, not currently in submarine hydrothermal factories, but in very short times nevertheless.

Two quantavolutionary theories, requiring very short times, offer themselves, one best enunciated by Melvin Cook, the other by Velikovsky. Cook hints that a great deluge may have precipitated the lateral break-out of the ice caps. The vast ice avalanche bulldozed the biosphere long distances and folded it into the Earth in a heated state. Velikovsky argues for the origin of petroleum from the tail of a great comet, which he identified as an erratic Venus. Both offer short-term explanations, Cook placing the production of oil around 10,000 years ago, Velikovsky around 3450 B.P.

Cook reconstructs the oil production process as follows: around the old ice cap of the north grew a heavy biosphere. The towering ice cap, triggered by deluges, exerted fracturing radial pressures that sent great bulldozers of ice and rock in all directions to sweep up, ignite and bury deeply the vegetation and animal life. The organic matter stewed under high thermal and pressure conditions. Some became coal; some became oil and natural gas. Here is a quick "Cook's Tour" of the world's petroleum [32].

> The most prolific oil basins of the world are those associated with the postulated major long-thrust systems described previously, namely the Mississippi valley--Gulf of Mexico system and the extensive and complicated overthrust systems comprising the great oil fields surrounding the Red, Mediterranean, Caspian and Black seas and the Persian Gulf. The southwestern USA thrust system responsible for the fragmentation in the Basin and Range province possibly contributed to the California oil basins. Another similar thrust system apparently generated the oil and coal provinces of Borneo, Sumatra, Java and New Guinea. These great oil and gas regions are most likely associated with sudden deep burial of marine and vegetal matter in (1) spoke-like radial thrusts from the ice sheets that began with the flood and eventually

> triggered continental drift, (2) continental drift itself, and (3) the Subsequent catastrophic effects of readjustment (ocean ridge and related systems). The greatest oil fields in the world, those in Iraq, Iran, Arabia and Kuwait, are apparently the result of all three of these mechanisms of sudden deep burial. The Gulf of Mexico system is postulated here to represent tremendous, sudden and deep burial thrusts contributed largely in the pre-continental drift stage, but with great contributions from both the north and the south such as to insure deep burial of sediments all along the coast and shelf of the Gulf of Mexico. The west coast of North and South America represent regions showing perhaps all of the deep burial effects: that due to welting and overthrusting in the pre-continental drift stage being strong in this region, the welting at the front of the thrust blocks during continental drift itself and the tremendous upheavals strongest here in the final readjustment stage. Perhaps the great (bathylithic) uplifts associated with the earth-circling ridge and rift system, particularly that part that cut into the continent in the western side of the Americas, contributed mostly to the deep basin structure in California, accounting for the youngest pools of the world.

Cook, then, must provide a force sufficient to initiate the break-out of an ice cap of enormous size; then a thrusting and folding of crustal rock over large distances, burying a whole biosphere of vegetal and marine life; then a cracking of the globe, sending the continents skittering from the great Atlantic and southern ocean cleavages in a complex pattern, with a major fracture moving through most of the world along the old Tethyan sea belt. He concludes as follows:

> The physical chemistry of oil, including its formation from marine raw materials, its conditions for cracking, its observed composition and physical properties as a function of depth of the reservoirs are, apparently, better accounted for by the sudden, deep burial mechanism than by the doctrine of uniformitarianism. Oil reservoir temperatures are too low to permit appreciable cracking during all of geologic time even assuming existence of the best known catalytic cracking conditions. The observed

> changes of oil grade with depth may be explained instead on the basis of the physical chemistry of decomposition of green marine and vegetal raw materials in their sudden burial at various depths in the oil basins [33].

But Velikovsky's theory of petroleum Origins introduces a frightful deluge of oil. He cites references in legends and scriptures to the fall of naphtha, sometimes blazing, and of brimstone, often rendered otherwise as a rain of hail. The Abkasian, a people famous for their long life-spans, convey a story about a fall-out of cotton, which caught fire and burned the Earth; perhaps it was "cotton-candy" mixed with hydrocarbon [34]. The ancient bible of Mesoamerica, the *Popul Vuh,* tells of the fate of the people of that age:

> And so they were killed;
> They were overwhelmed.
> There came a great rain of glue
> Down from the sky. [35]

The "glue" is still found in the land of the Olmecs. William Mullen comments on the work of the pioneer excavators: radio-carbon samples are contaminated by asphalt. "Much of the Early Tres Zapotes level was sealed with volcanic ash. Coe reports that lumps of asphalt were found everywhere at the San Lorenzo excavation."[36] I consulted with an expert on the area. As expected, he said that the area practically floats on oil. I visited the area. He spoke truth. But the question is: Which came first, the culture or the oil? Here, as throughout the world, the ancient voices give precedence to the people.

Velikovsky's concept can be summarized to a degree in his own words [37]:

> The tails of comets are composed mainly of carbon and hydrogen gases. Lacking oxygen, they do not burn in flight, but the inflammable gases, passing through an atmosphere containing oxygen, will be set on fire. If carbon and hydrogen gases, or vapor of a composition of these two elements, enter the atmosphere in huge masses, a part of them will burn, binding all the oxygen available at the moment; the rest will escape combustion, but in

> swift transition will become liquid. Falling on the ground, the substance, if liquid, would sink into the pores of the sand and into clefts between the rocks; falling on water, it would remain floating if the fire in the air is extinguished before new supplies of oxygen arrive from other regions...
>
> The descent of a sticky fluid which came earthward and blazed with heavy smoke is recalled in the oral and written traditions of the inhabitants of both hemispheres... All the countries whose traditions of fire-rain 1 have cited actually have deposits of oil: Mexico, the East Indies, Siberia, Iraq, and Egypt ....
>
> The rain of fire-water contributed to the earth's supply of petroleum; rock oil in the ground appears to be, partly at least, "star oil" brought down at the close of world ages, notably the age that came to its end in the middle of the second millennium before the present era....
>
> In the centuries that followed, petroleum was worshipped, burned in holy places; it was also used for domestic purposes. Then many ages passed when it was out of use. Only in the middle of the last century did man begin to exploit this oil, partly contributed by the comet of the time of the Exodus.

Definite legendary, archaeological, and geological evidence of a holospheric catastrophe in Mesopotamia was provided by J.V.K. Wilson for a period tightly connected with Inanna (identifiable as Venus) [38]. Large-scale mesolithic rock displacements are displayed, and accounts of rains of oil, the poisoning of the land, and falling sheets of fire are described in the ancient documents. Lion-headed pillars are associated symbolically with mushroom-shaped clouds (our typhonic cyclones) in the legend and architecture of the times.

The Soviet geologist Levin asserts that the hydrocarbons in cometary heads must have played a part in forming petroleum and in the origin of life."[39] Velikovsky wrote once: "Actually, if we can believe numerous testimonies bequeathed to us by ancient sources, the ancients had already what we intend some day to obtain from Venus--samples of its dust, ash, atmosphere,

and rocks." He believed firmly that "Venus must be rich in petroleum gases," which, because of the planet's great surface heat, "will circulate in gaseous form."

Fred Hoyle, in *Frontiers of Astronomy* (1955), argued for less heat and therefore oceans of oil on Venus. The historical and geological evidence led Velikovsky to argue that Venus was hot and cooling measurably, that it was comparatively flat, with a dense atmosphere, an anomalous axial rotation, and the aforesaid hydrocarbon gases. The other predictions having been generally fulfilled, it seemed for a moment that hydrocarbon gases had also been detected; if so, the theory of the historical encounter and the dropping of Venusian oil on Earth would be strengthened.

However, the NASA scientists involved in an early statement favorable to hydrocarbons withdrew their support, and a controversy ensued, to no final end. The clouds of Venus appear definitely to be mainly of carbon dioxide. Whether this is compatible with an existing component of hydrocarbon or can have resulted from chemical transformations that resulted in the disappearance of hydrocarbons is disputable. Furthermore, organic compounds seem to be present, and also indications of iron and sulfur, possible sources of pigment for the red fall-out phenomenon mentioned earlier.

Blumer, in a path-breaking article on organic paleochemistry, pauses to reflect that "man has long been curious about the origin of these materials," coals and oil. "On occasion, early speculations approached the truth in a colorful way; thus, the Triassic Tyrolian oil shales, which are rich in vertebrate fossils as well as in chlorophyll and haemin derivatives, were thought to have resulted from an impregnation of the local rock with the blood of a slain dragon."[40]

Perhaps he should have reflected longer. The dragon, in many a myth, has poured its red blood, metals, dust., and oil upon the Earth, and the dragon is often identified with destructive sky bodies, comets, no less. That silicates and oil should descend and emplace themselves in oil shales should hardly cause surprise; we have seen that the color of red-brown to blue-black oxidized heme, blood red, is often reported in myth as falling in

dust or in the gore of a slain dragon. The shale could be formed quickly, baked by a moderate heat.

How could the organic matter be injected into shales and oil from above? As related earlier, the presence therein and a fall-out of a biomass from a comet is not at all impossible. Furthermore, the distinction between living and non-living structures is not clear in the hydrocarbons of oil. "Trieb's isolation of pigments related to chlorophyll and haemin marks the origin of organic geochemistry... The fossil prophyrins of ancient sediments and of petroleum are *chemical fossils;* just as the more commonly known morphological fossils, they represent surviving evidence of ancient life processes that had achieved an increased structural order on the macroscopic and on the molecular level and inorganic as well as in organic structures."

It seems Blumer is claiming the unprovable, that in their beginnings these morphologically unrecognizable organic chemicals were in living organisms. Yet he declares, "in organic geochemistry, the distinction between chemical fossils and artifacts has not always been sharp." And he says, after defining geochemistry as ultimately based upon the molecular remains of ancient life, that thousands of changes occur: "chemical fossils are far more abundant than their better known morphological analogues. Contrasted with 90,000 (some say 110,000) species of fossil animals known presently, are millions of fossil chemical derivatives." Then, further:

> Research on the constitution of crude oil and of oil shales has revealed severely altered biochemicals and numerous structures which occur neither in living organisms nor in recent sediments... Also crude oil and sediments contain polymers (asphaltenos, kerogen) of a type not found in living organisms.

For pages, Blumer struggles to trace the complex descent of petroleum hydrocarbons from living organisms while insisting upon the intrusion of many non-organic chemical processes, only to admit that "we are virtually ignorant of the reaction mechanisms and. reaction rates." He proceeds to establish that depth, deposition rate and temperature control the chemical

chaos during the critical moments of oil formation. Still, "we remain uncertain of the extent, the rates and the mechanisms of geochemical reactions and of the composition and role of the sedimentary polymers."

We shall certainly not be contradicting him, if we conclude that the chemical transformations producing oil are as likely to occur in space as below ground, probably more likely, if we wished to argue the point. Further, we do not see how it can be asserted either that organic biomass capable of forming oil does not exist in exoterrestrial bodies or, if it does not, that its absence precludes space gases constituting or contributing to the constitution of the oils that are present on Earth.

Most metals, salt, and oil, we conclude, are more likely than not to have originated exoterrestrially or in exoterrestrially precipitated transactions at the Earth's surface.

Notes (Chapter Ten: Metals, Salt and Oil*)*

1. Bellamy, *op. cit.*, 84.

2. Velikovsky, *Ramses II and His Time* (N.Y.: Doubleday, 1978), 221-47.

3. "The Road to Iron: 8th and 7th Century Metallurgy and The Decline of Egyptian Power," (In press: *Catas. and Anc. Hist. M.*)

4. R. Maddin, J.D. Muhly and T.S. Wheeler set a date between 1100 and 900 B.C. ., "How the Iron Age Began" 237 *Sci. Amer.* (Oct. 1977), 112.

5. See fn 2, p. 5.

6. L. Pauwels and J. Bergier, *Eternal Man* (Herts, Eng.: Mayflower, 1972), 58, 160; and also their *Morning of the Magicians* for many suggestions of prehistoric discoveries.

7. *Op. cit.*, 197-8.

8. Fritz Heide, *Meteorites* (Chicago: U. Of Chicago, 1969), 44.

9. *Ibid*., 16.

10. Melvin A. Cook, *Prehistory and Earth Models* (London: Max Parrish, 1966).

11. 52 *Sky and Telescope* (1976) 429 citing a report by Walter Sullivan, NYT.

12. 2 *Sci. Am. Supp*. (1876), 510.

13. *Stratigraphie Comparée*... (London: Oxford, 1945). 580.

14. *A Life History of Our Earth* (London: Faber and Faber, 1957), 196.

15. Bellamy, *Moon*... 87, 89.

16. *Op. cit.*, 16.

17. *Cosmos*, I, 115.

18. R.P. Chan, *A Guide to Mexican Archaeology* (Mexico City: Minutiae Mexicanae, 1971), 75, 78.

18A. F.T. Kyte *et al*., *Nature* (30 July 1981), 417-20.

18B. 36 *Amer. Antiquity* 3 (July 1971), 286-321, 288, *cf.* 294.

18C. *Ibid*., 291.

19. 276 *Nature* (14 Dec. 1978), 7013-4.

20. Advice of Prof. Merle Langdon, then of Am. School Class, Studies; Athens. "Artemisiakon" was a favorite name, the "kon" ending meaning "under the protection of," "owned by" or "discovered by."

21. 271 *Nature* (26 Jan 1978), 347.

21A. P.A. Smith, 265 *Nature* (1977), 582-3 reporting Scott *et al*., I *Geophys Res. Ltrs* (1974) 355 and Golberg and Arrhenius, 13 *Geochim. Cosmochim. Acta* (1958) 153; Corliss, *op. cit.* ESS-005 doc.

21B. *Op cit*., 424, 440.

22. Cook, *op. cit.*, 87.

23. Oscar Wilhelm, *Geol. Soc. Am. Bull* (March 1972).

24. Allan Kelley and F. Dachille, *Target Earth*, 211; *cf.* 205.

25. G. den Santillana and H. von Dechend, *Hamlet's Mill* (Boston: Gambit, 1969), 247, *cf.* 146-7.

25A. *Deuteronomy* 29:22 (Watchtower Edition); Cardona "Jupiter--God of Abraham (Part III)," VII *Kronos* (Fall 1982), 66. Fire evidence is copious in the settlements excavated at the sites.

26. A.C. Lasaga and H.D. Holland, "Primordial Oil Slick," 174 *Science* (10 Oct. 1974), 53-5.

27. See K.S. Lewis, 78 *New Sci*. (1978), 277 and Walter Sullivan in *NYT* (24 Dec. 1977), 1.

28. A.T. Wilson, "Synthesis of Macromolecules." 188 *Nature* (17 Dec. 1960), 1007-8.

29. J. Oro and J. Han, "High Temperature Synthesis of Aromatic Hydrocarbons from Methane," 153 *Science* (16 Sept. 1966), 1393-5. *Cf*. J. Oro, "Comets and the Formation of Biochemical Compounds on the Primitive Earth," 191 *Nature* (29 Apr. 1961), 389-90.

30. C.J. Ransom, *The Age of Velikovsky* (Glassboro, N.J.: *Kronos*, 1976), 80-2.

31. "Submarine Seeps," 176 *Science* (16 June 1972), 1257-8.

32. *Op. cit.*, 241 ff.

33. Cracking is the process of breaking up large molecules of heavy hydrocarbons into smaller ones of lighter type, accomplished by heat, pressure, and catalysts.

34. Sula Benet, *Abkasian* (NY: Doubleday)

35. *Popul Vuh: The Sacred Book of the ancient Quick Maya* (Norman; U. of Ok., 1950 trans.).

36. *Ibid*.

37. *Worlds in Collision*, 53ff.

38. *The Rebel Lands: An Investigation into the Origins of Early Mesopotamian Mythology* (Cambridge, Eng.: Faculty of Oriental Studies, 1979), reviewed in IV *S.I.S.R.* 2(1981), 64.

39. B.Y. Levin, "The Interaction of Astronomy, Geophysics and Geology in the Study of the Earth," in *The Interaction of*

Sciences in the Study of the Earth (Moscow: Progress Publ., 1968), 178.

40. "Chemical Fossils: Trends in Organic Geochemistry," Contrib. 2898 of Woods Hole (Mass.) Oceanographic Institution, n.d., 592. See also W.W. Youngblood and Blumer, "Alkanes and Alkenes in Marine Benthic Algae," 21 *Marine Biol*. (1973), 163-72.

CHAPTER ELEVEN

ENCOUNTERS AND COLLISIONS

"Even heaven, despite the orderliness of its movements, is not inalterable." So wrote Laplace [1], who has been freely used to attest to the security of the celestial order. Nothing in his unparalleled mathematical and physical achievements kept him from soberly portraying the effects of collisions of the Earth with comets, and expressing the view that these had occurred and would probably again occur. He warned of movements that he could not take into account in his calculations, and mentioned the forces of electricity and magnetism whose effects were then unnoticeable. The gravitational balance of the solar system, he proved, however, was near perfect, an empirical demonstration that became a shibboleth to astronomy and thence to progressive mankind.

The present trend to accommodate ancient cometary and meteoroid encounters in the earth sciences and biology cannot but bring about a revolution in thought. A large body impacting on Earth is the most versatile mechanism of quantavolution: so everyone will admit. Its effects begin upon approach, increase upon passage through the atmosphere, reach a climax in its explosion, and continue to spread from the point of impact until the whole world and all its spheres are affected. Too, the effects may continue for many years in an active form and then go on in the 'genetics' of the holosphere.

During a period, which Nininger has well described, when scientific dogma forbade the serious discussion of exoterrestrial interference in the affairs of Earth, when even light meteoritic falls were ignored, students were denied the use of this marvelous theoretical construct in explaining what lay before their eyes. Finally a scientific commission was dispatched from Paris in 1802 to the countryside to investigate a reported fall. It returned with evidence of several thousand meteorites. So "America was discovered." Still in 1933, a Smithsonian Institution report by L.J. Spencer could declare, "the problem of

meteorite craters is quite a new one." Only several were listed, and of these only the Barringer crater of Arizona and the Wabar Craters in Arabia had been well described, both lately.

Yet, to continue the litany of this book, it appears now that enough meteoroids and comets have struck the Earth to deface it throughout. Moon, Mercury and Mars evidence telescopically tens of thousands of large astroblemes. Dachille (1962), projecting the Moon's apparent experience onto Earth, estimated a round million of heavy impacts here [2]. He assumes five billion years of uniform falls and applies weathering rates for the continental masses from wind, tide and vegetative erosion, ending up with somewhat over a thousand craters that are potentially identifiable.

Of this thousand, 750 are below water and ice; of the remaining 250, "in the last few years a staccato tally of meteorite scar finds or recognitions has raised the total to 42-50 at this writing." He offered an independent survival rate calculated by Krynine that would be in the neighborhood of 10,000.

He pointed also to new diagnostic methods, such as the discovery of coesite, a silica mineral that forms under high pressures in the laboratory and has been found in craters suspected of exoterrestrial origin. Meanwhile the space shuttle Columbia has photographed beneath the sands covering the eastern Sahara to reveal fractures, dried-up rivers, and probable paleolithic settlements. The U.S. Geological Survey confirmed the radar penetrations. Craters can be discerned as well, and they will probably be promptly mapped over the globe. Many bodily and electric encounters of Earth with exoterrestrial bodies will one day be counted, measured, plotted for concentrations, and assigned to temporal episodes.

The difference between a meteoroid and a comet may be an artifact of biased experience. Lately no comet has fallen to Earth. Perhaps, too, most or all comets come from a special source today; Jupiter has been suggested. Perhaps the meteoroids come from the asteroid belt; such is generally believed. The major distinction may come from their manner of flight; with highly elliptical and often eccentric orbits, comets must forever change their appearance in transacting with their

electrical and material environment; the asteroids are generally in regular orbit. Too, we know the size of many asteroids, but not of comets.

Once, to ridicule Velikovsky, a renowned astronomer claimed that comets were filmy and insubstantial bodies. A more acceptable theory of Whipple of the Smithsonian Astrophysical Laboratory (he was by no means a supporter of Velikovsky) sees comets typically as bodies of ice and other frozen gases cementing together rock and dust. It may be of significance to note the presence of water in recently examined meteorites, from studies by Hughes, Ashworth and Hutchison [3]; if water, then a watery planet once upon a time: so the reasoning goes.

Gravitational anomalies on the Moon and Mars have been interpreted to signify dense mass concentrations, hence "mascons." They are associated with large circular basins, therefore probably with meteoroid impacts [4]. The Earth has not yet registered mascons. Because of its heavier atmosphere, more intense magnetosphere, and greater electrical charge, it may be that the Earth has means of ablating and retarding the velocity of meteoroid falls. On the other hand, gravitational anomalies have begun to be detected in circular areas of the Earth and shortly we may expect mascons in the Earth's morphology as well.

With the aforesaid "soft frills," one can expect the Earth to exhibit hills and mountains, as of iron ore and erratic isolated hills, which are then surficial mascons. Concerning the "abrupt" extinction of Cretaceous life forms, Smit and Hertogen, like Alvarez and his associates, see in a general distribution of two trace elements, iridium and osmium, at this stratum of the phanerozoic record a proof of meteoroid impact [5]. Soil and rock everywhere, it would seem, are in need of chemical tests in search of exoterrestrial influences during their deposition.

A decade after his estimates were published, Dachille would report that the number of identified craters had risen to "60 well-documented craters, 25 very likely candidates, and another 20 hopefuls."[6] The greatest of these are the Ishim, Kazakhstan, USSR, (7000 km diam.), the Nastapoka Island arc of Hudson Bay (440 km diam.) and the Gulf of Saint Lawrence opening

onto the Atlantic Ocean [7]. The Ishim crater is estimated as initially of 350 kilometers in diameter, 12 kilometers in depth. "The subsequent rebound of the central region and the collapse of the surrounding area enlarged the crater to 700 kilometers in diameter, making it larger than the average lunar mare. The area of this impact structure is a little greater than the combined areas of Pennsylvania, Ohio, New York and Maryland. The kinetic energy of the collision can be shown to have been at least one billion times as great as the energy in any one of the largest earthquakes of recent history."[8] And these quakes, of course, much exceed the greatest hydrogen bomb blasts in energy output.

In a work of 1953, Dachille, together with Alan Kelly, offered the circular Bermuda Deep as an astrobleme. By all odds the largest candidate for craterdom so far, this feature might be held responsible for Bermuda Island, as its typical central peak. The hundreds of Carolina Bays were conjectured as the splash-down sites of successive meteors in the same train or later on. The Appalachian mountains would become the westward-thrusted, outer rim displacement from the crater. Significantly, in 1982, claims were voiced that a Northeast to Southwest belt of the Appalachians was once an offshore island chain rammed into America in the course of continental drift and, after the growth of the Eastern plain, the two continents split once more to create the Atlantic. More persuasive to this writer is the Kelly-Dachille view that would let the mountains be the Bermuda crater rim, let the plain be the crater debris and sediments and let the Atlantic cleavage be abetted by the Bermuda impact.

The authors of the Bermuda theory proceed to discuss the dozen high-energy expressions that must necessarily accompany so stunning an impact--global hurricanes, eruption of hundreds of thousands of cubic kilometers of lava, darkening of the globe for years, deluges of water and debris, destruction of most of the Earth's biosphere--terrestrial and marine--poisoning of the atmosphere and fall-outs of many kinds of material, a giant set of electrical typhoons centered at and around the impact and moving radially outwards, earthquakes and volcanism in many places including the antipodes, and vast tidal waves sweeping across America, the Caribbean, and the oceans to the north, east, and south. Large tracts of land would be sunk and others

elevated. Minerals would be formed, elements transmuted, species extincted and new forms created in the radiation storms. They assigned an axis tilt of 30° to the blow, shifting the north pole from near Akpatok Island, in the Hudson Strait, to its present location.

The diameter of the Bermuda crater appears to vary between 2200 and 2500 kilometers as its limits are drawn, the western being more marked than the eastern, which disappear into the oceanic abyssal bottom. The western arc extends from the Grand Banks of Newfoundland down around the East Coast of America to Puerto Rico. The diameter of the original comet or meteoroid is estimated at 400 to 700 kilometers, greater than the possible Hudson Bay crater (440 km). The relative speed before impact of the meteoroid with Earth is given at about 100 km/second, with an approach from the northeast. The collision would involve an energy approximately equal to that of the Earth's rotation (1.2×10^{37} ergs) and would readily provoke an interruption of the rotation, an axial tilt, a slippage of the crust above the mantle, and an immediate orogeny around the ruin of the blast crater.

The scenario includes many details that need not be repeated here. For instance, the hypothetical Bermuda intruder would theoretically account for all the coal, gas and oil of Appalachia and the North American continental shelves by instant burning in passage, deep burial and dampening upon impact folding, and tidal land thrusts and water flooding. Even cutting back its diameter to 280 km, the intruder upon impact

> would raise a column of vapor and debris that easily could measure one thousand miles in diameter at the base, and possibly larger at the top after the fashion of the atom bomb explosions. This column might tower something like five thousand miles above the earth, the higher particles doomed to float out beyond the reach of gravity for all time... the energy of the collision we have pictured is so great, that but 2 to 3 per cent of the total would be required to evaporate completely the meteorite and its equal in weight of the earth's crust. Therefore the column above the collision area may take on the function of a

> fractionating column for these mineral vapors, refining minerals to varying extent [9].

Streams of speciated minerals, metals, rocks and salts would pour down to form deposits. Large areas would be melted and magnetized by electromagnetic fields arriving from intense brief currents of electricity formed of the electron and ion plasma. In all of this, it should be noted that the colliding intruder partly or largely provides for its own concealment, by cross-winds, cross-tides, rain, volcanism, debris fall-out, and differential diastrophic effects, some of them called forward from remote areas.

Moving about the global map, Kelly and Dachille could suggest numerous candidates for their meteoroid inventory. Wherever an arc appears on a coastline--they noted five large ones off the west coast of North America, two off of West Africa, two off of Brazil and Argentina, plus the great island arcs of the north and east Pacific Ocean--a crater is implied. Norman elsewhere suggests "that any large-scale crustal feature which exhibits an arcuate outline is deserving of special scrutiny--for example, the curve of the Coast of China, the curved mountainous coast of eastern Australia, and the magnificent sweep of the Himalayas bordering northern India. Smaller-scale versions exist bordering the southern parts of the Caspian and Black Seas, and eastern Korea. We must also think of examining concave arcuate coasts such as the Gulf of Mexico or the Great Australian Bight."[10] In 1981, Fred Whipple suggested Iceland as the site of the giant meteor impact which, striking the volcanically active ocean ridge, initiated the finale of the Cretaceous period, its dinosaurs, and its marine life [11]. A year later, *Sky and Telescope* [12] reported the discovery of a double ring of magnetic anomalies of 60 and 180 kilometer diameters, in Yucatan. The anomalous magnetized rocks are about 1100 feet deep and assigned to Late Cretaceous which makes it, too, a candidate for extincting dinosaurs and decimating the biosphere. But other candidates can be named, for instance an astrobleme feature beneath the disturbed ice of Wilkes Land, Antarctica, to which Weihaupt ascribes hypothetically the origin of the tektite strewn fields of Australia, calling the collision of "Recent geologic time."[13]

I might, too, suggest the Pacific Basin as a possible impact site, though here the size of the feature is so great as to imply the

total destruction of the globe, and I have, for this reason and many others, elsewhere defined this area as the escape basin of the Moon, following G. Darwin, Osmond, and other writers. Notable in this case is the set of great transform fractures, pictured by Norman [14] which point from south, east and north like arrows to an "impact" or "escape" point in the central Pacific Basin. The current theory of scientists concerning the asteroid belt orbiting the Sun between Mars and Jupiter is that here is the debris of a great body exploded by collision with another body some millions of years ago. One may reason that if this could happen in asteroidal space, it could also happen to Earth's space. There has obviously been a limit to the size and mass of all that has struck Earth.

Satellite photography has in the past few years introduced a new instrument for crater detection, whether volcanic or meteoric, as in the Bichat structure of Mauritania. Some photographic reconstructions delineate what appear to be many crater outlines. Soon, it appears, the number of defined crater outlines will soar into the hundreds, and perhaps thousands.

Given the new interest in meteoritics, the identification of meteoritic fields may also proceed apace. As long ago as 1889, a list of 14 small fields was published, all of the nineteenth century and ranging from 3 to 16 miles long. The Arabian barrad fields, Donnelly's drift stones, and the tektite fields, already discussed, are much larger and older phenomena. The Atacama Desert also evidences a large meteoritic field, still unmapped, with many siderites and rich silver mines at its center. Meteoritic material on Earth is evidenced therefore by dust, stones, and craters, with all ranges of size from visually undetectable clay elements to basins so large as to be hitherto visually unimagined.

The answers to our persistent questions about the extent and recency of quantavolutionary phenomena at the Earth's surface are now beginning to take shape. The Earth must have suffered as much meteoritic bombardment as its planetary neighbors and satellite. On several occasions--at Hudson's Bay, the circular bulge of the West Africa Coast, Ishim, Bermuda, St. Lawrence Bay, Argentina, Australia, Antarctica, and others, all inadequately discerned until now--global catastrophes could

have occurred with large-body impact encounters. On other occasions, as we. discussed earlier, meteoritic showers and bombardments also may have been globally catastrophic. Harold Urey writing in 1973, conjectures a comet of 10^{18} grams and an impact velocity of 45 km/sec to end the Cretaceous and begin the radically different geological period of the Tertiary [15]; his scenario of effects upon Earth is substantially that provided here and in the much more detailed analysis of Kelly and Dachille for so large a body. (The reader is asked to recall that scientists have only lately granted comets this possibility of large masses and Earth collisions. The recent work by S.V.M. Clube and W.M. Napier, entitled *The Cosmic Serpent* (1982), essaying a connection between solar-system galactic spiral encounters and recurrent paleontological catastrophes, via cometary and meteoritic crashes, is perhaps the first treatise to be published by professional astronomers. The independently pursued work of the astronomer Earl R. Milton, much of it in press as *Solaria Binaria,* with the present author, is comparable. Clube and Napier wrote unaware of the astronomical theory of *Chaos and Creation* and similarly, I did not obtain a copy of their book until the present work was at the printers.)

But would any or many of the larger impacts be recent, within the past score of millennia? This is probable. The methods by which heavy meteoritic and cometary impacts on Earth are timed begin with averaging on uniformitarian assumptions. Thus Dachille arrived at his 1967 numbers by averaging the expected number of major impacts over a five billion year age for the Earth and Moon; then, again using uniformitarian premises, he reached for some broad guidelines. 'Weathering rates estimated for continental masses and great mountains are about 80 meters per million years, and for land masses in tropical regions 225 meters per million years. Circular ridges of less than 750 meters relief could be broken down in 5 million years, to be unrecognizable..."[16] Thus he arrives finally at his low figure for discoverable craters.

But when, with Kelly, he came earlier to describe the Bermuda event, he could contemplate this global catastrophe of maximum intensity as having occurred at the time of the Chaldeans and Hebrews, about 3500 years ago. In the Bermuda case the two scientists follow quantavolutionary logic and can explain the

new face of the globe in terms of seconds, minutes, weeks, years. They do not need or use much time. Not only that, but they indeed destroy time by the few-second incoming passage of the body through the atmosphere and the gigantic explosion that transforms a considerable portion of the atmosphere and rocks of the world. How many radioactive clocks, depending upon stable rocks and atmosphere, were disrupted?

Here the uniformitarian suffers the same embarrassment as the catastrophist. Just as he jests at the catastrophist, "You say that evidences of catastrophe are unavailable because they are destroyed," now the catastroptfist jeers at him, "you say that you cannot find meteoroid craters because they were eroded." Perhaps there never were a million craters or more. If undeniably *showers* of ice, water, dust, stones and heavy bodies have struck the Earth, cannot a *deluge* of dust, stones and heavy bodies have done the same? It is *prima facie* reasonable that the changes wrought, upon Earth have been the work of a few thousand years. And it is an open question whether the changes are recent or ancient. Perhaps the bombardment of Moon, Mars, Venus, Mercury, and Earth is all recent history.

C. Simon (1982) reports on the topography of giant circular ripples moving out from a point west of Hudson Bay as indicated by gravity anomaly data [17]. Scientists involved conjecture that a 60-90 km meteoroid impacted, digging a great crater and wrinkling the surface for thousands of kilometers around. All is covered over but the density variations remain, below the surface, to provide the circular patterning.

That such an event would be electromagnetic as well is certain. Lacking surveys, we are left to surmise. Electromagnetic effects must' be especially important in meteoroid impacts. Dachille has described electromagnetic fields produced by impacts of high-velocity explosives in military tests, and has projected the Em fields to meteoroid masses of 10^{12}, $l0^{16}$, 10^{20} grams at 40 km/sec. "Magnetic fields more intense than those of the most powerful electromagnets extant would be imposed upon matter many hundreds of kilometers from the point of impact."[18]

Once again, we must pose the dilemma that is to be a theme of our book: either the Earth must be so thoroughly tortured

electromagnetically that the search for magnetic maps to represent the Earth's magnetic fields is futile; or the Earth's surface was so lately magnetized, whether for the first or last time, that collisions and encounters and all other remagnetizing influences have not had time to deface it.

A generation ago, in the *Physical Review* for Aug. 15, 1948, Carl Bauer theorized that the asteroid belt contains remnants of the explosion of a planet less than 60 million years ago. He calculated the age from the quantity of helium in examined meteorites, assuming its origin from radioactive decay of uranium and thorium. Ovenden also later on retrojected an exploding planet as the ancestor of asteroids. Von Flandern added comets to meteoroids: "Comets originated in a breakup event in the inner solar system about 5×10^6 years ago. In all probability it was the event which gave rise to the asteroid belt and which produced most of the meteors visible today."[19]

In the course of his study, he alludes to "the lack of any definite finds of 'fossil' meteorites or meteorite craters," citing Cassidy; moreover, he reports that "Stair mentions that neither tektites nor other meteorites have been found in any of the ancient geologic formations, which also suggests that most surviving meteorites are relatively quite young, in contradiction to their estimates by the usual dating methods... The need for a revision of the standard dating methods is certainly suggested by these new results."

An astrobleme, large or small, disappears quickly under conditions of rain, tides, current, wind, fall-out, seismism, volcanism, biosphere invasion, and recurrent disasters governing its location. Still, what, if not astroblemes, are the multitudinous faint circles that John Saul has located on published maps, publicly available?

> The Earth's surface exhibits faint circular patterns which have not been described before. These circles are characterized by near perfection of outline. by the presence of topographic highs (rims) along parts of their circumferences, by their generally large scale (diameters of from under 7 km up to approximately 700 km in the areas examined), and by their definition in various

> geological environments, in many rock types, and in rocks of all ages. Many of the circles are intermittent in places along their rims but about 55% of the approximately 1,170 definite circles observed to date can be visually traced around an entire 360° of arc. The circles are further characterized by the presence of fracturing and brecciation along parts of their rims and by the extraordinary control they place on regional geology in general and on ore mineralization in particular [20].

Saul has only begun such surveying, and has found circles in the Western United States, northernmost Mexico, the Appalachians, Alaska, the Yukon, Madagascar, and Corsica. The circles occur more frequently in mountains rather than plains, indicating that mountains may often have been formed by such upheavals and that the scars are too deeply buried by overdrift to be observable straightaway on the plains.

Perhaps, he says, these circles are more shadows of astroblemes than the original craters themselves; they would be like old scars on human skin, which often are distorted and shift away from the original wound. Kellaway and Durrance, it turns out, had some time earlier discovered such circles too, and called them cycloliths [21]. They called attention to cycloliths in Great Britain and Mauritania (the Richat structure), and stress that they can be responsible for river development and drainage patterns. Rivers would channel along the rims, giving them a negative enhancement, and would make gulleys in the fractures associated with the cratering.

The cycloliths are granted great ages mainly because of their faintness. Yet their existence contradicts the interpretation of the rocks below them; if two intersecting or adjoining circles of similar states of preservation overlay rock exposures, say, a hundred million years apart, then, either the rocks or the circles are of the same age, and the rocks give no indication of the age of the cycloliths; worse yet would be the finding that the circles straddle rocks "older" than themselves. This is all matter for investigation.

Yet if time were short, could the Earth have suffered so many blows? In any event, large cycloliths must number in the scores

of thousands, unless the Earth, like the Moon, has a preferred side for suffering bombardment. Small cycloliths must then approach the millions. Nor are we speaking of fossil craters, contained in stratified sediments, none of which appear to have yet been discerned. It is one thing to say, as do the writers above, that the bombardment occurred upon a newly formed Earth crust, as on the Moon, four billion years ago, for then all the time given is free to give. But could they have been made by impacts in a recent period of, say, six thousand years? Then if two million landings ensued, they would average several hundred a year, like one clean hydrogen bomb per million square kilometers. Deluges of water might settle much of the dust. Still the prospect is awesome. Soft landings, ice falls, cosmic lightning blast--these might cause the Earth less agony. It is too soon to say.

Velikovsky, in *Worlds in Collision,* did not treat of collisions, strictly speaking, between Earth and its principal antagonists in space, Venus and Mars. The bodies approached one another at times between about 1450 and 687 B.C.; they exchanged electrical charges; dusts, stones, and gases fell upon Earth. Earth passed through the tail of Venus, which was behaving as a comet. The earth paused in its rotation on encounter. Here Carl Sagan in criticizing Velikovsky had to agree; the biosphere would not go swirling off the globe into space by centrifugal force, as others had argued. Actually the danger of explosions into space would rather come from electro-gravitational interactions [22].

A portion of such a cometary Venus or of its tail probably did, however, crash into the terrestrial globe. This was called Typhon by many writers and in legends. Typhon was both the name of a conquering king of Egypt, following the disasters that brought the Middle Kingdom to an end, and the name of a monster who threatened the world at the same time. We can let Donnelly tell the story [23]; he does it well:

> Born of Night a monster appears, a serpent, huge, terrible, speckled, flesh-devouring. With her is another comet, Typhon; they beget the Chimaera, that breathes resistless fire, fierce, huge, swift. And Typhon, associated with both these, is the most dreadful monster of all, born of Hell and

> sensual sin, a serpent, a fierce dragon, many-headed, with dusky tongues and fire gleaming; sending forth dreadful and appalling noises, while mountains and fields rock with earthquakes; chaos has come; the earth, the sea boils; there is unceasing tumult and contention, and in the midst the monster, wounded and broken up, *falls upon the earth;* the earth groans under his weight, and there he blazes and burns for a time in the mountain fastnesses and desert places, melting the earth with boundless vapor and glaring fire.
>
> We will find legend after legend about this Typhon; he runs through the mythologies of different nations. And as to his size and his terrible power, they all agree. He was no earth-creature. He moved in the air; he reached the skies...
>
> According to Pindar the head of Typhon reached to the stars, his eyes darted fire, his hands extended from the East to the West, terrible serpents were twined about the middle of his body, and one hundred snakes took the place of fingers on his hands. Between him and the gods there was a dreadful war. Jupiter finally killed him with a flash of lightning, and buried him under Mount Etna.
>
> And there, smoking and burning, his great throes and writhings, we are told, still shake the earth, and threaten mankind:
>
> > "And with pale lips men say,
> > To-morrow, perchance to-day
> > Encelidas may arise!"

Typhon, also spelled Typhaeon, is evidently another version of Phaeton (and probably of Python who was a monster killed by Apollo). The Phaeton myth, most famous 'of all, is treated by Plato self-consciously as a myth in form but standing for true natural history. Phaeton is reluctantly lent the chariot of his father the Sun for a day. He cannot control its powerful steeds and burns sky and Earth in his wild plungings. Finally he is felled by a Jovian thunderbolt, cast dead into the river Eridanus,

and the nearly destroyed Earth recovers. The sad and angry Sun emerges once more.

Parallel legends are found in other cultures; the best resume occurs again in Donnelly's *Ragnarok*. The paramount student of ancient astronomy of his day, F.X. Kugler, dissected the myth of Phaeton to assess its validity and concluded that a comet struck the Earth in the north Aegean region in the second millennium B.C. The event is probable. If it is tied into all the other evidence, in legend, history, and geology, of the same time, the event becomes more probable--and of more dire consequences. It is best if we avoid repetitious listing of disastrous effects; suffice to say that every criterion of a major exoterrestrial impact is satisfied, except the location of the point of impact.

Still the story is not to be ended neatly. At one and the same time, so it appears, a great body passed close by the earth (call it proto-Venus) and a large body collided with Earth. The disasters afflicting the world in those days were effects of both events. Until the crater or aerial explosion point of flaming yellow-haired Phaeton can be found and its size and traits used to evaluate the occurrence, the effects of the principal body's pass-by cannot be calculated. Inasmuch as the effects have been extensive and continuing, not only geophysically but socially, the research seems worthwhile.

Because it is our favored theory that the Moon erupted from the Earth, we give less attention to the idea that we discarded some years ago, namely that the Pacific Basin originated in a meteoroidal impact. We do ascribe many impacts prior to the episode, based upon legendary indications (see *Chaos and Creation)* and contributing to the loosening of the crust. It is noteworthy that E.R. Harrison "proposed that the Pacific Basin was the seat of an immense explosion in the primitive Earth" and suggested a planetesimal of about 100 km radius [24]. The rim of the Pacific has a number of characteristics of an astrobleme rim, on a gigantic scale.

Our preference for the lunar fission is based upon evidence elsewhere in this work, and in the Quantavolution Series; it has to do mainly with the nature and behavior of the Moon, with legendary evidence, with the recency of the event as attested to

by today's oceanography, and by the electrical effects of a two-body pass-by that would execute more efficiently, even while dampening, the effects evidenced in the Pacific Basin and throughout the global cleavage and rifting system.

By now the reader may be wondering how the Moon and more could have been erupted in one set of events, how so much of what we see on the surface could have dropped from above, and how thousands of craters, many quite large, could be dug into the Earth, all within a period of time which, it is increasingly apparent. I believe to have occupied only ten to twelve thousand years, in the Holocene period, no less. Are there not too many disasters to let the biosphere survive? Further, how do these relate in time? Finally, does the author accept all of the suspected astroblemes of the world without question?

To the last question, the author has to apologize for a general ignorance. The Bermuda astrobleme may be an illusion, for example. The thousands of faint circles or cycloliths may be how the Earth swells and expands. As to how the growing inventory of astroblemes may be placed in time, the author refers to a hypothetical calendar, carried here below and in *Chaos and Creation.* The ladder of associations between time and events will be better and better constructed as the calendar is investigated. To the first question, on the inconceivably large scope of the disastrous falls and their bisopheric effects, the author again pleads the general ignorance. On one issue, he feels confident, namely, that a small meteoroid such as the Alvarez team has sought and believed sufficient to destroy the dinosaurs and much else around the world--a meteoroid of a few kilometers diameter--would barely interrupt the reproduction cycle of the species; but it did not occur alone.

Certainly I did not begin my studies with so prodigious an armory of missiles in mind. It happened that more and more effects called for causes. It happened, too, that more and more literature has been becoming available that indicates exoterrestrial intervention in earthly processes. Meanwhile, I increasingly strapped myself into a short-time harness, which is explained astrophysically in *Solaria Binaria,* anthropologically in *Chaos and Creation* and *Homo Schizo I,* and to some extent in the chapters gone by here and in those to come.

My model demands a short-time for many exoterrestrial transactions to occur. If either the amount of time or the number of encounters is to be substantially changed, my model will crack up, and the value of my work must then rest on its assembly and description of exoterrestrial effects in the different areas of geology, astrophysics and anthropology. An exception would occur if it will be shown, as we have said in *Solaria Binaria*, that the formative period of the Earth, under a million years ago, brought down showers of material whose marks are faintly observable everywhere still. However, I am in no sense foreseeing a crack-up and ask the indulgent reader to continue to ride along with the model.

Notes (Chapter Eleven: Encounters and Collisions)

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17."Deep Crust Hints at Meteoritic Impact," 121 *Sci. New* (1982), 96.

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21.*Supra*, 75, ltr Geoffrey A. Kellaway and Eric M. Durrance with Saul reply 273 *Nature* (4 May 1978), 75.

22.Asimov *et al*., loc cit. and S. Kogan, *op. cit.*

23.*Op. cit.*, 140.

24. 188 *Nature* (24 Dec. 1960), 1064-7.

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