CHAOS AND CREATION

AN INTRODUCTION TO QUANTAVOLUTION IN HUMAN AND NATURAL HISTORY

by

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To Ami Hueber

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I cannot without great wonder, nay more, disbelief, hear it being attributed to natural bodies as a great honour and perfection that they are impassable, immutable, inalterable, etc.: as, conversely, I hear it esteemed a great imperfection to be alterable, generable, mutable etc. It is my opinion that the Earth is very noble and admirable by reason of the many and different alterations, mutations, generations, etc., which incessantly occur in it...I say the same concerning the Moon, Jupiter and all the other globes of the Universe.... These men who so extol incorruptibility, inalterability, etc., speak thus, I believe, out of the great desire they have to live long and for fear of death....

GALILEO GALILEI
Dialogue on the Great World Systems

The real actors on the stage of the universe are very few if their adventures are many. The most "ancient treasure" -in Aristotle's words-that was left to us by our predecessors of the High and Far-Off Times was the idea that the gods are really stars, and that there are no others. The forces reside in the starry heavens, and all the stories, characters and adventures narrated by mythology concentrate on the active powers among the stars, who are planets. A prodigious assignment it may seem for those planets to account for all those stories and also to run the affairs of the whole universe.

GIORGIO DI SANTILLANA HERTHA VON DECHEND
Hamlet's Mill

FOREWORD

The scientific community of today is in part a community of myth and ideology. This has always been, and most likely, must always be. Every body of ideas and practices must gather upon a raft in order to float upon the ocean of "absolute reality." When a raft is leaking, construction must begin on a new one. At that moment new designs can be introduced.

This book is designed to show that a typical scientist may hold untenable positions on five major issues: the ordering of the solar system; the genesis of God; the fashioning of the surface of the earth; the evolution of mankind; and the origins of culture. The chapters that are to come assert that all of these processes may have occurred in a short interval of time in association with a set of natural catastrophes. The world has changed by great abrupt movements. with far-ranging effects. This story, and the theory used to organize it, are here called "quantavolution" and "revolutionary primevalogy." They contrast with "evolutionary primevalogy."

In terms of scientific method, quantavolution is a model or image of what might have happened in natural and human history. As such, it is one way of approaching truth in cosmogony-those remote causes of our real world. It offers a truth that may do better than the next best truth, or it may serve until a better truth is offered, helping to orient other searchers, even to assist in its own replacement.

Our so-called "Age of Science" is a patchwork of different mentalities. Most people around the world would dispute the beliefs of science on the above five issues, but do not practice a scientific method. Most scientists of the age share fundamental beliefs on these issues, but too often they do not practice their scientific method with regard to them; they simply carry on at their special tasks. I subscribe to the methods of science, but yet am putting forward a challenge to the beliefs. This sets me among a small minority of scholars, but permits me to draw support from the traditions of a great many people, the

specialized studies of many scientists, and the sympathetic efforts of a certain few.

Many scientists pay close attention on their leading men who are building upon "realities," but ignore their philosophers of scientific method, who warn them not to arrogate "The Truth" to themselves. When their raft begins to leak, then, they must tolerate the effects of presumption: mistrust, disbelief, and annoying criticism. And they may not solve some problems that they have set their hearts upon solving.

ALFRED DE GRAZIA

London
May 1, 1980

INTRODUCTION

QUANTAVOLUTION VS. EVOLUTION

Some millions of persons have lately begun to read about ancient catastrophes. In this, they have been recapturing a habit of their ancestors who had been schooled, whatever their religion, to believe that once upon a time, in the beginning of mankind, terrible disasters of earth, air, fire and water engulfed the world.

As so often happens, what interests the public coincides with what interests scientists. Impelled by an intuition that is common to both the multitude of persons and the body of scholars, the human mind today is moving into an area "where the action is". For perhaps no more exciting and important a set of problems is to be found anywhere in the realms of science and scholarship.

Every discipline is implicated in the theory of ancient catastrophes - psychology, sociology, linguistics, archaeology, biology, physics, chemistry, astronomy, and geology, together with their many subdivisions down to special and new sciences, such as plasma physics, dendrochronology, and mega-vitamin therapy [1]. It has something to say about "the Jupiter Effect," "the Ion Effect," and "the Bermuda Triangle," not to mention "Ancient Astronauts," and the hominids of Olduvai Gorge. Every bite of the archaeologist's spade, every oceanographer's deep coring of the sea bottom, every penetration of outer spaces seems capable of attracting the attention of the catastrophist - that is, the potential quantavolutionist of natural history and human origins.

THE UNIFORMITIARIAN RESISTANCE

The history of science took a sharp turn around 150 years ago [2]. Before then it was assumed that life on earth had originated recently and was wracked by natural disasters. Although this

was believed largely on the "say-so" of ancient theologians and scientists, fresh evidence was being unearthed by famous scientists such as Georges Cuvier and William Buckland.(Figure 1 gives the names and main positions of some prominent catastrophists.)

Cuvier, who is sometimes called "the father of paleontology," divided the history of the world into four epochs, each with its own animals, each ended by great flood. In only the last of these ages, the present epoch, were men and living mammals present, stated Cuvier [3]. He was here mistaken; hardly had he laid down his pen, when human remains were found alongside the bones of extinct mammoths.

By contrast, the upcoming scientists of the last century argued that the world's history was long and evolutionary. On their side were those who were to become the treasured ancestors of science today - Charles Lyell (1795-1875) in geology, Charles Darwin (1809-1882) in biology, Pierre-Simon Laplace (1749-1827) in astronomy, and Lewis H. Morgan (1818-1881)as well as the versatile communist, Friedrich Engels (1820-1895),in sociology and anthropology.

The new group came to dominate scientific circles and scientific thought. The catastrophists disappeared from the scientific mind save as an old enemy. The victors advanced the principle of uniformitarianism. Their minions scorned the catastrophists.

In the words of Charles Lyell, "the ancient changes of the animate and inanimate world, of which we find memorials in the Earth's crust, may be similar both in kind and degree to those which are now in progress."[4] Given time, the forces of nature that we experience today would have caused everything in life and nature that greets our senses. The tallest mountains and the most bizarre fish would have come about gradually, over a long time and by small increments of change.

Indeed, asserted the uniformitarians, the short span of time demanded by the catastrophists was absurdly incapable of bringing forth the great variety of nature; a reader will sometimes encounter, as a ludicrous target, the date proposed by

Archbishop James Ussher (1581-1656), which set the creation of the world by God at 9 a.m. on October 26, 4004 B.C.

Figure 1

PROMINENT CATASTROPHISTS
(QUANTAVOLUTIONISTS)
SINCE THE BEGINNINGS OF MODERN SCIENCE*

	Signifi-cant publi-cation date	Requires divine action	Short-term for recon-structed earth	Intrusion of extra-terrestrial forces	Mankind was catastro-phized
Giordano Bruno	1584			x	x
William Whiston	1719	x	x	x	x
Giambattista Vico	1730		x	x	x
Nich.-Ant. Boulanger	1766		x	x	x
Giov. R. Carli-Rubbi	1780		x	x	x
Georges Cuvier	1826		x		
William Buckland	1824	x	x		
Ignatius Donnelly	1883		x	x	
Isaac Vail	1905		x	x	
Hans Hoerbiger	1913		x	x	
George McCr. Price	1926	x	x		
W. Comyns Beaumont	1932		x	x	
Howard B. Baker	1932		x	x	
Hans Bellamy	1936		x	x	
Claude Schaeffer	1948				
Immanuel Velikovsky	1950		x	x	x
A. Kellv & F. Dachille	1953		x	x	
Hugh A. Brown	1967		x		
Melvin Cook	1966	x	x		
Donald Patten	1966		x	x	
Charles Hapgood	1970		x		

* The list excludes the work of lesser-known and mostly younger quantavolutionists. I. Velikovsky, Ralph Juergens, Livio Stecchini, Gilbert Davidowitz, and Zvi Rix have recently died, leaving many unpublished manuscripts. A few of the scholars who are currently active are Robert Bass, John Bimson. Dwardu Cardona, William Corliss, Eric Crew, Frank Dachille, Eva Danelius, Ragnar Forshufvud, Brendan O'Gheoghan, Stephen

Gould, Lewis Greenberg, George Grinnell. Peter James, Julian Jaynes, Frederic Jueneman. Allan Kelly, Alexander Kondratov, Malcolm Lowery, Christoph Marx. Earl Milton, Brian Moore, William Mullen, G. van Oosterhout, Alan Parry, C. J. Ransom, M. G. Reade, Lynn Rose, Eddie Schorr, Martin Sieff, Warner Sizemore, David Talbott, S. K. Vsekhsvyatskii, Robert Wescott, Irving Wolfe, and Jerry Ziegler; *j'en passe et des meilleurs.* Also the *Creation Research Quarterly* group (Ann Arbor, Mich.); the group of the Society for the Study of Interdisciplinary issues (England); the *Kronos* group (Glassboro College, N.J.); the Lethbridge University, Canada, group (E. R. Milton). and the *Catasirophist Geology* group (Rio de Janeiro, H. Kloostermann). Nor does the table include the "Ancient Astronaut" school (Robert Temple, Erich von Däneken) or "life on other planets" students (Carl Sagan), or contemporary "flying saucer" discussants, or "biblical literalists." Furthermore, the list does not include many scientists. such as C. E. R. Bruce, D. Ager, H. Urey, J. Lamar Worzel., or C. Emiliani, who use catastrophe to explain important episodes of natural history. It may be of interest to place C. Lyell, C. Darwin, S. Freud, A. Wegener, and A. Einstein in the chart: all would vote "No" on all questions. Yet interesting passages and events in the lives of all of them have to do with catastrophic episodes and anomalies.

Actually, when pressed on the matter today, a uniformitarian will say that he is pursuing a method, not assuming an absolute reality [5]. He is saying: I can explain almost everything I see very well by assuming at the start that, whether a mountain or man, it came about gradually, in increments, point by point. That is, he uses a *uniformitarian model* to frame what be discovers.

QUANTAVOLUTION BY CATASTROPHE

By the same token, in this book, I advance a catastrophic model It, too, is a method. By using the idea that great forces can cause great changes in a short time, I am enabled to achieve a fairly consistent and defensible reconstruction of natural history and human history.

I use new terms in referring to this point of view. I call it "quantavolution", for in contrast to evolution, it considers "quanta-jumps" to be the main feature of change (volution). "Primeval quantavolution," then, would be the saltatory evolutionary science characterizing the first ages (primeval) of nature and humanity.

From time to time, I also use the new term, "revolutionary" primevalogy, to stand for the science of catastrophe. For the theory presented and discussed is much more powerful in its range and effects than is conveyed by the idea of a great flood or fire. "Revolutionary" stands in contrast to "evolutionary" and "uniformitarian"; these last words imply small changes occurring over vast periods of time under conditions that have not basically altered over a billion years and more. By contrast, "revolutionary" means intense, abrupt, large-scale change (the same meaning as it has in politics). "A comet produced the last revolution of our globe," wrote G. R. Carli, an early scientific catastrophist, in his *American Letters* of 1780 [6]. And it is the meaning that Georges Cuvier had in mind when, a halfcentury afterwards, he used the phrase "revolutions of the globe" in his discussion of fossil paleontology.

Much that we admire and respect in this world, including our very being as humans, must logically be thought of as the "good" side of the catastrophes of which we speak. Humanity, art, institutions and science are products of the most ancient catastrophes. So, again, the words "quantavolution" and "revolution" may be preferable, or at least useful to remember, in connection with the wholly negative word "catastrophe".

Many quantavolutionists, unlike myself, may refuse to set down a base line of time. Some quantavolutionists may set a single clock of the ages ticking at four billion years ago, and introduce a great leap every million or hundred million years. As one of them, geologist Derek Ager, has concluded, "the history of any one part of the earth, like the life of a soldier, consists of long periods of boredom and short periods of terror."[7] Generally, the farther back a quantavolutionary sets his events, the more be is accepted by the scientific community; for the idea that

contemporary scientists can least tolerate is the idea that the world has been catastrophized recently.

Nevertheless, after years of attempting to bridge the vast chasm between a quantavolution that uses the long time-scale of astronomy and geology and that which adopts the short timescale asserted by the unanimous traditions of humankind, I decided to try to reconcile the two scales to the brief period demanded by the early human voices. Only then could the model of natural and human history be integrated.

Consequently, as this book progresses, I shall be suggesting, with some reason, that human accounts provide a baseline for the age of catastrophes at 14,000 years ago. Also, in my opinion, the nature which offers itself to view-including the solar system, earth, and biosphere-may have assumed its present form in a series of recent sudden leaps. The holocene epoch, to which I allot the 14,000 years, has witnessed a connected set of catastrophes, these can be divided into nine periods, each characterized by natural outbursts but containing tranquil passages as well. I shall soon explain this

The original source of the saltatory changes of the earth and man has been in the skies, in disorders among the heavenly bodies. The celestial disturbances wrecked and reconstituted the atmosphere, rocks, and waters of the world. All combined to reorder the plant and animal kingdoms. Finally they created and molded modern humankind. In brief, forces of extra-terrestrial origin have recently catastrophized and transformed nature and mankind. Many ways in which nature and life behave today are best understood as tailing-off effects of the catastrophes of ancient times.

Notes (Introduction)

1. A. de Grazia (1975).
2. Gillispie (1951).
3. Cuvier (1831).
4. Lyell (1831-4), quoted by Albritton (1974) 857.
5. *Ibid.*, 859.
6. Carli (1780) 329.

7. Ager (1973) 100.

CHAPTER ONE

COSMIC INSTABILITY

The once preposterous idea is now a commonplace: worlds have collided. Even the naive image of colliding worlds two huge globes smashing, into one another is realized. The very event may be observed daily in the great telescopes of science. Furthermore, galaxies composed of millions of stars are in collision. Any unfortunate beings dwelling in those regions of the universe would not consider the word "collision" to be an exaggeration.

The "discovery of the existence, almost omnipresence of a high-energy, explosive universe" is accredited to the 1960's by the Astronomy Survey Committee of the National Academy of Sciences. "The previously well-organized universe ... exploded into a bewildering universe of new types of objects, large and small, with exotic new names and marvelous new natures."[1]

Some thousands of planetesimals of varied shapes and sizes, and much plain dust, orbit between planet Mars and planet Jupiter. These nameless fragments and bits were once part of a planet-, it is scientifically respectable now to think so. Ovenden estimated the mass of the planet to have been ninety times that of the Earth [2]. This implies logically the belief that within our family of planets, a monstrous direct collision once occurred. Ovenden assigns the, explosion to an encounter with a hypothetical intruder passing through the solar system.

Even before Ovenden, scientists such as Kuiper, Bobrovnikoff, Whipple, and Tombaugh lent their authority, too, to the idea that comets and planets collided in the asteroid belt. Whipple went so far as to talk of collisions in that area only 4200 and -1500 years ago, in 1950, the same year in which Velikovsky published *Worlds in Collision.* But Whipple immediately became a dedicated crusader against Velikovsky [3].

IMPACTS ON EARTH

It is also known that comets disappear into the sun, and that comets have hit planets. And that they will continue to strike planets, and that meteoroids, that is, fragments of unknown or eccentric paths, also strike planets, even Earth [4]. They can be, and have been, large.

At Ishim, Kazakhstan, U.S.S.R. is a meteoroid impact crater, recently demonstrated and said to be aged 350 million years. The initial impact penetrated to a depth of 12 km and amounted to 350 km in diameter. The rebound explosion and the collapsed rim enlarged the crater to a diameter of 700 km. The estimated kinetic energy of the event was ten billion times greater than that of the San Francisco earthquake of 1906, the Alaska earthquake of 1964 or the Chinese earthquake of 1976 [5]. The fall, in a different time and place, could have obliterated France or Germany. And from the explosion would have emerged a catastrophic typhoon that would have towered into outer space. It would have darkened the globe with dust, caused universal seismism, and brought worldwide floods from the concussion and from the tilting and/or rotational interruption of the Earth.

In the course of its encounters in space, the Earth has gained gases, rocks, metals and minerals, possibly even some forms of life, and mechanical motions and electrical charges. It has lost gases and rocks and life, motions and charges. It has changed greatly its surface, its atmosphere, and its life forms in the encounters. Examples of all of these occurrences will be found in the pages to follow. Many processes that still continue, such as the cutting back of Niagara Falls, the adaptation of species to desert conditions, earthquakes and volcanism, not to mention various mental processes of humans, can be interpreted as dying effects of the encounters.

Quantavolutional thought is often said to be unable to explain the fantastic amount of energy that must be present and converted in changing large-body motions [6]. After all, to account for an orbital change in distance between the Sun and the Earth requires a power which, if it were expressed as dynamite, would

be sufficient, when properly placed, to blow the Earth to smithereens.

However, such images can be unrealistic, balancing forces operate. Warlow (1978) has, exhibited a wide range of data. and mechanisms -- legends, massive faunal destructions, abrupt salinity changes, tektite falls, then spinning top experiments and mathematical calculations -- relating to reversals of the Earth's magnetic field. He argues that the Earth is easily destabilized and can even turn over repeatedly in response to external influences. If the axis of the Earth tilts when an intruder approaches, the Earth's angular moments of rotation and revolution can respond less radically to the strange forces; the total sphere responds and there is less strain on its parts. Or if the Earth's rotation is interrupted, a fracture of the Earth's crust will reduce the energy of the braking and increase the time given to it.

Every day thousands of airplanes take off and land that would disintegrate if their acceleration or deceleration were in seconds instead of minutes; the rate of slow-down is all-important in the difference between an explosion and a glide, whatever the ergcount.

The damping of the rotation of the Earth from a four-hour to a twenty-four hour cycle would require the disposal of 1.2×10^{10} erg/grams, or a heat equivalent to raising the temperature of the globe 1000^{o} ; but obviously the time factor here is ignored and is therefore instantaneous. Half the Earth gives up some degrees of heat every night, and a slowly decelerating Earth might do the same, night and day.

There is literally all the difference in the world between an earth slowing in a day and an earth ceasing abruptly to rotate. Indeed, it is impossible for a sudden stop to occur. Even if an errant great body were to collide with the Earth, days before the explosive moment the Earth's rotation would have come to a halt, and its surface and atmosphere would be erupting in flames and lightning.

Finally, electrical adjustments are a form of energy disposal and can change a hot transaction into a cool one, and *vice versa*.

Many a meteor that would scorch the atmosphere and bum itself up, or perhaps explode in great heat, is repelled by a like charge of the upper atmosphere and skips off into outer space.

Vast stretches of astronomical and geological time are not required by the delicacy of organized matter. Only small amounts of time may be needed in which to accumulate and dissipate great heat and pressures. From a molten mass, the Earth could have acquired a hard crust in a thousand years (if radioactive internal heating is ignored) [7]. Both electricity and water increase greatly the metamorphosis of rocks and facilitate volcanic activity [8].

That the Moon and Mars and Mercury are devastated and biologically dead, that Venus is rotating backwards and burning hot, that a ghost planet which should perhaps be called “Apollo” is represented by a host of asteroids flying between Mars and Jupiter - all these give one to suspect that the Earth has also suffered, but escaped the worst.

THE CLEAVAGE OF MARS A PARTICULAR CASE

The planet Mars became a horror and great god to the people of 2700 years ago. Mesopotamians might well chant:

> “Shine of horror, god Nergal, prince of battle,
> Thy face is glare, thy mouth is fire,
> Raging flame-god, god Nergal.”[9]

Nergal is god-Mars and planet-Mars. Only a god could fearlessly assault a god. And that is what Pallas Athene, goddess of the planet Venus, did to Mars-Ares-Nergal. It is the famous scene of the battle of the gods in Homer’s *Iliad* [10]. Athene, with the blessing of Zeus drove her chariot towards Ares, “the bane of mortals,” and drove her spear “mightily against his nether-most belly.” A great black cloud arose from him, he “bellowed like ten thousand warriors,” and fled into the high heavens.

Planet Mars is small compared with Venus and Earth, though larger than the Moon. It has a very thin atmosphere. In 1976, American’s spacecraft landed upon it, sensing for signs of life,

finding neither proof nor disproof, but ambiguous evidence. It is wracked by wind and storms of dust. It has changing polar caps of “dry ice”. Most of all it has been bruised and battered [11].

The most revealing feature of Mars is its Coprates canyon complex, photographed by Mariner IX (see Figure 2 with 1997 upgrade). The Coprates complex, as Alan Kelly has related, is a 7500 miles long line of volcanoes and canyon that are the “product of the same event, when some very large comet or other massive intruder from space passed too close to Mars.... This intruder literally sucked the lava from the interior of Mars to form the huge volcanoes.... As it came closer it caused a tremendous bulge, miles high, that burst open along the top and spewed out lava and great chunks of Martian crust, much of this material following the intruder into space.”[12] Two million cubic miles of lava disappeared into space within a few hours [13].

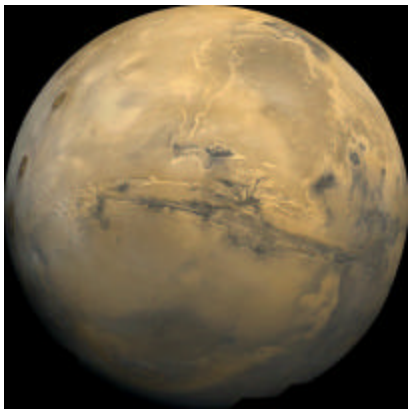

Figure 2: THE RIPPING OF THE SURFACE OF MARS. (Click on the picture to get an enlarged view. *Caution: Image files are large*.)

Kelly marks the following: the 2200 miles length of the canyon proper is more that 300 miles wide near its center and over 20,000 feet deep. The disturbed surface, however, marked by great mountain peaks such a Nix Olympica, begins before the rupture and continues far beyond it, giving a total length of 7500 miles, which is over half the equatorial circumference that it follows. Nix Olympica is over 300 miles at its base and over 15 miles high. All but one of the 20 volcano-like structures on Mars are along this same line of destruction. The walls of the canyon

are slumped or subsided in a series of stair-steps. No evidence meets the eye of water erosion, sedimentation, delta fans, or eroded stream channels cutting across the surrounding plateaus (the expanded bulge of the gravitational attraction). Hence the canyon is not, nor was it ever a water system, nor ever transported water. Mars or Ares was assaulted and ripped open from space.

"ONE OR TWO CENTURIES" OF "ETERNAL ORDER"

The educated public has long held, as an article of faith, that Isaac Newton discovered the laws of planetary movements and that Laplace (1749-1827) mathematically expressed their practically eternal stability [14]. Yet here I have suggested that the planetary movements are not so stable, nor have they been.

Lately astronomers have begun to reconsider the dogma of celestial stability. Ransom and Milton have collected studies of instability in the skies [15]. In 1953, W. M. Smart, Professor of Glasgow University, wrote in his book, *Celestial Mechanics*, that the maximum time-interval over which stability calculations of the type presented by Laplace, Lagrange, and Poisson can be trusted is 300 current solar years [16]. The words "one or two centuries" occur elsewhere as the time limit of validity.

Moving back, in 1931, E. W. Brown that the President of the American Astronomical Society, wrote that the mathematical statement of the stability of the mean distances, of the eccentricities, and of the inclinations of the planets "can only be regarded as valid over a limited interval of time of the order of 10^6 or perhaps 10^7 years at most."[17] Thus 10 million to 100 million years of stability.

Brown stated elsewhere in the same year that there were no logical or mathematical reasons to doubt that certain of the terrestrial planets might have interchanged their mean distances from the Sun. He felt that this interchange was unlikely, and believed the planets were probably in their initial order, "though the relative magnitudes of some of their distances may have been considerably changed."[18]

Back again, in 1961 Arnol'd and before him, in general, PoincarÈ in 1899, proved that Simon Newcomb's 1895 mathematics providing 100 billion years of stability were wrong in form, but especially in not accounting for perturbing (possibly non-gravitational, said Brown) resonances [19].

Newcomb had been attempting to bolster Poisson, Lagrange, and Laplace (1773) in their attempts to show that the mean planetary distance would always stay within bounds and that collisions were nearly impossible. Laplace (1749-1827) in 1784 declared that planetary inclinations and eccentricities must remain small [20].

Laplace had guessed 10 million years as the duration of the present stability, a soothing enough figure to unleash the uniformitarians to pursue time enough on Earth for sedimentation, surface changes, and evolution of life to occur. Or so they thought. With a present Earth-age estimate of some 5 billion years, 500 times greater than his 10 million years, there might have been 500 world collisions in Earth history, and another may be just around the corner.

Astrophysicist Robert W. Bass has related this story much more fully elsewhere [21]. If anything can be added to his account, it may be that Laplace, the mathematical godfather of the stability of the heavens (with Newton as father), had himself expressed original doubts on their stability despite his mathematical proofs. Stecchini has published Laplace's doubts [22].

It develops that Laplace was more sinned against than sinner, by those who made a uniformitarian religious dogma out of his mathematics of stability. For the same Laplace had written: "The sky itself, despite the orderliness of its movements, is not inalterable." Further the stability of the present order "is disturbed by various causes that can be ascertained by careful analysis, but which are impossible to frame within a calculation."[23]

Laplace warned that he had not taken comets and meteoroids into account, and encouraged the study of history, however brief, for enlightenment on such experiences. He also wondered, Stecchini declares, "whether heavenly bodies might not be

affected by forces other than gravitation, such as electric and magnetic forces."[24] And he even presented a cometary collision scenario, following evidence from mechanics, geology, natural and human history. Thus Laplace may be placed in the company of Giordano Bruno, Galileo Galilei, William Whiston, Nicholas Antoine Boulanger, and perhaps even Isaac Newton, when he strongly supported Whiston, his younger colleague.

Nevertheless, Bass is correct in his account of how Laplace was used in history by scientists who were fighting for uniformitarianism and against the need for any divine intervention in world affairs. He has shown how the successors of Laplace expressed themselves in intuitive language, supposedly the bane of the conventional astronomers. "Whenever these allegedly authoritative statements about time intervals of validity [of calculations of celestial stability] have been made, they are without exception accompanied by words like 'supposed', 'appeared', 'hope', 'seems', 'might', and 'think', revealing clearly that the writer was relying on his personal intuition rather than quantitative evidence [25]. It is ironic that Harlow Shapley, the famous astronomer, admonished the Macmillan company for considering a venture into the "Black Arts" with the publication of Velikovsky's *Worlds in Collision* [26].

A review of cases such as that the comet Oterma III may be in order, for both the solar system and beyond. A report on Oterma III was presented by A. V. Folcin of the U.S.S.R. in 1958. Before 1938, this comet has an orbit lying entirely between the orbits of Jupiter and Saturn. In that year, it approached near to Jupiter and then swung around so that it acquired a new orbit entirely between Mars and Jupiter. Bass points out that "for Venus one can, with negligible error substitute any smaller mass."[27] That is, what happened to Oterma could also happen to Venus, to Mars, or to Mercury, for all are of the same minute order in comparison with Jupiter.

In sum, this brief chapter has intimated several conclusions. Astronomers often have fallen victim to the myth of the eternal order of the heavens. The mathematics of the classics writers concerning immutable motions are vulnerable. The "guaranteed" stability of the solar system, when recalculated in their own

terms, may be uncomfortably short. Recent events such as Oterma III encourage a review of theories of celestial order.

As Professor John A. Simpson expressed the new mood, writing while Pioneer XII was speeding towards Jupiter: “Much of the new astrophysics is based on non-equilibrium - even explosive - phenomena, rather than the steady state thermal phenomena which have been the primary concerns of astrophysics in the past. It is the violence of the phenomena discovered in the astrophysics of the past fifteen years that has changed dramatically our current view of the universe.”

Changing celestial behavior excites great forces to work upon Earth. After assembling the evidence for the quantavolution of life forms, the Russian paleontologist and geologist, L. J. Salop concludes: “The Earth, together with the life it supports, is not a closed self-developing system but constitutes an integral part of the cosmos.”[28]

Notes (Chapter One: Cosmic Instability)

1. *Astronomy and Astrophysics for the 1970's* (1972).

2. Ovenden (1973).

3. Velikovsky (1955) 288-9; Juergens, 30 and de Grazia 212-3 in de Grazia *et al* (1966).

4. In addition to the older writers, Whiston, Boulanger, Carli, Donnelly, and Beaumont, see Velikovsky (1950); and entries in A. Miller (1977); Ransom (1976) 73-9; Kugler (1927); Patten (1973); Kelly and Dachille; *Pensée*, nos I-X; *Kronos*, vol. I-III; Richter; Rix (1975); Vsekhsvyatskii (1976).

5. Dachille (1975) 51.

6. Rose and Vaughan (1974); Michelson (1974).

7. Cook (1966).

8. Kelly and Dachille, 67; Velikovsky (1950) 91-2; (1955) 133.

9. Velikovsky (1950) 261, quoting Böllenrücker, 19.

10. Iliad, Book V; here the quoted words are from the Murray translation. Loeb Classical Library (1925), *Cf*. Velikovsky (1950) 245 ff.

11. Pollack (1975); Woronow (1972).

12. Kelly (1974).

13. Some of the huge duststorms of Mars may be of this material too. *Cf*. Vsekhsvyatskii (1967) on loss of material by planets. The solar system envelope contains a great deal of "meteoric" dust (Van Allen, 1975).

14. Stecchini (1966) 80 ff.

15. Ransom (1972); Milton (1975).

16. 4, 94-5, 198 discussed in Bass (1976) 39-40.

17. *Ibid*., 39.

18. *Ibid*., 37 quoting from E. W. Brown's Presidential Address; *cf*. p.30.

19. *Ibid*., 31-5 and Bass (1974) 8-20.

20. *Ibid*.

21. (1974), (1976).

22. (1966) 105-9.

23. *Oeuvres Completes*, VII, 121, quoted *Ibid*., 107.

24. Stecchini (1966), 108, citing Laplace VI. 347.

25. Bass (1976).

26. Juergens (1966), 20.

27. (1974), 15.

28. (1977), 40.

CHAPTER TWO

HIGH ENERGY FROM SPACE

In the train of the great deluge that ended the reign of the god Saturn-Osiris, mankind suffered from hideous monster-forces. So said the Egyptians. These were Briareux: loss of serenity; Othus: the succession of seasons; Ephialtes: horrendous clouds; Encelade: ravaging waters; Porphyrion: fracturing of the earth; Mimas: the downpours of water; Rhaecus: the great wing. Horus, son of Osiris, helped his mother as much as he could to restore man to his happier pursuits [1]. The original cause was a huge celestial body. It was an age-breaking period, one of the two worst, but the high energy forces were always the same, in all the periods of chaos and creation.

The first chapter offered grounds to doubt the stability of the solar system in the past. The present chapter introduces - but only for recognition and as a prelude to extensive discussion in later chapters and volumes - the heavy, sky-provoked forces that can cause immense changes upon Earth in a short time. If the solar system may have been unstable and if the Earth can be transformed by high energy forces, then all is ready for the third chapter, which radically challenges a long-time history of the present world. Once that is done, a new short-time calendar of the holocene epoch is in order. Thereafter, the goal will be to prove the calendar - or if not to prove it, to establish it upon a basis worthy of intelligent discussion.

Comets have been invariably a source of terror to humanity and linked to all manner of evil (see Figure 3). The many apparitions have been accompanied in all too many cases by the reality of collision. Planet Earth may have endured more than a score of space encounters with large bodies during the holocene epoch. The most recent occurred around the founding of Rome. Mars approached on several occasions, at 15-years intervals. Venus also intruded upon the Earth’s sphere, then and before then, at least several times, on a half-century cycle. Velikovsky (1950) depicted these latter events.

Figure 3. FEAR OF COMETS AND THE CONQUEST OF 1066. (Click on the picture to get an enlarged view. *Caution: Image files are large.*)

The Bayeaux Tapestry on the Comet of 1066. On the eve of The Battle of Hasting, a comet lit up the sky. The crowds gaze up in awe at the comet, and a courtier tells King Harold of this terrible omen. Below are seen the ghostly invasion ships which Harold now fears will follow. The tapestry was produced only decades after the event.

Earlier, planet Mercury appears to have been a familiar figure of several pass-bys. Saturn, Jupiter and other heavenly bodies give the impression of having loomed large in the sky during their own great times. The moon has been a continuous interactor with Earth but for long has been in stable relationship; I would only mention here that the original great body to have encountered Earth, which I shall be calling “Uranus-Minor”, may have made only a single pass at our globe but that the Moon owes its very existence to it.

Large-body encounters bring hundreds of damaging adjustments of short and long duration, when the effects of an initial encounter are being dissipated. It would always take some time for the winds, waters, and land to settle down and for a new electrical balance to be struck throughout the system. An equatorial bulge and flattening of the poles would have to occur after a change in the Earth’s geographical axis, that is, after a shift of the location of the poles. The strains of this adjustment would carry over thousands of years.

To be added to the bill tendered by catastrophes are some minor disasters. These might be Jovian "bolts from the blue" across immense spatial distances. Or they might be showers of gases, rock, or dust. Or the penetration of the Earth's defenses by a small or heavy meteoroid. I shall be arguing later on that a heavy bombardment of the Earth preceded the pass-by of Uranus Minor from which emerged the Moon. Further, the fall-back of lunar material would have been like a rain of meteoroids.

It is difficult in these more stable years of solar dominance, or Solaria, to imagine ancestral conditions. People suffered from catastrophic activity in one way or another during much of the holocene: perhaps one-third of human history, or 5000 out of the 14,000 years that I estimate as the duration of "full human-ness". For one-third of its existence, the human being has been in a struggle against annihilation by nature, or, more exactly, has been caught up in a battle of annihilation among the forces of nature, a "war among the gods".

When the Earth and any large intruder approach each other, their motions are affected and surface breakdown occurs on both bodies. The affected motions, such as angle of approach, speed of rotation and orbital speed, may be numerous. Their magnetic fields may be altered and even reversed. The crust or shell of the bodies, affected more directly from "above" tends to slow down or accelerate faster than the denser and hotter mantle and core of the bodies. These continue their speed almost unabated. Heat is generated upwards within the bodies. Explosive exchanges of atmosphere, water, soil, and rock occur. The shells crinkle, raising hills and mountains. One is reminded of the Revolt of the Giants in Greek myth wherein the giants piled mountain upon mountain, "Ossa upon Pelion," in their attempt to assault the heavenly fastnesses of the gods. Great gravitational and electrical forces are levied and act destructively throughout upon air, earth and water.

ELECTRICAL FORCES

Entities from the size of an atom to that of a galaxy can hold electrical charges, and carry free positive or negative charges that can move through a field under repulsion or attraction with

great energy, depending upon the distances involved. Eric Crew has recently commented that "one of the most striking and yet most neglected aspects of electricity in astronomy is the enormous forces which can be produced by accumulation of electron charges."[2]

The potential difference of charges that can be theoretically accumulated on even microscopic particle is describable in millions of tons.

For instance, the number of free electrons in 1 cm^3 of copper is 5 x 10^{22}, giving a charge of 8000 coulombs. If so charged alike, two cubes of 1 cm that were one meter apart would repel each other with a force of 79 trillion tons. (This earth-cracking force could not really occur because the copper would fly asunder long before it could be charged to 8000 coulombs.) The example serves to alert one to the possible electrical transactions that may occur in astronomical space, where distances between bodies are great but the size of the bodies, too, is great. Planets can be charged to potentials differing from their near space, with catastrophic result should a discharge occur. Furthermore, great electrical exchanges can occur both between bodies of opposite charges, and between bodies of similar charges of different sums, that is, subject to a voltage gradient between them.

A nova - and we shall assert that two or more have occurred merely in the time span covered by this book - is largely an electrical phenomenon. Surely it is part of an interacting celestial system, but the form of the interaction occurs internally and in the near space of a body. Stars are prone to nova, not planets, we say, but that only means that a planet is defined as a more stable (dense) arrangement of matter. When a star novas, writes Bruce, the principal event is the dispersion of its atmosphere leaving the nucleus practically unaffected [3]. A nova is the catastrophic electrical neutralization of the entire charged atmosphere of a star.

A complicated natural system of sheaths surrounds bodies in space. It grades, balances, and neutralizes charges to keep cosmic bodies in the state which we come to regard as "normal," that is, where time is lengthened and geological and biological

processes, such as our very existence, can occur. Ralph Juergens has described the space-sheath system in connection with the encounters of the Earth and Mars [4], and it will be explained below. In all the "amazing" observations that we make about the "world," surely the continuous series of electrical relations that extend from the universe, through the galaxy and sun and planets and space, through the atmosphere, through the rocks, throughout our bodies down to the extreme interior of every cell, must be among the most astonishing.

HEAVY-BODY IMPACTS

Neither Venus nor Moon nor any other large body could actually pass through the Earth's near atmosphere without the annihilation of both bodies. At some 30,000 miles distance, a large body such as Venus would draw up tides of the atmosphere and oceans with 35,000 times the tidal attraction of the Moon, and hump up the rocks in places. The gravitational attraction would be 25 times that between the Sun and Earth. Something like this may have occurred not only with regard to Venus but also during the Uranus Minor and Saturn Flood episodes, soon to be discussed.

However, any small extra-terrestrial body, a rock meteoroid, say, of half-mile diameter, would cause great damage in passing through our atmosphere. It would blast, burn, deafen, terrorize and transmute materials over its line of travel, in a tube with a radius of a hundred miles or so. A body of 100,000 tons[3] has a speed at impact anywhere from 5 to 50 miles per second, and its ambient temperatures as it passes through the air rise to 2000 degrees centigrade or more. When it strikes, a crater of several kilometers in diameter would be excavated.

Atmospheric shock-waves, capable of blowing down Manhattan, would occur, but if that would not suffice to destroy it, the heat would vitrify the city and the earthquake would shake it down. The remainder would be ravaged several times over by crosscutting tsunamis.

The Siberian Tunguska body of 1908 that penetrated the atmosphere and exploded just short of contact would have done

this kind of job at St. Petersburg, the capital of Czarist Russia, if it had continued to travel for a few hours longer. At Tunguska, it killed the biosphere for miles around, blew down 80,000,000 trees, sent blasts of wind and earth tremors over hundreds of squares miles, engendered a flourishing forest growth, and may have mutated and created new plant species [5]. A new Soviet expedition departed in 1976 to investigate the locale.

Far greater in destructiveness than either the hypothetical case or the Tunguska incident was the Phaeton (Typhon) explosion of about 1453 B.C. The mythical Phaeton was such a larger meteoroid or was a falling portion of cometary Venus itself. Child of the Sun, he was let drive his father's chariot, but could not control the horses and burned up much of the world. Zeus finally dispatched him with a thunderbolt to save the rest. Many stories are told, too, of a monster Typhon being struck down in the same time period; probably Phaeton and Typhon are identical; they are certainly related [6]. About fifty years after the first great incursion of the comet definitely referred to as Typhon, a second incursion came and was seen as a horse-drawn chariot and driver in the near East [7]; the image would correspond closely to the Phaeton myth and the time interval would have been small enough that, together with the destruction and confusion, the two encounters would later be treated as one. When Phaeton (Typhon) struck the earth and penetrated the atmosphere the effects were severely destructive. The location of the fall of Typhon is unknown. Kelly and Dachille guessed it might be at Bermuda. The Ishim meteoroid, described in chapter I, may have been implicated, despite the much greater assigned age.

The great pass-bys may be more important to history and more thoroughly destructive, but small and medium-sized meteoroid impact explosions, such as the Ishim, Tunguska, and Phaeton, are heavily damaging. Geologists Kelly and Dachille have calculated the effects of an explosion of a 200-mile diameter "Intruder", somewhat smaller than one which they believed fell at "Bermuda" within recent times, possibly in the Jovean or Mercurian period.

Approaching tangentially the Intruder would have scorched through 1100 miles of atmospheres at a speed of 20+ miles per

second at temperatures (~7500° c+) greater than the Sun's surface. From 8 to 60 second seconds' exposure would be suffered below its path. It would occupy at an 80-mile elevation over 100 degrees of the total dome of the sky (180°). It would theoretically generate then and upon impact biosphere residues enough to produce all of the known coal and oil reserve in the world.

The temperature at the moment of impact would rise to over 200,000° C.

> "An actual collision would raise a column of vapor and debris that easily could measure one thousand miles in diameter at the base, and possibly larger at the top after the fashion of the atom bomb explosions. This column might tower something like five thousand miles above the earth, the higher particles doomed to float out beyond the reach of gravity… This catastrophic column would be "a gigantic chemical laboratory," arranged in levels downwards, outwards and upwards. Its pyrolysis would continue for some time to "add to the generation of coal beds, oil crudes, baked shales, sand-stones, firerock, hard pan, and to many specific, but generally unexplained mineral forms. At 'zero point,' conditions being so extreme, it is not unreasonable to suppose that actual transformation and the very synthesis of elements would take place."[8]

Fundamental dissociation would occur and rearrangements of protons and electrons forced into being. Heavy metals such as uranium and thorium might be formed, with their radioactive properties. In a breathtaking sentence, the authors ask whether we can "see in the radioactive elements one course taken by nature to absorb and store a portion of the high energy of the impact, with the energy escaping gradually due to an imperfect storage structure within the nuclei of these elements."[9] Grading away from "Point Zero" would be ionic and elemental fabricating zones and zones where more stable compounds are generated. Rock salt would descend from intensely heated bodies of water blown from their basins, or it would form soon after the landing and evaporation of the waters.

Shearing, folding, fracturing would occur on a large scale in an area of over a thousand miles in diameter. Biosphere mutations at the edges of the catastrophized area would be exceedingly

numerous. They may be disregarded for the moment, my purpose here being to stress the probable role of the "catastrophic column" or typhoon among the mega-forces that shorten the time needed to change the world.

SEISMISM AND VOLCANISM

Chapter 7 will portray the world-wide cleavage and ramified fracture system originating in the large-body encounter of 11,500 years ago, and the subject of earthquakes will be further treated in a forthcoming volume. Therefore, I need not here dwell upon the seismic effects of celestial encounters. When catastrophic seismism occurs, owing to crustal slippage, the rocks of the Earth move not locally but over long distances. Different layers of the crust may move at different speeds and for some miles down. The Alberta Canadian Rockies are thrusted and folded sedimentary rock propelled from a long distance away and piled up many thousands of feet. These sediments left behind them the basic shield rock [10].

The number of extinct volcanoes far exceeds the number that are active. Iceland has 107 active volcanoes, but thousand of craters, most of them definitely extinct, all young. Of its great network of fissure volcanoes, some have erupted disastrously in recent history. Lava beds not only line the ocean basins but are interlarded among pebble, rock, and sand beds in many parts of the world. The lava beds laid down in the last two thousand years are as nothing compared with those found in all the continents of the world from earlier times. These were laid down mainly by fissure, not cone, eruptions. A large-body encounter would excite such volcanic activity in many places.

FIRE AND GASES

When the Earth changes motion, fires break out. When meteoroids fall, fires break out. When lightning strikes, fires erupt. When gases penetrate the atmosphere, fires explode. All of these accompany and occur in the aftermath of large-body encounters and significant meteoric fall-out. Persuasive accounts come down from legends of many peoples concerning the burning of the world. One of the most astonishing groups of legends, set forth by Velikovsky and others, treats of rains of

burning oil [11]. It is difficult to put aside these reports, which are associated with the cometary tail of Venus in the fifteenth century B.C. The falling substances are both in flames and unburned, they have the stickiness, the flammability, the noxiousness, the denseness of petroleum and bitumens. They could not have been lofted by volcanoes or exploded by local pressures of oil reservoirs underground. They might be manufactured, however, in the "chemical factory" of a meteoroid impact.

The account of the destruction of the army of Sennacherib before Jerusalem in 687 B.C., synchronized as it is with other disastrous events elsewhere, indicates strongly a poisonous gassing of the multitude waiting to assault the eminences of the walled city [12]. Donnelly lays responsibility for the immense Pestigo (Wisconsin) Fire, and the Chicago Fire upon pockets of gas broken away from Biela's Comet that had earlier disintegrated but whose fragments and gases were making an anniversary rendezvous with Earth [13]. Thousands of people were killed and millions of acres burned down in three states [14]. He extends the condition and consequences exponentially in his discussion of the great comet of *Ragnarok* times.

The famous case of the frozen mammoths is related to sudden atmospheric change. To freeze a large mammal so quickly and completely that even the mouth and stomach contents contain half-chewed and undigested plants requires quick-freeze conditions found today only in freezer-factories processing fresh foods for indefinite cold storage [15]. So indeed the mammoths have been preserved up to this time. Quite possibly, the cold front introducing an abrupt climatic change penetrated first as pockets of space gas at temperatures found only in outer space. A related possibility is a vacuum-chill incident; the congested lungs of one mammoth implies this. The most likely time for the death of the great animals would be during the early Jovean age, about 3500 B.C. There, both deluge and temperature conditions were extreme. The several writers who have advocated a sudden axial tilt as the sole and sufficient cause cannot be correct [16].

DENSE FALL-OUT

In all large-body encounters and minor extra-terrestrial invasions there will occur fall-outs of dense material. Dust, stones, brimstone, ash, micro-tektites, oils, and other material will descend with or without water. All will bury or devastate the biosphere by poisoning and asphyxiation. A geologic column will reveal some extra-terrestrial or at least catastrophic element of fall-out of one or more of these materials. A recent study, by Woods Hole oceanographers, of American land and shallow sea cores shows the presence in the soil of ancient polycyclic aromatic hydrocarbons, which are carcinogenic [17].

Extraterrestrial and explosive fall-out includes radioactive material along with the dense material product. Some of the radioactivity will enter because the bars are let down to the intrusion of “normal” cosmic and solar particles. Much will be “a la carte,” produced by the peculiar invading agency and the destruction of its materials in the atmosphere of the Earth.

HURRICANES

In the large-body encounters and in many derivative or minor intrusions upon Earth. there will be hurricanes and typhoons of large diameter and immense energies. The hurricanes will be operating at speeds upwards of 200 miles per hour and raising catastrophic columns of all kind of material far into the stratosphere if not into outer space. They can scrape the surface -- clean down to bedrock, eradicating all trace of biosphere and human settlement. They can transport the biosphere over long distances, and drop it or raise it into the skies. They can even make away with rocks of 1000 or more tons; they can suck up or lay down lakes of waters [18].

PANDEMONIUM AND DARKNESS

With such forces in operation, the sights and noises are terrible and maddening. When the “dormant” Krakatoa volcano exploded in 1883 (following, incidentally, by a year the passage of the Earth through the tail of a comet), the thunderous noise was heard a thousand miles away. The noise of the eruption of Cosaguena, Nicaragua, on January 30, 1935 was heard in

Jamaica 850 miles away. The fright was so severe that in one village “300 of those who lived in a state of concubinage were married at once.”[19] Jupiter was the planet of “Thunder”, Saturn was called the “Thunderer” too; Mars was called the “god of Noise.” The full consequences are reserved for treatment in a subsequent volume, but I would mention here the knowledge that we newly possess -- that sights and sounds can have not only far-reaching psychological effects; they can compete with radio-activity in the production of biological, hence ecological effects [20]. The meteorological, geological and astrophysical sciences are as yet scarcely positioned methodologically to attend to or even discern such effects.

Comets, and to a lesser extent meteoroids, can take many shapes. Several illustrations are given on the adjoining page from astronomical drawing and photographs. Many basic human objects and experiences can be obviously symbolized by a comet: violence, instruments such as swords, chariots, boats, wings, birds, cows, sexual organs, heads, hands, flowers, etc. These apparitions are so suggestive, compelling, and terrorizing that whatever on Earth is associated with them will never again be ordinary, and the ways in which these objects and experiences enter culture will be pathologically or at least illogically affected (see Figure 4 on pp. 26-27).

A final effect, when considering the consequence of large-body encounters, whether atmospheric pass-throughs or impact explosions, is that a stygian darkness would occur. A reduction to zero-visibility at night and near-zero visibility in daytime has most formidable psychological and physical consequences [21]. The Jews in Exodus wandered in darkness or gloom for many years. Their survival was only through the fall-out of manna, a sweet tasting starch, whose deposit from the skies is reported from Greece, India, Scandinavia, and Mexico -- from all around the world, it appears [22].

Styx itself was the gloomy hell of the Greeks, whence stygian darkness. *Götterdammerung* was the twilight of the gods of Nordic mythology, a similar cosmic darkness. After the explosion of Krakatoa in 1883, the sunsets of the world were more sombre and beautiful for years. After the Alaskan volcanic eruption of 1912, some 20% of the Sun’s radiance was

interrupted. There is nothing at all unbelievable in the ancient's accounts of years of darkness.

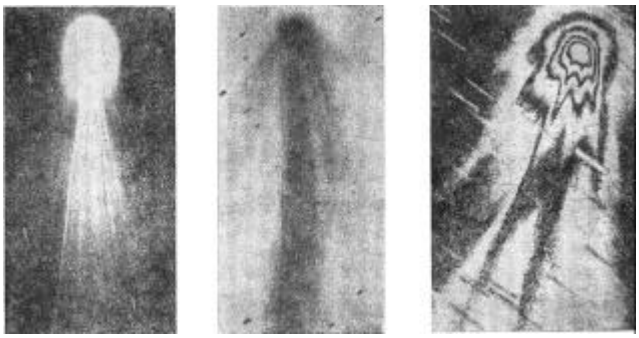

Figure 4. SOME SHAPES TAKEN BY RECENT COMETS. From left to right: (a) Tailed Sun, (b) Widow-Witch, (c) Monster

4 (d) Flying bird

4 (e) Scorpion

4 (f) vulva

4 (g) Phallus

4(h) Quetzalcoatl Bird

(Click on the picture to get an enlarged view. *Caution: Image files are large.*)

"Comets are individual objects and .. a truly representative comet does not exist." (Rahe *et al*., *infra*. vii). Hundreds of different figures can be (and have been) associated with comet in science, legend, and journalism. See our Figs. iv, 3, 17, 31, 32. Photographs and drawing by astronomers: a. Daniel 1907 IV M. Wolf (photo); b. Morehouse 1908 III (photo); c. Morehouse 1908 III (isodensitometer photo); d. Swift-Tuttle Aug. 29, 1862 (drawing by Secchi); e. Daniel 1907 IV M. Wolf (drawing); f. Swift-Tuttle Aug. 27, 1862 (drawing by Schmidt); g. Tebbutt July 4, 1861 II (drawing by Schmidt); h. Tebbutt July 1, 1861 (drawing by Secchi).

Source: Jürgen Rahe, B.Donn, and K. Wurms, *Atlas of Cometary Forms* (SP-198- NASA, Washington D.C. 1962), pages (in order): (a) 40 Fig. 1; (b) 73 Fig 22a; (c) 63 Fig. 14; (d) 29 Fig. 47; (e) 40 Fig. 2; (f) 25 Fig. 15; (g) 17 Fig. 9; (h) Fig 21.

Some day, when the fractures and craters of the Earth are counted and synchronized, even approximately, the most astonishing images will be forced upon us by the calculation of times, not once but often, when mankind had to live for extended periods -- days, months, years, a whole generation -- deprived of light to hunt by or to see even a cloudy sky. These would be times when the natural and human fires would be the living light, and the sky lights would be in memory, yearning, dreams and utmost ritual pleas.

THE BATTLE OVER TIME

No doubt that in the darkness, the human being thought of time. “When will it end...?” and course, “How long has it been going on...?” which means “When did it begin...?” The *Veda* pleads: “Hide the hideous darkness, make the light which we long for.”[23] Time has from its human beginnings been subjective.

Still, human capability has stretched to the utmost to objectify time. The aim is to place the world outside of reach of fickle minds and to ask “When did it really begin? What is its real measure?” So that there have become two kinds of time, subjective time and objective time. And neither is clean, pure, separate from the other.

But few question the dominating claim of science, which is this: “Never mind how suffering and pleasure and shock affect the human mind. Outside of man, there moves a process quite out of control of his wish or will. That is time. Now how do the two relate to each other?”

Scientific time strives to go beyond human time. When we think of a microsecond, we imagine it or we simply calculate it mechanically. We do the same with a billion years. We take a time to which we can relate psychologically -- a solar year -- and

reduce or expand it to where we must deal with it mechanically, without feeling it in our guts.

We do the same with energy. We feel a heat in some measure and then extend its measures to degrees of cold and heat that are astronomical. But these extremes are also mechanical extensions of ourselves.

In both time and energy measurements, therefore, we are working within realms of the human that are extended into the inhuman. Both catastrophists and uniformitarians are human, feeling time and heat; both are working with inhuman extremities.

Each looks at a range of "mountain": the one says that it was raised in years by unimaginable forces, the other that it was raised unimaginable millions of years ago. It should be possible to say who is correct. Although both are dealing with absolutes raised out of relatives, both share and understand the relatives. Hence, sooner or later, one will be proven right or wrong in terms that the other must accept.

Why, under such circumstances, cannot the quantavolutionist and evolutionist come to terms? One reason is that they need not come to terms. A quantavolutionary can be just as good a geologist, historian, astronomer, biologist, or philosopher as an evolutionary. One will find fewer instructional materials, true, because practically all educational establishments are in the hands of evolutionists. But, if persistent or clever, one will make up one's own materials from those of the opposition. I do not see how pragmatic skills of the kind that earn a livelihood, whether in teaching, research, or professional practice, will be affected adversely. But I can see how such an allegation can be used as a form of invidious discrimination against revolutionaries.

Another reason for not coming to terms is already implied. "Nature" likes ambiguity. The historical record of nature is dim, irregular, and requires assumptions that are logically vulnerable in interpreting it. The parties might be forced to come to terms if "nature" offered itself as arbitrator. But time after time, it refuses to arbitrate; now a scientist will approach with a carbon-14 test

for precise dating and evolutionaries will exult: “It is all over but the shouting!” Other scholars will claim that the test is not fair, constant, or valid, so the controversy is only beginning. Again a scientist will appear with a “proof” (e.g., Bode’s Law) that the planets must occupy their present order and intervals, and another scientist will step up to show that a) another formula will express a different order equally well and b) there is no empirical theory behind the seeming order [24]. Or again, scientists are persuaded of the fact and age of continental drift by the bands of magnetic reversal found on the rocks of the ocean bottom, but they will be told that the magnetic bands could be much younger (and therefore reversals more frequent) if the ocean bottom were being expanded and paved more quickly [25].

Nevertheless, both the quantavolutionary and evolutionary are driven to woo “Nature” for a direct clear reply and perhaps one day someone will succeed. Meanwhile the quantavolutionary will continually step forward to offer the unimaginable forces of ancient times--the killers of time, the stoppers of clocks.

Geologist Derek Ager estimates that 2000 heavily destructive tsunamis have struck the continental coasts during the present era (Solaria) and wonders at their great cumulative effect [26]. The convinced quantavolutionary says that the total effect of these 2000 tsunamis would have been exceeded by a single close passage of planet Mars between 766 and 687 B.C. Or by a meteoritic fall of the same time. “The terrible ones,” and “the Maruts” are two of many personalized and divine epithets given to the bursts of meteoroids and thunderbolts from Mars that struck in many places [27]. We find Hindu prayers imploring them to “be far from us and far the stone which you hurl.”[28]

THE QUANTAVOLUTIONARY COLUMN

Wherever one stands on earth, there exists some record of history above and below. A fully intelligent mind should be able to observe and write it. Lacking full intelligence, but also in order to generalize, one can still construct a model. Hence we conjure a quantavolutionary column, that by telling of present conditions, gives form to our history.

In the memories of the days of chaos and creation, in the annals of pre-Solarian mankind, and in the textbooks of science today are described numerous floods, shocks, and explosions, of dimensions too great for modern measure. Working as causes and effects, and as effects that become causes, they have made of any place on earth a Quantavolutionary Column:

Any cube of one kilometer diameter circumscribed anywhere on the surface of the earth, which reaches as high as the end of the magnetosphere hundreds of miles upwards, and as low as the upper mantle some thirty kilometers down, will have endured within the past 14,000 years radical changes in its absolute and relative orientations, its atmosphere, its rocks and its biosphere, including any long-lived human cultures.

The revolutionary column is thus about 500 kilometers tall but if the magnetosphere is traced to its farthest reaches, it extends about 4 million miles into space away from the solar windside of earth. The variety of radical changes in this column has been such that every science must be affected by a new knowledge and conception of them.

THE EXPONENTIAL PRINCIPLE

The premise that every spot on earth exists within a quantavolutionary or catastrophic column is basic to primevalogy. A second principle is the exponential behaviour of high energy expressions. The winds, floods, and lightning we have spoken of earlier arise with little warning (it may be seconds or years) rise to a peak swiftly, inflict crushing blows, subside quickly and tail off their effects over a long period of time.

The exponential principle needs stressing. Where the evolutionaries say “uniformitarian”, the quantavolutionaries say “exponential.” Catastrophic events behave exponentially: they typically arise and increase their effects with extreme rapidity and decline in their effects almost as precipitously. Then, of course, the decline trails off and becomes near zero, where the uniformitarian usually picks it out for extrapolating backwards in time.

For example, is Mt. Everest, in the Himalayas, the world's highest mountain, still rising? If it were undergoing the kind of uplift measured at Cajon Pass (near Los Angeles) in relation to its surroundings, which amounts to 0.45 feet per century, then, allowing for erosion at the rate of 2 feet for every 3 feet of uplift, Mt. Everest would be produced in 9 million years, by Shelton's estimate [29]. But if this 0.45 feet per century is the trailing effect of a negative exponential curve, Mt. Everest might have evolved in only several thousand years.

Everest in 29,000 feet high; the Indian subcontinent rammed up into South Asia and in the collision the two bodies forced up the Himalayan mountains. Let us suppose that this impact, which is accepted widely now to explain the Himalayas, happened in the early Lunarian period of 11,000 years ago. If the collision were forceful enough to raise the land in the first year of contact by a few hundred feet and to continue on at some diminishing rate thereafter, the mountain would be raised to its present height in a couple of thousand years. Taking the present rate of uplift at 0.45 feet per century and increasing it by a factor of 1.1 so that 100 years ago it would presumably be 0.495 feet/century and 200 years ago 0.544 per century, Everest would have been emplaced before the age ended.

Certain lunar heat spots and moonquakes, for example, may be the fossil or ghost remnants of Aphrodite's "love affair" with Mars [30] in the late seventh century B.C. Similarly, volcanism has been declining for a long time in comparison with its incidence in ancient times and prehistory. Too, the measurable inching of the Arabian peninsula towards Asia is the dying impulsion of its recent amputation from Africa: the Red Sea is the surgical scar marking the line of severance [31]. Indeed the phenomenon of "erosion" that is basic to uniformitarian geology is largely derivative. It is an attenuated effect of the catastrophes that carved canyons and raised mountains. All of these statements will be clearer in the light of later chapters.

It would appear in passages from Velikovsky and from and inspection of Schaeffer's data that seismism was heavier throughout the Bronze Ages and Iron Age down to the Christian era. Ambraseys has attacked the job of counting earthquakes for the past 2000 years and hesitantly concluded that earthquakes

have been uniformly experienced in the Near East over the period [32]. It this study of 3000 quakes in generally accurate, the enormous seismism recorded by Schaeffer for the Bronze Ages marks catastrophic periods.

Michael Chinnery and Robert G. North have analyzed the techniques used for reporting seismic events today and warn that earthquakes, exceeding in intensity the present scales, may have quite recently occurred although knowledge of them is lacking [33]. It is well to mark this study, inasmuch as professionals and laymen alike are often of the opinion that the top calibrations of the Mercalli and Richter scales represent the maximum tremors that are today possible. In fact, there exists a dogmatic view that the Earth for a long time has not had within it the means of exceeding these scales. D. Vitaliano [34] and her predecessors have maintained that legends and ancient reports were exaggerated and have to be translated into current scales of events. It is possible to reconcile the two views by opining that earthquakes have been diminishing over time as a tailing-out effect of much greater, earlier upheavals (in accord with the exponential principle). However, records are too few and analysis not theoretically enough advanced to predict that intracyclical fluctuations of the curve of long-time decline will not be of hitherto unregistered high intensity.

The exponential principle is crucial to biological quantavolution as well. Exponentialism marks the rise and fall of species. A recent example will help to clarify the point. Muskrats abound in America; ten millions are trapped annually. But muskrats did not exist in the vast Soviet Union, despite a similar potential habitat, the high mobility of the animal, and its aquatic skills. Either recent biological catastrophe is to be suspected, or else the species originated in the past several thousand years: both hypotheses indicate quantavolution. In 1928-33, several thousand muskrats were introduced at hundreds of points in the U.S.S.R. Within forty years, their number was estimated at 100 millions, twice as many as exist in America [35]. Given a niche, a species fills it quickly.

REVOLUTIONARY INTEGRATION OF THE COSMOS

Everything is connected with everything else: the most ancient people thought so, and modern scientific philosophy agrees. The teachers of natural science to the young repeat interminably, "Inside the atom are locked the secrets of the universe." The microscopic related to the macroscopic, the microscope to the telescope.

Yet the mind scuttles for its own hole. It does not want to be part of the infinite interconnected web of reality. It makes isolates of all other persons. It studies the small apart from the large. It stretches out time endlessly so that things do not happen together. Voices assemble and amplify themselves in politics, science, the press, the street-corner hang-outs: "We are spared the fate of the whole. What happened once happened to others. They are not us. What is happening elsewhere is not happening to us. We are spared. What will happen to the future is again not us. Again we are spared." So it goes -- an endless litany to express the feeling, as Einstein wrote ironically to Velikovsky: "Holy St. Florian, spare thee my house. Set fire to the others."[36]

The greatest lesson of the unity and interconnection of person and person, and of person and nature, finds its destructive and creative climax in the quantavolutionary explosion. Recall only one recent memory, before we move into the primeval ages of mankind. What was the great lesson of the explosion of Hiroshima? That a new age had broken upon mankind. That in the giant column of fire carrying upwards a Japanese city was the fate of man and nature, inextricably bound. The single act of destruction called forth the essential forces of nature and the amazement of human beings, friends and foes alike, all over the world.

Yet this was a small force compared with those being discussed. True, there was no force in earliest times that is unknown today. But modern man must look with sinking heart upon his earliest experience because the forces of nature then expressed themselves in exponentially greater measure than they do today and seemed to have as their target, as their favored creature, and as their responsive audience, the developing human being. The

earliest events brought forward the revolutionary calendar. So it came about finally that mankind today experiences by his own hand an imitation of the state of nature that brought about his very existence as the deluded “wise man,” *homo sapiens*. Standing in the Solarian Age, he can for the first time do what only natural forces once do -- bring the curtain of catastrophe crashing down upon the end of an epoch.

Notes (Chapter Two: High Energy from Space)

1. Boulanger (1794), V. 220 ff.

2. (1977) n°4, 24.

3. Bruce (1944).

4. Juergens (1974-5); In a general statement Piddington (1960) writes: "Magnetic fields are almost ubiquitous and it is rapidly becoming clearer that they play a dominant role in the evolution of the universe. It is likely that without these fields the planets would not have formed and even galaxies or protogalaxies may never have developed from the more tenuous primeval gas." Magnetoplasma makes up practically all of the Universe that is not of rigid or non-conducting bodies.

5. Krinov (1966) 125-65; Glass (1969); Rich (1978).

6. Lowery, *Kronos* (1977); Velikovsky (1950) 143-5, 148-9, 159-60, 169, 301; Bimson (1977) 9; Ovid, Book II; Fontenrose (1959); and *cf*. Index below.

7. Velikovsky (1950), 141.

8. Kelly and Dachille, 203; *cf*. Gallant (1964).

9. *Ibid*., 204.

10. Cook (1966) 183-4.

11. Velikovsky (1950) 53-8.

12. *Ibid*., 227-35.

13. (1833),ch. 5. Furneaux (1964) mentions cometary phenomena the year before Krakatoa exploded.

14. Schroeder (1964) 492.

15. Patten (1960) 104-9; Cardona (1976); Velikovsky (1950) 326-9.

16. Cardona (1976) reviews the 14C dates; they extend over thousands of years, impossibly, although they generally fall within the age I suggest.

17. Blumer and Youngblood (1975).

18. Lane (1965), "Hurricanes."

19. Furneaux (1964) 203.

20. Juenemann, 112.

21. Velikovsky (1950), 58-62,126-38 *et passim*; (1952) 28-9, 46-7; (1964), 175-6.

22. Reade (1977).

23. Velikovsky (1950), 285.

24. Nieto (1974) with Ransom comment, p. 7; Bass (1974) 11-12.

25. *Cf*. below pp. 155-59, Barnes, Milson (1977) and Cook (1966).

26. See also Coleman (1968).

27. J. Ziegler (1978); Velikovsky (1950) 282-9

28. Velikovsky (1950).

29. 416-8.

30. *Cf*. Homer's *Odyssey*, Bk. VIII, the "Song of Demodocus;" Juergens (1974-5).

31. Sullivan (1974) 214.

32. (1971) 379.

33. Chinnery and North (1975).

34. Vitaliano (1973) makes a major thesis of the reduction of legends to the commonplace.

35. Igor Akimushkin, *Animal Travellers*, Moscow: Mir Publ., 1970, 208-9.

36. Einstein (1955).

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