PART SEVEN

DIMENSIONS OF QUANTAVOLUTION

High-energy expressions of nature number a round score. Each has its pertinent sphere, in a way, as hurricane to the atmosphere, thrusting to the lithosphere, and pandemonium to the biosphere; but all high energy events are effectively polyspheric, as a hurricane mows down forests, sends tidal waves over the land, flushes the air, and erases or builds mounds.

When a high-energy event achieves quantavolutionary proportions - that is, is of high intensity, broad scope, and suddenness - it is invariably holospheric. Certainly this fact has made difficult the organization of materials for this book; it is not unusual for all spheres to be highly associated in the event. An examination of the Index will reveal how often a given force expresses itself aside from the events of the chapter in which it figures most prominently.

Overhanging all is the exoterrestrial event, the theme that pervades this book and lends it unity. It is the cosmic power that supplies the Earth with its quantavolutions. Left to itself - an absurdity - the Earth would pursue an evolutionary and uniformitarian path through the ages. But Earth has not been left to itself, nor is it likely to be.

CHAPTER THIRTY

INTENSITY, SCOPE AND SUDDENNESS

The eye of the poet, quotes Ager from Shakespeare, "in a fine frenzy rolling, doth glance from heaven to earth, from earth to heaven." "So," says Ager, "ultimately must the eye of the geologist, in seeking the nature of the control. One always seems to come back to climate as the primary explanation of the sort of phenomena I have been discussing, but for the ultimate control, sooner or later, we must face the possibility of an extra-terrestrial cause..."[1]

Meanwhile, the Soviet geochemist, Y.P. Trusov, is writing that "the fundamental motive cause of geochemical processes is the contradiction between internal - physico-chemical - and external - macroplanetary, nuclear, and cosmic - factors active in the earth's crust."[2]

We shall see more and more of such intimations of the Earth's exoterrestrial transactions, until the earth sciences will undergo their own theoretical quantavolution. In this process, poorly equipped though we may be to move between geology and history, we shall have to reconcile the two modes of thought and bodies of fact. There ought to be no logical conflict between natural laws and historical events. Either historical occurrences - counting ancient voices, too, as historical events - will contribute to the affirmation or display of natural laws, or they are false or falsely interpreted. Either natural laws conform to validated historical behavior or the "laws" are not laws and require limitation or correction.

To pin down a quantavolution, even a single one, is like wrestling, "no-holds-barred." One grabs at any possible fact, at any method, hoping to take advantage of it. Tactics that scholars ordinarily spurn are demanded. If the geologist wants to know whether the Earth has long rotated at its speed of today, he

asks the astronomer. If the astronomer is conventional, he replies "Of course." If the astronomer is a true empiricist and even a sceptic, he says "We don't know," and asks the paleontologists, the geophysicists, the ancient historian, and the mythologist for help.

M.G. Reade, a confectionary engineer, navigator, and scholar, addressed himself to the evidence of the *Panchasiddhantika*, documents of ancient India. There, at a time suspected of being around the eighth and seventh centuries B.C., he found evidence of "aberrational," slower rotations for the Earth from data given for five planets then known, amounting to a 360-day year. The same Hindu figures suggest "that the whole solar system may have been slightly more compressed than it is at the present day, the Earth and all the planets being rather closer to the Sun than they are at present."[3] This, with other pieces of evidence from wherever they occur, in a dozen fields of study, becomes valuable, once belief in the constancy of the historical skies is held in abeyance. The struggle to know becomes, as was said, "wrestling, no-holds-barred."

It may be argued that the most ancient cosmogonies of the world hold a consensus that amounts to a model of recent natural history. Perhaps scholars would agree that the following thirteen complex experiences are recited in or can be derived from the earliest sources and from the oral accounts provided by existing belief systems that pretend to refer back to the "beginnings." I imply in each case that proofs of fair reliability are accessible to expert ethnologists, linguists, and mythologists from among the many collections now available from all parts of the world.

1. Earliest man could make out no sharply visible lines between far sky, air and earth; they merged.

2. Earliest man asserted that the atmosphere cleared somewhat amidst a chaos, and that, here and there, the ceiling of clouds broke.

3. He claimed to see a great body appear in the "North" that was not the Sun, was more vigorous than the Sun, and remained in the sky for many centuries.

4. He observed the dense planets (Mercury, Venus, Mars, and others) to be present and close in, while the gaseous planets were part of, or grouped close to, the binary second sun.

5. He determined that the planets moved with some regularity, with occasional changes of motion and place, in a heavily gaseous space, but the gases were diminishing.

6. He viewed a series of explosive 'battles,' during which Earth suffered heavily, and whose outcomes provided a succession of gods of the same family.

7. Archaeo-history says that the last active binary principal second sun was Jupiter (by many names), the others having retired into farther space as indifferent gods (becoming the *deus otiosus* of theology).

8. They assert that planets passed close to the Earth and that comets and debris both passed by and struck the Earth.

9. Early legends reported that the whole Earth was deluged with waters, fires, and other material fall-outs from the skies on at least several occasions.

10. Earliest man says, too, that the Earth exploded a great deal of material into the sky, including possibly the Moon, which, in any event, he claims to be a late arrival.

11. He claims that the Earth changed its motions repeatedly and that its surface morphology was drastically modified.

12. Primeval humans refer to electric discharges of the type of St. Elmo's fire and thunderbolts as much more frequent, even continuous at times, and often of much greater intensity than at present.

13. Finally, early humans thought that they had observed their own "creation"; that is, immediately upon being humanized, they felt capable of observing their distinctive

> internal psychic processes and their external relations with others and with nature.

Modern explanations of this primeval cosmogonic consensus, should it be agreed to exist, are various. Perhaps it developed from a single diversifying human race that might be said to have taken off at the time of the Ice Ages, the early Holocene Epoch, or some such baseline. Or perhaps it developed when numerous sub-cultures, already diversified among early mankind, witnessed events independently. Or it may have diffused later on from a single powerful political-religious movement with a highly persuasive ideology.

In assembling this cosmogony, it may be appropriate to make no distinction between gods and nature, taking it for granted that when an ancient legendary voice says 'god' it means a discrete and powerful natural force or body which may ('the known god') or may not ('a new god') be behaving in a characteristic (i.e. predictable) manner.

These thirteen event-complexes of primeval natural history constitute, I think, a consistent, if presently non-authoritative, model of natural history, one which I have adapted to contemporary science in several books. Their numerous anonymous discoverers were fully human observers who imputed the phenomena to animated beings (gods) for compelling reasons, especially in an attempt to control them, so as to assuage terror and get on with the business of survival under most unfavorable conditions.

To put the hypothesis absolutely: nowhere on Earth is a people to be found whose legends contradict this total set of claimed experiences. No ancient people asserted a linear or uniformitarian history. Then the questions arise: could all this have been a universal set of illusions affecting all people? Was a universal genetic archetype of the human mind bound to erect this cosmogony? Was it a consensus of observers?

Scientists are not dealing here with 'anomalies,' but with a universal set of consistent allusions. The detail is so extensive as to rebuff facile explanations; one ought not merely to conjecture 'archetypes,' or 'grand delusions.' 'Euhemerism' may provide the

answer; it interprets myths as traditional accounts of historical personages and natural events. But euhemerism should not prejudge the case in favor of uniformitarianism by retrojecting current history.

Anthropologists finally established as research doctrine that primitive cultures are to be taken seriously; the statements of informants are to be examined, not ridiculed. And the examination can be conducted and completed without conversion of the anthropologist to the views of the informants. *Pari passu,* the most ancient "fossil voices" are to be audited seriously, even sympathetically. In this case, the voices would have to be translated into a model that would begin to make sense to modern physics and psychology.

The results would be foreseeable. Considering the intellectual revolution that would follow, the ancient cosmogonical consensus would be rejected by most scholars in short order. For the following principles of physics and natural history would be among the most likely to be inferred from the ancient empirical beliefs:

A. All planets and satellites would have to exhibit evidence of very recent extreme thermal and explosive experiences.

B. The solar system bodies would have to show a declining but considerable set of electric fields and electromagnetism, and solar system space would be in the process of clearing up its ionized gases and plasmas.

C. Remanent binary behavior would have to be evidenced by Jupiter or by the outer planets as a group.

D. Continental "drift" theory would need to permit a negatively exponential rate of movement from a very late breakup of the Pangean crust, and a socket from which the lunar material was wrenched must be shown on Earth.

E. Astronomical motions would have to be reckoned as short-term, empirically observed behavior until a new mathematical model could be developed.

F. The biosphere, lithosphere, atmosphere and hydrosphere must be capable of interpretation according to which major elements and features were quantavoluted or saltated, and present constituents and behavior are comprehended as "tailing-off" phenomena.

G. The human brain (behavior) would have to be compatible with convulsive original experiences that set it upon its present course, hologenetically, in a quantavolution.

H. Human culture would have been hologenetic, too, arising abruptly as a total response to the requirements of a quantavoluted mind.

I. Explicitly, as implied in all of the above, a basic error in radiochronometry must be demonstrated, and long-term geology heavily revised to admit numerous occasions of late, large-scale quantavolutionary phenomena.

If some such model is physically impossible, then we should have to discover and explain some other structural-functional mental dynamic, universal among human groups, that made necessary its elaboration as science-fiction.

If the early scientific catastrophists had gone on with their work, we would have learned enough by now to make what I have just stated an epilogue rather than a prologue. "If the catastrophists had gone on..." The German methodologist and sociologist, Max Weber, once wrote at some length about the scientific justification of "if... then..." historiography. "If Lincoln had not been assassinated, then the U.S.A. would have become more unified during the Reconstruction period:" may such a thesis be posed and dealt with scientifically? The answer Weber gives is "yes." So some legitimacy (the "legitimacy of scientific authority" Weber would have said) is owing us for proposing this line of thought for some future historian of science. The theses just presented and those yet to come are then monuments to a science that might have been and a budget of a future science.

Popular geology believes that the Earth is stable and quiet, and that where it is not so, the explanation has to do with a hot

turbulent mantle that continually causes surface disturbances. Geologists were responsible for this belief and mostly share it. What can be labeled as the conventional geological position is summarized by Shelton [4]:

> Most geologists look inside the earth for the ultimate driving force of diastrophism; no known exterior forces are sufficiently versatile to account for the variety of deformation we see... It would seem that plastic creep, perhaps in the upper part of the mantle, is the active element, and the brittle crust on which we live is passively riding on this very slow flow. Of course, discernible forces arise from the rotation of the earth, from the tides, and from gravity acting differentially on irregularities in the crust and its surface topography, but these influences probably can do no more than modify and locally complicate what is probably the essential mechanism of crustal deformation - very slow plastic movements at about the level of the upper mantle.

Shelton goes on the show why "this concept is attractive," why the presumed "plastic creep" has most of the essential capabilities needed to mold the Earth's surface over great lengths of time. "The combination of gravity with variations in the density of the material" operates so that "circulation in the deep plastic zone probably involves rising and sinking columns as well as horizontal currents... Some kind of very slow thermal convection - the rise of relatively warm columns and sinking of relatively cool ones - is a favored hypothesis for the ultimate cause of diastrophism." This is about as far as the theory of 'land-based geology' has come.

In contrast, we have been offering a space-based geology. Here the "ultimate cause" is exoterrestrial. Quantavolutions - intense and abrupt events of large scope - occur. Without exception these involve exoterrestrial transactions. No intrinsic Earth-force can produce quantavolutions. These events can be given values and measure; they can be comprehended and subjected to at least as much quantitative modeling and manipulation as is afforded by 'land-based geology.' Unlike evolutionary theory, which deals in bulk low-energy transactions, quantavolution pursues bulk high-energy transactions.

The forms that high energy takes have been discussed heretofore, and will shortly be summarized. In a score of guises, all will have ultimately originated by space transactions of particles and masses. The space transactors are galaxy, planets, Sun, Moon, comets, meteoroids, plasmas, electric charges, and so on, sometimes taken as independent, sometimes dependent, variables.

From the standpoint of the Earth, an expression of high energy denotes an exoterrestrial force when it achieves a specifiable level of intensity, scope, and abruptness. Invariably, it operates to include other forces and to develop, with them, countervalency, as well as extended effects. Here we shall give hypothetical examples of what would be *prima facie* demonstrations of the operation of quantavoluting high energy expressions originating exoterrestrially. Together with the materials assembled earlier in their respective chapters, the examples run the gauntlet of 'land-based' alternatives; the thesis is that they cannot have occurred without a direct or near relationship to an exoterrestrial event. The examples are hypothetical; they are conjectural approximations of what could at a later stage of the earth sciences assume a more qualified and varied quantitative formulation, of what could later on be historically located.

Supposing, in the first instance, we were seeking evidence of a "cosmic hurricane," that is, of a high-energy wind of ultimate unearthly origins. One will be entitled to claim exoterrestrialism with "the discovery of three heterogenous fossil agglomerations of the same age within an area of 1000 kilometers diameter from which sediments of the same age are patchy, missing, or abnormally continuous." And, we may add “provided that tempestites and other wind indications can be assembled for the area” since aquatic tides will invariably provide associated data, and in fact, by the principle of mutuality of high energy transactions, no effect is single. The proposed discovery is of unknown difficulty; it has not been attempted; it may be simple or practically impossible. Yet how else can we search for "fossil winds."

And this could denote cosmic cyclones as well, the uplift of immense agglomerations of material and their erratic deposition.

Of many thousands of geological and atmospheric studies, is there one on the cosmic fossil cyclone? None, though we have mentioned the evidence of single fossil tornadoes. Yet we know the effects and conditions of cyclones, how they occur in multiples, of their transporting power, of their relation to volcanism and explosions, and of other characteristics that make them invariably part of a catastrophic scenario. In *Solaria Binaria,* Milton and I posit thousands of downbursting cyclones as the most logical means for a deluge to bring huge sky waters down to Earth, shaping itself thus with the help of the also inevitable electric discharges.

Let us posit another example, trying to isolate fossil electrical discharges, while granting their presence in every high-energy expression. We would seek "Metamorphosed rock on one-fourth the prominences of a 100 km diameter mountain range, which is not otherwise metamorphosized." Or we might seek "non-assembled heavy biotic dissemination in contemporaneous sediments taking the form of fusain and calcination and extending over an area of 500 km diameter." This latter may be from a conflagration as well.

The detection of thermal change goes beyond electrolysis and conflagration into non-calcinating fluctuations, and of these is climatology composed in part. The correlation of climate with exoterrestrial phenomena is proceeding apace. When we offer as a suggested criterion, "Cold and warm weather fossil species occupy contiguous strata or are mixed in the same deposits," we are probably opening up many strata of natural history to quantavolutionary exoterrestrialism. Unless it can be shown that the changes are gradual, the exoterrestrial presumption is justified.

The search for fire effects is broader because it admits the provenance of ashes: "Simultaneous fires devastating 3+ areas of 1000 km^2, each of which is 1000+km distant from the others." Without such evidence, the world can scarcely be said to have burned up, even in significant part, as the fossil voices insist. Paleochemical analysis, a field in its infancy, may be the appropriate technique; still, the very material to sample may have been blown or washed away, and there is the high energy of volcanism, to which are generally ascribed the ashes that

cover many parts of the world. Somehow, we must go beyond the ancients, who united, in the concept of fire, spontaneous and celestial conflagration, volcanism, and electricity.

Especially for volcanism, there would occur evidence of "Plinian outbursts simultaneously of 20+ volcanoes anywhere on earth." This figure is modest; yet it would indicate exoterrestrialism; few volcanologists would deny the repeated occurrence of such phenomena and some might dwell upon much grander episodes.

Earlier we have sought evidence of fall-out. The archives of anomalistics, as R.W. Wescott has employed the word [5], and which William James referred to as "the unclassified residuum," are replete with minor cataclysms, many of them traceable back to an origin on Earth, others patently exoterrestrial, and some of questionable origins. One might here venture in search of "Cataclysms of water, minerals, fluids, gases, biotica, and dust 100+ times greater than norms of the twentieth century, happening in a period of less than a year, and often continuing for many years."

And perhaps one should seek "Poisonous chemicals in similar strata at 4+ points at least 300 km from each other." But the mention of poisons could send one in search of "Six or more fossil conglomerates of similar sediments anywhere in the world exhibiting 2+ times the normal background radiation of modern age bones."

As for deluges of water and other space debris, one would raise the factorial on some of the above fall-out, and explore "A type of non-fossiliferous deep sedimentation discoverable over an area of 100 km diameter." Some creationist scholars, using the flood of Noah as a unique all-encompassing event, and pushing the principle of the mutuality of high-energy transactions to its limits, have managed to interpret all diastrophism and catastrophic morphology as effects of flood and tide.

Proving precisely a deluge, as distinct from, even although associated with, floods and tides, is a difficult problem for geophysics. The evidence is of a kind elaborated earlier in this book - the search for the sources of oceanic water, chemistry of seawater, and so on. Still it may be possible to discover a true

exoterrestrial deluvial sediment by, if nothing else, the exclusion of all other explanations from related features.

Sometimes fossil lake and sea basins are detected and, rarely, a sudden displacement of waters from the bed is the subject of comment. The "outrageous hypothesis" of Bretz governing the sudden emptying of now extinct lakes in a barrier-bursting flood of northwestern U.S.A. - the Channeled Scablands - is a case in point. Where one lake is emptied, exoterrestrialism is doubtful. If "2+ bodies of 100 km^3 of water were abruptly displaced at the same time," exoterrestrialism would be indicated, possibly an axial tilt, or secondary events following the exoterrestrial event, such as a massive thrusting, a deluging and bursting of barriers, an ice surge and melt, a tidal damming and bursting, and a 9+ Richter seismism.

Fossil tides are also difficult to distinguish. One may propose "Tidal waves attaining 100+ meters in amplitude at 10+ land points not less than 400 kilometers apart. This might achieve a satisfactory level of confidence in an associated exoterrestrial event. For cosmic flooding, one would repeat the deluge hypothesis, where uniformly fossil-bearing strata are included.

We appreciate, however, that flooding of this kind may originate in the sinking of land followed by its rising or by the melting of an ice cap, flooding, and then either withdrawals of water for new ice or a rising of the land. Explanations of this kind are common, and usually omit any causal explanation beyond its mere statement, *viz*. "Here we find a marine-fossil stratum of age 'A' probably due to the ending of ice age 'III.'"

It is doubtful that the Earth can contract globally, if only because an exoterrestrial electrical discharge that might compact it would be associated with a thermal force that would expand it. That the margins of the continents can be flooded is probable; the ice caps contain enough potential water for the purpose; and that ice accumulations have melted in times past is fairly obvious. However, it is also now fairly plain that, for ice masses either to accumulate or melt requires a quantavolutionary exoterrestrial transaction.

At the same time, for the land to rise, carrying the biotica of

shallow seas with it, also requires an exoterrestrial transaction. Here the criterion may be "An absolute rise of 300+ meters over an area of 100+km diameter." Actually this may occur at the seabottom as well as on continental land. To identify an absolute local, much less a worldwide, expansion is again difficult. It may be that the universal lava venting, circular bubbles, high plateaus, and broken crystal grid of the Earth reveal global expansion.

Convection current theory, unfortunately vulnerable, can seek a merely terrestrial explanation of these phenomena. But if it tries to engage its currents to shape the Earth's surface as just described, as well as to push the continents around, it will logically have to posit a very young and turbulent Earth, which it will refuse to do. Or a large Earth expansion, which it refuses to do. Or an Atlantean concept of great sunken continental areas, which it would hotly reject and furthermore do not exist.

Land might be removed by explosion into space, with some fall-back. It can also accrete, meaning that a mechanism such as a cosmic wind or typhoon has incited local "minor" turbulence. Suppose "A heterogeneous conglomerate of 100+km^3 filling a basin or composing all or part of an elevated range." Must this accretion be exoterrestrially caused? Probably indirectly by induced winds, tides, and bulldozing.

Bulldozing with a rock, or ice, or aquatic shovel can accrete (filling basins and forming hills); it can produce thrusting, and it can remove land features. Thus if "Five or more blocks composed of similar rocks, of 30+km^3 each are separated by 100+km from each other and are 10+km from kindred strata," we can speak of thrusting by bulldozing provoked by exoterrestrial transactions. The figures used may, in fact, be much reduced. Thus, also, if "Two or more consecutive eras of sedimentary rock are missing over a region of 200 km diameter," the removal will have been accomplished, if not by bulldozing, then by hurricane or tides on a cosmic level of intensity.

The relation of cosmic pressure (electro-mechanical) to expansion and thrust may be explored by the detection of "Expanses of 10,000 km^2 with frequent granitic and metamorphic outcroppings designating a prior period of heavier

overhang rocks and a thrust or blast removal of the overhang." The argument here would follow along the lines of argument against "plastic creep" in general.

When speaking of thrusting, the original event will have been a large-body collision or encounter near-in with a great body - Sun sized or greater to the eye, yet seemingly far removed. Inertia comes into play in the atmosphere and lithosphere. "A ten-second deceleration of the Earth on a single day" will produce many local thrusts, expansions, and probably every other high-energy manifestation. Even at this seemingly modest deceleration, one would be able to find later on extensive macro- and microfracturing of the lithosphere. Raise this deceleration to hours and the surface of the Earth would be extensively altered.

As evidence, what would be demonstrable is probably already present and awaiting discovery, that is "Areas of 500 km: exhibiting fractures of 85% of all included grids of 15 kilometer diameters in one or more strata." Perhaps here one should expect tortured seabottoms and igneous flows that would have been nonexistent or molten during the events. Axial tilting would also be denoted by patterns of inertial change probably by now totally confused in the morphology and petrology of the Earth, except as we have pointed out in earlier sections of this book, where axial tilt can be detected on gross features of the global map.

The most obvious form of exoterrestrial transaction is the meteoroid explosion, which is provable on its face, of course. That a great many of such intrusions are not yet discovered has also been shown. That the Earth should have fewer craters than the Moon only occurs by reason of their quick erasure here. As detecting techniques improve we should be able to speculate reasonably, in the manner used for fracturing above, that meteoroid impact craters arc present over all of the globe save where erased by other quantavolutionary processes.

Several biosphere phenomena may be hypothesized as indicative of exoterrestrialism in quantavolutions. The pandemonium accompanying quantavolutions is not likely to have left a geophysical record. "World-wide sound at 100+decibels, approaching human physical limits" can be considered, given,

for instance, the thousands of square kilometers of high audibility of the Krakatoa volcanic explosion; still such effects would not fracture rock nor (probably) affect the hearing of species genetically.

Other acoustical effects might, however, be mutating, and even chemically effective on the molecular level of the atmosphere and lithosphere. Legends do describe great sounds that suggest exoterrestrialism: we have alluded to them. So too, have we mentioned spectres as often the greatest contribution of ancient voices to the proof of exoterrestrial events affecting earth; thus we would allow as evidence of an exoterrestrial transaction "Reports of an observed cosmic intrusion of an apparition the size of the Moon when at meridian, or larger." We would expect such a spectre to be associated with at least several other high-energy effects mentioned above.

A final trio of expressions may be advanced. We should be alerted to magnetic effects. These may be indicators of axial tilting. But when localized, they can point to meteoroid explosions and peripheral and subsurface melts, where post-event magnetization differs from magnetic orientation, as displayed in the circummagnetic field of central Canada, having south Hudson Bay as its focus. "Inconsistent and strongly deviating rock magnetism over 5º grids of latitude-longitude" proves quantavolution.

In biospherics, "Biosphere extermination over 100 km^2 in 1 incident of under l-day duration" would be proof of exoterrestrialism. So would "The extinction of 3+ species in less than 1 year," or "Depopulation by 70% of l+ species of 10 biological families in less than a year in an area of 1,000 km diameter." A number of phrasings may be formulated to denote physical catastrophe in biological terms as well as in terms of physical science.

At the same time, genesis may be used as an indicator of quantavolution. Thus. "The simultaneous appearance of 3+ new species" will suffice to indicate a catastrophic innovation. "Simultaneous" means genesis within a century, or the smallest frame visible in the fossil record. An "appearance" should not prompt an assumption of missing transitional ages.

Thus we have possibilities of operationally defining quantavolution as a happening of high intensity, everywhere, at the same time, and, as we shall shortly argue, quickly. In a great quantavolution, many things change at once, overlap, transact, follow in quick succession. A quantavolution of one kind, once initiated, has a prelude, a climax, a procession, a recession, a stabilization and finally a uniformity.

The concept of negative exponentialism holds that the initial quantity (intensity, number, frequency, amount. volume, locations, incidence, etc.) of a type of event decreases sharply with the passage of time, but ever less sharply as time is extended. Finally the rate is indistinguishably uniform, that is, the same, and the activity being observed is constant. One notes that this may be accomplished theoretically (i.e. imaginatively) or by the use of empirical data. In theory one can annihilate change by stretching time: increments of volcanism are spaced so far as to provide a negligible rate of change, or spaced so tightly as to provide catastrophic rates of change.

To denote negative exponentialism realistically (empirically) requires data on the beginning, the end, and at least one point of time in between. Thus, if 500 volcanos were active 11.500 years ago around Auvergne in France and 0 are active today, a decrease is undeniable (from 500 to 0 in 11500 y) but the decreasing might have occurred at any point and in a number of ways: all 500 might have stopped erupting last year, for all we know. At least one estimate of the number of active volcanos at some point of time between the two given ones is required to permit an elementary idea of the progression.

Let us suppose - which, alas, may be the fact - that all activity ceased before history began; further, that no evidence of relative youth is to be observed by geological examination; worse, that no radiometric test and not even Carbon 14 dating is capable of assigning relative dates. All we can say is that the first local references were 2000 years ago and no mention of volcanic activity is to be found. So the curve is flat for the past 2000 years.

What next? One can go searching for records of other volcanoes in other areas, the Mediterranean say, where history of a kind

goes back another 2000 years. There we would have to discover some evidence - whether on official tablets, in legend, or in archaeological excavations of extinct human activity laid upon or beneath lava or ashes - that an ascertainable level of volcanism was occurring, whereupon the indicators of this would be presumed to indicate what was happening in the Auvergne. But this logic, of course, violates the ordinary supposition of most volcanologists, that volcanism in one area does not suppose or call up volcanism elsewhere, a supposition true in these days, it would seem, but not necessarily true if volcanism were more rampant.

One may resort to widespread ash layers as well. If layers are thick and far-flung, it may be reasonable to suppose the Auvergne would be afflicted by the same activity as is producing the ashes generally, and, with ever better chemical analysis, the ashes may even be traced to the neighborhood of the volcanoes in question.

Still, as the chapter on volcanism reflects, at the moment historical volcanology has to put together bits of evidence from widely separated localities in order to supply what is largely a conjectural statistical foundation to the generalization that at certain historical points in time volcanism leaped to peaks, subsided quickly, and then evened out, thus lending the appearance of a uniform activity but, if one wishes to assume our position, also letting us guess that volcanism is delineating negatively the exponential principle. .

For each and every type of expression of force involved in a catastrophe, there would exist a statistical curve delineating its individual intensity over time. Each expression would possess its peculiar rate of decline from its initial peak - its own "disturbance constant" - giving us various exponential or hyperbolic functions. Then, for instance, as more and more data illuminated the dispute over the late Cretaceous extinctions, curves might be drawn to depict the fate of biosphere segments and of inorganic expressions of the catastrophe, answering ultimately the questions: "How intense, what scope, how sudden?" for portions of each sphere, the several spheres, and the holosphere of Earth.

If peak catastrophic and holospheric turbulence has occurred, say, at five points of time in the holocene, there will be a new negative exponential curve to assign to the effects of each set of events. If these curves are merged, one gets a kind of roller-coaster curve, rising and falling in conformity with each set of events, while at the same time maintaining a momentum of generally falling activity until, at the end, like when the roller-coaster ride is ending, the past two thousand years become practically a smooth glide.

Such is the negative exponential curve of quantavolution, taken as a whole or in its subsets. For these phases in any high energy expression are subject to the successive sets of phases of the quantavolution of other kinds, subsequently, yet concurrently, initiated. These may accumulate intensity at any phase, or countervail, that is, diminish intensity.

The whole Earth is acting out the several stages for numerous forces at any given moment in time, and the state of the Earth may as a whole be deemed uniformitarian or disastrous as it is working its way through a low cumulative effect of the forces or a high cumulative effect.

The low effect - the world as it is today is mostly a descendant effect from original high effects. This we have considered as the principle of exponentialism, which results, in the end, as an almost uniform rate, with exceptional cases of high activity. In an article on "Landform Evolution" (geomorphology), interesting in its vagaries and confusion, the *Encyclopedia Britannica* cites many catastrophic conceptions, ascribes erroneously the beginnings of scientific catastrophism to Bishop Usher's Biblical literalism, and summarizes uniformitarianism today as holding, "Although present processes are similar in kind, process rates must have been variable." But it is doubtful that any scientific catastrophist ever believed that processes were dissimilar. It has always been an argument over rates.

It is also of interest, and insufficiently addressed by the many commentators who recognized that C. Darwin took from Malthus the idea behind his theory of the origin of species by means of natural selection, that he did not see the larger consequence of Malthus' idea of exponentialism. This latter idea

expressed in the belief that while population rises geometrically, the means for its subsistence increases arithmetically - points to catastrophism but inversely, that is, negatively, implying that the catastrophe is a sudden leap and then an exponential decline from the leap in the direction of increasing gradualism. Ignore the leap and the character of exponential decline, as Darwin did, and natural history is stripped of its salient behavior. What appealed to Darwin and those of like mind, such as Spencer, was the competitive struggle as the means of subsistence grew scarce in relation to population; and the notion, of course, that "fitness" is an objective concept, in nature as in society.

There exists little speculative or empirical literature on the abruptness of catastrophe. Catastrophe by definition connotes an abrupt disintegration of an existing course of natural behavior. How is "abrupt" to be conceived? Suddenly, quickly - but is this seconds or millennia, or something in between? Should we say that, to have a quantavolution, an event or set of them has to occur in less than a million years? This would please some conventional geologists who have given themselves some five thousands of such units to reckon with. Five catastrophes distributed over the period would consume only one-thousandth of the time allowed.

But what kind of catastrophe is it that would take a million years to happen? Suppose some poison slowly entered the atmosphere or suppose the Sun for a million years was hyperactive, and radiated the biosphere beyond the sufferance of many species. Even conventional scientific gradualism would find the postulation of such slow "catastrophic" processes implausible.

Natura facit magnum saltum: that nature, when she leaps, leaps high, is a more believable axiom. This is no place to argue, as we do in another book, *Solaria Binaria*, for a million year history of the solar system. But if we were to cast dice, giving each possible source of catastrophe, whether slow or fast, an equal chance, we should very probably cast forth one of the fast catastrophes. That is, of the half dozen major types of catastrophe that are possible, only a special variety of particle and dust bombardment produces a slow catastrophe. And this, as we have implied, should be measured in hundreds rather than millions of years.

The many scientists who today make dire predictions about the effects of a carbon dioxide pollution of the atmosphere or of the removal of the ozone barrier to exoterrestrial particles, couch their forecasts in hundreds of years; why would the same and other scientists wish to insist retrospectively upon tens or hundreds of thousands of years for the same phenomena to have occurred? If they did, it would be for irrational, that is, ideological, reasons: they would be unconsciously straining to support an evolutionist view of natural history.

Luis Alvarez, and perhaps his associates as well, after suggesting that the sweeping extinction of the biosphere at the Cretaceous boundary came with a solar obscuration by dust raised by a meteoroid crash, elected a period of about three years of dusty atmosphere, then lowered the effect by a factor of ten, to three months [6]. Again, what is abruptness? What is "geologically instantaneous?"

Eicher notes a "huge" recent Chilean ash fall which is never over 10 centimeters deep away from the central volcanic area [7]. Yet in the Upper Cretaceous strata of Colorado, over thousands of square miles, there occurs a bed of bentonite, highly compressed volcanic ash, which is a meter thick. This may have been coincidental with the boundary events of which the Alvarez group speaks.

Smit and Hertogen inform us that the great biosphere extinction marking the Cretaceous-Tertiary boundary "was abrupt without any previous warning in the sedimentary record."[8] O'Keefe at the same time accounts for the devastation of fauna at the end of the Eocene (assigned 34 million years ago) by radical climatic change induced by a ring of microtektites and tektites circling the Earth for perhaps a million years and obscuring the Sun [9].

Ogden discusses abrupt changes in American forestation about 10.000 years ago, also climatically impelled, with the pattern of pollen deposits in lake sediments moving at the rate of a mile a year [10]. Hapgood has compared what arc regarded as 'normal' rates of ice retreat with the results of carbondating, and allows some 60,000 by the one and only 17,000 by the other. He believes that the carbondating must be in error [11]. Cracraft, in expatiating upon the "punctuated equilibrium model" of

macroevolution, argues that speciation is a "geologically instantaneous phenomenon."[12]

There is, in sum, a growing body of paleontology and geology that perceives abruptness of change as a feature of natural history. What means "sudden" and "abrupt" is likely to be a much-discussed question in the near future. We can suggest here merely that every feature of the holosphere enjoys its idiosyncratic manner suddenness.

A species, a land mass, a body of water, and an atmosphere all change according to their nature, and measured in human terms, this may be fast or slow. When a quantavolutionist speaks of abrupt change, he can only mean the margin between explosion and extinction on the one hand, and the rate of change peculiar to a given organism or natural process when the rate is affected by a disaster produced by a specified high-energy expression.

Similarly, when speaking of energy of high intensity, the quantavolutionist is describing known natural forces proceeding at abnormally high rates. A recently discovered ash layer in E1 Salvador covers 1300 square miles and a once flourishing Mayan civilization. (The fall of ash was dated much earlier before the culture was unearthed.) Some 45.000 of such eruptions would be needed to blanket the Earth. The volcanoes, mostly extinct to be sure, are present; how many of these were ever exercised simultaneously?

One more, when speaking of scope, scale, or simultaneity, the quantavolutionist seeks limits appropriate to the effects of a high-energy force, between total immediate transformation and a highly significant change. Isaacs and Schmitt address themselves to oceanic energy sources; they provide global figures on the great energy sinks and low energy manifestations involved in currents, waves, tides, thermal gradients and salinity gradients. The rising and falling of waves is an energetic type of movement. When it occurs as a tsunami, or is pulled up tidally in an exoterrestrial encounter, it multiplies exponentially its force, as was said earlier, so that nothing can withstand it finally except the Earth itself.

The rotational energy of the Earth can he translated into $6X10^{15}$

Megawatt years. All the electrical needs of the world projected into the 21st century amount to 3X 10^{17} MW: if continuously mined from the energy of the Earth's rotation, the length of the day would be increased by five minutes per million years. This is the latest and one of the finest comparative measures by which the forces of nature are converted into everyday terms and may be used to explore the dimensions of catastrophe as well [13].

Until recently, to take another example, only three cubic miles of petroleum have been drawn upon for the useful and often unpleasant industrialism of modern times; if, as we suspect, the origins of petroleum are largely cometary and cataclysmic, many an ungovernable object in the sky may contain that much and many more cubic miles of the substance or its components; awaiting the occasion of manufacture may be an abundance of cosmic electric potential.

Hibben once voyaged the far North with an eye for catastrophic remains. He remarks that the Pleistocene ice sheet (if it truly existed as such) never covered the central regions of Alaska nor parts of the Aleutian Range. He reports, as have others, the several hundred feet of frozen muck deposited in various unglaciated areas. In the muck are volcanic ash layers, peat, animal and vegetable matter in vast quantities, and ice fragments. Below the muck have been found mammoth bones, human artifacts, and tree stumps in their original position as they had grown. The total effect is of several simultaneously interacting high energy forces, whose total rate of burnup of the Earth's rotational energy must have in hours, not in a million years, taken up the equivalent of five minutes of the Earth's rotational energy, and perhaps then, indeed, as a prior condition, the Earth's rotation may have slowed by that much, or more.

All effects of high energy deteriorate exponentially, we repeat. Often, as with a hurricane that expends the energy of many hydrogen bombs, the force is largely employed within and against itself. Forces also act by the principle of countervalency. Bursting into operation, one force generates another, which may not only bring on a third, but may turn against the first and moderate (as well as heighten) its effects. A volcanic wind can halt a lateral hurricane; two sets of rocks can counterthrust. An extinction of one species can promote the survival of another

species. Cross-tides may create destructive vortexes but also moderate each other. A deluge can dampen the fire with which it originated from a third force. And so on. The possibilities are very many; if the Earth exhibits patches of peaceful history here and there, these may be effects of countervalency.

Countervalency may occur on the grandest scale. Repeatedly the theory of the eruption of the Moon from Earth is challenged by the conviction that so large-scale and destructive an event would have destroyed the Earth's crust entirely, or at least its biosphere, or at least all vertebrates and forests, or at the very least mankind. Such is not the case.

The energy of the lunar eruption may or may not have exceeded the energy involved in wiping out the Martian atmosphere and biosphere; the gross energy expended (transformed) is not the issue; the counterrailing operations of the energy forms, the coincidences, are the determining factor in the extent of destruction.

One several occasions, the Earth's atmosphere may have been destroyed and transformed. The presence, according to the theory of *Solaria Binaria*, of a gaseous tube enveloping the solar system, even until a dozen millennia ago, allows for a drawing off of the atmosphere over half the world, for a rush of atmosphere from the opposite hemisphere, and for cataclysms of atmosphere from the plenum, not irreconcilably different from the atmosphere that it displaced.

In other uses, the very motions of the Earth itself will tend to deprive a catastrophic force of complete victory. If 50,000 volcanoes erupt simultaneously, the whole atmosphere will be put to work with electricity and water to bring down the dust, part of which, for that matter, may erupt into space in pursuit of the body that produced the motion changes and eruptions in the first place. In Saint-Pierre, there was a prisoner in his dungeon, sole survivor of the volcanic explosion of Martinique. In Hiroshima there were the unexplainable uninjured survivors of the blast and holocaust. Once again, problems posed by catastrophes find their solution in the behavior of catastrophes.

At the present stage of the earth sciences, there are probably

many fewer persons who will insist upon finding the ultimate source of great turbulence inside the Earth alone. Still this conviction - or is it a hope - persists. Geologists tend to believe that nothing grave ever happened in the skies; biologists often look upon the rocks as gift-wrappings for their fossils; astronomers are inclined to believe that nothing serious happened upon Earth; anthropologists and historians usually believe that ancient times were as serene as nature today. This consensus is suspect. Some scholars apparently are still reassuring one another, so that all might eventually come to believe that no event of great importance has happened in any sphere of existence.

I hope to have suggested in this chapter some orderly means of bringing forward and considering exoterrestrially provoked quantavolutions. Most such means are difficult, even impossible. But what else can be done? Most of us, whether from timidity, distaste, or because expertly qualified for other forms of combat, will not engage in "wrestling, no holds barred."

Notes (Chapter Thirty: Intensity, Scope and Suddenness)

1. *Op. cit.*, 83.

2. *Interaction of the Science in Study of the Earth, loc. cit.*, 252.

3. S.I.S. Workshop (1982).

4. *Op. cit.*, 423.

5. V *Kronos* (Spring 1980), 36-50.

6. *Op. cit. cf contra* R. Jastrow, "the Dinosaur Massacre," *Sci. Digest* (sep. 1983).

7. Don L. Eicher, *Geologic Time* (Englewood Cliff, N.J.: Prentice Hall, 1968), 72-3.

8. 285 *Nature* (1980), 198.

9. 285 *Nature* (1980), 309.

10. *Op. cit.*

11. Hapgood, *Path of the Poles*, 127-8.

12. *Phylogenetic Analysis and Paleontology* (NY: Columbia U., 1979), 26.

13. "Ocean Energy: Forms and Prospects,"207 *Science* (18 Jan. 1980), 265-73.

CHAPTER THIRTY-ONE

THE RECENCY OF THE SURFACE

If a fossil whale standing on its tail can disprove "millions of years" of sedimentary accumulation, perhaps a live animal can try to do the same. Igor Akimushkin tells us how "The cepola fish... may sit still for hours on the crooked end of its tail, with its wide-open jaws turned upwards expectantly, waiting patiently for heavenly manna to fall into its mouth.'"[1] The cepola is a fish of the abyssal ocean, where it lives in perpetual darkness.

If it feeds this way for twelve hours a day and collects one millimeter of material with its mouth, in which enough nourishment is contained, then in a year it might be said that a column of 365x 2 millimeters will be striking the ocean floor. This would amount to a column of 730 meters in 1000 years, assuming that inedible waste and compression cancel each other out. Since the ocean sediments average one kilometer, and our live precipitation meter may be at a typical location, the column will reach the average depth of sediments in about 1350 years, under uniformitarian suppositions. With a negatively exponential fall-out, cepola would have once fed more quickly than he does today. So the ocean bottom cannot be older than 1350 years, and ethology becomes the queen of clockmakers.

Quantavolution should be embarrassed to joke so, if science were not on some occasions a theatre of the absurd. One can reflect upon the history of geology when, blessed by the *nihil obstat* of Lyell, geologists would simply draw upon time without end to do away with complexities and perplexities. When Poulett Scrope prepared his famous studies of the volcanoes of Auvergne (France), his theories might be liberated from temporal restraints, such that a recent commentator on his work, Rudwick, could refer to "unlimited drafts upon antiquity" as his necessary and useful tool [2].

Continuing until today, the time scales have been even more expanded, much more, so that many a geologist has felt free to mount his facts into any frame of time that can hold them; the duration itself would scarcely be accosted for proof. Owing to recent discoveries such as the youngness of the ocean bottoms, and to late criticism of biostratigraphy, the license to capture time has become more restricted. But radiochronometry, newly developed, reigns supreme over time and is dizzied by success.

Conventional chronology today gives about 15,000 years to the Holocene and latest period, and about two million years to the Pleistocene. Then some 35 my go to the Tertiary, with its Pliocene, Miocene and Eocene; 55 my to the Cretaceous; 27 my to the Jurassic; 23 the Triassic; 33 the Permian; 74 the Carboniferous; 72 the Devonian; 22 the Silurian; 57 the Ordovician; 92 the Cambrian; and some 2000 million years (or much more) to the Precambrian era.

By this point, the reader is well-aware of our scandalous departures from the conventional text. We have been arguing, in the whole of our Quantavolutionary Series (and see page 497 below), that all of the preceding ages probably have occurred within a million years, and especially that major elements of the Holocene, Pleistocene, Tertiary, Cretaceous and Carboniferous have occurred within the time usually allotted to the Holocene, namely some 15,000 years or less. The great disparity has occurred, we maintain, owing to the displacement of time by catastrophe. And to denote these catastrophic intervals, we have used certain disruptive episodes that we have tied into astronomical events, bringing a sequence of periods that we begin with the Pangean, and then go on the Uranian, Lunarian, Saturnian, Jovean, Mercurian, Venusian, and Martian, each marked by catastrophe, until the present or Solarian period to which only some 1600 years are allotted.

Many salient events are disallowed to quantavolution theory by conventional science not because they take too long to happen, not because they did not happen, but because they happened very long ago. Notable among such cases are the fission of the Moon from the Earth, the transportation of hydrocarbons by comets, the prolonged great heat of Venus, the desolation of Mercury and Mars, and other impliedly catastrophic

occurrences, whose number is surprisingly large - even determining - when plucked out of the pages, for example, of the special account of the solar system contained in the *Scientific American* for September, 1975.

Some fifty-nine techniques of determining prehistoric duration and fixing distant events were summarized by the present author (1981) and deemed faulty in one or more regards. This, even when taken together with the sources to which it refers, does not constitute definitive disproof of the validity of long-time chronometry. However, it does permit us to entertain a short-term model of solar system history. The evidence of *Solaria Binaria* is such that all previously existing tests offering macrochronic conclusions are either modified to suit our model, or declared invalid.

With regard to geological and biological tests that assert long duration of processes, evidence is accumulating rapidly that quantavolutionary transformations are physically possible. Independent of historical argumentation, geological and biological time are collapsible in theory and in the laboratory. Astronomers figure time in light-years over vast distances, but this is a convenience, not a measure of history. Empirical tests are, however, also theory-dependent, as, for example, the "thermonuclear" Sun whose dynamics are invisible, and the potassium-argon radioactive decay tests performed upon moon soil that presume a three-billion-years-old Moon, or the radiocarbon test that believes in a practically constant atmosphere.

Every discipline advancing long-time claims would today be in a defensive posture were it not for the heavy investment, both intellectual and material, in radiochronometry, which is believed to be paying rich dividends. The bedrock defense of radiochronometry is that radiodecay rates of known elements are regular and inalterable by any conceivable environmental force. Lately, this view has been challenged.

Once the quantavolutionary hypothesis is substituted for the evolutionary hypothesis of uniform and gradual changes based upon the change rates of recent centuries, the majority of tests simply is nullified. The reason is that the constituents of time-

measurement are nature-dependent - the time-makers are, like undisciplined and free workers, able to speed up or slow down and hence cannot be counted upon for an indefinitely long series of regular movements or changes.

If there are 59 different measures of time, say, each one will have to know enough about a certain changing phenomenon of nature to guarantee that it has given off a set of signs or signals throughout a specified period, that these signals composed intervals translatable into current understanding such as solar years or millennia or some usable sequential juxtaposition, and these signals that were once given off can be reliably reproduced, observed, or inferred when recently or currently the signals were registered and/or interpreted.

Considering the prevalence of scientific opinion on the side of a universe, solar system, Earth biosphere, and hominoidal presence, each of long duration - say, of 6 gigayears, 5 gigayears, 3 gigayears, and five million years - the challenge which short-time chronologists present to the time-keepers of science should be easily disposed of: these need only provide one incontrovertible proof of long duration where short duration is claimed. Should it be demanded that the short-time advocate offer his proofs first, one may plead that the long-time chronometrician is rich in experimental resources, hence *noblesse oblige.*

The stakes in radiochronometry are very high: all of the natural sciences have a stake in the game, plus ancient history, pre-history, anthropology, archaeology, indeed all of the humanities and, in the end, philosophy, theology, cosmology.

At Valsequillo (Mexico) human occupation is evidenced by sophisticated stone tools but the horizons occupied have been dated by the fission-track method on volcanic material and by uranium dating of a camel's pelvis at 250,000 years of age [3]. At least one of the team believes the age to be "essentially impossible."

North of the border, at the Calico site, California, early humans occupied premises and employed several categories of tools. Uranium-thorium tests yielded a date of 200,000∀20,000 years

for the artifacts [4]. Meanwhile, in Israel, at the 'Ubeidiya site, previously dated to 700,000 years, fossil mammals were redated to a human site containing Acheulian artifacts at two million years, "500,000 years older than any record of Early Acheulian artefacts or *Homo Erectus* in Africa."[5]

These claims support my attack in *Homo Schizo I* upon the hominid chronology asserted in such studies as those of R. Leakey and Johanson in East Africa. That is, all datings of hominids and early man are far too old, and the so-called hominids were probably human. They also support the thesis of *Chaos and Creation* that assigns an ecumenical culture, worldwide, to Pangea, prior to the breakup of the continents.

In the realm of legend, challenges to radiochronometry emerge as well. The following abstract from *Catastrophist Geology* may be quoted in its entirety [6]:

> Lake Bosumtwi (diameter 8 km) in Ghana is by geologists generally interpreted as the impact scar of an extraterrestrial body, and the Ivory Coast tektite field has been correlated with it on chemical and geochronological grounds. The Dogons, who live 800 km away in Mali, preserve an ancient tradition attributing the Lake to the fall of a fiery metallic mass of unusual dimensions. This legend is also an integral part of the cosmogony of many other West African peoples, such as Mandingoes and Bambaras. Many priests make a pilgrimage to the Lake or to the nearby town of Kumassi, and also many blacksmiths visit the Lake before initiation to their sacred profession. Glass from the impact rim around the Lake has been radiometrically dated at 1.3 to 1.6 million years, a period when Africa was inhabited by Australopithecines.

The moment is opportune for some scholar to compile such victories of oral traditions. No less than eight hypotheses of this book are combined in and supported by this single story. And who dates the Australopithecines and how? The problem is global.

Every proposition that supports exoterrestrial influence on Earth threatens radiochronometry. Radiochronometry has meanwhile

thrown biostratigraphical chronometry into disrepute. Vita-Finzi, for example, places his hopes for quaternary geochronology on radiochronometry [7]. Richer in his turn writes:

> Radiochronometric dating thus laid to rest once and for all the idea that rocks can be dated, even in a gross way, by their lithology or by the extent of their deformation and metamorphism. Radiometric dating also revealed that Precambrian time was far greater than anyone previously imagined."[8]

(Precambrian time is accorded 80% of all rock time and Precambrian rock by one estimate surface over 17% of the Earth.) Fossil-time is heavily theory-dependent. Alter the assumed speed of evolution and one alters fossil-time, and the dating of its associated sediments. Evolution-time, once we dismiss the pretensions of natural selection (adaptation and survival of the fittest), and microevolution (neo-darwinism) and introduce quantavolution, can be calibrated on practically any time-scale, allowing only a perceptible succession and superposition of species.

The boundary times between the Cretaceous and Tertiary periods are increasingly recognized to have been catastrophic. From tall mountains to the deep abyss, notable turbulence occurs. Asteroids or comets have been called forth to explain the phenomena, which are holospheric. One study [9] concentrated upon a single core drilled at 4805 meters of ocean depth off Africa into a fan of a submarine canyon cut into the Walvis Ridge; at about 205 meters below the bottom the C/T boundary was ascertained and its materials analyzed. Numerous anomalous chemical conditions were discovered, leading the 20 authors to support conclusions, some suggested elsewhere, that the state of carbon dioxide, oxygen, iridium, platinum, cyanide, osmium, arsenic, calcium carbonates, terrestrial ejecta dust, and exoterrestrial dust indicated and/or caused general decimation of marine invertebrata, and, by extension, as suggested elsewhere, insufferable conditions for flora and fauna of the continents, with magnetic disturbances, a rise in temperature of 8 degrees centigrade, flash-heating of the atmosphere at the explosive moment, difficulty in photogenesis, and starvation.

The mixing of C/T fossils above the boundary for two meters led to an unresolved question as to whether bioturbation or a prolonged extinction process was proceeding after the extincting event. There was only a film of sedimentary clay to work with at the boundary. Above lies core material ending with lower Eocene fossilized ooze at the surface: thus, most of the Cenozoic or recent period is unrepresented. Basalt is first struck at 280 m subbottom depth, below which it alternates to 340 meters with volcanoclastics, clay and sand. Above the latest basalt occur the same, with fossils at intervals intermingled with a sandstone marl, and, toward the present, chalks, cherts, limestones, and ooze. A layer of ash is found at -200 meters just above the C/ T boundary transition and another at -60 meters.

There is an obvious sequence from older to newer nannofossils, but there is also a gnawing doubt as to the length of time which the total deposition, even in its presumably truncated form, actually required. If, for instance, in the 280 meters of postbasalt deposits, some 7 meters consist of ashes, which must fall rapidly, then ashes amount to about one-fortieth of the column, but they must have dropped in a matter of days.

If, too, the submarine fan was laid down turbulently from its parental canyon, and, all the while, heavy volcanic fall-out was occurring, one might conjecture again in terms of days, or months, or years, but hardly in millions of years. The sudden cessation of deposition at the Lower Eocene of 50 million years ago suggests a bottom of prolonged stillness, but then what comes before as here must suggest a brief turbulence. The sequence of fossils could extinct and proliferate in centuries or millennia, or, less likely, occur by instant turbulent crossbedding from different sources.

The authors and others are looking for a medium-sized astrobleme that would have been the disastrous Intruder of the C/T boundary; a 25 km/diameter crater at Kamensk (S. Russia) is alluded to. By our theory the Earth may have suffered numerous meteoroid explosions at this time. In earlier pages, the exponential rate of astrobleme discoveries was noted. There is no chance of finding a solitary culprit. Cretaceous craters will be numerous, and if time is compressed, distinction among the ages of most astroblemes may be vitiated.

All of this is ominous. If geology and geophysics are so ready to sell out biostratigraphical chronology, on which natural history has depended almost entirely from the beginning of its modern phase 150 years ago, then those disciplines, if not bankrupt, are poor. One cannot be blamed for addressing them with alternatives.

Moreover, one must consider whether radiochronometry would ever had developed if geochronology had not already felt the need to posit macrochronism. The presuppositions of radiochronometry are such that it would have had hard going against a microchronism. Basic among these uncertainties of radiochronometry are, first, the setting of zero time for the start-up of radioactive decay of the measuring elements such as 238-uranium, second, the need to assume a constant intake of exoterrestrially produced elements during a long Earth history, and third, the belief that electric charges within the crust and their magnetic fields are either constant or do not affect rates of radioactive decay of the elements whose decay is used as a measuring rod.

As Cook has argued, the early state of the Earth is hardly empirically known or deducible. Yet radiochronometry must proceed as if it were, and, furthermore, somehow, whatever is found now as the result of decay was not present in the beginning but finds its only source in the decay process [10].

> There is a basic weakness of all radioactive decay methods of chronometry that is too frequently ignored. All these methods must *assume* a given composition of species at zero time. For example, in the original 'lead method' it was assumed that the total 'chemical' lead was zero in uranium-thorium minerals at their time of origin. In later lead 'isotope' methods the decay isotopes were assumed to be absent in the original sample. Later work showed that such assumptions were very doubtful if, indeed, not untenable. Any such method would seem on its surface to be invalidated as soon as one obtains evidence regarding an appreciable abundance of decay products at zero time unless some means were available to determine the zero time concentration of the radioactive decay products. Unfortunately, one may only guess these

> concentrations, and the age results thus obtained can be no better than this guess. The apparent hopelessness of this situation is exemplified by relative lead isotope abundance data presented in extensive tables by Faul and Kulp (Landsberg, 1955).

Cook proceeds to the second problem, that of cosmically produced nuclear transformation of the isotopes being used to measure time.

> A few years ago radioactive decay processes were the only natural ones known. Perhaps all of the nuclear reactions previously described as 'artificial' as well as many others involving energies quite outside the range of artificial transmutations actually occur probably at appreciable rates in the earth. Puppi and Dallaporta (Landsberg, 1955) showed that the average star (cosmic ray-promoted nuclear explosion) rate is about $2/cm^2/s$ or $10^{19}/s$ in the atmosphere alone. George (Landsberg, 1955) gave star count data which would suggest possibly about another 10^{25} inside the earth. Moreover spontaneous uranium fission alone should produce 10^{26} stars/year inside the lithosphere. Since α particles emitted from radioactive elements have enough energy to penetrate the coulomb barrier in nuclei of atomic number Z up to at least 20, perhaps upwards of 10^{-4} of these particles (geometrical cross-section about 0.02 barns) should produce secondary nuclear transmutations. If this is the case, natural decay processes should effect at least 10^{29}-10^{30} secondary transmutations in the earth's crust each year.

This would be enough to disjoint the radio clocks.

Jean Perrin, as noted by Baranov [11], has gone farther than Cook to argue that radioactive decay is not spontaneous, but is caused by ultrahard radiation coming in from exoterrestrial sources. That is why "natural" radioactivity is concentrated within the crust of the Earth.

We have stressed that exoterrestrial bombardments of the Earth by particles from nova explosions and other sources of hard

radiation have been repeatedly experienced by the crustal rocks of the Earth. The present state of the Earth must be receiving a small fraction of its historical radiation. Yet scientists who have provided some of the chemical proof of these catastrophes have been, inconsistently, strong advocates of timing their own disproofs of cosmic particle equilibrium by the very radioactive levels being simultaneously disproved. Like the proverbial military headquarters, they issue bulletins that "the situation is developing well; our troops are withdrawing on all fronts."

A similar problem is to be seen in the separation of electricity from radioactivity. Ignoring the electrical state (or, better, the electrical history) of the Earth may foreclose alternative life-experiences of radioactive materials. But we have intimated earlier that the Earth has had heavy periodic electrical transactions with exoterrestrial bodies and plasmas. Further, the Earth has had electric potentials differing from its potential today.

Sykes placed a standard radioactive cobalt-60 specimen between the poles of a magnet with an estimated flux-density of 0.1 Tesla, positioned a gamma radiation detector in proximity, and took readings of the emissions when the magnet was on and when it was off. The "decay constant," which is supposed to be invariable if it is to be used to clock geological time, speeded up about 2% when the magnetic field was applied. He concluded that "the thesis of decay constancy under all environmental conditions cannot be maintained."[12]

These experimental results move in the direction theorized by Juergens and experimentally indicated by Anderson and Spangler [13]. The half-life of radioactive isotopes appears vulnerable to external electromagnetic influences. Since the strength of the Earth's magnetic field has been diminishing, along with that of magnetized rocks, the radio clocks within the rocks will have been slowing down. Further, it is not alone a matter of a long-term trend. In any quantavolution, strong electromagnetic forces are likely to be applied to crustal rocks causing sharp increases in the speed of passage of "radio-time."

Furthermore "electric discharges of cosmic proportions should be capable of creating new elements; even atmospheric lightning

is credited with producing radionuclides, and all artificial element-creation starting with the first fusion reaction ever achieved in the laboratory - producing technetium from molybdenum, in 1937 - has involved harnessing the forces of the electric discharge." So writes Juergens [14]. Tesla, his biographers recall, once began experiments to make of the whole Earth an accumulator of induced atmospheric charge; in 1982 an immense electrical current was traced from its North Pacific origins through the Strait of Georgia behind Vancouver Island past Tacoma (Wash.), into Oregon, paralleling a fault line [15].

"What role," Juergens goes on to say, in passages cited briefly in our chapter on lightning, "might environmental electrification play in setting the rules for nuclear stability, radioactive-decay rates, and energies of particle-emissions in decay processes?" The ambiant electrical stress would be different, whether continuously or for short periods of time. "It would seem to follow that decay rates for radionuclides might well differ radically from today's norms. Polonium isotopes now exhibiting very little stability [referring to Gentry's experiments] might then acquire - briefly, but long enough, half-lives in keeping with the evidence of the Earth's crustal rocks." Gentry had shown the existence of short-lived polonium without evidence of association with uranium-decay, whereas polonium has been considered an essential link in the chain of decay that ends in 206 lead. Critics of Gentry objected that his findings would cause "apparently insuperable geological problems."

Juergens proceeds farther. Following experiments by Gamow in wave mechanics, he describes the nucleus as having a well-potential or "'potential-well" out of which alpha particles must climb to "decay," mustering sufficient energy to escape. He regards the Earth's electric charge as a principal "well-builder." "The Earth appears to be strongly charged with negative electricity, so that its surface potential is low, which is to say, highly negative."

Suppose, then, that Earth potential is suddenly lowered by just 1 million volts - this, in all likelihood, is an almost negligibly small fraction of the planet's 'normal' negative electric potential. Alpha particles could, so to speak, climb out of the well readily. "Any abrupt lowering of Earth potential by a mere million volts could

be expected to produce rampant radioactivity, with consequent lethal or at least strongly mutational effects on all forms of life."

Even presently, under quiet cosmic conditions, the possibility of electrical intervention in radioactivity is not to be ignored. Radioactive radon is released from rocks in earthquakes [16]. This is revealed by a sudden decrease, followed by a sharp increase, in the radon content of the water table just prior to an earthquake. The mechanism is obscure, but it can be conjectured that the electrical fields being generated in the area of the faulting play a role in the phenomenon. When these occur under conditions of a largely quiet exosphere (though we bear solar-storms correlations with seismism in mind) piezoelectricity is to be suggested, as rock is being recrystallized under pressure and heat.

What happens to cause a radon deficiency in the subsurface rock may be happening to other radioactive elements as well, including uranium and potassium isotopes. If so, such rocks may be incapacitated to serve as radiometric clocks, supposing, for example, that potassium 40 is under the same stress. It will either leak out of the rocks, or decay rapidly into the more stable form of Argon 40. If it leaks, and Argon 40 remains, the rock will become promptly "older" in K/A testing. If the Argon 40 leaks disproportionately from the rock, the rocks will become "younger." More likely, the ratio of the two will change and establish itself in a false gradation within the local geological column that will, upon testing, confirm relative age differences with perhaps little more chronological information than is supplied by simple superpositioning of the strata. But what is "local" is probably large-scale, inasmuch as rocks everywhere have been involved in seismic disturbances.

A treatise or symposium negatively critical of the macrochronal pretensions of radiochronometry would be welcome and is overdue. The objections raised here cannot be sustained without much more elaborate treatment. Nor can we more than mention the problems of radiocarbon dating, so important to holocene and pleistocene geology with which we deal heavily in these pages. As I have written elsewhere, the fragility of this index of time is such as to make it less useful beyond 2500 years ago [17].

As with every radiochronometric process, various fluxes of cosmic and terrestrial electricity, large fluctuations of the gaseous and radiation intake of the atmosphere, and biospheric conflagrations all contribute to radiocarbon disequilibrium. Given, for instance, that a solar magnetic storm of the 1950's was observed to add 1% to Carbon 14 of the atmosphere, hence the intake of the biosphere, the probably much heavier solar storms associated with several kinds of atmospheric turbulence of antiquity might seriously affect dating, which, indeed the studies of H.E. Seuss have proven [18]. We bear in mind, too, the calculations of Cook, which, retrojecting the small but perceptible increase in Carbon 14 in the atmosphere under uniformitarian conditions today, come out with a figure of zero-carbon in the air some 13,000 year ago.[19]

Like every radiochronometric process, with its half-life calculations, radiocarbon decay is figured at a declining exponential rate. The mathematics of exponentialism subjects the process to time collapse; exponential rates in chronology are an unreliable ally of uniformitarian rates in biostratigraphical measures of time and of macrochronism generally. In the clamor of debate over the significance of the multitudinous mammoth (and antelope, rhinoceros, and other) fossils of recent times, the long spread of Carbon 14 dates assigned to the finds has attracted attention, but their meaning for carbondating has been ignored. If frozen mammoth finds are dated from 44,000 years ago at one extreme to 2500 years ago at the other extreme, an impossible pattern of climatic changes has to be developed, all allowing some of the cadavers to persist unthawed during the whole period, while letting others cadavers give all signs of eating warm-weather plants just before death [20]. The Carbon 14 dates must be invalid. The same dates, if collapsed and rendered simultaneous, then support an abrupt event, as opposed to an event occupying many thousands of years. The same reasoning would apply to other Carbon 14 problems of the end of the ice ages. Here then, one would refer back to the last chapter and its stress upon the abruptness of biological and geological change.

Is there then nothing whose history when retraced on an exponential rate of development must still have been of long duration? Most likely to limit the microchronic concept of

quantavolution are certain biological phenomena. Thus, if a living bristlecone pine tree shows annual growth rings now, and if these go back in time for hundreds of years on the same tree, and these live trees are positioned above a locality of fossil trees, which exhibit the same many rings, and in turn connect with the rings of other trees obviously buried continuously below them, a lengthy period of time begins to develop which, founded upon the need for the species to have evolved beforehand, would begin to push time back by thousands, if not many thousands, of years. Proof of such retrogression is not quite satisfactory yet.

With an enthusiasm born of religious convictions and impelled by many years of frustration at playing the other fellow's game, a group of creationist geologists, without spending much time at the task, can readily explain the history of the world's landforms in terms that allow only a few thousand years. That they can do so constitutes in itself a formidable challenge to conventional geology. Still, even granted that they can do so, are they correct?

If they pursued the line of thought that I follow in my books, they might first dispose of the missing half of the Earth's crust by removing it, in a major incident, from the Pacific Ocean hemisphere. They can place the removed crust on the Moon and in planetary space. Then the minor oceans of the world open up to let the continents raft into their present position. Practically all of the ocean bottoms are of recent lava.

Next, they tackle the waters, which descend largely from the heavens, and from boiling metamorphosizing basalt foundations. Next they fashion the rivers from the world's infinite cracks and faults, big rivers from big faults. The mountains are folded and thrust up forward and aft of rafting continents. Huge tides create deserts and fill some lakes. Precipitation fills others. The ice comes from precipitation in darkness, and from exoterrestrial falls.

The sedimentary rocks are ground up from the turbulence of winds, tides, and the friction of moving land masses. Their fossils, when they occur, denote rapid deposition. Volcanoes spurt up along the forward edges of movement in vast numbers and volcanic fissures vent even more than cones. All of the sea and some of the land is lava-covered, an igneous composition.

Another large part of the land and ocean shelves is of the original basalt base of the earlier all-land system and is called shield rock or Precambrian exposures. The biosphere that has been destroyed by drowning, burning, burial, poisoning, and freezing exhibits itself largely in a few assemblages, as fossils, coal, fusain, and some types of oil. The metals coming from earlier explosions among the planets fall in dust or globules, mixing with the turbulence as deposits. Repeated falls of dust, terrestrial and exoterrestrial, mingle with the slowing floods to give the Earth its patina of soils in favored places. Here, and also at one time in the drowned slopes of debris off the shores of continents and around submerged volcanic heights, most of the surviving and adapting biosphere found its home.

Who needs more time than several thousand years to explain all this, they may well say? I would say that we need at least a little more time for all of this work, another ten thousand years perhaps. Even then, we would need an additional longer period for the creation of the solar system, the planets, the Earth, and the land and biosphere that were worked upon in the scenario just presented. In an accompanying volume, *Solaria Binaria*, a million years is given. (See page 497.)

Only a small fraction of the operations and product of the earth sciences and biology depends directly upon the chronologies that have been developed in natural history. Determining whether the dinosaurs were exterminated five thousand or fifty million years ago may have little to do with deciding whether the mammals had reptilian ancestors. King Kong may still be alive in some jungle for all the difference it would make to primate zoology. The protozoans are alive and studied without reference to the discovery of similar Precambrian species.

Even the science of radiology is independent of its use to measure time; geophysicist Melvin Cook, following upon his trenchant criticism of radiochronometry, is prompt to praise other uses of radiation physics in geology. Similarly Dudley attacked vigorously the idea of stability of radioactive decay measures even though he was a professor of radiation physics in medicine and quite aware of the value of radiation science [21]. When asked to comment on tests by Anderson indicating the non-random and unreliable decay of C14, "scientists said that it

could be possible to accelerate or control the release of energy from decaying nuclei...This could lead to..."[22] It's an ill wind indeed, that blows no good.

When a group of scientists and philosophers, perhaps the most notable of them being Albert Einstein, radically criticized the notion of time, the progress of physics is said to have been assisted. Even when time is conceived to run backwards in certain physical, chemical and astronomical theories, the idea is treated as possibly a positive contribution to the solution of perplexing issues.

Nor does the radical alteration of other hard-shelled concepts throw the sciences into unhealthy turmoil. For some time now, the gravitational constant has been assailed as an inconstant, possibly diminishing on the Earth and in the cosmos, following the work of Dirac, Dicke, and others. In an accompanying volume, Earl Milton and the present author, in a history of the solar system, seek to dispense with the concept of gravitation entirely, save for the notion of inertia. At the same time, we seek to work with the concept of a single charge in electricity, endeavoring to solve cosmogonical problems without the two-century-old idea of positive and negative charges.

Why, then, does it matter at all when, in looking upon a mountain or dealing with a human being, one person says he is looking at a historical creation of a great many millions of years while another person says he is observing the creations of a few thousand years? Each sees beauty in the sight, let us grant; each understands the morphology; each commands techniques for mastering problems that arise in connection with the mountain and the human. Indeed, each may exclaim, "What wonders hath God wrought!" - God taking much time to the first observer, little time to the other.

But, now the second person adds that he believes in the validity of certain scriptures that purport to convey the word of God, among which are some sentences that describe how God made the world, including a time-schedule of the construction. The first person has no interest in these same scriptures except as possible scientific testimony, and as such he finds them almost totally incorrect, and says so.

Now an issue is joined. But note that the issue concerns time only incidentally. The issue is whether a body of writings can be the words of God; many other parts of the scriptures are at issue which do not concern time at all, such as, for example, a statement forbidding the eating of pork and shellfish.

The issue of sacred authority is beyond the method of the present work (and is treated in my book, *The Divine Succession)* unless, as a consequence of this book, either the one or the other person derives support from it, which he can then use in proving that the alleged words of God do or do not conform to a historical reality, proved by other means.

However, it is deemed permissible to employ the scriptures in a secular sense here, as a source of facts, allegations, and hypotheses about natural history; in so doing, we submit the scriptures to the same respectful treatment we give to all the rare ancient documents treating in their own way of scientific subject-matter, such as Hesiod's Greek *Theogony* and the Hindus' *Rig-Vedas.*

Therefore, questions of the elapsed time for accomplishing the present surface of the Earth have to be answered with a set of intellectual instruments called the scientific method, which are presumed useful to all persons engaged in seeking such answers. The primary tools are the empirical proposition, the testing of this by factual evidence, and some control of reality under the government of the propositions - that is, hypothesis, proof, and application (prediction being one form of such).

This is all elementary, but leads us to ask about time. If the duration of historical time is unimportant and inconsequential in most of the work of the earth sciences, why should it be important in natural history? If it can be shown that natural forces could have provided all of natural history through the agency of hundreds of millions of years, why trouble oneself with showing that they could provide the same in a few thousand years?

There are two answers, not identical even though usually correlated: one set of solutions may be more consonant with reality; further, one set may be more useful. A satisfactory

explanation of those answers (apart from the problem itself) would require a volume of philosophy on the true and the useful. We might, for instance, find ourselves concluding that the short and long chronologies are both equally true, but the short answer is useful for people who wish to correlate perfectly their natural philosophy about the empirical world with their beliefs in the words of their sacred scriptures.

Alternatively, we might discover that the long-term view is really true and we might as well accept the reality principle as our guide, instead of the sacred doctrine. Since this is a fairly weak view (why hold to reality if it doesn't make pay-offs?), it is often strengthened by a historical, acquired fear of negative experiences in treating with persons holding to the scriptural text. Taken together with various sociological forces - such as professionalism and bureaucracy - truth *per se* and historical fear can generate a strong sense of the utility of the truth. The stage is then set for an enduring struggle between creationists and gradualists.

Here we end up in a distinctly different position. We wish no quarrel with anyone; yet, in a sense, we have to quarrel with everybody. We say that, properly understood, natural forces can have created the present world in a vastly compressed span of time. Too, they may have done so. In arguing that they may have done so, we probably lend a hand to creationists; we do so, too, by according respect to ancient holy writ, as we find this source of evidence shabbily treated in both scientific and humanistic circles.

On the other hand, we see no divine miracles in a nature operating by quantavolutions over a short time. Nor do our time schedules and calendar of events correlate fully with the sacred ones that we know. Nor, finally, unless I underestimate my work, do our explanations facilitate the introduction of an animate divine intelligence into natural history.

Indeed, "creation science," as is called the systematic effort to validate the natural history of the Bible, may be self-defeating. It lets a holy statement, which might better be believed as a different kind of truth-telling and saving instrument, enter into competition in the contests of science, where the rules, the

umpires, and the rewards are greatly different. I say this while expressing appreciation of the distinctive contributions that creationists have continuously made to the earth sciences, and realizing that, were it not for their religious zeal, their scientific interests alone would not have given birth to their hypotheses and research.

Supposing that a respectable case has been made for its actuality, what utility does mini-temporal natural history possess? It displaces time as dictator of events. Although it does not abolish historical time, it allows natural forces to play flexibly with time in history.

It lends historical stimulus to inventive ideas that would be hopeless if time were by its very slackness a limiting factor. We see this kind of idea now seeking realization in such fields as elemental physics and genetic engineering. Third, it permits the amalgamation of the earliest records of mankind into the natural sciences, makes man a creature and creator of nature in a holistic sense, helps understand the human story and uses that story to help explain nature.

Here arises the theory of which Velikovsky was the leading exponent, that the morale and behavior of the human race would be improved if humans would appreciate their catastrophic history. Once recalled and realized, the catastrophic record would keep mankind alerted to its compulsion to repeat its past. The racial death-wish could better be kept under control, especially now that racial suicide is facilitated by nuclear armaments.

Since there exists a high correlation between millennialist attitudes (the expectation that world-destruction is imminent) and support for catastrophist scientific theories, I doubt that a therapy for the unconscious compulsion to destroy the world is to be found so easily. "If one is going to go to heaven, the sooner the better." More complicated solutions will be addressed in another work concerning religion. It is conceivable that quantavolution offers possibilities of a new effective synthesis of religion and science, which existing creationism and evolutionism cannot afford.

Beyond such utilities rest the several advantages that a microchronic model provides in association with the other elements of the theory of quantavolution: such as the negative exponential principle, the holistic principle, and the transactions of exoterrestrial and terrestrial forces. For example, moon-eruption theory (G. Darwin, Fisher, Pickering *et al.)* was first posited as occurring in early stages of the Earth's formation by macrochronic reckoning.

When Wegener advanced his continental drift theory, he was impelled by paleontology to place the rifting continents in the Cretaceous period. An opportunity to join lunar outbursting and continental drift was lost because of vast differences in timing the two events. Both theories, moon-eruption and continental drift, were placed in abeyance for many years.

Then, when Wegener's theory was revived, an elaborate mechanism of tectonic plates moving by convection currents was devised (Hess *et al.).* Again an opportunity was lost. But microchronism, together with its allied quantavolutionary principles, brings all three events together: paleontological ecumenicalism, the moon-eruption, and continental cleavage and rafting.

For propagandistic purposes, one might take advantage of the credibility that attends long time scales: granting quantavolution, may I not still allow a few millions of years for the resurfacing of the Earth, or only a million, or even a hundred thousand? Or use the Pleistocene, that period of "ice ages" which can be stretched from 100,000 to 2,000,000 and has as many climates and ice advances as we have fingers and toes, thus to avoid a furor of reproaches? Why do I crowd the Holocene so?

I reject this admittedly tempting idea for one large reason alone. As is demonstrable fully in my books on *Chaos and Creation* and the rise of *Homo Schizo,* I find evidence in the earliest behavior and beliefs of mankind that I cannot dismiss, which attests to human experience with every form and scale of quantavolution. At this point in the study of quantavolution, I would lengthen the time scales only if some incontrovertible proof of a relevant far-distant event were offered, or if it were to be discovered that the earliest humans whom we know about

were survivors of earlier advanced civilizations whose true long natural historiography was handed down in garbled form. Neither seems likely.

Notes (Chapter Thirty-one: The Recency of the Surface)

1. *Animal Travellers, loc. cit*., 87.

2. M.J.S. Rudwick, "Poulet Scrope on the Volcanos of Auvergne: Lyellian Time and Political Economy," VII *Brit. J. Hist. Sci*. 3:27 (Nov. 1974), 205-42.

3. Virginia Steen-McIntyre *et al*., "Geologic Evidence for age of Deposits at Hueyatlaco Archaeological Site, Valsequillo, Mexico," 16 *Quaternary Res.* (1982), 1-17.

4. Ruth D.Simpson, "Updating Early Man, Calico Site, California," 20 *Anthro. J. Canada* 2 (1982), 8.

5. C.A. Repenning and O. Fejfar,"Evidence for Earlier Date of 'Ubeidiya, Israel, Hominid Site,"299 *Nature* (1982), 344.

6. E.Guerrier, "Le Forgeron Venu du Ciel," 17 *Kadath* (1976), 30-6.

7. *Op. cit.*

8. *Op. cit.*, 65.

9. K.J. Hau *et al*., "Mass Mortality and Its Environmental and Evolutionary Consequences," 216 *Science* (16 April 1982), 249-56. (20 authors, now at 13 different institution, 2 funding organization, sponsoring center, and a number of readers were involved.)

10. *Prehistory and Earth Models*, loc. cit., 24.

11. In Interaction of sciences in the Study of the Earth, loc. cit., 221-2.

12. N.J.G. Sykes, "A Simple Investigation of the Thesis of Isotope Decay Constancy," III S.I.S Rev. (Aut. 1978), 43-5, 45; *cf* Don Robins, "Isotopic Anomalies in Chronometry Science," II *S.I.S. Rev*. 4 (1978), 108-10.

13. 77 *J. Phys. Chem*. (1973), 3114.

14. III *Kronos* (all, 1977), 3-17, 11.

15. J.R. Booker and G. Heusel performed the work; see "Nature′s Hidden Power Line," 90 *Sci. Dig*. (Oct.1982), 18.

16. Hiroshi Wakita *et al*., "Radon Anomaly..." 207 *Science* (22 Feb. 1980), 882-3.

17. A. de Grazia, *Chaos and creation*, *loc. cit*., 51, and Chapter 3 generally.

18. 4 *Radiocarbon Geophysics* 3(1980), 113-7, 117.

19. "The Radio Carbon Method," 39 *Utah Acad. Sci. Arts Letters*, *Proc.* (1961-2). 11-5.

20. Cardona, I *Kronos* (Winter 1976)′ 77-85; Ellenberger, *op. cit.*

21. See *Chem. and Engin. News*, Apr. 7, 1975, "Comment."

22. Interview *NY Times* (30 Mar. 1971), Following presentation of paper, see IX *Pensée* 4 (Fall,1974).

EPILOGUE

This book will conclude without a chapter given over to the explosion of the Moon from Earth. In *Chaos and Creation* and *Solaria Binaria* lunagenesis is treated more directly, whereas here we have mentioned at many points its relevance to geological processes. Lunagenesis was the paramount holospheric event. No major geological process can be understood without a theory of the origins of the Pacific Basin. The reader can, if so minded, judge the plausibility and the consistency of the theory by tracing it with the help of the Index.

Geology has not been able fully to confront lunar fission because of its notions of time. Nearly all studies favoring the idea have placed the event in the most remote eras, because to place it later would require the reconstruction of later natural history, including that of the biosphere, Furthermore, recent explorations of the ocean bottoms have revealed their astonishing "youth." This finding has been thought to disprove even the earliest fission of the Moon, since lunar fission theory without the Pacific Basin as its point of departure would be unappealing.

But the new evidence piles up in favor of lunar fission from Earth. The physical calculations of mass fit are plausible; the Moon fits its hole. The Indo-Pacific Basin is there; the ocean bottoms are all freshly paved. The land has been cleaved into great and small chunks and directed at the source of the eruption. The cleavages have occurred at a negative exponential rate down to the very present. The only force capable of such large interlocked effects would be the passby of a gigantic exoterrestrial body interacting electrogravitationally with the Earth. Such evidence is resisted because it is felt that the atmosphere, lithosphere, hydrosphere, and biosphere would be totally destroyed. This is not a challenge to be met by theory alone. If the facts occur to demonstrate the prior existence of a totally encrusted and thriving world surface and, then, after an epic quantavolution, continuation of the same processes, greatly altered, lunar fission has to be believed.

Yet theoretical logic - call it speculation - has a large role to

play, not the least in calculating whether the biosphere would survive. A review of all that has been written on this subject allows an affirmative. The extinction of a species is difficult; the extinction of tens of thousands of species is more difficult; the extinction of nearly all species requires the total explosion of the globe. Exponential reproduction over a few years can hide the most drastic reductions of population by fire, flood, thrusting, explosion, fall-out, radiation, de-oxygenating, and de-photosynthesizing conditions.

The very excesses of blast may harbor the secret of survival. Cyclonic action fashions its own boundaries. The cyclonic form is applicable to water, heat, dust, debris, electrical charge, radiation - to all that in a spread-out form would tend to exterminate life. An atmosphere permitting survival, by the theory of *solaria binaria*, would have been present in a huge plenum or sac surrounding the planets; in addition, atmospheric gases in close encounters can be exchanged, possibly even created under extreme conditions out of water and other compounds.

Surely survival would not be guaranteed. It might even be considered miraculous. Yet there is enough plausibility in survival so that extinction should not be assumed; what is perhaps the most useful and credible theory to explain the tortured Earth should not be passed over. If the Moon was assembled out of a blasted Earth in a highly developed and recent epoch, then the origins and behavior of continental drift are explained, world geography and physiography are explained, the oceans are explained, and the present state and distribution of the biosphere are explained.

It is astonishing and dismaying to consider the huge differences in time allowances between evolutionary and revolutionary morphology. The Grand Canyon has been a showpiece of geology as well as American tourism. Its accepted history is in the range of one to two billion years for the walls and 10 millions and more for the gorge. M. Cook's explanation calls for only I0,000 years to develop the whole complex. The whole world is implicated in such discrepancies, for the types of geological structures of the Earth are limited to a couple of dozens and they are nowhere unique.

Does it not wreck the earth sciences to propose a cut in time by a factor of 200,000? One might as well ask whether it wrecks economics to suffer both Adam Smith and Karl Marx. A quantavolutionary earth scientist can earn a professional livelihood as well as an evolutionary one, so long as his employer is unprejudiced. Further, radical criticism cannot but help any field, if it is properly conducted. Conventional science funds should be tithed to promote tests of the quantavolutionary model.

But beyond these considerations goes the nature of the field. Geology operates upon a few basic concepts, among them superposition, erosion, heat and pressure. And these are commonsense to begin with. When one rock rests upon another, it is younger, unless some force has intervened; erosion is the effects of wind and water upon landscape; heat and pressure can transform and transmute a substance.

Catastrophists do not deny these ideas; in fact, they invented them. Geology also has a large dictionary of names that are given to things large and small, representing infinite combinations of substances, heat, pressure, erosion, and position. The genius of geology is to bring order to this immense variety and to use this knowledge to practical ends like making cement and finding oil. To all of which the quantavolutionist says "amen."

Neither geology, nor any other science in its historical aspect, has to fear the idea of collapsed time, but can derive theoretical benefits from it. Let us speak for a moment of chemical evolution. Should it be as well termed quantavolution? I have here above (Page 119) spoken of the Miller-Urey experiments on the initiation of primitive life processes, and have generally considered the possible derivation of earthly existence from exoterrestrial and atmospheric sources. In *Solaria Binaria* we go farther into the matter, elaborating the life-creating and sustaining plenum of primeval Earth.

In 1983 C. Ponnamperuna reported the discovery of all five of the so-called "precursors of life" in the Murchison meteorite that fell in Australia in 1959 [1]. The compounds are adenine, guanine, cytosine, thymine, and uracil, which are key molecules

in DNA and RNA. He subsequently created all five bases "in one fell swoop" by subjecting a mixture of methane, nitrogen, and water to electrical discharges. This, he said, evidenced that chemical evolution could have been accomplished in a single pool of liquid (or dense atmosphere?) in primitive times. The process might have occurred exoterrestrially as well as on Earth, commented Melvin Calvin who had also studied chemical evolution and won a Nobel prize.

"In one fell swoop:" what, if anything, is this expression but a way of saying collapsing time and quantavolution? Nor can one arrogate to man alone the ability to compress time. Nature may be blind, but she is infinitely large, powerful, and busy.

Therefore, collapsing time may boggle the mind but does not destroy geology. Collapsing time introduces the need for high energy forces than can do in weeks what erosion can do in millions of years. The forces - wind, water, heat, pressure - are already present; it is a question of their organization and intensity. The more intense the forces, the more they depart from our experiences, and resemble the catastrophic recitals of the earliest humans.

Also, the more intense the forces, the more likely that they originate exoterrestrially. There appear to be no means whereby the scientific ideology pervading the earth sciences for the past century and a half can continue legitimately to ignore exoterrestrial causes and exoterrestrial effects in explaining our lately tortured Earth.

Notes (Epilogue)

1. P.M. Boffey, in the *New York Times*, 30 Aug. 1983.

Two Charts of Time

1. An Unconventional Time Scale

See Table 6 in *Solaria Binaria*

2. A Conventional Time-Scale such as is found in numerous works.

Period & Epoch	**Years before Present (m/y)**	**Duration (m/y)**	**Biosphere Prominences**
Quaternary (Holocene)	15,000 yrs.	15,000 yrs.	see text below*
Quaternary (Pleistocene)	2	2	
Tertiary (Pliocene)	15	13	
Tertiary (Miocene)	28	13	
Tertiary (Eocene)	37	9	
Cretaceous	92	55	
Jurassic	119	27	
Triassic	142	23	
Permian	175	33	
Carboniferous	249	74	
Devonian	321	72	
Silurian	343	22	
Ordovician	400	57	
Cambrian	492	92	
Precambrian	2492	2000	

* In the Q mankind caps the prominent insect, mammal, fish, bird and angiosperm plants, presences, which meet the Cretaceous that, with the J, T, and P down into the Carboniferous. abounds in reptiles (dinosaurs), fish both bony and shark-like, brachiopods and ammonites, with conifers abundant. Then we move into ages rich in amphibians, shark-like fish, insects, tetracorals, and productids. The Ordovician and Cambrian favour nautiloids, graptolites, trilobites, and lingulella, while the Precambrian reveals bacteria and algae.

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End of

The Lately Tortured Earth

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Home