

A

Written lower case as 'a', 'A' is first letter of English alphabet, also Greek (Alpha) and Hebrew (Aleph); originally in English as in Latin and Romanic tongues it is the sign for making the lowbackwide sound with jaws, pharynx, and lips open. Its prime position indicates importance of the sound, which has several meanings as an exclamation of wonder, approval, and worship. Ancient name of the Moon in several Near East cultures was "A" or kindred sounds and syllables, "Aa", "Ah", "Ai". "A" to Babylonians signified the Great Mother of the wise and "Akshara." Greek myth regarded "A" as the beginning of birth and creation, the entrance to the river Styx that wound about in the womb of the world, finally returning to Alpha. Aku, the Sumerian Moon, was also "the Measurer." The name "Abram" or "Abraham" might have originated as a combining of the Moon (Ab), Sun (ra) and Mercury (ram or raham). The letter has other uses as a word, as an indefinite article ("a bird"), in Latin languages, as an article and also as a preposition ("to" and "by") and feminine ending ("femina"); pragmatic uses as a vowel and word and exclamation in communication are thus known; ultimate significance is unknown, as, e.g., whether all languages must utter the full A sound in a certain range of frequencies or whether the sound preponderates in sacred utterance, etc.

aa

Form of lava which solidifies as a mass of blocklike fragments with a rough surface. Also called block lava.

Aar Gorge

A 1.6 km long cut through a limestone ridge near Meiringen, Switzerland, carrying the torrent of the Aar River that arises from the Aar Glacier. The parent mountain is Finsteraarhorn, highest peak of the Bernese Alps. Walls of the cut reach 50 meters, while its width is as narrow as one meter at its foot. The gorge derives an age of 10k (c) from the end of the Ice Age. Granted a constant flow, hence a slow startup until the definitive cut is made, the extent of ablation appears excessive. Alternatively, (q) the cut occurs originally as a fracture inviting the flood; or the initial torrent was exponentially greater, therefore able soon to initiate the cut.

The famous theorist of the Ice Ages, Agassiz, built a hut by the Aar glacier to observe its behavior, engendering public curiosity and accelerating its popularity.

Aaron's rod

A staff of magical properties carried by Aaron in Bible and legend as High Priest of the Hebrews in Egypt and the Wanderings. A rod was used upon the command of Moses to perform miracles when challenged by the Pharaoh. The rods of the Egyptian magicians/scientists were outdone. Both Moses and Aaron educated serpents from rods and the principal rod ended up on the Ark as the Rod of Aaron. It was said there to have produced overnight buds, blossoms and almonds. Treated as miracles by some, magic by others, literary devices by still others, the essentials of a queerly behaving rod, whether handheld or positioned, may be owing to static electric properties, given a charge collector and/or (q) charged atmosphere. The magical rod is particularly a property of the Greek God Hermes, but is also found in many magical and authoritative settings elsewhere.

Aaron

Biblical personage of Exodus, brother of Moses and Miriam. High priest and ancestor of subsequent high priesthood of Judaism. More likely he is halfbrother of Moses through their father, or cousins by an uncle, with his mother as Moses' guardian wetnurse. He is closest to him of all men saving Joshua, the warrior. Origin of his name may be homologous with that of the Ark, a box or chest; Aaron was custodian of the Ark, the sacred container, upon which Yahweh appeared and spoke. The root of ('aron) refers also to a gatheringin, a collector, which relates therefore to a function as well as the chest. The analogy of collector permits the application of both the person and his function to the Ark as an electrical charge collector or Leyden Jar. When Moses was assigned his divine mission to demand of the Pharaoh the release of the Hebrew People, Aaron went with him as a laboratory assistant for his magical demonstrations and as an eloquent spokesman to assist the apparently stuttering or incoherent Moses. For the rest of his life, Aaron was the inseparable and docile companion of Moses, holding the rank of High Priest; his temporary complaisance during the rebellion of the worshippers of the Golden Calf was forgiven.

abacus

At first the term abacus refers to a sand covered table upon which figures were inscribed using a stylus. There is a suspicion that the abacus had a semitic origin. A cuneiform sign among the ruins at Nippur(Shid») resembles its form (a calculating table). The abacus developed into a form utilizing small discs or counters to indicate numbers. The counters were arranged loosely along lines or placed in grooves. There is evidence that short Bamboo rods were used in China (»1925), rather than a nut or an inorganic counterpiece, in early use of this method in its Oriental form. The Japanese, too, used chikusaku» placed on a board for their computations. A later abacus, still in use in Russia, Japan, China, and Arabia, has movable balls or discs mounted on rods.

The abacus is likely to have originated because the original numerals, principally alphabetic letters, were unsuited to computation. These numerals were principally suited to the reporting of quantity. A counting device thus was needed. The Roman numerals are the most familiar example. Here the letters I, V, X, L, C, D, and M stand for quantities between the unit and one thousand. Some Greek and Hebrew letters were similarly assigned a numeric equivalent to report totals.

The abacus came into common use as a calculator in many countries: Armenia, Babylonia, China, Egypt, France, Germany, Greece, Japan, Korea, Latium, Poland, Russia, Turkey, and elsewhere in W Europe. Modern arithmetic notation emerges from its arrangement.

In the (q) context counting devices seemingly appeared during the revolution which followed the last astral cataclysm. In this period the notion of private property emerged along with the patriarchal system of inheritance, accompanied by the masculinization of the pantheon of deities.

abdomen:

-- Region of the body furthest from the mouth. In [insects](http://www.ucmp.berkeley.edu/insects)
<<http://www.ucmp.berkeley.edu/arthropoda/uniramia/uniramiasy.html>>,
the third body region behind the head and thorax.

Abdul Rauf, M.

Author of works on Arabia, including of the Black Stone of Mecca (diam=30 cm), now encased in silver and embedded in a corner of the Kaaba. Moslems believe the stone, which is meteoric in origin, to be the only remainder of the House of God of Abraham and Ishmael and to be associated with Archangel Gabriel, hence planetgod Venus.

Abell-35 nebula

A large nebula of low surface brightness, possibly a binary. It lacks a central blue star. Parabolic emissions of gas centers on a 9th magnitude star. The nebular glow (seen at a "forbidden" oxygen energy) indicates a diffuse plenum of gas. The glow is brightest where the oxygen changes its ionization state. No shock front is observable at its edge. In the red light of hydrogen two parallel luminous jets are seen. If a planetary, the nebula's diameter of 5.2ly is one of the largest. Abell35 is estimated to be nearly 1200ly distant.

A planetary nebula is driven in the (c) view by "hidden" light (ultraviolet, Xray, etc.) emanating from a very hot central star which does not emit much visible light. A (q) alternative is that the nebula represents a stellar discharge originating or impinging upon the region. The form of the nebulous glow depends upon the nature of the gases present and their state (density) as well as upon the discharge current.

Abell, George D.

Astronomer, whose (Exploration of the Universe) has been an influential textbook, more open than most to new theories.

aberrational Earth forces

Forces producing erratic Earth motions deviating from strictly gravitational expectations. Several instances are: solarplanetary conjunctions involving unusual electrialgravitational attractionrepulsions such as the "Jupiter Effect;" annual and diurnal periods owing to variations in atmospheric pressures especially on midwinter midnights and summer noons; the halfmonth lunar period of 14.8 days; the elevenyear period of sunspot occurrences bringing heavy atmospheric effects of wind, rain, earthquakes, volcanism, etc.; the 19y (18.6y) nutation period involving variations in lunar precession in relation to the Earth's plane of the ecliptic; varying ice cap pressures incident to increased or decreased ice caps; yet unknown periodicities that are anniversaries or residues of ancient quantavolutions, i.e. residue forces presumably tailing off with time, such as polar axis drift, adjusting equatorial bulge, continental drift, and orogenic settling by isostatic equilibration and the cooling of upper mantle.

Abery, Jill

Contemporary English quantavolutionist, biologist, who has produced a large number of analytic notes of current relevant scientific investigations. Published regularly in the SISR and SISW.

abiogenesis

The concept of life originating from nonliving matter. Spontaneous generation was the older concept, and included ideas about vermin coming from manure, etc., but Pasteur and others showed that life could not be so produced before our eyes. Hence interest turned to means of producing ever more complicated organic molecules in the hope of finally bringing forth selfreplicating genetically fixed organisms. This is hardly believed possible today but is thought to have been the natural means under primordial conditions. Cyril Ponnampere (1983) found all five of the chemical bases of human genes (adenine, guanine, cytosine, thymine, and uracil) in a meteorite and has synthesized all five in a single laboratory experiment, indicating the possibility of their combining naturally. In the experiment, the commonly found methane, nitrogen and water (supposedly like the Earth's atmosphere billion of years ago) were subjected to heavy electrical discharges.

abiotic compound

Certain molecules of biological importance might be synthesized in nature independent of living things: such molecules would be termed abiotic. Some meteorites contain racemic mixtures of amino acids (mixtures containing possible isomeric forms not found in living systems). The presence of the amino acids in meteorites has led to the speculation that the all of the materials necessary to assemble living systems could originate in space prior to polymerization in suitable planetary environments. The notion of important biological units being fabricated abiotically differs from the theory of Panspermia in which living spores are carried through space between worlds riding on a sunbeam or pushed by starlight.

ablation

Natural process removing, eroding, evaporating, melting, or evaporating material in situ. Rates of ablation where calculable can be used to determine duration of ablated objects Thus, if the total diminution of glaciers consists typically of evaporation at a 5% per annum rate in the Northern Alps, the balance of ablation occurs in melt waters. But (q) climatic occurrences or (u) climatic shifts will affect both evaporation and melt rates.

aboriginal humans

First or primeval humans, defined as highly self-aware beings. Their direct descent is probably from a hominid looking very much like them, who did not make the requisite genetic change and/or physiological adaptation to a new determining constant of the environment such as a high oxygen or a changed electromagnetic state of the atmosphere. The difference between the two modes of change is that a single mother might be the only mother of the human race in the first case and a number of individuals in the second, whether the individuals were from a special locality or scattered around the world. More likely it is the first, since there has been a scientific consciousness of the latter types of change without persuasive theoretical or experimental models. This question will be treated in detail in the article on homo sapiens. In either event (q) argues for a catastrophe or quantavolution as the active cause of humanity, whereas (c) seeks for a great many minute changes bred among an isolated population that branches and produces another isolated population that mutates and produces yet another, that is, a chain of mutating scenarios, each involving an adaptation of a mutation already present or acquired on location. This envisions a ladder of evolution and incites a search for the earliest particular changes, the cause of a succession of millions of evolutions, and the order and timing of the changes. Contrariwise, (q) presumes as a consequence of self-awareness a hologenesis into an aggressive and schizoid mentality, a basic tool kit, household utensils, and a coupling of human mentality and actions with exciting and uncontrollable sky events. The location of the change from hominid to human (c) is based upon the theory of gradual piecemeal evolution, the presumption of a constant ecology, the continents fixed into their present configuration, the absence of worldshaking natural events, and the validity of geological and radiometric dating. With this background, physical anthropology moved in its second century from a concentration upon European finds and finds by Europeans in Java and the Peking region to a plethora of discoveries in South Africa and thereafter the upper Rift Valley. The Near East and other regions elsewhere for instance, Morocco, the Riviera, and Israel have begun to issue bulletins of discovery of hominids and early humans with competitive time test results. The Americas are left out of the map of discoveries of early man; this would suggest (q) that they were thoroughly devastated by catastrophe, or that EastWest timetables are immensely awry, or (c) that ice and sea kept humans from entering the New World until 1230ky ago. The apparent diversity of races (modern African, Asian, Indo-European, Levantine, as well as Amer-Indian) has been documented in preColumbian carvings, paintings and sculptures, so that the infusions of the last 5 centuries can be discounted, but this method has not found favor with anthropologists and archaeologists. Some sixty sites of toolmaking of the Lower Paleolithic have been found spread around Europe, the Mediterranean and the Southeastern African belt. Oceanographers and glacialogists describe the seas of the world as significantly lower during this time. Therefore it is all the more remarkable that the Americas are credited with null hominids and null human culture. The most radical proposal to contrast with the (c) map marking the origin and spread of humans is a (q) thesis that the world was all continental crust until recently (Pangea), a great part of which exploded into space, already in the time of humans, and that the continents then rafted apart, carrying humans with it; a likely site of the birth of humans under

these circumstances would be the Tethyan Sea. The Tethyan Sea is carried in legend as the original home of the human race, and is construed (q) as the shallow sea girdling the Pangean globe. The earliest human memories of a cultural ancestry might be indicating a place from which the earliest men journeyed around the world (see adjoining map). In this case the hominids of Africa might be among the country cousins of the "Atlanteans", as the originals might be called, or a marginal true nearhuman, waiting for assimilation and/or extinction. The change to human is (c) traced from a hominoidal primate group called ramapithecines, through gracile and robust australopithecines, through homo erectus (no longer first to walk erect, alas, since Lucy's finding), to the several early modern types of homo sapiens, several of whom may have disappeared, such as CroMagnon, Neanderthal (now cleaned up greatly, disease freed, found to be largebrained, and given a culture called Mousterian, relative to the first specimen found in Germany 144y), the Australian robust type, thankfully the nontype Piltdown fraud of a Man, etc., but it is also permissible to claim that these have been absorbed into the more fertile varieties and might pop out under isolated conditions and inbreeding. (q), inclined to simplify, sometimes argues that the hominid is actually human when found walking upright and with a chipped stone ax in her hand and that time lapses are highly exaggerated. Nonetheless (c) places the transition from ape to hominid at about 10my, from hominid to human between 10 and 1.5my, and the arguably human Homo erectus into modern human at about 0.5my. Thence the development of higher culture, with its artistic creativity and religious rituals is found (c) in the Late Paleolithic at under 40ky. Time has been exponentially crushed in the path of development lately accelerated by (c), whereas (q) has introduced the possibility of crushing both time and culture into a short span. (Q) relies heavily upon the thesis that all of the artifacts of humans that have survived, all of their dwelling residues, all of their drawings, anything indicative of ornament or religion, in fact just about everything except handaxes, have appeared within the Late Paleolithic, assigned an age by (c) of 840ky. centering upon an age of ~18ky, hence representing possibly the very same time period, without basic change. Thence, going back in time, there appears to have been little discoverable development over 2my, so that a situation prevails much as in the spurious "Dark Ages" of Greece, where a large "timeperiod" never really existed. The cultural interval between Ramapithecus and Lucy would be better set at 1 Quantavolute, that between Lucy and modern man at 1 Q and that from the "50ky" "modern man" arrival to Leonardo da Vinci .2 Q. It may be foreseen that no category of culture will be discovered to have been invented between Lucy and today, i.e. ~2my (c).

aborigine

Coming from the Latin, "ab origine", "from the beginning," a term applied to persons conceived to have been present at a locale before others and possibly before all others. As often as not, the "aborigines" are themselves colonizers of an earlier epoch, whose aborigines have disappeared or assimilated. The term is especially used in Australia for the preEuropeans, and this aggregate, classified as Melanesian by race, is believed truly to have been aboriginal to the continent but in two branches of homo sapiens, one more robust, the other gracile. Indications of 53ky(c) are offered for first arrivals by sea when less than 100 km may have separated Australia from the Asian land mass. A full range of cultural activities was introduced and continued its development. Catastrophic mythology is extensive, including flood legends and accounts of sudden Pleiades shift westward in sky with freezing and population decimation.

Abraham

A key personage of Biblical Genesis, Abraham's very name is in contest. It is rendered as "father of many" and, when designated Abram translated into "the father is high," and can also be considered a combination of Moon and Mercury, that is, "A" and "ram", given that he is believed (c) to have existed in the 5Mn when HermesMercury was a prominent god, "Ram", and Egyptian, Sumerian, Akkadian, and possibly Arcadian words for Moon began with "A", such as simple "A" or "Aa", "Ah", etc. He was a famous astronomer of Ur, where the Moongod was especially worshipped. Biblical literalists believe that Abraham lived a long life, during which time he experienced travels throughout the Near East and Egypt, founded the Hebrew Religion, sired Isaac, made a covenant with Elohim, and gave to Elohim the character later decipherable as the Hebrew, Christian and Moslem God (thus possibly inventing monotheism), instituted circumcision in his religion, and caused the cessation of human sacrifice (this occurring when about to sacrifice Isaac on command from Elohim and then refraining upon the latter's stayorder and substituting for the boy a ram). There appear to have been catastrophes in his time, particularly the destruction of Sodom and Gommorah, which may have also opened up or enlarged the Great AfricanRed Sea Rift and Dead Sea, and wreaked destruction generally; also a prominent comet appeared described as a smoking pot with a blazing torch in the skies amidst a general "thick and dreadful darkness." Although most (c) and (q) theory assign early dates to Abraham, and therefore to the cultures among which he moved, it has been lately proposed that these cultures are grossly olded and need be younged by two thousand years or so, basing the claim upon much later usages attributed to Abraham, such as moneyexchanges and monotheism; however those who refuse to young Abraham argue that he might well have been attributed postexilic traits following the return of the Jews from Babylon when the Priesthood codified the Old Testament, including Genesis. One possibility of resolution is that though Abraham is an archaic father figure who lived before the Age of Venus (beginning 3500) and that Scripture relating to his presence in Babylon was added during or after the Captivity, which ended in 2537. Parallels with Abraham in other cultures are not lacking: Brahma, the Indian Solar deity, bears a similar name and was also "father of a multitude". His wife was Sri or SaraSvati, while Abraham's wife was Sarai or Sarah. The firstborn of Sarai came when the father was 100; the first of Sri after a century's waiting. Greek parallels also suggest legendary ecumenicalism, possibly resulting from namecalling of commonly observed natural events. Resolution of the "Abraham Problem" should liberate several Middle Eastern Chronologies tied to him and might allow several anachronisms to be eliminated from the histories of nations and of thought within the region.

abrupt transform

Alteration of any kind, in anything, which is deemed to occur at the brief end of a time scale that is thought might be much longer. Actually the phrase may be used as a synonym for quantavolution. Thus in early science, Ovid and many others catalogued what they believed to have been instant metamorphoses of species, often "regressive" as well as "progressive," for instance, a man turned to stone or ape; they claimed, too, sudden extreme changes of climate, atmosphere, soil, and topography. Applied to (q) and (c), the question of whether an event of the past required less rather than more time to transact or transform with other events of their medium may be most significant, comparable in importance to questions of the relative intensity of events and their scope. The (q) tends to believe that the rate of change peculiar to a given organism or natural process, measured at today's rates, has been drastically altered at times by explosive transformation, including extinction of life forms. The change in question may be within and among star galaxies or in rates of radioactivity of a microscopic chemical element. It may refer to the evolution of species or the end of the ice ages. Hence this article can only format the problem and illustrate it, implying the logic and methods used to address it. A change may reveal itself in a substance or a motion, in a body or in a transaction between bodies, in an effect upon a third body or an effect upon a measure or index of the change. Thus a fossilized fern discloses family and individual features, and, if unique, sets up a species, suggesting then either a continuation or a change of kind. The fossilizing process is measured in relation to the surrounding medium, which must bear appropriate traits for inducing the fossilization. The age of the plant becomes the age of its case, the suddenness of the chemical process dates it; the date is determined by geological or chemical means, both controversial; if the plant is unique, its date in relation to dates accepted for other plants of the same family will suggest whether a sudden or longterm transition from one species to another has occurred. Obviously the longer the period between two events, the longer the subperiod between two subevents, so that in astronomy and geology and evolution, as the time between original and current events has been lengthened, the time allowed for intermediate transformations has been increased. Thereupon, either abruptness is denied to as many events as possible, or an event is termed abrupt even if it takes many times the period hitherto assigned it; terms like "geologically sudden" and "astronomically gradual" are employed increasingly. Illustrations of the problem are numerous: a.) Two phytosaurian "reptiles" found in late Triassic rocks (soft, claylike matrix) in India contain smaller reptile skeletons in their stomach cavities; again, fossil fish remains have been found in throat sacs of pteranodan; in both situations, sudden disaster is indicated, and abrupt fossilizing conditions. b.) explosive volcanism can extinguish almost all life and pave vast areas around it for greatly varying areas, but the myriad extinct volcanos point to a time when a great many volcanos were exploding and erupting at the same time, and fissure volcanism has been responsible for remaking completely the morphology and later life forms of vast areas such as Northcentral Siberia and the Deccan Plateau. (A recently discovered ash layer in San Salvador covers 1300msq of a Mayan civilization.) Under such circumstances, ashes, gases and lava together can transform large sections of the global environment. c) Cracraft argues that speciation is a "geologically instantaneous phenomenon." d) Studies of generally occurring

exoterrestrial iridium residues assert a shutdown of thousands of species from an obscuration of the Sun brought on by the dust of a meteoroid impact but whether the extinctions occurred in 3 months, 3 years, or millennia is hotly debated. All of these would be considered too short a time by (c) but some (q) exponents would even argue that 1ky is too long for a cosmic fallout of heavy material to have catastrophic effects on the species. Abrupt transform is sharply defined in recent studies of clay beds near Teapot Dome in Wyoming; there, in (q) 65my clay beds, investigators unearthed fossil land and water plants such as water lilies and lotus, akin to modern plants, whose cell structures indicated that they had been killed suddenly by freezing in the month of June. The sharp offseason winter lasted for 12 months, because the world was in darkness, the sun being unable to penetrate because of dust and gases from a meteor impact blanketing the sky. Even upon recovery, disaster would continue to strike, because then the sunlight would be let in but the atmosphere too choked with reaming dust and gas to let the heat out; a long wet greenhouse effect would destroy most remaining land biota. The presently feared destruction of the lifeprotecting, ultraviolet shielding ozone layer, on account of the abuse of supersonic plane flights, aerosols, etc., would be an abrupt transform without great Earth movements, wind noises, or oceanic turbulence, reminding one that ancient disasters might have occurred from the sky leaving little sign of their entrance or effects. The mammoths that have been found deep frozen, undisturbed, chewing plants, are examples; they hardly were terrified in certain cases, but were most likely so when found in a jumble of corpses. Investigation for the deepfreeze phenomenon must turn to exoterrestrial blasts of a cold gas, possibly cold helium that can asphixiate and freeze stiff a large animal instantly, without a great change in absolute temperature. Debates about global warming, ozone depletion, deforestation, and pollution currently occupy great scientific and public attention; even as a consensus of imminent danger seems to be growing, the length of time years, decades, scores of years, centuries tests the methodology of scientists of several major fields, armed with budgets inordinately larger than the budgets of natural historiography.

absolute zero

Lowest temperature theoretically obtainable. A conceptual state in which atoms and molecules have minimal energy. The motions of molecules are equated to the temperature based upon the kinetic molecular theory. The scale assigns no translational motion to molecules at absolute zero; 0 kelvin on the thermodynamic temperature scale. The notion of absolute zero arises from the observation that the volume occupied by a gas is proportional to its thermodynamic temperature. Originally, absolute zero was the temperature at which a "perfect" (ideal) gas would occupy no volume. It is equivalent to -273.15°C.

absorption

Absorption is when one substance permeates the bulk of another, as in gases dissolving in liquids or solids, or liquids mixing into solids.

2. Loss of energy within a medium, as light losing intensity passing through glass, sound becoming fainter heard through a wall, or neutrons losing speed in paraffin. The energy loss may be due to scatter or due to the molecules of the medium becoming excited by the source.

Abydos

1. City of ancient Greece on Hellespont.
2. Egyptian city of the First Dynasty where vases were found resembling finds at Knossos on Crete, of the Early Minoan Period. A polychrome vase of Middle Minoan II was discovered in a Twelfth Dynasty Tomb which would appear to tie the Egyptian and Greek cities together. Destruction at both sites appears as part of a widespread catastrophe which brought an end to the Middle Bronze Age.

abyss, oceanic

The bottoms of the ocean basins, by far the greater extent of the oceans (310m sqkm), largely plains, fractured around the world, dotted by myriads of volcanoes and seamounts, bounded on all sides by continental slopes. The abyss is a coating of basaltic igneous rock the same everywhere, product of the volcanic outpourings of the fracture system from the mantle of the Earth below. As the continents split asunder and rafted from one another, their huge blocks left behind a heated smooth bottom that was then paved over by the new volcanic material, like a roadbed laying machine following after a bulldozer. Beneath the coating lies an underside that is half the thickness of the floor, apparently not a product of lava flow but a melting and cooling of the lava in place. Depths of its water cover vary, averaging 4 km. Abyssal rock is termed sima, rich in magnesium and silicon substance. Continental rock or sial (silicon and aluminumrich) is found practically nowhere on the ocean bottoms unless it has detrited from the continents or fallen from the skies. The abyssal thickness is only onetenth that of the continents, which suggests that it is the product of a melt and that the oceans are new, and also it is more basic, less acid than the continental crust. Considering the extensive legends of the sinking of lands into the depths of the ocean, the expected abyssal continental sial does not exist there; one searches therefore for the source of such legends on the continental shelves, whether from contractions from fundamental cooling or increased water from outer space or melted ice caps and glaciers. The ocean basins are barely sedimented; they hold only 1% of all sediments. Under uniform conditions, this would represent only 16My of runoff debris totalling 10×10^{18} tons. Dissolved solids in the oceanic waters total 3% of the aquatic mass, far from the extent of the difference, nor can these solids be attributed to continental detritus. The sediments are thickest on and at the base of the slopes; sediments of the abyss amount to a few meters of clay and ooze, incorporating a large amount of ash from aerial fallout and cosmic dust. The clay is igneous in origin. Pebbles, fish teeth and bones, and manganese nodules are sometimes encountered, and low hills, (c) ascribed to turbulent currents originating in earthquakes, the rotation of the Earth, or temperature shifts. The climate of the abyss is, however, fairly constant, and cold. Still, species do exist in scant numbers, unexceptionally species or varieties of species that are found near the surface, indicating either conditions inhospitable to life, a failure of evolution, or a newness of the abyss.

Acadian disturbance

Devonian period's set of uplifts and sinkings, accompanied by heavy volcanism, settling large lava beds upon Northeastern North America (Francophone Canada, ergo Acadian). The White Mountains rose, with a granite core. Eastern Australian ranges also originated, providing estimated 10kthick igneous beds. The same species of animals are fossilized in North America and Europe, though ocean separates the two lands now. The Acadian upheavals are differently interpreted as gradual (c) and abrupt (q) and as distant and elongated in time (c = 340405My), (q = £1ky). The Old Red Sandstone of England is a controversial Devonian-Acadian event, proposing a million times longer by (c) than by (q).

acanthode

Fossil fish abundant in early Devonian period freshwater deposits. These minnow-sized specimens have bony skeletal tissue. Their fins are supported by a heavy spine. A. have rows of spines between the pectoral and pelvic fins. They are not believed to be ancestors of the common jawed fishes which appear in the Silurian period and flourish in the Devonian.

Acapulco Bay

A fine natural harbor, surrounded by cliffs and promontories, located on the SW coast of Mexico at »17°N latitude. The deep circular bay bites into the narrow lowland of the coastline. Beyond the Sierra Madre del Sur rise 900m above the sea separating the bay from the continent. Isla la Roqueta guards the bay's mouth. The region suffers frequent damage by earthquakes and hurricanes.

The nearby ruins of Ciudad Perdida are of archaeological interest. They are dated to 2000.

A circular depression like Acapulco Bay is a possible astrobleme or it could be a fossil caldera of an old volcano. Subsurface probing would be required to validate these or other mechanisms for the bay's formation.

acceleration

The rate of change of velocity with respect to time. A moving body can accelerate by changing speed or by changing direction. Isaac Newton described acceleration in terms of a force acting upon the body. A force of 1 Newton acting corresponds to acceleration of 1 metre/second/second. A body falling near the earth' surface accelerates 9.81 m/s^2 (=g). An automobile accelerating to 100 km/h in 10s accelerates at 2.77 m/s^2 .

accelerator

A device that causes acceleration.

1. The gas pedal of an automobile.

2. An electromagnetic mechanism to increase the motion of charged atomic particles to velocities near the speed of light. Particle accelerators are rated by the kinetic energy they impart to the accelerated particles. It is usually measured in electron volts.

acclimatization

extent to which life forms derive life chances from the atmospheric conditions, together with the dependent terrestrial conditions thereof, within a given habitat. Considerations usually resolve to the formula: Given conditions a,b..n, how will species A,B,..N fare in reproduction. Often, trend analyses are the focus of interest. How did climate affect the evolution or extinction of the giant sloth of the Pampas, or the northward reach of the coniferous forests in the last interglacial period (c), etc. The Earth contains thousands of microclimates with accompanying acclimatized species, a Maine lobster, a Chesapeake Bay clam. Everything affecting climate affects acclimatization. Ordinarily, what climate makes, the species take. More brutally it is said, "Adapt or perish," and natural history of the Pleistocene, at least, becomes often (c) a story of ice ages coming and going. The extinction of large and small mammals in the Late Pleistocene in Australia appears not to have proceeded from climate or humans, and may be one of the many indications that (q) factors involving , of course, abrupt and extreme acclimatizing demands have to be searched out. Species can affect climate slightly; forestation invites heavier precipitation, etc. Humans can and have acclimatized by affecting their microclimates in many parts of the world, usually by destroying life forms that in their turn had affected climate, wild grasses, animal herds, forests, water supplies, etc. Global warming, an industrial and consumption effect, appears to be enticing many plants, ground animals, and birds northward just within the last two decades, the most convincing studies a product of the University of Michigan. Here one sees that acclimatization may take an aggressive form, as well as causing retreats and extinctions; life forms unrelentingly search out and seize opportunities. Global effects of ozone depletion, carbon dioxide emissions and industrial acid diffusions into the atmosphere appear to be having significant climatic effects that may make heavy demands upon humans to acclimatize to a new worldwide set of conditions.

accretion by comet

The orbits of the many periodic comets resemble the calculated trajectory of specific streams of tiny meteoritic particles which produce the annual meteor showers. The similarity between the two kinds of orbits led to the theory that comets evaporate "dust" as they pass near to the Sun. The comet dust, scattered through space near the comet's orbit, is thought to fall into the Earth's atmosphere producing the meteors. Since the periodic comets pass through the asteroid belt on each orbit of the Sun recent speculation has it that the comets might be accumulating asteroid material which they later shed as the "dust." The idea of comets capturing material as they orbit through the Solar System is fully consonant with (q) theories of comet operation.

accumulation, precipitate

snow, ice, or dust aggregates from atmospheric fallouts, whether from near or far space. Glaciologists are most concerned with the history of frozen precipitates, especially as they accumulate and form ice caps which are supposed to draw upon the oceans for their growth and renewal. The present ice caps, as well as all of those of natural history, and especially in the several Ice Ages that are believed (c) to have occupied much of the Earth's surface over long periods of time, are said to have grown up during the early Pleistocene, ~12my, owing to diminution in solar activity, increased dust clouds in the Earth's atmosphere due to a plague of volcanism that would block the sun's rays; both theories might be termed (q) but are allowed to take enough time to be called gradual. The fact that ice accumulates on mountaintops and in glaciers descending therefrom also promotes the theory that the ice caps form from perennial precipitation. The fact that the "Wisconsin" ice cap disappeared, leaving the minor caps of today, in a geological instant (therefore q) brings into question whether the origins as well as the demise of enormous accumulations of ice can occur without exoterrestrial (q) intervention. However, ice cores have been drilled in Antarctica and Greenland and appear to evidence to the eyes and by chemical test, annual layers of deposit; a sudden drop of ice blocks (q) would appear to be prohibited. If, on the other hand, the layered accumulation had been the product of heavy repeated hail and snow, the layers might be explained; a Noachian flood, that is, given an Earth with cold poles as today, would have been received upon the poles as ice and snow and preserved as such, with some layering. More likely in the two preceding hypothetical instances, the large blocks or the particle precipitation would both be below the area where annual varves are distinguishable (itself a hotly contested location in the cores). It is even difficult to determine whether snow is ample enough to increase accumulations of ice at test points in Greenland and Antarctica, or is more than ample. If the latter, and the flow off the bottom of the cap is constant, the time taken for the ice cap to generate would be short(q) and the age of the cap young; the fact that the very dwellings of the supervisors of the drilling operations are hoisted annually to escape burial in the snow would perhaps suggest a rapid rate of accumulation and an equally rapid rate of out-squeezing at the cap base.

accumulator, bioenergy

A box of metal covered on the outside with a layer of organic material was found to "accumulate" some form of biological energy. Measured temperatures above the accumulator exceeded those in the room by 0.2 to 1.8degC. The effect was least on humid days. Boxes built of only insulating material did not heat. A box kept in the shade heated most on sunny days. When it was raining no heating occurred.

Seeds treated in an accumulator germinated more reliably than seeds handled comparably but not treated with "bioenergy." Animals and humans became more relaxed after sitting inside an accumulator. There is some similarity between the response to the accumulator and exposure to enhanced numbers of negative ions.

achondrite

Stony meteorite that does not contain metallic particles in its crystal structure. It resembles terrestrial rocks. Its chemistry suggests achondrites were once melted or partially melted. (c) 90% of the meteorites that "fall" are stony, yet only half of the "finds," confirmed meteorites, are stony.

acid-base reaction

Acids are "proton" donor molecules; bases are "proton" acceptors. In aqueous solution the proton is exchanged as the hydronium ion, H_3O^+ , or hydrated proton. Acids and bases are considered strong if they readily donate/accept protons. Weak acids and bases react less readily. The AB reaction exchanges "proton(s)" between appropriate molecules.

acid rain

Chemical reactions are induced with chemicals present in the atmosphere by highenergy sources indigenous to the Earth's environment. Lightning dissociates more or less inert atmospheric nitrogen molecules producing chemically reactive nitrogen atoms. The nitrogen combines with oxygen producing nitric acid and other compounds of nitrogen and oxygen. These biologically important compounds are transported to the ground with rain and lodge in the soil where the nitrate and nitrite can be assimilated by plants.

Unfortunately nonmetallic atoms and oxides have accumulated in the atmosphere as byproducts of industrialized society. Nitrogen oxides which are not biologically utilized and sulfur dioxide are notable. These molecules are made reactive by ultraviolet and all other high energy radiations as well as by lightning. In these cases the molecules converted into ecologically dangerous acids (like sulfurous and sulfuric). They also fall with rain only they do not enhance plant growth, rather they alter the acidity of the soil and the water, often destroying the biological balance of otherwise stable ecosystems.

(q) theorists have suggested that comets striking the Earth at the end of the Cretaceous Period might have excited the atmosphere sufficiently to produce enough nitric acid to defoliate the trees and to leach strontium from silicate continental rocks. Using this scenario these theorists hope to explain the enhanced level of strontium⁸⁷ (which originates from the decay of rubidium⁸⁷) found in bones and sediments dated to the CretaceousTertiary boundary. A variant of the theory suggests that the mass extinctions associated with this Age-boundary might follow from an environment polluted with toxic metals including beryllium, aluminum, mercury, and lead liberated from rocks by excessive acid rain.

acoustics

1. The study of the behavior of sound and sound waves.
2. The characteristics of a space within which sound is "heard." Particularly how readily the original sound pattern is discerned. Echoes are reduced by curving walls and by making them from sound absorbing materials. Resonances lead to certain sounds persisting while others do not. Reverberation time is a measure of how rapidly the intensity of a sound is absorbed within a room. Too short a RT makes the room sound "dead." Too long a RT muddles sound, garbling speech and confusing the articulation of music, because the last sound has not died away before the following one is heard.

Certain significant (q) phenomena may under the right conditions produce sounds. They are mentioned in connection with the polar aurorae by observers whose location is well away from the noises of civilization. Great meteors produce sonic booms which are heard over large areas. In the equatorial region charged particles are produced during thunderstorms. These particles become entangled in the earth's magnetic field and produce faint sounds which are audible as a whistle after amplification. In earlier ages, when the magnetism may have been stronger and the atmosphere more extensive, whistling atmospheric sounds may have been clearly audible.

acquired immune deficiency syndrome (| aids|)

A condition in which the immune system is suppressed leaving the patient vulnerable to illnesses which eventually prove to be fatal. AIDS was noticed when several homosexual men succumbed to pneumocystis carinii, a rare form previously seen only in cancer patients with drug induced suppressed immune systems.

The disease is attributed to a virus which after introduction to the body alters the genetic material of the host. The disease has a long latency period leaving the host unaware of the infection for a decade or longer. During this latency period the patient becomes infectious and can spread the disease unknowingly to any person whose bodily fluids come into intimate contact with bodily fluids from the infected person. The most common means of spreading AIDS is through sexual contact and by intravenous drug users who share needles. It can be communicated by biting if the skin is broken.

The original diagnosis of AIDS was made in the United States but the disease was soon found to be widespread among homosexual men in Haiti. Then a similar disease was discovered in East Africa where heterosexuals are infected. The disease now is found in most parts of the globe. In the Orient it is prevalent in Thailand where it spreads from contact with prostitutes; about one in five of the active prostitutes are infected.

In the first decade know cases of AIDS in the United States rose from 5 to 150,000. About 700,000 cases are reported worldwide. Presently the estimates of those carrying the AIDS infection are one million in the US, and 810 million elsewhere. In the next decade these numbers are expected to double. About 5 million of the current AIDS infections are in subSaharan East Africa.

By the end of the millennium 90% of the transfers of aids are expected to be through heterosexual encounters. The disease is spreading about four times faster in smaller cities than in the larger ones. It has gained a foothold in the teenage group. A major deterrent to the spread of the disease is prudishness and selfdeception among the populace. The beliefs that only "bad people" get infected and that scientists will quickly find a "cure" for AIDS are major hindrances to the containment of the disease.

An AIDSlike condition has been found among domestic cats in the United States. About 13% of cats are currently infected. The disease can be spread by bites. So far other animals and humans are not at risk from infected cats. The feline disease has a three to six year period of incubation. Similar but less virulent diseases are found in horses, sheep, goats, monkeys, and cattle. In animals the AIDSresembling diseases do not appear to spread sexually.

Until recently, treatments for AIDS have only slowed down the degeneration of the immune response system. Patients eventually succumb because of immunological insufficiency. Very recently (1996) therapies utilising combinations of drugs, always including at least one protease inhibitor, have had

spectacular results in decreasing the levels of the presence of the virus, to the point where it becomes undetectable. Symptoms, even in some patients at a severe stage of the disease, often vanish, but tend to reappear as soon as treatment is interrupted. It is too early at this point to say whether these improvements in the condition of those affected by HIV or AIDS will endure beyond a few years. That they are considerably life-prolonging seems without a doubt. The high costs of these treatments (over US\$15,000 a year) makes its benefits all but attainable to the masses of the poor of the world, or even to those in the United States. Only in the advanced industrial societies of Western Europe and Oceania are the treatments available to all those affected with HIV or AIDS, with governments carrying most or all of the costs.

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Acraman



South Australia, Australia

The existence of this impact structure was deduced from the discovery of its ejecta layer within late Precambrian shales of the 590-million-year-old Bunyeroo Formation in the Adelaide geosyncline, South Australia. This layer contains abundant shocked quartz grains and small shatter cones. The ejecta were found in outcrops and drill cores over several hundred kilometers. These outcrops led scientists to the Acraman structure in South Australia, which was shortly thereafter confirmed as an impact structure, and as the source crater of the Bunyeroo impact ejecta layer. The diameter of the Acraman structure is at least 90 kilometers, with some outer arcuate features at 150 kilometers diameter. Impact ejecta have been found at distances of up to 450 kilometers from the Acraman structure. The center of the structure is occupied by the 20-kilometer-diameter, hexagonal Lake Acraman, a dry salt lake (white feature slightly left of the center). It is not quite clear if the semicircular Lake Gairdner and Lake Everard, which can be seen in the upper part of the image, are part of the impact structure or not. If they are, Acraman would have a diameter of about 160 kilometers. (*Space shuttle image STS88-704-16.*)

Location: 32°1'S, 135°27'E **Diameter:** ~90 kilometers **Age:** ~590 million years

Acropolis

Meaning: high city. A fortified hilltop site, often a sanctuary for the city gods. Ruins of many A. testify to their use for religious ceremonies. The most famous A. is in Athens which since ancient times contained a temple dedicated to Pallas-Athene, mistress of the Arts and Sciences, (q) Venus, protege of Zeus. The central terrace with the temple to Athena was the site of a Mycenaean megaron; this temple was remodelled and embellished several times until its destruction by the Persians in -479. The new temples were built around the terrace which, though devoid of any buildings, remained the centerpiece of Pericles' reconstruction. The Parthenon was located to the S of the earlier Athena temple. It was built after -446 using Pentelic marble. Two radical changes in plan were made during the single constructive effort by which it was erected. The remainder of an earlier "Peisistratid" temple not totally destroyed by the Persians was removed and its cult was transferred to the Erechtheion.

actinide elements

Atoms having atomic number between 90 and 103. The actinides all have two outer $7s$ electrons so are chemically similar. The actinides differ because each has a different number of $5f$ and $6d$ electrons. These levels are close in energy so that the filling pattern is complex as one progresses up the series. Members between Actinium and Americium can form bonds with their $5f$ electrons and so show variable valency. Like the transition metals they form coordination complexes. The heavier members Curium to Lawrencium do not bond with their $5f$ electrons, they form compounds as A^{+++} ions resembling, in this sense, the Lanthanides.

action at a distance

Conception that a physical force can act on a distant body without direct contact. Action at a distance describes the notion that the Sun's gravity keeps the Earth in orbit as a planet, and the Earth's gravity keeps the Moon as a satellite, without any tangible connection between the bodies. The concept replaces an earlier notion whereby any transaction between two bodies requires some medium to communicate the action, as in the nebular or vortical theory of the Solar System by which swirls of subtle material moved the gravity from the Sun to each planet. The idea of action at a distance implies something extraordinary only in the sense that space is empty. From its introduction into physics during Isaac Newton's lifetime until about 1895 physicists conceived of space as filled with an aether which transported light and gravity. Only for a few decades, until spacecrafts detected the solar wind, was space envisioned as truly empty. Even during this brief hiatus many physicists were postulating the need for a new aether to reconnect the now isolated bodies across the empty space. Einstein's curved space and Dirac's electronsea were disguised aethers whose function filled the void created by the concept of empty space.

action, unit of

The fundamental unit of quantum theory. Energy transfers between radiation and matter occur in discrete amounts, or quanta. The energy transferred is proportional to the frequency of the radiation involved. h , Planck's constant (the elementary quantum of action) relates energy to frequency. It has the value 6.624×10^{-34} joulesecond. Planck's constant represents the intrinsic spin of electromagnetic radiation times a spatial factor equal to 2π . The 2π factor can be interpreted as the phase of the action when radiation transacts with matter. The quantum of action is equivalent to the angular momentum of classical physics. Using this equivalence the incident radiation can be likened to a spinning flywheel transporting stored energy from place to place. When the radiation encounters an atom whose energy states match the stored energy a transfer may occur. If the transfer is made the radiation ceases to exist. Any amount of energy can be converted into radiation. The sole condition is that only integer units of energy can be transferred: 1.65 quanta can not be transported.

actor, acting

pretender of someone other than the ingrained self; also, a subject or protagonist in action while under study. Can be common sense meaning of the projection of a role in a theater or other life situations, or, technically, player of a role that may or not be conscious. Animals can pretend, instinctively (though the definition of instinctive should not be accepted on faith, for the animal is making a "deliberate" choice and choosing a strategy), as the bird pretending to have a crippled wing to draw predators from her young, or the opossum "playing 'possum." Ordinarily only certain mammals are credited with acting, primates, domesticates, and humans, because of the element of selfawareness required for the assumption of a role or second self, together with the ability to abandon the role at will. The gap between consummate acting and the loss of identity with the assumption of another or several others is bridged on traumatic occasions. There would appear to be (q) no incident discoverable in natural disaster or the human responses to catastrophe that does not sooner or later find itself into acting in the role of the destroyers and the destroyed, embodied in legend, drama, everyday behavior, customs, religious worship and thought. Masks and a large variety of costumes and makeups are universally employed to heighten the conditioned response of the viewers and rehearsers of the primal scenes. "Acting out" is a term employed to designate the recreation unconsciously of deeply troubling scenes from earlier life or ages of culture by the method of bringing them into contemporary reality. The "payoff" is the relief that the actor gets from the explosive effect. One of the more dangerous elements in allowing possession of religious and political power and terrible weapons to humans is that they are tempted to bring about deeply felt wishes to destroy the world or one's enemies blindly or in the name of some god or ideology or as a paranoid belief that someone else (the enemy) is about to do the same.

Adam & Eve

According to the Book of Genesis Adam was the first man and father of the human race. The story tells of Adam being made from dust. His wife, Eve, was made from one of his ribs. JudeoChristian conceptions of sinfulness and divine retribution arise from events leading to Adam's temptation and from the couple's expulsion from Paradise.

A less paternalistic variant has Adam made from the clay of the Earthgoddess and given life by her blood. By this version the idea of Adam's rib is ascribed to a Sumerian story that children were formed from their mother's ribs.

A third interpretation is that Adam is allegorically the mountain top god. This "man" could be dangerous. His name is associated with "dam" which can mean "blood" as well as "sin." In this version the later creation of woman represents the new theology of the "ark box" in which god's essence (possibly static electricity of great potency) could be stored (hidden from the eye) in the same way a baby could develop in the womb.

The Sumerian first man was called Adapa. After his creation the exalted tiara and throne of kingship were lowered from heaven to Eridu.

The fall of Adam and Eve has an Egyptian parallel which includes the serpent as tempter and a pomegranate (symbolic of the temptation). A depiction of this story is found in the Temple of Osiris at Phylae. The tale can be interpreted as a lament at the passing of power from the mountain god worshipers to the later arc-worshipers. The serpent in the Egyptian story roars like a lion and has a sword facing in all directions reminiscent of an electric discharge of great power.

Adams, R. M. C

U. of Chicago archaeologist, working in Middle East, in (c,q) ca 3500 digs of Kassite civilization, discovered "major westwards shift of the Euphrates systems of channels as a whole," incurring a long dark age of abandoned settlements and reduced populations. His theory requires general revision of the (c) belief regarding stability of geology of area.

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Adams, Walker S.

American astronomer, in 1875, detected water vapor in the atmosphere of Mars, using the 2.5m diameter telescope at the Mount Wilson Observatory in California. In the same year he confirmed the spectrum lines of Sirius B were shifted to the red relative to those of its larger binary partner (Sirius A). His observation was taken as confirmation that the gravity field associated with the "B" star was affecting the spectrum lines. He claimed the stars gravity was some twenty times stronger than that of the sun.

Adams attitude revealed in his correspondence with (q) are a shining example of how scientists properly deal with ideas whose interpretation conflicts with the currently accepted scientific position.

adaptation:

-- Change in a organism resulting from natural selection; a structure which is the result of such selection.

Aden, Gulf of

body of water connecting the Indian Ocean with the Red Sea, passing between Somalia in the South and Yemen in the North. Its base houses a fracture connecting East with the Carlsberg Ridge, Northwest with the Red Sea fracture, thus actually forming a feature of the worldgirdling system (q) that must be assigned an age in conformity with that of the whole system, hence as late as the Holocene. The Strait, Bab elMandeb (Gate of Tears), that connects with the Red Sea, is said by the peoples living around it to have received its name from the large number of people who perished in the great convulsions of quake, volcano and tide when Arabia pulled away from Africa.

adhesion, bonding:

Sticking together as if glued. Chemical bonding, effected by the exchange of one or more electrons between molecules is an example. Adsorption of a surface film is another.

adiabatic process

A process involving no gain or loss of heat. The change often involves alteration in temperature, as in the adiabatic expansion of a gas where the gas cools because work is done by expanding it. The vertical flow of atmosphere is an example, rising air expands and cools; falling air contracts and heats.

Aditi

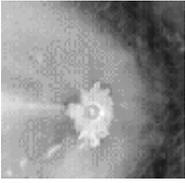
Indian preVedic creatrix who exercised dominion over the world. Her name means infinity. Her function embraced all life. She is a redeemer who releases her devotees from sickness, need and the taint of sin. Aditi supposedly knew the mystery of time. She presided over the stars which marked time.

Adityas

Seven or eight children of Aditi mentioned in the "Rig Veda". This epic is (c) dated to 3700 and is associated with the Aryan invaders of the Harappa and MohenjoDaro cultures of the Indus Valley.

Varuna, a cognate of Ouranos, heads the Adityas. He guards cosmic order (rita) and is lord of the night. Post Vedic literature poses twelve Adityas in the role of the sungods who ruled over the months of the year, which began in the autumn.

Adivar, Venus



This radar image acquired by Magellan shows the Adivar crater in exquisite detail. Bright returns indicate blocky, rough units or smooth surfaces that are tilted toward the radar sensor (toward the west in this case). Dark returns indicate smooth flat surfaces or units that absorb, rather than reflect, radar energy. The blocky central peak, smooth floor, sharp rim, and blocky lobate ejecta apron are typical of many fresh complex craters on Venus. In addition, however, Adivar displays an ornate assemblage of bright distal deposits consisting of diffuse radial streaks. No other venusian crater exhibits such a pronounced distal signature, suggesting that these deposits fade quickly with time and that Adivar may be the youngest complex crater on Venus. (*Courtesy of Robert Herrick, Lunar and Planetary Institute.*)

Location: 8.9°N, 76.2° **Diameter:** 29 kilometers

administration

the planning, organizing, staffing, directing, coordinating, reporting, and budgeting of the activities of a group of humans with regard to achieving goals of sponsors or actors or clientele or public. Bureaucracy is a synonym, though often used to mean "bad administration." Animals, especially insects, evidence "administrative behavior;" it is unconscious and unvaried apparently, and therefore without the clash of motives and desires and the alternative instrumental complexes that typify human administration. Administration cannot exist without foresight, therefore cannot have appeared before humanization. Administration characterizes almost all scientific activity today; hence the effects of administrative processes upon creativity, neutrality, openness, compensation and motivation of science and scientists are often important to the success of scientific undertakings. Who controls administration effectively guides hypothesis and scientific method. Still, like sending astronauts into space to perform scientific operations without instructing them as to the effects of the internal environment of the spacecraft, scientific training almost never encompasses the study of the sociology and psychology of administration.

Adonis

Greek demigod, connected with Hebrew word for "Lord," "Adonai," killed in the interplay of loves and jealousies of Aphrodite and Ares, Aphrodite and Persephone, etc. acc to sundry myths. He was born of Myrrha, a virgin temple-woman and adopted by Aphrodite who later loved him. He was torn to pieces by a boar, directed by Ares; he was also castrated; both are sacrifices of a hero or god or king for the rites of fertility. His phallus became ithyphallic Priapus, who carried a pruning knife to commemorate his father. He was said to have been born at Bethlehem in the same cave where Mary bore Jesus. His beauty was the focus of his extensive worship. GreekHebrewSyrianCanaanite ecumene is evident in Adonis myths. Despite or because of his varied record, (q) has not been able to use his material yet.

Adrastus of Cyzicus

Mathematician, from Cyzicus, who is reported by Marcus Varro [Of the Race of the Roman People] to have dated a change in the behavior of Venus to the time of the Flood of Ogyges. Varro noted that the "star" Venus changed its color, size, form, and course. Varro went on to state that this occurrence has never happened before or since.

The incident reported likely occurred many years before the time of Adrastus in that Cyzicus, in Asia Minor, was not founded until -755. Varro wrote his works before -26, the year he died.

adrenal gland

Two complex glands, one above each kidney. The adrenal medulla is a part of the autonomic nervous system. It produces two hormones, adrenaline (sometimes named epinephrine) and noradrenaline (norepinephrine). The adrenal cortex is triggered by the pituitary secretion A.C.T.H. (Adrenal Cortex Tropic Hormone). The hormones of the cortex regulate sexual development, glucose metabolism, and electrolyte balance in the body.

Asking what is most determinant of human nature one thinks of the brain. In particular the speed of neural activity. One can suspect that to be human implies confusion of an ever restless mind. In particular the link between the brain and the adrenals is of interest, in that the fight/flight mechanism seems to be incessant resulting in a "nonclinical" overstimulation of the cortex, and indirectly of the medulla as well. The endocrine system (hypothalamus, pituitary glands, spinal cord, celiac plexus, along with the adrenals) is fully functional a few days after birth. There is no reason to deny the (q) assertion that primal fear may be hereditary or even prenatal. The "higher" control centers of the brain perceive outside crises and institute some kind of "stimuluslogical response" for which the body reacts in every way like that invoked by "lower" control centers for crises within the body. The result is always arousal.

Adriatic Coast

The Italian Coast along the W side of the Adriatic Sea is low. The Po and Adige rivers are the largest rivers draining into that sea. Farming is extensive. Along the Dalmatian (E) coast conditions are more harsh. The coastline is rugged, marked by jagged bays and offshore islands, where the Dinaric Alps are drowned by the sea. Soil is sparse, in marked contrast to the condition on the Italian side. Very little agriculture is possible except within valleys fed by rivers. Surface rivers are commonly interrupted and the waters disappear into limestone caverns. The arid Mediterranean climate and absence of surface water on the E side reduces the visible erosion. Nevertheless many gravel pits of eroded limestone extend into the sea (c) at times extending to 17M has to be explained. The sparse soil layer is blamed upon millennia of farming. The scarcity of alluvia from the Dinars and the ineffectiveness of wave action on the shoreline are blamed for the absence of beaches and other common coastal landforms. In (q) terms the abruptness of the events creating both the Adriatic seabed and the rise of the Dinaric Alps and the proximity of that event to our time helps to excuse the state of the Dalmatian coastline. It is a recent landscape which is located in a region where rainfall is light, and surface water is uncommon. What else can be expected in about 7 or 8Mn?

Adriatic Sea

arm of the Mediterranean Sea running 800km from the Gulf of Venice to the Strait of Otranto. It runs the length of the Italian Peninsula. It is bounded on the E by a part of the mountainous Balkan Peninsula. The Adriatic Sea is very shallow except near its outlet where the channel has a maximum depth of 1.25km about one third of the maximum depth in the Mediterranean. Such shallowness suggests (q) an origin as an extension of the great African Rift-Red Sea fracture that may have then been overrun at its Northern section by the rising Alps and filled in by mountains of debris running off abruptly from the flood- and rain-soaked surroundings.

The area occupied by the Adriatic Sea was (c) a part of the extensive Tethys Sea, whose warm waters it is believed fostered extensive coral growth. At the end of the Mesozoic Era the limestone layers were buried by sediments which became folded into alternating anticlinal ridges and synclinal valleys when the Alps rose during the Oligocene and Miocene Epochs. In (q) terms these changes are dated to the Period of Late Quaternations, beginning in the Ouranean Age and completing themselves in the Lunarian Age. The Tethys Sea is ascribed to the earlier Period of Pangean Stability. Between these periods humans probably inhabited the present floor of the Adriatic Sea.

Adriatica

name of the (q) hypothetical civilization supposedly to have subsisted in pre-history in the Adriatic Sea basin, and then flooded or sunk in natural catastrophe, along with enough similar situations in the Mediterranean Sea to support further study of the problem as a whole. The Adriatic Sea is almost as shallow (100m) as the Aegean, except for the incredibly rectangular great Abyss of the Doges (q.v.) of 1250m depth, channeling out into the Ionian Sea.

adsorption

the formation of a layer of a material on the surface of a solid or a liquid.

1. Chemisorption involves chemical bonding of a single molecular layer of the adsorbate to a surface.

2. Physisorption involves the weaker van der Waal's force. Van der Waal's force likely is electrostatic in origin: unlike the classical chemical bond no electrons are exchanged, rather, permanent or induced polarization within the adsorbed molecule allows surface charges to attract and hold the adsorbate.

adult:

-- The mature stage of an organism, usually recognized by the organism's attaining the ability to reproduce.

adventitious roots:

-- A root that grows from somewhere other than the primary root, for example, roots that arise from stems or leaves.

Aegea

name given the larger part of the Aegean Sea basin that was supposedly the site of a nowdrowned civilization, or possibly the Early Cycladic culture. The waters were said to have been above the Islands of the Aegean Sea and later on diminished to allow them to appear, Delos, for example, the sacred Island of Apollo and center of Hellenic cults. The Aegean is actually continental crust with water to depths under 100m in large part. Candidates as cause for the event would be (q) the encroachment of the Noachian deluges that raised the oceans everywhere greatly, the collapse of the west wall of the Gobi Sea, now an immense desert, in western China, that travelled as a flood all the way into the Mediterranean basin, or (c) a sinking owing to plate tectonics.

Aegean region

area of islands and mainland surrounding the Aegean Sea, itself about 700 x 320 k large, with Thessaly at the North and Crete boundary of the South. Region is a prolific source of preHellenic and Hellenic legends, art, and technology. Believed by the Greeks to have been all land, then flooded, then dotted with the resurrected portions of land, providing the famous islands of Delos, Naxos, Samos, Limnos, Eubea, Thera, Milos, and many more. Its island civilization, called the Cycladic, endured for 1000+y, was related to and transfigured by the Minoan culture, blended finally into Mycenaean and then, if not always, firmly Hellenicized. It survived a catastrophic period of (c)4300. Probably in connection with other disasters of the same time, around ~3000y its highly cultured island, now called TheraSantorini, was partially exploded by its volcano, leaving a spectacular crescent island over a yawning but beautiful gulf. The islands and western Aegean are presently united with the western mainland under Greek dominion after 2000y occupation by the Romans, Venetians, and Ottoman Turks, while the eastern continent is fully Turkish. The fairly neat separation of Greeks and Turks stems from a wrenching exchange of populations in 1920's.

aegis

a magic shield, particularly of Zeus, lent on occasion to his favored daughter Athene, appearing on statues as a short scaly cloak of goatskin (like a bulletproof vest). The word may derive from "aix" (goat) and from "aissein," (to dart quickly). It is fringed with snakelike tassels, and in Homer's words, "crowned with fear." On it are displayed Strife, Might, and Rout, and the head of the monster Gorgon is prominent. It is often depicted in art and sung of in Poetry. Lightning was supposed to flash from the Gorgon's eyes, which could represent the fission (q) of JupiterSaturn. The Gorgon was also related to Phaeton and Lucifer, thus to pin on himself, Zeus, what he had destroyed and reveal the destruction inherent in him.

Aelianus, Claudius:

(c.175 AD - c. 235 AD):

Roman author and rethorician, born at Praeneste, flourished under Septimus Severus and Elagabalus; *Varia Historia*, Book II., 33.

Aeneas

Prince of Troy, son of Anchises, refugee to Italy, settled in Latium, leading shortly afterwards to the founding of Rome, according to legend, ancient consensus, and some modern evidence, superior to competing evidence. He was believed to be the grandfather of Romulus and Remus, orphan sucklings of the wolf of Rome (the Mars symbol), hence sons of the God of War Mars. Recent archaeology has tended to support the epic Aeneid of the poet Virgil, writing perhaps 7ky after the event (1200ky by (c). The main reason for the closing of the gap comes from the recent discharge of the "Dark Ages of Greece," five centuries between Mycenaean and archaic Greece of which practically no evidence has existed. With the Dark Ages gone, Aeneas is born, fights for and flees Troy, meets Dido, Queen of Carthage, lands in Latium, raises a family and leaves descendants capable of handling the expansion into Etruscan territory. Virgil says Aeneas entered the underworld realm at Cumai, a word very close to the Aramaic/Hebrew root for "arise, "cum", one of many details available and to be discovered of the great Mediterranean ecumene of the 3000's.

aeon, eon

A long time, an age. The longest unit of geologic time, which is divided into eras. Originally aeon implied about a gigayear (1000 million years). Here, aeon is used discussing cosmic and planetary events on the long (c) timescale. The short (q) timescale posits cosmic events, including stellar and biological development, can be accomplished in periods which need not exceed a megayear (million years).

aeon:

in the neo-platonic and gnostic doctrines, designates the unit of time during which the Spirit exerts its action upon things. More generally, it means an indefinitely long time, in Quantavolution of the order of the conventional age of the planetary system, a billion (or thousand million) years. Also equivalent to *gigayear*.

aerial photography

the recording of images concerning the Earth's and planetary surfaces using methods that do not involve actual contact with the object or part of it being registered. Early aerial photographs generally were made from lowflying airplanes. As photographic emulsions with increased resolution and sensitivity to light were developed flights at higher altitudes could be used successfully to record greater expanses of surface in one view. In the case of astronomical bodies the first images were made photographically using telescopic cameras. In the more recent age of spacecraft, digital and video techniques have been combined with electronic stabilization of images to allow sensing to be done successfully from greater altitude and from platforms in space moving at large velocity relative to the target being sensed.

In the beginning most records were recorded on photographic emulsions sensitive to energy in the nearultraviolet, visible, and shortinfrared, however supplemental information is obtained today using electronic and other detectors responding to narrow bands of energy both in the range of photographs and beyond it at both the high and low energy ends of the continuum. Stereoscopic images can be obtained using multiple overlapping images and by radar range measurements. Using this last technique the energy being recorded is transmitted from the recording station, is reflected by the surface being probed and the reflection is read by the detecting apparatus.

Since the 1870's, when the Moon and Sun were first photographed, the advantage of permanent images over visual observation and sketching have been apparent. Now most of the major bodies of the Solar System have been mapped, some only partially, over a wide range of energies. Comparison of images produced by using different energy ranges (radar, infrared, visible, and ultraviolet) allow information to be gained which helps estimate the biological, chemical, and physical status of the surfaces being sensed. Such information can not be gathered as simply by other methods. The overview provided by seeing the Earth from space has aided geologists immensely.

aerobic:

-- Pertaining to the presence of free oxygen. Aerobic organisms require oxygen for their life processes.

aerosol:

colloidal dispersion of solids or liquids in a gas. Aerosols layers are thought to accumulate in the stratospheric layers of planetary atmospheres, including that of the earth. Aerosol particles are tens of micrometers in diameter. The smaller the particle the longer it is likely to remain suspended without settling.

Colloidal suspensions of solids in liquids, particularly water, are common in nature and especially in living matter. Excepting for the medium involved they resemble aerosols. In turbid water colloidal particles may exceed 25mm in diameter. Much smaller suspensions are invisible. Colloidal suspensions cannot penetrate animal membranes whereas solutions can diffuse through such barriers. Colloidal particles possess an electric charge. If the colloid is treated its particles flocculate (coagulate) and drop from suspension.

Aerosol layers are electrically charged which is likely why they migrate into the stratosphere when created or liberated in the lower atmosphere. In the earth's stratosphere the charged colloidal particles are suspected of decomposing ozone. Some of the aerosols present are natural to the earth while others are the result of human civilization. The amount of ozone is effected by solar events and the passage of meteorological systems. On the short term the consequence of the observed decline in the ozone levels cannot be interpreted. Observations must be made over more than one solar cycle before any meaningful downward trend would be detectable. Possibly over a whole solar cycle (or sequence of cycles) the effect of man-made aerosols on the ozone concentration, if real, can be overcome by increased production of ozone as the solar activity reaches a maximum. At this time the outer regions of the earth are subjected to increased solar outbursts accompanying the maximum.

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Aeschylus

Greek tragic dramatist of -556 to -425 who was born at Eleusis (home of the Mysteries), fought at Marathon and Salamis against the Persians, and divided his time between Athens and Sicily, where he died. Of his plays only 7 of 85 remain. "Prometheus Bound" depicts the fate of the demiGod who taught the arts of living to humankind, but violated the rule of the (significantly) New God Zeus keeping back fire from man, and taught man to make fire too. For this he was chained forever and tortured. Aeschylus spoke somewhat like a prophet of Israel, and not much later, and already in a humanitarian spirit, for it almost appears as if he hates god, the ruthless lightninghurler worldshaking giftwithholder. The relentless character of "Force" drives even the God Haephaestus to empinion cruelly the Christlike Prometheus. The two sequels to the drama are lost; they apparently did not change the fate of the world, but only softened through outside intervention (especially Hercules) the fate of Prometheus.

aesthetics

the theory, standards and databases of the arts. Included as arts are the planning of settlements, housing design and practice, modeling, poetics, graphics, photography, singing, reciting, music, the crafts (especially in their nonroutine aspects), etc. Indeed, all human activity may be considered to have an aesthetic element, in that it can be judged to be pleasing according to vague but essential notions of artistry. So one encounters in science "the elegant theory," in labor, "the neatly dug ditch," as well as "the masterpiece of sculpture" or the "beautifullyshaped woman's shoe." One can have "a wellwritten report on sewage," and a "marvelouslydrawn map of the heavens." Even a horror can be beautiful, as the explosion of a volcano or the sight of a tornado. All drawing of lines to exclude any human activities whatsoever from the reach of aesthetic theory is illogical and probably antiutilitarian.

What is the underlying basis of the so-called "aesthetic sense."? It is little known and understood. No one has been able to sample randomly the full range of mankind and subject it to interview, get it to fill out a questionnaire, and obtain a history of its behavior, such that one could analyze the data and emerge with a set of propositions denoting the extent of common standards and how they are applied in thought and practical life. It is likely *q/* that humans derive their basic aestheticism from a catastrophized outer and inner setting and experience. That is, every human is genetically induced or heavily trained by genetic types to sublimate the totality of his perception and cognition of the world such that one cannot "take the world as it is." One must make something of it, and that "something" is cloaked in thoughts and symbols, communicating interpersonally, which brings about a set of perceptions and representations and productions reflecting the aesthetic standards of one and all. The one never escapes the all and the all must tolerate the one, no matter how uneasy the relationship between the artist and his groups.

A principal problem or dilemma facing aesthetics and the artist of every kind is how to confess his catastrophied mind and at the same time deny it. So a poet like Ovid will write of frightful metamorphoses of humans and at the same time cloak them in beautiful settings of brooks, flowers, dells, and lovers. Or, contemporary furniture designers (the best of which would be Eames), in a permissive society urging them to express their libido frankly, devise chairs that, as Benjamin Nelson said, "forces us to suffer because of how they hated their mothers." The *q/* would say that a large part of all artistic production, especially that which need not be routinely functional, is the displacement upon art and one's audience of the essential schizoid fear of losing control over one's selves so as to get the comfort of the others' sharing the fear and even converting it into enjoyment.

Catastrophe as a theme in itself is a vivid engrossing portion of all artistic production, especially in sacral art everywhere, for it is the "function" of religion to manage catastrophic fear by dispensing controlled suffering including art that depicts or enacts suffering. The flight from the suffering and openly

expressed fear (of damnation, etc.) that religion provides often takes bizarre forms in which artists unconsciously reveal their denial of primal fears or express them in shapes and structures that, it sometimes would seem, everyone but themselves can grasp.

What is beautiful, good, true, satisfying, and useful all at the same time would be the ideal aesthetic form or thing. And, in a strict sense, nothing can be perfect aesthetically by just being "beautiful," for it cannot be such, that is, this is a contradiction in terms. It must have elements of all the other traits to qualify at a decent level. (This is not to say that many aestheticians and artists have not denied the need of anything but "beauty." Their position usually ends up absorbing the other qualities in the process of denying them.) Perhaps one needs to say that the "best" art is that which helps oneself and the most others control the mind, letting out its energies in satisfying, constructive ways. The aesthetic dimension of existence is so huge that endless opportunities to develop and practice the "best art" are available to all.

aether, ether

1. (t) The space above the Earth's atmosphere in which celestial bodies move.
2. An allpervading, infinitely elastic, non-resistive, subtle medium necessary to connect physical bodies occupying otherwise empty space. The aether was a medium through which light "waves" and gravity could be communicated across space. Physicists encountered difficulties reconciling Newton's Universality postulate: that the basic formulations (laws of nature) must be the same everywhere (at all places regardless of the local state of motion). Rather, it turned out that way in which a scientific relationship (law) was transformed (mapped onto the other place, differently moving than the Earth) determined its form. Faced with this dilemma the LorentzFitzgerald Contraction hypothesis was accepted, whereby the properties of bodies become a function of their motion. Using the system of equations know as LF transformation the laws of nature finally were written to remain the same everywhere. The next step was to postulate the aether into obsolescence. Although the problem of dealing with the medium in which physical transactions occur and are communicated are eliminated with the demise of the aether the need for some kind of communicative matrix between the objects in nature will not vanish.

The question remains as to what the ancient's meant by the aether? The Greek root is ambiguous in that aether could mean <to run always> or <to burn>. Some think the aether refers only to material collected in the plane of the planets.

Aethicus Ister:

protagonist of a geographic work written in the VII.-VIII. century by Pseudo-Jerome, maybe in association with the Canterbury School.

Afar Depression

great fractures of the global surface, where the East African Rift, moving Northeast, intersects the fracture passing through the Gulf of Aden from the South and moving into the Red Sea. The history of clashing forces in the area produces in the literature a Babel of geological nomenclature and age distinctions. Volcanism is rampant in the area. The mountains on the Ethiopian side are split from their extension across the narrow Strait in Yemen, both very tall (over 3000m) and plunge into the Depression on the South. The rock around the area is precambrian, but largely covered with lava. The Depression itself is considered (c) Tertiary and Quaternary extrusives. Salts and sands cover numerous low areas. A great many faults crisscross the area. The fit of the Arabian Peninsula into Africa (socketed in northern Somalia) below Afar is one of the neatest in the world, tending (q) with the sharpness of the rock everywhere and the numerous hardly extinct volcanoes to belie age estimates into the Miocene. It is almost (c) as well as (q) to argue that the hominid and homo remains found not too far away up the Rift delta debris were eyewitnesses of the tearing apart of the region.

affection

a sentiment of intimate oneness with another, that may extend only to occasional or spasmodic feelings, or to an aroundtheclock, universal and allembracing sentiment, and brings a euphoria whose hormonal structure is more complicated than genitality alone produces. Thus many people felt their heart go out to the Russian crowd defying the reactionary junta in the August 91 days of the hateful coup. Thus, too, Christians speak of an allovering God, meaning specifically Jesus, or of a person as being of a loving character. If it were not for two types of affection, motherly love and sexual love, both of which often become total, affection would have a small place in the values that men seek; power, prestige, wealth, skill, and health would overpower it. Affection finds a strong place in political appeals, if only because it is considered too rare, so that movements have often in history called for brotherly love. The powerful maternal and sexual sources of affection apply to such large portions of one's lifespan, however, that they often overwhelm the search for the several other values. It is therefore crucial to understanding, that both of these are profoundly instinctual in the human, mammalian, primate in behavioral terms, going back to the discovery of sexual reproduction in the history of life. Like all other human values they take on myriad guises. For instance the idea of the Virgin Mary, in numerous forms, takes in and gives off large numbers of indirect and sublimated signs, sentiments, impressions of affection of a mothering, sistering, and wifing character, all things to all men. The figure of woman in Christianity has regained its primordial interest to a degree but has hardly recovered from its shocking treatment at the hands of the Old Testament, where women are degraded to an extent hardly appreciated by feminists themselves. It begins with the abomination of Eve, the First Woman, and continues throughout with an alternation of neglect, denigration, even horrifying of roles (as with Eve, Sarah, and Esther, the exceptional Ruth being a Moabite). In general, only in black Africa (including some largely misunderstood New World manifestations wherever black influence is strong) and in the upper and intellectual classes of Europe do women act liberated. Nevertheless, a large portion of humanity yearns for a more general and intense diffusion of loving relationships, for the love of a mother and a partner in love is a highly constructive model for human satisfaction and even happiness. Affection plays so large a part in the nurturing and training of an infant that it naturally becomes an area of fixation for many problems of other instinctive zones besides the sexual. Affection becomes attached to all manner of seemingly irrelevant encounters and objects. It is plucked out and considered then the basic drive, even in its more intense sexual form by Freud. But it is not that at all, self-control, if anything, being the source of all specialized instinctually derived drives. The central nervous system is laced with interconnections of affections. Once the larger world is opened to the baby, the baby must begin to accept those displacements that her attendants point out as the true sources of indulgences and deprivations. His teachers, while pointing to various nearby objects with a causeandeffect connection that is fairly obvious even to the very young, are especially interested in leading her on to some very great abstractions as the

ultimate causes of her wellbeing or illbeing, as the case may be. Nor are they scrupulous in following logic or evidence in the pursuit of cause and consequence. What blocks a larger development of the affectional urge in humanity is, according to HS (q) theory, the fear of oneself within oneself in its myriad projections that tend to organize around the value of selfcontrol (expanded to worldcontrol) that must preoccupy the human soul, leaving a small and uncertain role for an expanding value of love. Given that the material qualities of all other values are acceptable within the framework of HS the drives for wealth, health, knowledge, respect, and power the affectional drive is the most likely to be abandoned in the general confusion, perplexity, ambivalence, and fright of the selves within a person. That is, by HS theory, the processes that are typically human as against animal, beginning with the primordial trait of self-awareness, happen to bolster these values at the expense of affection. In the press and film, ordinary people are surprised at the behavior of social institutions dedicated to love or whose priests and priestesses of love behave contrarily. They act unfeeling, cold, inhuman, interested in abstract things such as sin and goodness or rite and ritual. These "welfare officials" who are supposed to be basically dispensing affection, actually deprive people of affection, taking with the one hand what they give with the other. The reasons for this lie partly in the fundamental anhedonism and personal aversiveness inherent in HS, whether they express their own character in so doing or the character of the institutions they represent, that is the collectivity whose agents they are. A climactic case of a love institution built upon a great fear and hatred is afforded by the 1970's U.S.A. American utopian community of Jonestown briefly located in Guyana, South America, where nearly a thousand people belonging to a community of love were suddenly transformed by their paranoid and panicstricken leaders into a community of killers and suicides, to the end that within a few hours almost no one was left alive. The words of the last hours were filled with terror and doom. Only were there to be restrictions upon all of the normal processes of HS, and only if the other values held within limits, would the affectional drive begin to assume prominence. Since, therefore, the affectional institutions of society are its weakest, save for the mothering and sexual instincts, a reformer of HS might say that the production and expansion of affection beyond these two limited spheres into the larger society of work, politics, consumption, and life style should be the objective of social policies, and on a much magnified scale compared with history and today's world.

Afghanistan

central Asian Republic bordering on the Soviet Union, China, Pakistan, and Iran. Area: 652 000 sq.km. (252 000 sq. mi.). Population 14 million. Religion: Sunni muslim. Capital Kabul. The population is largely illiterate, 18% are nomads. Afghanistan is an agrarian society which imports most manufactured goods.

Mountain chain known as the Hindu Kush forms the major watershed. Kush is highest in the east where it rises to several elevations exceeding 7km. It has acted as barrier and gateway to humankind. Passes through the Kush have been crossed by merchants and warriors alike seeking fame and fortune on the other side. Summer temperatures reach 45 C (115 F).

Afghanistan conquered by Alexander the Great in 329, became kingdom of Bactria. It became Muslim when overrun by Arabs in 650. Later invaded by Genghis Khan and Tamerlane. Babur based in Kabul invaded India before 1500. Came under influence of British and Russians after 1800. Amanullah secured independence and became king in 1901. Became a republic in a coup d'etat by Sadar Daud Khan in 1973. Recently civil war has aligned Sovietaided Government versus U.S.A.aided rebels, with destructive and indeterminate consequences.

Original (c) theory has mountains of Afghanistan as <in situ> uprising have now changed to a part of Himalayan weld attributed to an ongoing collision of Indian subcontinent with Asia some 65M in large concession to (q). Colliding edge of India was supposedly forced beneath the sediments of ancient Asian seafloor, remnants of which are found today the high valleys of the range. Granitic intrusions welled through the cracks producing mountain summits. Heat and pressure produced by the collision supposedly metamorphosed much of the rock.

Alternatively (q) can consider the Himalaya mountains as relics of the post-Pangean catastrophes. Original surface of Afghanistan was part of Tethyan Sea Welt, a globe circling lowland inclined about 20° to present equator. Mountainous surface was successively molded by deluges, tidal washings, and uplifting after formation.

Africa

second largest continental area, 30Mkm². The majority of African population of 623M are black skinned, but nonblacks dominate the Sahara and Mediterranean and North Atlantic rims. The Ethiopians are a mixed race. Certain other peoples of dark color "blacks" are racially distinct from other blacks examples being the pygmies of the equatorial forests and the Bushmen of the Southwestern deserts. In fact, skin color, as among Mongolians and Caucasians, is a feeble method of defining race. Many Europeans have settled in the Southernmost region since the Age of Discovery began, and have in good part interbred with older Africans. More than 1000 languages are spoken.

Fossils from the Afar Triangle and Olduvai Gorge suggest Africa was occupied by humans when they first appeared (c). Egypt had an early high civilizations, dated (c) to 6Mn.

Africa constitutes about 10% of the World's land area. It straddles present equator stretching 8000 km N/S and 7500 km E/W. It has a land bridge to Asia at the Isthmus of Suez.

(c) Most of Africa is a remnant of a plateau that has subsided in the N & W producing basins, and uplifted in the S & E into highlands. A Great Rift divides continent beginning where it is believed Madagascar once was attached to the continent. The rift is deepest in the central part. It bifurcates, where the west branch is marked by White Nile River, and then rejoins leaving the continent at the Afar Triangle.

The Afar region is a relatively low region in NW Ethiopia and extends to Djibouti at the head of the Gulf of Aden. It is the most obvious continental junction anywhere on the Earth. Marine sediments covered most of the Afar in the Mesozoic Era. Basalts invaded the Afar in late in the Pleistocene Epoch. Several volcanic cones dot the region. Lake Abbe sits near the junction point of Africa, Arabia, and the Great Rift valley.

The Atlas mountains of Morocco document the collision of Africa with S Spain. This meeting marks the closing of the ancient Tethys Sea. The Atlas range is ascribed to the Cenozoic Era. It is described as the most spectacularly exposed fold belts in the World.

In central Mauritania there is a Richât, bullseye, pattern 38km across. This multi-ringed structure resembles others found on Luna, Mercury, and Mars. The presence of coesite, a highenergy form of silica discovered at the Arizona astrobleme, in the resistant rocks of the circular series of ridges making up the bullseye leads to speculation that the Richât may be an astrobleme. Against this hypothesis are the absence of any gravitational anomaly and breccia layers characteristic of other "impact" areas. No shock metamorphosis has been uncovered around the Mauritanian rings. The central basin is a flat layer of limestone. Vertical relief is about 100m. Minor radial and tangential faults are

seen in the outer parts of the structure. There is no evidence of volcanism. The origin of the Richât formation remains a mystery.

In Namibia the Damara mountains represent an outcrop of Paleozoic Era material. These rocks supposedly accumulated between the two fragments which make up the present African continent. They are made up of metamorphosed sediments.

The largest shield in Africa is located in the Transvaal of E South Africa. Its materials are (c) dated to 2.5G. Here, elevations are between 1500 and 1600m. On the South African Veld to the S is found the Vredefort dome a circular feature with overturned strata in which are found innumerable shatter cones and other examples of extensive shock metamorphism. The center of the dome is granite. It is suggested that the dome could be an ancient astrobleme.

In Zimbabwe there is a great dike, a ridge of low topographic relief, running for 500km. This material was intruded into the country rock in the PreCambrian Era. Later faulting offsets the dike material at several points. The Mtsiagwe river flows along one of these offset fault lines.

On the continent there are signs of water action on a great scale located stratigraphically at the time that other parts of the globe were supposedly covered with ice. In the Sahara and adjacent areas there are stream channels, not now occupied by water, that obviously carried great quantities of water at one time. These waterways were trenched during periods of great flow. Lake Victoria once stood 100m above its present level, its outlet has reversed from the ancient flow direction.

Marks on rocks in both equatorial Africa and in Madagascar suggest that ice sheets have moved over the rocks spreading from the Equator toward higher latitudes in the S. Without a drastic shift in the position of the Earth's cold pole the African Ice Sheet was flowing in the wrong direction.

Much of the geological exploration of Africa has concentrated upon the Rift. There is no consensus about its age. Basement rocks in the Rift have been ascribed great age. Diatomite deposits are dated to the Miocene Period. The Victoria Falls appear to be very young. The final shaping of the Olduvai Gorge seems to be postPleistocene. Volcanic deposits are evident.

The source which lifted Africa's plateau remains (c) unknown. A (q) approach has subcontinental melting accompanying the lunagenesis catastrophe. The swift eastward motion of the then broken Atlantic seabed drove the African continent eastward pushing up the plateaus. This same push may have been what prevented the circumAfrica rift from cracking its crust wide open to admit an ocean basin when forming the Rift valley. Splitting of the cleavage simultaneously broke India and Madagascar from the African continent. Both quickly achieved their present locations as a part of a global continental relocation which accompanied a »20% expansion of the volume occupied by the Earth's material.

African Rift volcanism

a wide belt of lava fields topped here and there by volcanoes, most inactive, beginning half way up the African Rift and accompanying the Rift until it strikes and joins the Indian Ocean-Red Sea fracture underwater, presenting therefore one of the greatest concentrations of continental volcanism in the world. The volcanism is assigned to the Tertiary, Miocene, in conjunction with the rifting process, although many of the craters are outside the confines of the rift belt. Remarkable at the north end, in the Afar, are several guyots, flattopped volcanoes, of the type found in the scores of thousands in the ocean basins. (q) microchronal estimates view the scene as latePleistocene, ignoring the welter of descriptive igneous rock types, claiming them as merely contemporary effusions of different type, without macrochronal significance.

African Rift

a spectacular rent of the Earth's surface extending from the Red Sea 4000km to beyond the Zambezi River. The walls of the Rift are from the PreCambrian Era. Over much of its length the floor is marked with young sediments and volcanic rock. In Afar the African Rift joins two other fractures, one running up the Red Sea and the other along the Gulf of Aden. The three join near Lake Abee.

The fracture running up the Red Sea, bifurcates again to pass up the valley containing the Dead Sea into Syria where it becomes lost in the jumble of mountains to the N. The western branch is questionable, but it likely passes across the Mediterranean Sea, up the Adriatic, beneath the Alps, and out along the Rhine graben that ends far to the NW beneath the North Sea.

The Rift turns NW at the point where Arabia fits against Africa. The junction of the Rift with the westward thrusting Indian Ocean fault which runs up the Gulf of Aden likely provided the reinforcement necessary to crack a neat rightangle around the Arabian peninsula. The narrows where the Gulf of Aden enters the Red Sea, marking the place where Arabia contacted Africa, is called Babel-Mandeb, the straits of tears.

Study of the Rift as a geomorphological unit has been aided by remote sensing from spacecraft. The question of the extent to which its path was determined by the structure of the ancient rocks in which it is found has long been a controversy. From space it is apparent that in some places the rift conforms to earlier structures while in other places it is rather clearly uninfluenced of local trends.

The walls are marked by sharp scarps along the faults that bound the Rift. The boldness of the walls is taken to mean that the feature is young. Debris found near the walls indicate the episodic nature of deposition and its freshness confirms the age as read from the walls. On either side of the rift upland forests contrast with the barren floor of the rift. Lava and fracture marking accentuate the tension which opened the rift.

In the portion of the Rift near the KenyaTanzania border great shield volcanoes are prominent. Mt. Kenya, Mt. Kilimanjaro and Mt. Meru rise to the east.

The rift splits when it meets the Tanganyika craton (a stable slab of PreCambrian Era. rock). The eastern branch is dotted with elongated lakes . Several ancient cicoliths and volcanic cones are evident. Near the Ngorongoro crater the Olduvai gorge cuts back the W wall of the Rift.

The Serengeti Plain separates the divided Rift. The watershed runs close to the E Rift. Upland drainage is toward Lake Victoria. The lakes within the R. drain the valley. Since rains are seasonal the water levels fluctuate greatly. Salts are concentrated by evaporation creating thick deposits of sodium carbonate around the shorelines, as around Lake Natron.

Opinions differ as to the age of the African rift. Legends and excavations indicate that it has been active in human times. In (c) terms its origins have been set back 2.7G. and its structure has been compared to that of the Rhine graben and the Baikal depression. (q) workers have linked all three structures, but they have done so as a part of a single global event of maybe a dozen millennia ago. Other (c) investigators have accorded the Rift an origin in the late Pleistocene. Between the (c) ages is the general opinion that the oceanic rift system (which connects to the land rift system) is no older than 200M. Spreading of the crust in widely separated regions show similarities including correspondences even when discontinuities are compared.

Deposits of diatoms in the lakes of the Rift are ascribed to the Miocene Epoch. Hand axes embedded in the same lake deposits are called Pleistocene Epoch, because they are the works of man. The spectacular land features in E Africa appear young. The Victoria Falls and Zambezi Gorge are young. If their age compared with N America's Niagara Falls this bit of Africa would be no older than 3.5Mn. A (q) view of geology tends to bring more and more features closer and closer together; the Earth's surface tends to become more hologenic seen in holistic perspective. The young looking Olduvai Gorge could have been created during the Bronze Age of Egypt.

India and Madagascar were dissociated from Africa by (c) reckoning some 100M years ago. Africa and the Americas (c) separated not long before that time. The land around the Rift must have been strongly affected in these partitions. No matter when it happened the cracking of the Earth's crust in such a dramatic and complete way must be considered as the major event (or events) shaping the present Earth. In the context of a (q) short timescale this reworking of the Earth's surface happened recently and was accomplished quickly. Its aftershocks extend into historical time. Our interest focusses not upon the old rocks which were cleaved but upon how these rocks were reworked when they broke. When the Earth broke the SE plateau of Africa was lifted as» the continent moved swiftly E. The Rift had already split the just diminished African landmass. The Carlsberg Ridge, now beneath the Indian Ocean, was an even larger crack than the African Rift, it likely spread on both sides even faster than did the remaining parts of Africa. So doing the W moving material ahead of Africa pushed back on the E moving continent limiting the spread of the African Rift so that its rocks could fall only a short distance before halting. There they remain, covered with lakes, volcanic ash, and plains.

Shortly thereafter and in response the major cracking lateral faulting shifted the end section of the Carlsberg Ridge into the Gulf of Aden where it joined to the African Ridge and struck northward up the Red Sea and beyond. For some time after the cleavage began reactive forces continued to modify its profile. Hominid and mammal fossils have been unearthed protruding from the walls of the Olduvai Gorge. If the Rift is very old it is difficult to explain their presence so high up on the walls. These men and animals could not be cliff dwellers; so the Gorge where they are found must be younger than they.

In the Afar triangle, a flat landfill actually born of the pullout of Arabia, hominids related to those in the Olduvai Gorge are buried in the fill. Similarly in Palestine, on the continuation of the Rift, more Olduvai types of hominid sites are found. The destructions of the Cities of the Plain, including Sodom and Gomorrah, are reported in the Old Testament and thus must have occurred in Recent time. The Syrian section of the Rift has been placed by archaeological investigators in the early glacial period (Pleistocene Epoch). Magnesium salts in the Dead Sea have been used, on (u) principles, to approximate its age at 50k. In Biblical accounts of the destruction the Sea is not mentioned until Moses and Joshua arrive at its shores (q) dated to 3450. This implies an age for the Jordan Valley and the Dead Sea of less than 5000 years.

African veldt

the country around Mount Kilimanjaro, lacking both a blanket of Pleistocene gravel and a cover of fine sediment. Despite its apparent great age, the veldt, a high plateau some 2km above sea level, was never inundated. Other regions higher in elevation than the veldt were flooded. Oceanic flood deposits are common in many parts of the world indicating an episode of recent worldwide flooding. On the veldt there are thick deposits of soil which show little erosion because of the dense vegetation.

afterglow light emitted or remaining after the excitation source has been removed. Excited atomic states are thought to last the order of 10microseconds before collisions deactivate them. Afterglows occur when the energy that should have been removed by collision of the excited atom with an unexcited one ends up in what is called a metastable atomic state. Afterglows generally will be of short duration, lasting fractions of a second. But, longlived metastable atomic states exist where the afterglow lasts minutes, and even hours. Phosphorescent substances are an example of this latter case.

In meteorology illuminated columns of light, from the Sun which has already set, is termed an afterglow. The columns are generated in mountainous regions where the shadows of the mountains contrast with the bright reflections off of dust in the illuminated columns of atmosphere. In certain situations the columns of afterglow can be observed to converge at the point in the sky opposite to the Sun's position below the horizon (behind the observer).

afterglow:

in a molecular gas, is produced by a pulsed electric discharge through pure nitrogen. The afterglow has been observed to persist to the darkness-adapted eye for several hours (Strutt); it is strongly visible for minutes (Ruark et al.). Other common gases produce weaker, shorter-lived afterglows.

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Agassiz, Louis

geologist, paleontologist, SwissAmerican, spokesman for the then new Ice Ages theory, Neufchatel and Harvard Univ., 1807-73. He envisioned an ice cover for much of the polar regions, with glaciers in every mountain valley descending into temperate zones. After his own conversion he conducted leading scientists to view lateral and terminal rock moraines in presently icefree valleys, conveying forcibly evidence of now disappeared or truncated glaciers. At first (q), he became (u) and led the establishment of present (c) views. He persuaded Buckland to accept the Ice Age theory, and then accepted Lyell's (u) and gave him long glacially slow processes in return for Lyell's accepting the Ice Ages. In studies of fish, Agassiz showed that earlier species often exhibited more complex development than the forms that succeeded them, an indication of sudden extinction (q) and apparent failure of evolutionary progress.

Agate, Nebraska

site of the Agate Spring quarry beside the Niobrara River containing a fossil-bearing deposit 50cm thick. The broken state of the bones indicate a long and violent journey from their place of origin to their final resting place in the quarry. The interlacing bones form a veritable pavement of interlaced bones, very few of which remain articulated in natural ways. A sample in the American Museum of Natural History in New York contains in excess of 1600 bones/m². A second excavation, by workers from the Carnegie Museum, found the bones of an estimated 820 skeletons (averaging 200 bones per skeleton), which totals 164,000 bones in an area of 125m². Their excavation covered about onetwentieth of the area of the site.

The bones found were from mammals. The twinhorned rhinoceros (*Dicera-therium*) was most numerous. *Moropus*, an extinct animal with the head of a horse and the heavy clawed feet of a predator, were found. The bones of giant swine (*Dinohyus hollandi*) were dislocated within the matrix. The animals whose bones are jumbled in the Agate Spring quarry could not have wandered to the site and then died of old age. Nor, likely as the Museum caption would lead us to believe, did they fall into a river eddy and become trapped in quicksand on the river floor, where the constant shifting of the sand disarticulated and interlaced them into the hodgepodge there today.

In other quarries nearby other fossil assemblages have been discovered. In one a destroyed herd of a gazelle camel (*Stenomylus*) lies in a deposit showing signs of transport by a violent torrent of water containing sand and gravel. The bones bear abrasion marks from their final journey.

These Nebraska assemblages of tens of thousands of mammal bones, in common with those found in many places elsewhere, provide evidence of great natural extinctions of living beings, not because the mammals were degenerate or in illhealth, not because of some local hazard, but because cataclysmic forces were suddenly unleashed in their environment at the moment of their demise.

agate

a stone of silica in the form of chalcedony which exhibits concentric bands of colors when seen in section. Agates are found in cavities in volcanic concretions and inside petrified logs.

(c) believed processes involve the slow migration of mineral impurities into the rock matrix forming the agate. A plausible (q) mechanism precipitates out trace minerals present when silicious material is destructively heated by volcanic material falling upon and freezing around local surface material, or when intensive electrical flows pass through a buried object. The local material is vaporized in an enclosed space. Agates are recovered near the center of the refrozen material.

age determination

a way of telling the place of an object or event on an absolute scale of time. Rough and exceedingly fine methods have been devised from human beginnings to determine when an event has happened in relation to the present. Telling when a human passed by a footprint in the sand is a test; a stone age man could perform this test validly and to increase reliability call upon his companions to confirm or modify his conclusion. Years of formal instruction and immense machines are employed to pierce the skies and measure radioactivity on the atomic level to solve larger issues of time. The fascination with timetelling is discussed in other articles. Here one is concerned with gauging times past, almost entirely prehistoric and back to beginnings; the various means of telling time are inventoried and surveyed; and for each method a (c) and (q) point of view expressed.

The quantavolutionary is likely to favor assigning short time to prehistory and geologic events such as the birth of Earth and Moon, while the conventional scientist and evolutionist is likely to insist upon everlonger periods to achieve what lies before the eye as the universe of things and life. The age of the Earth has been determined by (c) radiometric dating of meteoritic leads to be about 4.5G (Patterson), assuming the meteorites and Earth rocks to have appeared in the solar system at the same time. On the Arctic Circle, near Yellowknife and Great Bear Lake, a rock has been assayed by the uraniumlead method (the radioactive decay of uranium into lead) to 3.96 by. The oldest life (c) is now considered to exceed 1G. The solar system has to be older: the formation of a solartype star and planets from a cloud of gas and cosmic dust would occupy 400M±, then 12G for the Earth to solidify, and presumably all of the remaining time up to 15G to get to where it is from the hypothetical "Big Bang." At the same time some (q) have managed to redress the ages to accomplish the whole of the solar system as it is today, life forms and all, in a million years. It might seem impossible to reconcile the 5000times greater age span of (c) over (q). Actually it is not impossible. For instance, the processes reflected in the Grand Canyon profile could be temporally collapsed by a factor of 5000, making out of every five million years a thousand years, without scrambling ordinary explanations; mainly this occurs by substituting deep fractures and abrupt sedimentation from tides and heavy fallouts for slow uplift and erosion. The accompanying chart allows one to see at a glance how many tests are at issue in assigning absolute dates to all the matters of concern to this Encyclopedia. Minor and branching tests that largely favor (c) are not included in the table. At the moment, the only one of potential value seems to be the "ice core measurement." Employed in Greenland and Antarctic, the ice is drilled and the climate and pollution of the atmosphere is seen to affect the ice of each year. Seasonal deviations are detectable by the thickness of annual bands and the ratio of Oxygen18. The Greenland tests, though they do not disclose large disturbances known to have occurred at certain times, are not interpreted to show the much larger effect of catastrophes, implying that they have not happened. Much breakage of the extracted cores might belie this conclusion. A record limit of 100ky has been achieved. Doubt has

been expressed over the visibility of the bands and the melt of the ice sheet probably caused by the heat of catastrophe. There should have appeared, furthermore, signs of at least one shift of the Earth's axis during the period supposedly covered.

They do not include some of the tests that are usually cited to favor (q) because these are largely deprived of quantification and must be thought of as judgements. (q) tests often lack tubes, needles, gauges, and ask instead for judicial temperament operating with slippery data bodies; they often mix human evidence with natural conditions in estimating long ages, and they join legend or human calendars with proposed events of prehistory, such as changes in lunar or Earth orbit. To the evolutionist, (q) appears fuzzyminded, gullible, and fanciful; but to the (q), the (c) seems narrowminded, technocratic and historically untutored.

The (c) offers his tests of time; when applied, they show time as exceedingly long and change as most gradual. He grants more and more, however, that the largest changes striking the Earth have come about in catastrophes; but even here, he would allow slow, rather than abrupt, speedup of the changes.

(q) asks consideration of all natural forces operating today, including volcanic outbursts and earthquakes and hurricanes to be but minute in character and effects from the world catastrophes of old. Extrapolate the modern forces and their effects: then state what must have been the conditions of the skies, Earth and life under catastrophe. Repeat a number of times: that is true Earth history.

Some of the "soft tests" that (q) are often confined (recall, besides other problems, that any (q) seeking to develop tests must face budgetary problems perhaps a hundred times as great as (c) researchers) to offering are the following:

- a. Crosscultural similarities, as when ancient Japanese artifacts appear in ancient Ecuador.
- b. Abrupt changes in species in the fossil record.
- c. Close similarities of "old" species occurring across great stretches of water or climate barriers.
- d. Natural highspeed replication of longterm processes, as when lightning fossilizes a tree.
- e. Demonstrations of the abruptness of geological change as of Mt. St. Helens.
- f. Crosscultural mnemoses, that is, the theory that enormous collective traumas (cosmic lightning storms or cataclysms, e.g.) will cause on the part of various or all people a forgetting, memory loss, memory transformations, sublimations, blocking out or transforming the events.

g. Apparent incredible recency of geological and fossil phenomena, such as frozen whole mammoths, or the appearance of the Sierra Nevadas of California, the Himalayas and other mountains.

h. Apparent incredible rapidity of sedimentation, as with the White Cliffs of Dover or the results of a heavy flood.

i. Wasting phenomena, such as hot springs, dried recent lakes, ice caves.

j. Incredible deposits of debris or fossils that have to be assigned widely varying ages, sometimes quite across the phanerozoic scale.

k. The suspicious absence of change in extremely old species; also the extreme persistence of species.

l. The obvious occurrence of exoterrestrial intrusions despite the obsessive denial of such history.

m. The logical extension of minor to major and major to catastrophic, as when an undersea volcano springs into the air and builds an island in a few weeks or when the Himalayas spring up and, if they, why not all other mountain ranges around the world, and if that, why not a world catastrophe to bring it all about.

n. Reflection upon what must have happened to explain the million volcano forms, trillion earthquake faults, and millions of wet and dry stream beds and hundred submarine canyons, and the supreme feature of the world its global fracture, running continuously as a girdle around the world, all of these suggesting shorttime events that would have happened in groups with successive catastrophes, leaving all measures of time vain exercises if they presumed a uniformity of the development of any feature of the Universe. The chart displays the given tests, an indication of its unique quality, and the main contrast between (q) and (c) positions regarding it. Further descriptions and analyses of the individual items are to be found under their alphabetic heading elsewhere in this E. General comments follow here. The First Category deals with tests regarding surface features. The (q) position generally is that high heat and pressures, great electrical discharges (sudden and slow or both), super-hurricanes and tornadoes, glitches in the Earth's motions, and exoterrestrial crashes, fallouts or near passbys can cause them all in short order. The main (q) objection to the biological measures of (c) is that the very same phenomena can occur in quantum jumps, by saltation, under high energy impulsion. Once granted that mass extinctions and the arrival of abundant new species occur in connection with catastrophes, then it is strongly arguable that the large number of mutations needed to produce successful and significant biological change are available only at these times and by these means. The third category, radiochronometry, is heavily dependent upon the elements involved such as uranium238 decaying at a constant rate over hundreds of millions of years. The general formula employed in these radiometric tests of time is: $N = N_0 \exp(-t/t)$. N is the number of atoms of a radioactive element present in a sample of ore of a specified quantity. N_0 is the initial or original number of atoms present in the

same ore. t is the time elapsed since the initiation of the decay. e is the exponential number 2.71838. And λ is the constant decay rate expressed as the fraction of radioactive nuclei decaying per second). However, (q) would argue: apart from all other interferences with the performance of proper testing (machinery, care, number of repetitions of the test, registration of results, contamination by other means), the radiometric test is flawed and probably invalidated by the ignorance of the quantity of uranium in the original rock and the ignorance of vitiating experiences of the rock. The amazing capacity of machines to count atoms in a gas container should not overawe logic. Leakage of radioactivity from the host rock is apparent in some cases. Examples sometimes become public, at other times they are discarded; in 1984, N. Vasilyev, the leader of a Soviet expedition to Tunguska, site of an exoterrestrial disaster in Siberia in 1908, announced that lead bits in the vicinity showed ages of 11 billion y, twice the (c) age of the Earth; if radiometry were correct and welladministered, there had to be an alien spacecraft explosion there (so he said), or else the dating system was exhibiting its inherent weaknesses or was badly operated. Of astronomical motions, the fourth category, it can be said that proof of constancy of motion is available actually for only a short time; the fact that there are stable laws of motion (Newton, Kepler, La Place) does not demand that the historical motions themselves have been stable. There are various mysterious motions that may be fossil twitches from radically different ancient motions. The very rotation of the Earth may have once been a circular orbit of much greater radius around an electric current, as a part of its magnetic tube. Generally (c) declines to take into consideration electrical factors in regard to astronomical bodies and forces. In the fifth category, (c) may be claimed to have consistently ignored or scorned the multitude of ancient legends and even written materials on time sequences. Whereas social scientists and humanists, including psychologists, accord increasingly elements of truths to legend and myth, astronomers and geologists refuse to take them into account and have discouraged archaeologists and mythologists from taking them seriously; in some cases, as in the careful plotting of levels of destruction in excavations of ancient sites, archaeologists have been remiss, ignoring or refusing to admit the possibility of ancient catastrophes. With respect to the several categories considered together, the doctrine of uniformitarianism (c) has had pronounced effects by assuming that the skies, waters, air, rocks, and biosphere have changed always at the same rate. But (q) it would appear that inconstancy affects practically all measures of time and must be fed in systematically as a variable to the equations, even if only on the basis of intangible, vague, and imponderable events that are foes of neat equations. The planet Jupiter, for instance, was credited by the ancients to have behaved, as Jupiter the god, in catastrophic ways; very recently, from being a cold, lifeless planet, Jupiter has been shown by exploration to be a hot explosive second tiny Sun. (Velikovsky predicted the radio noises of Jupiter in 1950 on the basis of ancient claims and the hypothesis of an eclectically active solar system. Too, in the fierce competition to succeed in creating new science, (c), like (q), have concealed anomalies, allowed or even encouraged the contamination of experimental samples, exaggerated the degree of reliability of their observations,

generalized from insufficient data, pleaded premises as proofs, selected specially favorable evidence, used special cases instead of representative sample of all cases as proof, and have been theoretically inept (owing to the culture and to the intense specialization fostered by the job market as well as the needs of scientific investigation. Revisions in the tests are occurring continuously, reluctantly or with alacrity, usually depending upon whether a theory is helped or hurt. Carbon dating, for instance, has been changing its measures continuously since its invention a generation ago; it may end up actually as a foe rather than a friend of (c). M. Cook has shown that the accepted rates of increase in carbon-14 in the atmosphere, if retrojected would give an atmosphere purged completely of C-14 10,000 years ago; other gases would certainly be affected by such changes, and there is good evidence that uranium, given its cycle through the air, seas, rocks, and space, cannot be accounted for on a regular basis. Two series of tests, anxiously watched by geologists and archaeologists, on wood and seeds of Thera-Santorini give dates of the explosion as much as 1000 years apart in each series. By measuring the extent to which the lefthanded molecules have become righthanded in bone tissue amino acid (such as aspartic acid) of animals long dead and fossilized, it is believed (c) that time can be measured in years back to over 100,000, bridging the gap between carbon dating and potassium-argon dating. The process is called amino acid racemization dating. The test is temperature-sensitive and depends for its calibration upon carbon dating. Granted the lopsided allocation of resources between (c) and (q), still there has been a dearth of initiative in the development of quantitative tests or at least objectively and publicly verifiable systematic observations by (q). Fields especially adapted to this end and not too costly to explore would be sedimentation rates, the contamination of radioactive constancies by electromagnetic currents, the systematic inventorying of fossil sites to show their catastrophic causes, the piecing together of Pangaea on the theory of its having been split asunder by a single great brief event complex, a systematic search of space satellite maps for astroblemes, including soft landings with peculiar deformations not conforming to the Berringer crater profile, etc. Just as forensic medicine has hardly disturbed the role of the clever detective, technical dating systems have not affected - should not affect, would be better the value of holistic analysis of a situation to be dated; the date is the criminal and all means must be brought to bear upon discovering its identity. Thus, when the Bushmen of the Kalahari Desert employ a delicate bow and arrow with a poisoned wood or bone arrowhead, and practically this same arrowhead head is found in multiple examples in the African site of Gwisho, the dating of Gwisho at 6000bp raises questions of whether such a technique can have preserved itself so perfectly for so long a time (there are a great many of these incredibly long hiatuses of cultures in (c) anthropology), and if so how many thousands of years must these Africans been cultured before that time, knowing both ballistics and chemistry. What kind of comparative logic, qualitative to be sure, can be devised to evaluate such problems? The side effects of dating techniques may be valuable. For instance, the study of Aegean prehistory was given a boost by the attention aroused when geologists flocked to investigate the ancient volcanism of Thera-Santorini Island. The investigation of

hydrocarbons under the sea has located ash from huge fires of prehistoric times off the U.S. Atlantic seaboard and in normal soils. In all testing, the datacollecting is difficult. Whole ages given (c) many millions of years are missing from the surface of much of the Earth; increasingly, (q) comes into play, asserting catastrophes may have wiped out these layers; the possibility must then occur that whole vast civilizations may have been wiped out by catastrophes, as most peoples say happened with a great flood, or other cases, by a great fire from the sky, or by a great wind, reducing the survivors to the primitive stage where they were to begin with. It is unlikely but not impossible, that the exceeding slowness of humans developing a high civilization was owing to repeated total catastrophe. Only the historicity of a few scholars and elite members in a couple of nations were basically responsible for the uncovering of ancient civilizations, that today appear so obviously important and impressive, yet there has been no worldwide catastrophe for 2700 years. In age determination often more than one test may be applied, and a conforming result may signify greater validity and reliability to the test, as when both dendrochronology and carbon dating agree within a decade or two on the age of an item. Even vast time differences are excused in the very longterm radiometric tests, such that 100my of discrepancy will be accepted as not vitiating a twin test by fission and UTh technique, or some millions in comparing a thermoluminescence test with a PotassiumArgon test result. Complaints against bristlecone pine and radiocarbon dating are legion, for the two rarely agree and are being recalibrated constantly.

Age of Discovery

the worldshaking movement of the Atlantic European nations, especially Portugal, Spain, France, Holland, and England, that drove these early modern states with their medieval religions, propelled by the verve, inventions, and ideas of the Italian Renaissance, outwards around the world, bringing about within a century the conquest and domination of most of the nonEuropean world. The movement ceased, but then principally in a political sense, with the midTwentieth Century; for, economic, industrial, and military power remained in European and North American hands. Ultimately there was formed an economically, culturally and politically intermeshing world of some hundred and fifty significant states, dominated by no more than a dozen among them. Like all great movements, there were portents. The Ottoman Empire closed the door against Europe in 1453 with the capture of Constantinople. Icelanders had dwelled in a town of Greenland for centuries, and Lief Ericsson had gotten at least to Newfoundland with his Vikings. The great Venetian Republic was greatly weakened, even as it was a center of world map production, creating a hiatus on the seas. Portugal and Spain, new strong entities, were already picking up islands in the Atlantic Ocean. Legendary accounts of ancient and recent exploits to lands unknown were told in harbor stores and offices. Continuously less doubt attends now these accounts. That the Americas were visited from the Mediterranean seafaring countries, from Ireland, from Scandinavia is evidenced by coins, sculptures and graffiti. From the black African Cape Verde Islands off of Senegal (Africa) to the Pernambuco hump of Brazil was no more than a voyage from Venice to Cadiz, Spain, from where Columbus departed for the Indies in 1492. Undoubtedly the passage had been made many times in history, before Pinzon (1499), Cabral (1500) and Magellan (1519) made the trip. Other voyages into the Caribbean may be presumed as well. What Columbus(o) did by his journeys and settlements was to release floods of new information and initiatives. Amerigo Vespucci followed in several years and "America" was soon named by a Dutch geographer working with an Alsatian printer. By 1550, almost all the principal cities of Latin America to this day were named and founded. The grinding down of peak Amerindian culture had progressed beyond recall, not without a partial incorporation of Indianism by the colonialists. The French and the English reserved their main thrusts until a hundred years later, though the Italian navigators Sebastian and John Cabotto (Cabot), got the English off to a good start as early as 1497 in North America. The ruthless suppression of native institutions by the Portuguese and Spaniards, as well as the genocide of the North American Indians by the English and their successor population is well known. The French, possibly because led by curious Jesuits, but also because it was not tempted by great riches in America and was concentrated upon European hegemony, escaped less guilty. The Jesuit histories of the natives of North America are correspondingly rich sources. Victim of the violence and contempt visited upon the natives of the Americas was also their history; documents, artwork, legends and stories, temples, statuary, priesthoods were practically wiped out. As has happened elsewhere in the world, for the same reason but at different times, as with the Alexandrian Library in Egypt, as with the

Chinese Imperial order to destroy all books, the testimony of the ancients, which everywhere in the world was catastrophic and (q), has been reduced to bits and pieces that are offhandedly denied admission at the bar of science. In the East, the Age of Discovery proceeded with Vasco da Gama (1497) around the Horn of Africa to India, with Ferdinand Magellan (and his replacement J.S.del Cano) around the World (1519), and thereafter with many captains who pioneered routes to India, Indonesia and China. Everywhere, the old beliefs and traditions foundered or gave way to the Christian commerce and industrialism that followed the navigators. By the time anthropologists began to arrive about 1830, a great many peoples no longer had their stories straight. Most were denying their own accounts of the cosmos and history and incapable of repeating them faithfully.

Age of Jovea

in Quantavolution, the period following the Deluge (about 5700 BP) to the time of Mercury's encounter with the Earth circa 4400 years ago. Dates liable to important variation.

Age of Saturn

in Quantavolution, the period stretching roughly between eight thousand to fifty-eight hundred years before present.

Age of Urania

the first age of the Quantavolutionary Period, assigned to run from 14000 to 11000 years ago. Also called the Uranian age.

Age

a distinctive period or stage in the history of the Earth, a planet, or a region. Ages are not directly linked to time, rather they indicate sequence. Since evidence of past events often are found buried within the Earth the depth of burial commonly indicates it "age." A particular stratum was deposited upon another or lies below a third one. Logically the lowest stratum was deposited first, then the middle one, and finally the highest stratum was added. The question of when each stratum was laid down and how long the processes took is a more difficult thing to ascertain than the order of deposition.

Several scales of the Ages can be used. Each one is discussed in more detail under its own listing. Here are only the general markers for the Agescales.

1. Biostratological Ages indicate the presence or absence of obvious fossils in the rock strata. Under microscopic examination no systems of strata remain lifeless.

Azoic: microfossils only

PreCambrian Period

Cryptozoic: algae, worm casts, protoleaves

Late PreCambrian Period

Phanerozoic: layers with obvious fossils

Paleozoic Era: invertebrates, fishes, amphibians

Cambrian to Permian Periods

Mesozoic Era: reptiles

Triassic to Cretaceous Periods

Cenozoic Era: recent life

Tertiary Period: mammals

Quaternary Period: man

On the assumption that the theory of natural selection has directed biological evolution from "simplest" organisms to ever more diverse "complexity" the fossil content of the strata has been used to sequence them for nowhere in the world is there anything but a fragment of the total column of possible strata.

2. Cultural Ages indicate the presence of particular artifacts within layers of sediments. The ages are dictated by the kinds of implements in use and their form.

Lithic Age: stone implements

Paleolithic: early artifacts

(c) coexists with Pleistocene Epoch

Mesolithic: hefted axes and bone tools

Neolithic: early farmers

(c) coexists with Holocene Epoch

Bronze Age: mining and metallurgy

Early: use of pure copper

Middle: alloy of tin and copper (Bronze)

Late: sculpture and casting in Bronze

Iron Age: development of industry

use of hammered tools and weapons

It is not clear that the cultural ages are distinct in time in that stone, alloys, and pure metal were often used together. In general the classification applies to the degree of implement and artifact sophistication found at a particular archeological site. By (q) theory the humanization process was a saltation producing all aspects of human culture. How culture was manifested at a particular site depended upon the available resources, the potential of the local terrain (with regard to agricultural development, mining potential, and the need for particular tools, amulets, or adornments).

3. Mythic Ages represent the notion that men descend from the gods. Developing like children men are first parented by the god(s) after maturing they corule with the gods until they become sufficiently wise to be trusted with selfrule. This process of acquiring selfdetermination by the human race is accompanied by the realization that men, unlike idealized gods, err from time to time. The mythic ages are:

Period of Divine Rule:

Golden Age: Age of Kronos

Time of serenity, peace, and eternal spring

Silver Age: Age of Zeus

time of law, luxury, and seasons

Brazen Age: Age of PallasAthene

time of the great destruction

Period of the PriestKings:

beginnings of empire and strife between nations

Historical Period: roughly from the Era of Nabonassar (of Babylonia) onward.

On this agescale are measured the degree of secularization of human events. It begins with humans as god's children and ends in a time of travail when justice and piety have vanished. During the historical age mankind has struggled to reconstruct on his/her own terms that "Paradise" which once existed by "Divine-edict" and which was lost through "man's fall." These ages in (q) terms reflect human alienation from nature and our attempts to redefine that which is "good" and "proper" in logical terms.

4. Stratigraphic Ages: The various rock systems exposed for examination at particular locales have been ordered in part by their composition and structure, in part by their fossil content, and in part by radiometric chronological techniques. The system of strata bear the names of those regions where they are the characteristic rock layers. They are listed here from oldest to youngest.

PreCambrian Era:

(c) to about 570M.

Cambrian Period

Ordovician Period

Silurian Period

Devonian Period

Mississippian and Pennsylvanian Periods

Permian Period

to about 225M.

Triassic and Jurassic Periods

Cretaceous Period

to about 65M.

Paleocene Epoch

Eocene Epoch

Oligocene Epoch

Miocene Epoch

Pliocene Epoch

to about 2.5M.

Pleistocene Epoch

Holocene Epoch

The (c) longtime scale in use is predicated upon the notion of slowly sedimenting layers accumulating and being deformed over aeons by purely mechanical means. Adopting a (q) mode of conceptualization allows for considerable shortening of the time involved because highenergy processes acting for very short times do most of the shaping of the land and the subsurface layers.

5. Quantavolutionary Ages are based upon a genesis scenario in which the ancient Sun fissioned at some point in its existence creating the Solar System. For most of its history, while life appeared and flourished, the system contained two stars. Then, the binary disintegrated drastically reshaping the structure of the System and the nature of the planetary surfaces. Man, as we know him, was shaped by this physical transmogrification. Both geological and cultural history reflect the stages of the breaking up of Solaria Binaria.

Era of Super Solaria

from the beginning of time to roughly 1M.

Era of Solaria Binaria

Period of Radiant Genesis

from the creation of Solaria Binaria to the establishment of a stable biosphere (»250k).

Period of Pangean Stability

ending about 14000 when the solar binary began to disintegrate.

Period of the Late Quantavolutions divided into Ages characterized by an active or dominant astral body

Urania (2500y)

Lunaria (3500y)

Saturnia (2300y)

Jovea (1300y)

Mercuria (950y)

Venusia (675y)

Martia (1175y)

Era of Solaria (1600y), the time when the Sun as been regarded as the dominant Solar System body.

This system of Ages attempts to incorporate all of the (q) features noted in this work. At best it should be considered an approximation» to the true sequence of events. Flawed as it may be to the totality of possible events involved it does better than other agescales presented here to fit the spectrum of the evidence from the many disciplines of human inquiry.

Ager, Derek

British geologist at Swansea College, in 27 he wrote the "Nature of the Stratigraphic Record" in which he is an exponent of abrupt transforms as major medium of geomorphological change. Ager holds generally, however, to a macrochronal position ("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"). He writes: "the periodic catastrophic event may have more effect than vast periods of gradual evolution," a phenomenon he calls "quantum sedimentation." Guardedly he suggests that geologists, "must face the possibility of [an] extra-terrestrial cause" for common findings. Ager confronts the (c) mindset of Earth-scientists molded by 150 years of ignoring catastrophism and especially astral-catastrophism but stops short of considering exoterrestrial influences thoroughly in his written work. He defends the longtimescale of (c) scientists while recognizing the value of (q) events as, "an easy and incontrovertible solution for everything that I have found remarkable in the stratigraphical record." He resorts to plate tectonics as a possible alternative mechanism (presuming these are internally propelled).

He points out storm deposits from several widely spaced periods of the geological record; hard to discover, they are nevertheless influential in landscaping; the storm rock debris he labels "tempestites," following Gilbert Kelling who discovered them profusely across the Atlas Mountains. Enormously widespread ash layers covered quickly by sediments are also found. Whereas geologists generally believe that "the stratigraphical column in any one place is a long record of sedimentation with occasional gaps...I maintain that a far more accurate picture of the stratigraphical record is of one long gap with only very occasional sedimentation...The gaps predominate...,the lithologies are all diachronous and the fossils migrate into the area from elsewhere and then migrate out again." In his work are a wide range of examples from numerous eras, of the worldwide distribution of various rocktypes and fossils. Ager accepts the sense of the supposition that there existed a global ecumene of animate and inanimate forms. The fossil record indicates large numbers of species which never reached their potential limits. Ager illustrates the bizarre differences in depth of the deposits of the same age in separate regions both near and distant, pointing out, for example, the 30cm of Jurassic sediment in Sicily in contrast to the 4.5km of one Jurassic zone or sediment in Oregon. Since sediments accumulate in basins rather than on mountain tops the 20km thick deposits found in places would have been below sea level had the oceans existed while they accumulated. He alludes to wide differences in rates of sedimentation: an 11.6m tree stands amidst the late Carboniferous Coal Measures of Lancaster; but for the flow of sediments from rivers he quotes Holmes' measure of only one centimeter per millennium. He estimates the age of the Grand Canyon at under 10M; its gorge provides a case of rapid erosion. Other empirical scientists and scholars of Earth's history can be cited reiterating points Ager made. A few of them go far beyond him in that they are severely critical of long timescales.

aggression

the attempt to inflict physical and mental damage upon others by physical or psychological means. The action may or may not be "justifiable" although ordinarily it is rationalized for the good of oneself or the public. In fact, one major (c) theory of A. is that "aggression is always a consequence of frustration." Further, frustration always results in aggression. Freud moved away from this thesis toward a genetic or inborn source (c) always longterm and evolutionary, and actually developed several inconsistent explanations of the phenomenon in his lifetime. His last theory seemed to invoke a death instinct and a life instinct, in conflict, which is a kind of schizophrenia in which the individual is doomed to fight against himself, using conflicts with others as a way of playing out his urges. The simple frustrationaggression theory, initially coming out of Freudianism and pursued by a research group at Yale U., becomes quite extensive and complex when pursued. Aggressiveness is pandemic in mankind and follows a psychological progression that is largely unconscious although its effects are sensed by the aggressor as well as the victim. For instance, territoriality has been suggested as a universal instinctual motive, that calls up fights among all males of a great many species, with generally limited ambition. But the human demand for territory is in the first place insatiable, once inflamed, but also only one of many and is entirely subordinate to other demands, whereby, for instance, territory may be given away in exchange for sexual privileges or movable property or even a teaching appointment. The basis from which poly-specific aggressiveness as a trait can develop (q) is the schizoid human, the split personality, created suddenly by natural causes whether external or genetic, who is at odds with himself simply from the difficulty of making up his own mind on a host of matters as part of being human. The human seeks to control his own mind, but is doomed or blessed (depending on one's philosophy of happiness) to failure, and therefore seeks to control others, beginning with the constant apparent causes of his failure to control, the gods and demons of the sky. Witnessing and suffering from the turbulent skies of the primeval days of his own creation, the human looks unceasingly there for messages, and the messages are simple enough, obey or be punished, the messages as to how to obey being highly ambiguous as are the punishments wreaked for disobedience. A considerable part therefore of original man and his descendants is given over to controlling himself, the heavenly host and his fellows. No mammal or animal or plant feels this need so intensely and so futilely. The initiation of an aggression is generally a frustration multiplied by the constant (in mathematical language) which is this existential fear and frustration) such that he now commits in succession the almost entirely human mental procedures of displacement and projection of the aggression to whatever target offers itself conveniently. There is such a thing as rational aggression if rational is defined as, say, actions against the source of a frustration to cause it to cease or recompense one. But the generalized unconscious aggressiveness of the human is not satisfied by solving his aggressive problems rationally; he engages in overflow, overkill. This, then, is destructiveness blows (mental and physical) without reason, wars without

sufficient cause, character assassination and assassination with displaced motive ("kill the President, not your father," the voice tells the demented aggressor, and supplies him with justifications). Although individual aggression has been here described, it can be multiplied in a group or society as a whole until it becomes collective aggression; certain externals change but essentially the group or crowd or ethnic group or nation or religious sect is going through the same process as the single person, reinforcing its members by their interaction, and using the groups resources for the pursue until one has deadly compulsory warfare consuming the scarce goods of the community and destroying a part of its members in the name of justice (never sheer aggressiveness or destructiveness). In the (q) of humankind, the first instances of aggression came about with the first moments of its being, when, in trying to get its head together it belabored first itself and then the people around it, beginning with its mother and siblings. Going beyond them it worked its way among the less aggressive hominids. A hominid, as an animal, a pongid, ate only vegetables, and its successor, the human, would have little interest in killing to eat. It would kill to restore its own sanity, and it would eat its kind if a necessary rite to restore the wholesomeness of its mind. The hominid then was the first likely set of victims of the human, to obey or be injured or killed. Perhaps the very success of the human in spreading around the world and multiplying was in its ruthless self-justified, rationalized godobeying eradication of the hominid. There has ever since then been a special hostility that the human has for its own kind that is not quite 100% its own kind. Here is a possible source for the intolerance of the not-quitehimself that has ever been pandemic in homo sapiens schizotypus. Most animals have a sense of territoriality, but none but homo goes out deliberately to conquer as much territory as possible. Nor is this unusual but is characteristic; the fact that the Napoleons, the Julius Caesars, the Pizarros, the Cecil Rhodes's are few indicates only that there are so many people that are doing the same for themselves that only a few can succeed and most die trying or subside exhausted.

agnatha

Jawless fishes found both in lakes and sea. The larva are wormlike and filter feed, while the adult can be parasitic, feeding on the flesh of their prey. The lamprey of the Great Lakes is a member.

Agnatha represent the oldest of vertebrate fossils. They appear in the Ordovician period, (c) 500M. Ancient members are fishlike animals covered by bony plates; most lack paired fins. The group remains important into the Devonian period when they disappear from the fossil record. Though seemingly extincted hundreds of millions of years ago contemporary jawless fish, otherwise quite different from the ancient forms, are put into the same class. The lamprey and hagfish are the only known members of Agnatha today.

Possibly modern survivors come from a much more recent (q) destruction of the now fossil species, which once thrived in the shallow waters of the Pangean Stability and were transmogrified by the Late Quantavolutions.

Agni

Vedic lightning god husband of Ambika, a goddess who represented the primal ocean of blood from which all things arose at creation. Agni represented the fructifying lightning (fire from heaven). In early sources he is described as the bull of the waters. He makes water pregnant.

Agni's name comes from the same root as the Latin *ignis* or fire. He is said to be born from heaven, from the Sun, or from lightning.

The union of Ambika and Agni represented the soul of the universe whether moving or still. Agni consumed sacrifices placed upon altars in a manner represented by a like aspect of Yahweh. In this regard he is said to be born from stone or from water (in which extinguished celestial fire resides).

Agni is depicted with a long beard and clothed in fire. He is reddish. In his hands are flames, a trident, and a water pot. He rides a ram. He is an intermediary between mankind and the gods.

(q) placement of Agni would occupy most of the millennium following 3500. His role in holocaust sacrifices would date after 3000.

agnosticism

a suspension of belief in gods and theism, especially of named gods, arguing generally a lack of proof, whether by reason or evidence. Stopping short of atheism, it is a convenient position for both philosophers and laymen, especially where persecution is a threat. The term was introduced by the Darwinian evolutionist, Thomas Henry Huxley in the 19th C.

Agricola, Giorgius

***Fl* »465, physicist, mineralogist, specialist in metals and classification systems, Germany.**

agriculture

the deliberate and periodic seeding, growing and harvest of flora. The product of the process is eaten, fed to animals, woven to be worn, or incorporated into many other processes. It has always engaged a large part of all human energies. Its invention and development have been credited with a parallel development of large populations and high culture. It is (c) supposed to evolve from a "hunting and gathering stage" of mankind, but this is doubtful (q) in that the earliest human gatherer may be presumed to have cast aside seeds that sprouted and she might even have been a vegetarian anyhow (ab origine), given the disadvantages of meat: difficult hunting, preparing, cooking, digesting, spoiling, and poisoning. Furthermore, gathering of nuts, plants and insects provided a more varied and healthy diet, and why sow and tend when one might simply reap? The killing and eating of insects and small animals (amphibians and rodents) would lead promptly to the keeping of these, plus crippled birds, for future use. Fishing, too, would offer an easy alternative to hunting large beasts and birds; both (c) and (q) would allow for domestication to come along with agriculture; interacting, from the observation of trapped insect and animal behavior, humans learn of seeds, foods, preservation. Indeed the killing and eating of larger animals may have developed partly as a sacred pursuit and sacrifice to the gods and spirits of the sky. The breakup of the primeval solid "adamantine sky" into flocks of clouds suggest mammal flocks and herds and flights of birds, the sky behavior of meteors and meteoritic showers upon the hapless folk prompt projections of frustration, rage and fear onto both humankind and larger animals. Animal and human sacrifice went together everywhere; the latter relapsed into symbolic forms and pure amnesia while the former remained and converted into notsosacred meat diets. Agriculture is more likely to have developed with techniques of human control of others; coercing others to labor in the fields under guard is religiously, psychologically more appealing than to have them running about out of control. This may be more important than the usual reason given for the invention of agriculture, that populations got too large to support by hunting and gathering. The rationalization for the effort and triumph of establishing rule over others would be to maintain peace and order for instance to prevent incessant warfare among clans striving for territorial rights at the cost of loss of autonomy. Once settled in agricultural communities, a high birth rate would be both natural and promoted.

Anthropologists are moving agriculture backwards in time. Mexican economies with a mixed farminghuntinggathering base are estimated at 8000y. Sedentary lake shore communities are quite apparent in the Chalco Basin by 6000y. High Ecuadoran corn plantations existed with their storage jars at least as far back as 4000y. In preEuropean California, hunting and gathering competed successfully with agriculture; some planting was used to supplement to other means of subsistence. The Bible promotes life before agriculture as superior, and introduces a catastrophe for Adam and Eve with the celestial snake, thereafter lamenting that toil and sweat must be the human lot. The implication is strong here that to the schizoid aggressiveness of fearful therefore powergrasping rulers

(exemplified in the Lord) must be added a desolated world that required assiduous cultivation to produce a living. Agriculture is so easy for the human who is smart enough to hunt game, and select search and find nuts, honey and the like, not to mention to detect edible scavenge that attempts to date it as a later form of culture out of purely economic reasons in an unchanged psycho-environmental setup must be looked upon with distrust. Hence one must be unready to accept datings that place American humans and all the rest of the world for that matter behind the Southern Levant as the originator of cultivation of the soil. There charred remains of wild grain (presumably cooked and eaten) were found to be 19ky old. Annual growths of the wild grain in the Dead Sea-Negev area were fostered naturally by a severe permanent desiccation and converted into actual farming by the Natuffian inhabitants, whose population was pressing upon resources. Careful replanting and observation of productive specimens led humans to put aside and use an ever larger selection of annually productive seeds. This would have been about 12ky. Once this happened (c) would maintain that a diffusion of farm populations, swollen in numbers, would occur into Turkey, thence to Europe, so that within about seven thousand years the people of Scandinavia and Britain were sowing and reaping and sharing some few of the blood proteins of the prosperous immigrant Levantine farmers in their veins. A generally contrasting view is that all the while the same steps were being taken by peoples in Asia, Africa, Europe and the Americas. In Japan at Early Joman site of Hamsuno, S. Hokkaido, around 7ky, rice, barley, gourd, buckwheat, and wild grains were being processed and eaten. A diet superior to the "English" and "Swedes." On the Altiplano of the Peruvian Andes, at least several thousand years ago, highly sophisticated farming, even by today's standards, was practiced over thousands of square miles, with the full extent yet to be determined. Potato and quinoa were among the pollen grains found by archaeologists. Since the 1960's millions of raised fields have been discovered, all about 3 feet high, ranging between 1333 feet wide and 33330 feet long, bounded by narrow canals through which water was run, and dipped onto the fields by pouring from vessels. Offflow from the platforms settled in the ditches and was used to renew the platforms. Experiments have confirmed the great efficiency of the system. The total system broke down even before the arrival of the Spaniards, for reasons unknown. If such a system had been employed at 3500y, it must have depended upon developments extending over a long time prior; or, rather, it would give no reason to concede priority to Palestine in farming and would lend encouragement to the (q) that the human race everywhere had gained together the fundamentals of farming, perhaps around 13,000y. These they brought with them and developed largely in their own way in the successive separations and isolation that catastrophes visited upon the human race.

Agua, Guatemala

volcano notable for its symmetrical slopes. Summit crater is small, 100m walls with a notch which is only 12m high. Volcano erupted at 2 a.m. 459 Se 11 engulfing Ciudad Vieja, first capital of Guatemala, in a sea of mud. Represents the only recorded activity of this 2100m high mountain.

Agua is named for the watery consistency of the ejecta and debris which supposedly flooded down its slopes. Eruption apparently followed three days of torrential rainfall and was immediately preceded by violent earthquaking. The channel carved by the eruption is readily seen through tropical forest covering the mountain.

The investigation of the signature of the eruption of Mount Saint Helens in 20 suggests that the volcanic material accompanying the eruption of Agua may not have been as aqueous as the sediments seem to indicate.

The mountain is one of a long chain of volcanoes running along the west coast of the Americas. It is near Fuego (fire) the most active volcano in Guatemala.

Ahaggar mountains

Algerian mountains rising in the heart of the Sahara desert. Mountain basin, 550,000km² in area is surrounded by higher Tassili Plateau. Except to W basin is bounded by steep sandstone cliffs. Mountains near edge of basin are not spectacularly high, no peaks exceed 800m. Highest central point rises 2918m.

Composed of metamorphic rocks of the African Shield, (c) dated 2G, the region is in part overlaid by volcanic rock, believed to be recent (M).

(c) Folding and faulting followed formation of the African shield. Erosion supposedly reduced the region to a peneplain by 700M. The region was twice glaciated before it domed up removing sedimentary deposits and reexposing the ancient bedrock. Because of the region's complexity some authorities believe the region has been buried and reexcavated several times before 100M. Subsequent upwarping took place because molten material collected beneath the basin. Volcanism created the towering plugs which make up the most spectacular features of the Ahaggar region. Faulting has determined the path of several valleys some of which are followed by local streams. Rejuvenation followed eroding the peneplain into the topography that seen today. Evidence of erosion by freezing/thawing is present.

(q) Northern mountains of Africa are possibly residues of globe circling belt of highlands bounding the early Tethys Sea. The sculpting of this complex region bears the signature of one or more short episodes of global catastrophism, which elsewhere produced uplift, volcanism, and intensive episodes of tidal scouring and exposed many parts of the Earth to ice falls and falls of debris.

Ahura-Mazda and Ahriman

AhuraMazda and Ahriman were celestial twins born simultaneously from the womb of Zurvan, Crone of Time. Like Cain and Abel the twins offered sacrifices to the older deity V (who may be the androgyne Varuna). AhuraMazda's sacrifice was accepted while that of Ahriman was not, symbolic of Ahriman's expulsion from heaven.

AhuraMazda was god of light (the Sun, (q) the Star) while Ahriman created the material world (the Earth and the planets). In Zoroastrianism Ahriman became Angru Mainyu (the evil spirit) while AhuraMazda, originally Spenta Mainyu (the holy spirit), became Ormazd (lord of wisdom). AhuraMazda originally may have been androgenous since Ahura was originally a feminine name.

The Magi regarded Ahriman, whose influence was considered greater on the Earth than that of AhuraMazda (whose realm was the celestial), as the source of their magic. The Magi were experts in the art of purification of the natural substances: earth, water, and fire. At least later AhuraMazda represented the pure of substances from which the world was made. The wisdom of the Magi, which conceptually and theologically resembles that of the Celts may provide one of the roots of alchemy. Their rites of purification may be associated with the quest to return creation into its original form.

Ain ez Zarqa

Artesian springs emerge in the Biqa Valley at Ain ez Zarqa producing an oasis on the arid landscape. The waters arise from snows fallen on the high summits of the nearby Anti Liban mountains. The spring water emerges from a fault in the underlying limestone layers. Flow amounts to 13 cubic meters per second. The spring waters feed the N flowing Ari (Orontes) River.

Human habitation near the spring extends into the Lithic Age. Cavelike cells remain in the steep walls of a deep canyon close to the oasis. Their latest occupancy dates until at least 1400.

aircraft

a conveyance by which human beings can rise into and/or travel through the atmosphere. Aircraft can be classified into those whose lifting power derives from aerostatic processes (buoyancy) as well as those rising under aerodynamic conditions (use of a static or moving airfoil and by those which remain aloft by following a ballistic trajectory): today, hotair balloons, heliumfilled dirigibles, airplanes (propeller and jet driven), helicopters, rockets, and certain groundeffect machines (hovercraft) qualify.

Aircraft may have (q) significance in that certain ancient traditions incorporate the notion that humans, or other beings, ascended into or came down from the heavens. Children may have resulted from sexual union between these "air travellers" and local humans. These offspring may have been the original "children of god" or they may have been born "monsters" of various kinds. On the plains of Nazca in Peru there are deliberate markings of great size, presumably the works of mankind, which could only have been seen by an observer viewing them from aloft. Only the region around the Mediterranean Sea was mapped accurately in ancient times but one map showing the outline of Antarctica is also existent. The notion that these maps may have been made from an airborne platform has been presented, and though it seems an implausible explanation for the maps attaining the necessary airborne vantage point to make them might be possible in (q) terms if the maps have sufficient antiquity. That is, in early ages the Earth's atmosphere seems to have been more dense than today. As well it may have joined to, or even have been a part of, a system enveloping gaseous plenum filling the spaces between the planets, the Sun, and its early companion star. If this hypothesis for the structure of the early Solar System is accurate then airborne navigation might have been within the reach of humans, or even long extincted residents on other planets.

Airy, G. B.

Astronomer Royal, who in 129 performed a crucial experiment concerning the aberration of starlight. In 274 it had been determined that the star positions showed apparent displacements with a period of one sidereal year. The amount of shift depends upon the star's proximity to the pole of the Ecliptic. Aberration is interpreted as an effect due to the motion of the Earth around the Sun. Airy repeated the earlier experiments using a waterfilled rather than an airfilled telescope, expecting that the amount of aberration would be increased 33% over that in air because the path followed by light would be bent upon entering the water from the air. He found that the aberration remained at 20".5 no matter what substance filled his telescope. Airy's result is taken as an early indication of the correctness of the postulate that the speed of arriving light is not affected by the observer's motion, in this case the motion of the orbiting Earth.

Airy also considered issues germane to the Earth sciences during his career. When it was found that the Himalaya massif did not exert any gravitational pull on a nearby plumbline Airy offered the theory that reversed mountains, immersed in the magma, exist below the visible mountain ranges. The intrusion of lighter granite into the more dense basalt (isostasy) would explain why a mountain does not deflect a plumbline. A difficulty with this experiment is the inability to determine the local vertical independently of the existing terrain. Positions N and S of the Equator are determined by observing which stars pass overhead. This must be done with the mountains in place so that any effect they have has already been included when the latitude was measured.

Airy speculated that terrestrial poles could be shifted a few "miles" by the sudden raising of a substantial mountainous mass. In Airy's opinion the axis of rotation would be displaced from the axis of the figure (the Earth's shape) so that wobbling would induce polar wander. Airy's calculation fell well short of explaining the great changes in climate reported by the geologists which motivated him to attempt this explanation.

Ajios Jakovos

A destruction site, one of the many reported on and correlated by Claude Schaeffer with natural disasters, that may or may not have been exo-terrestrial in origin.

Ajios Jakvos:

A destruction site, one of the many reported on and correlated by Claude Schaeffer with natural disasters, that may or may not have been exo-terrestrial in origin.

Akhnaton

pharaoh of Egypt of the Theban Dynasty, variously times (c) at 3400's, (q)3100's, 2900's, 2700's, who upon ascending throne declared a cultural and political revolution, annihilated the name of his father, married his mother Tiy and made her Queen, married his daughter Nefertiti, whom he exiled later, set up the worship of one god alone (for which deed Sigmund Freud credited him with the inspiration of one Moses, an Egyptian Prince, who left Egypt taking with him monotheism and the Hebrew tribe), and was overthrown by conservatives after perhaps two decades of brilliant but controversial rulership. His name is changed from his name upon accession, which was Amenhotep IV, worshipper of Amen, declares him a worshipper of the god Aton, who (c) believe to have been the Solar Disk (hence one step away from abstract monotheism) and some (q) believe to have been the Planet Venus. He created a new city in honor of his god, inspired a new realism sharply contrasting with ageold Egyptian art forms, and posed with his family for many portraits and sculptures, insisting, apparently that he be portrayed as he was, with a monstrously long head and swollen limbs, symptoms of a rare disease. The sphinx evidently first appeared now and was initially the portrayal of a woman with breasts and catlike form in honor of his beloved mother Tiy, whom he married and made Queen. When he disappeared in a coup and all trace of him was thought to be extinguished by the reactionaries whom he had suppressed, his sons succeeded him but, after brief rules, fought each other and both were killed. The younger, King Tutankhamen, was buried in great splendor and his tomb luckily remained undisturbed until opened by archaeologists in modern times. The story of Akhnaton struck the imaginations of the ancient world and the Oedipus legend of the Greeks, subject of the drama by Aeschylus, is modelled in astonishing detail upon it. Oedipus is Akhnaton, Queen Jocasta is Tiy, etc., but the important small difference is that in Greece incest was taboo whereas in Egypt, Iran and elsewhere in the Orient it was acceptable, at least among royalty. Akhnaton was deposed because of his cultural and religious revolution, rather than for his incestuous relations with his family. The founders of Greek Thebes may have settled there upon the capture and destruction of their home city by the Assyrians. It would be more likely that the time span between Akhnaton and the founding of Thebes would be less than the halfmillennium called for by (c) dating. Catastrophes were striking the Eastern Mediterranean and elsewhere around the times argued for Ahknaton. Several references occur in the Amarna royal letters archive to heavy natural destruction.

Akkad, Akkadian

region and people of Mesopotamia occupying the N part of Babylonia. The Akkadians used a Semitic language. Their capital Akkad or Agade, believed located near Babylon, has never been found. King Sargon of Akkad is reputed to have conquered lands from the Black Sea to the Mediterranean shores as well as the S land of Sumer. Sargon's empire (c) dates to somewhere around 43Ce ago. Naturalistic sculpture and glyptic art are the only remnants suggestive of this empire, as isolated in time as it is devoid of artifacts. Akkad is thought to have been overrun by mountainous tribes from the N.

The Akkadians are not represented stratigraphically by any layer of artifacts. Written Akkadian texts date younger than 2700. These are believed by (c) scholars to be copies of originals dating to the time of Sargon. No remains have been found of Sargon's capitol, DurSharruKin, reputedly built by him in N Mesopotamia, but a rather great ruin remain for the later Sargon of Assur at Khorsabad. Many correspondences between the lives of Sargon of Akkad and the (c) 1500y later Sargon of Assyria exist. Similarities between their empires is carried to the coincidence that the earlier Sargon's holdings were lost to mountain tribesmen to the N, while the empire of the later Sargon fell to the Scythian's who emerged from the land between the Black and Caspian Seas (Armenia). Temporal anomalies in the texts presently ascribed to the Akkadian Sargon, notably a reference to the splendor of Babylon which demonstrably was not splendid until rebuilt after 2688, suggest a reexamination of the entire chronology of the Mesopotamian Region and of the assignment of the strata to each stage of civilization represented there. Part of the difficulty revolves around the insistence of (b) scholars that the Hebrew Patriarch Abraham must be literally associated with the city of Ur during the 5Mn. It is possible that the tradition of this Patriarch has been merged with later life in Babylon during the period of the Captivity (»2596 to 2537).

Alabama

22nd American state. Entered Union in 1819. Area is 134,000km². Population 4 million. Capital at Montgomery. Largest city is Birmingham. The state is situated mainly on the rolling coastal plain of the Gulf of Mexico. Northern Alabama includes a part of the Cumberland Plateau. NE region is cut by the Appalachian Piedmont. Highest elevation: Cheaha mountain, 734m. Major river system rises from the Piedmont. Alabama river is over 500km long. It forms where the Coosa and Tallapoosa rivers join, near Montgomery. The Alabama flows SW where it joins the Tombigbee river, which drains the western part of the state, to form the Mobile river which drains into Mobile Bay on the Gulf of Mexico. Tennessee River cuts across the northern boundary of the state near both corners. Cotton remains major crop in irrigated land near the Tennessee river. Central belt of black soil is very fertile because of mild and moist climate. Here, cotton has been displaced by cattle and poultry as the principal agricultural products. Mountainous ridges are mineral rich. Coal, electricity, iron, petroleum, stone, and timber are used by state's manufacturing industries.

Four groups of indigenous peoples were located in Alabama: Creek and Cherokee in E, Choctaw and Chickasaw in W. Mound State Monument near Tuscaloosa is location of many burial mounds.

Russell Cave National Monument near Bridgeport is the site of 125ha of limestone caves which show evidence of habitation from earliest times until 350.

Åland Islands

a labyrinth of rocky islands located in the entrance of the Gulf of Bothnia between Finland and Sweden. The gently rounded islands are lowlying and covered with evergreens. The exposed bedrock is a red or pink tinted granite composed of feldspar embedded in fine grained quartzes. The islands, like the mainland around it, were covered by the ice sheet. Their granite was scoured and planed into a gently undulating surface by the ice. When the ice melted the Baltic Sea flooded the area and cleared away most of the debris that should have been left by the ice. During the past 10,000 years the earth's crust in this region has been slowly rising, presumably because of the relaxation of the compressed land from the glacial overburden. The islands grow larger as the land emerges from the sea. The largest of the Åland Islands now covers 740km². The usual q/ questions apply as to the source of the vanished Pleistocene ice and the mechanism of its motion across the islands.

Alaska:

largest American State. Joined the Union as 49th State in -41Y. Area: 1.5Mkm². Population one-half million. Capital at Juneau will be relocated at some future date in keeping with Legislative Act of -26Y. Largest city is Anchorage, located on the S coast. The University of Alaska at College, near Fairbanks, in the interior, sponsors geophysical and sociological studies of regional phenomena and resources.

Alaska is located in the NW corner of N America. It is bounded on the N by the Arctic Ocean, and on the W by the Bering Sea. The Seward Peninsula is separated from Siberia by the 80KM Bering Strait. The Alaska peninsula extends westward into an arc of volcanic Aleutian Islands stretching nearly 3200KM, where the sovereignty changes; the chain continues for a short distance as the Komandorski Islands of Siberia. The Aleutian range has many peaks exceeding 1200M. The present arc is believed to have begun in the Cretaceous and has uplifted considerably. It has remained stable since the Pliocene epoch. The coastal mountains, to the SW, descend into the Pacific Ocean as the many islands forming the Alaska Panhandle. E Alaska borders on the Yukon Territory of Canada. The Panhandle borders on the Canadian Province of British Columbia. Alaska has more coastline than any other state of the USA.

The narrow northern plain slopes downward from the Brooks range into the Arctic Ocean. The plain is underlain by a kilometer of sandstones and shales ascribed to the late-Cretaceous and early-Tertiary Periods. Above them are 45M of recent clays, silts, gravel, and peat. The Yukon river crosses Alaska from east to west for 1900KM. It drains a vast Central Plateau into the Yukon Delta on Norton Sound. Up to 100M of Pliocene to Pleistocene Epoch Sediments overlay another 45M of alluvium are deposited on the Yukon river flats. To the S are the high mountains of the Alaska range, whose greatest peak, 6.2KM high Mt. McKinley is the highest elevation on the Continent.

Alaska's climate is cold, but during the brief summer rather warm temperatures occur in the interior. Its coastal islands are sheltered by the mountains and warmed by the counterflowing Alaska current. Onshore

winds deliver abundant precipitation to the Panhandle region. Winter weather in the Gulf of Alaska is dominated by a more or less permanent low pressure area which spawns eastward moving cyclonic storms frequently.

N coastal Alaska has rich petroleum deposits which are the state's major cash resource. A large commercial fishery exists. Fish processing, wood pulp and lumber are major industries. There are extensive deposits of heavy metals. Farming is difficult except in the Mantanuska valley of the S and in the Tanuka valley near Fairbanks. The different regions of Alaska are naturally and climatically isolated. The major modes of transportation are by air and by sea.

Alaska has several active volcanoes in the chain of Aleutian islands. Shishaldin on Umimak Island has erupted 25 times in the past two CE. The Valley of the Ten Thousand Smokes marks a region of great volcanism.

Several major ice sheets fall out of the St. Elias mountains shared by Alaska and the Yukon. The Muir, Seward and Malaspena glaciers are of great size and are major scenic attractions. The latter glacier extends to 300M below sea level and has a measured thickness of 610M. The ice fields of the Glacier Bay National Monument are conveniently reached by tourists. Here, the tidal glacier at the head of the bay has retreated 130KM in 195Y. The Columbia glacier, near Valdez, discharges 2 cubic kilometers of icebergs into the bay each year.

The Earthquake of -36Y Mr 27 was the strongest ever recorded in N America. It killed 114 persons, caused major property damage, even destroying several small settlements. Major psychological disruption of the affected population has been documented.

Until -286Y, when Russian explorers arrived, coastal Alaska was populated by the Aleuts, and the northern slopes were occupied by nomadic Inuit peoples. Several tribes have occupied the central interior.

Alaska was not ice covered during the Pleistocene Epoch. Dinosaur bones and teeth have been unearthed on the Arctic coast and dated to the Cretaceous Period. In the interior vast muck deposits have been discovered containing important fossil assemblages. A mid -1CE expedition investigated muck in the Tanana valley. The muck is made up of the frozen

mass of trees and animals. Extensive warped layers of volcanic ash is admixed into the muck. In places the muck is more than 100M thick. The mangled state of the finds implicates flooding by massive tidal waves. Mammoth, mastadon, super-bison and horse carcasses are abundant. Despite disarticulation frozen ligaments, skin, hair and flesh are preserved. These findings certainly point to a momentary, and likely, recent destructive event.

The deep Aleutian Trench on the Pacific Ocean seabed testifies to the *q/* notion that the land of Alaska rafted rapidly into position. The sharp bend at the end of the Aleutian arc occurs at precisely the point where an extension of the line of Emperor seamounts meets the Asian coast. One *q/* view has rapidly moving continental fragments gravitationally slowing and coming to rest on the raised rim of the freshly blasted Pacific crater. Alternatively one could imagine the several electrically charged and electrically driven slabs of land, that now form the Pacific Rim, converging suddenly upon their present locations and crunching together in a grinding collision. The same electrical charges which flung the fragments from their original crustal positions now helped to stop their crazy motion on the lip of the Great Pacific Crater, postulated as once occupied by the material which is now Luna, the Earth's Moon.

Alaskan oriented lakes:

the most significant feature on the Arctic coastal plain of Alaska are the oriented lakes. The lakes are found along 725KM of the coastline and extend inland about 150KM. These marshy ponds and shallow lakes cover between 50 and 70% of the permafrost of the plain. Between the lakes the surface is rolling surface is covered with scrubby vegetation (mostly lichens and grasses) and interconnecting water channels. Trees are conspicuous in their absence. Most of the lakes are less than 6M in depth, but a few are deeper than 20M. Between the lakes ridges up to 5M are found, inland the ridges are lower, averaging 3M. The lake shapes vary between ovoid and cigar-shaped. Length to width ratios run from 1:1 through 5:1. Near Barrow ellipticities between 2:1 and 3:1 dominate. From now drained basins and older shorelines to existing lakes it is deduced that the lakes are smaller now than they once were. By carbon dating the lake ages are estimated at a few KY.

The average annual temperature is -12°C . For more than 87% of the year sub-freezing temperatures are recorded. Permafrost extends from a few decimeters below the surface to a depth of 680M in places. In summer thawing degrades the shore lines, a process to which wave action on the lakes contributes. The *c/* viewpoint is that the lakes arise when frozen sediments (containing ice) melt and create a depression above which a thaw lake accumulates. This process alone does not explain the dominant N10-15°W axis of the lakes, for which a palaeowind (no longer experienced) is suggested. The local wind direction is mainly from the NE. The observation that no new lakes are forming along the new wind vector supports an incidental act of formation. Other investigators suggest that shelves and bars forming perpendicular to the prevailing winds (nearly along the long axes of the lakes) might be responsible for the shape of the lakes. Deeper and warmer water is found near the S end of some lakes, thereby tending to accentuate erosion there helping to preserve or even extend the ellipticity of the shorelines. Bedrock fracture is another alternative given for producing the orientated lakes. Ice-wedges have been noted parallelling crustal fractures. Upon thawing such wedges sometimes

leave elongated pools. Landsat images indicate that the size and elongation of the lakes increases toward the coastline. The interior lakes are smaller, more round, and more sparsely distributed.

A *q/* senario links the occurrence of the oriented Alaskan lakes to the Carolina Bays. Both features are located on coastal lowlands. The oriented lakes are approximately as distant from the present N Pole of the earth as were the Carolina Bays from an ancient rotational pole situated near or on Apatak Island in the Ungava Bay at the end of the Hudson Strait. In -67Y, the origin of the Carolina Bays was linked to a storm of meteorites. The absence of surviving fragments threw the theory aside for a time. The meteorite hypothesis was revived in connection with a suggestion that the Bermuda Deep resulted from a cataclysmic impact produced when an exoterrestrial object of some size penetrated the Earth's surface. The subsurface rebound from this impact raised the Bermuda Islands and shifted the earth's rotational pole northward from near Apatak Island to its present location. After the cosmic object crashed through the oceanic crust of the Atlantic Ocean ice dislodged from the former icecap likely skidded to both sites of the oriented lakes. The major difference between the two sets of coastal lakes is the drainage of water from one lake to another in Alaska. Such drainage does not occur between the Carolina lakes. It might be explained by the quick movement of Alaska from a north temperate climate to an arctic climate while in the Carolinas the climatic shift was opposite. Ice fragments grounded on the two shorelines (both nearly equidistant from the Apatak pole) would ablate differently. Slower melting of the ground shards of ice would be expected in Alaska's new location meaning that melting could have taken centuries. If so, stream and vegetation patterns were well established before the melting of the originating polar icebergs was completed in Alaska. Melting of the Carolina's ice would proceed more quickly. In both locales the largest and most oriented lakes are situated near the coastline where the biggest ice fragments would be expected to come to rest.

albedo

(lat. *albus*, white) the fraction of received light reflected from a non-luminous body.

Alberta:

Canadian Province admitted to Confederation in 1905. Population of 2.4M and an area of 661,000KM². Capital Edmonton, on the North Saskatchewan river, is the location of a major university. Calgary is the financial center of the Province. It boasts a lively tourist trade because of an annual Stampede (rodeo and fair) and its proximity to the mountains and Banff National Park. The small city of Lethbridge has a large population of Japanese-Canadians, displaced inland during WWII with Japan. The city has a university where major *q/* studies have been conducted. In 1927 the University of Lethbridge awarded an honorary doctorate to Immanuel Velikovsky, the most famous *q/* of the 1CE.

Alberta is bounded on the SW by the Rocky Mountains and along the W, at the 120TH Meridian (longitude), by the Province of British Columbia. Its northern boundary at the 60TH Parallel (latitude) is with the Northwest Territory. Alberta borders Saskatchewan on the E at the 105TH Meridian. The 49TH Parallel, divides Montana of the United States from Alberta on the S.

The land rises from a treeless prairie in the SE through several ranges of foothills and mountains to the Great Continental Divide in the Rocky Mountains. These mountains are thrust folded rocks, some propelled from a great distance before being piled highly. Near the USA boundary the Milk River Ridge divides the Arctic watershed to the N from the Missouri-Mississippi waters to the S. The many tributaries of the Saskatchewan River system drain the S half of the Province and flow eventually into Hudson's Bay. The Pembina, Peace and Athabasca rivers flow N into Lake Athabasca, which constitutes a watery divide (it has both a western and an eastern outlet); and into the Slave River, which drains through the MacKenzie river system into the Beaufort Sea. Most of Alberta is part of a plateau of at least 600M elevation. At the base of the Rockies the land exceeds 1KM above sea level. C Alberta is a partially treed parkland with clay-soils of high fertility. Much of the arid S has been irrigated. The N is covered with virgin forest. Tree size declines in the sub-Arctic climate of

the far N. Agriculture is a major industry. Great wealth comes from vast deposits of coal, gas, and petroleum. In the NE are found huge sand formations laden with heavy petroleum fractions.

Deposits *c/* attributed to continental glaciation lie beneath the parklands. A line of large erratics extending across the Canadian W ends on the lower slopes of the Alberta foothills. The cliffs of the Red Deer river valley abound with dinosaur bones, and other carbonized, mineralized and fossilized matter. Significant deposits of coal and volcanic clays are found here and throughout the region. The badlands near Medicine Hat are rich in fossils: camel, sabre toothed tiger, and other species are recovered.

Petroleum deposits span N America from the Beaufort Sea to the Gulf of Mexico indicate *q/* processes have acted. The Alberta portions are not the exception. Mountains in the easternmost front range of the Rockies, from the Yellowhead Pass and extending southward into Montana, are said to be inverted in that their uppermost layers are dated to the Precambrian Era while the rocks below are ascribed to the Cretaceous Period. Between the unconforming layers are a finely structured coal seam, whose presence belies the *c/* explanation that the older strata have overridden the younger basement rocks, travelling many KM from the W to their present location.

The indigenous population has left many artifacts. Tribes of the Blackfoot Confederacy are found in the SC Alberta is Cree territory while the to the N are found the Dene. Most of the natives now live on "reserves" which occupy large tracts of land scattered throughout the Province. Many landclaims, unsettled for many years, have created tension between the resource companies using the land and the natives who live on it.

The Columbia Icefield, greatest in the Canadian Rockies, straddles the Alberta-BC boundary. The largest remaining herds of wild buffalo reside in Elk Island and Wood Buffalo National Parks, however the latter herd is allegedly disease-ridden and a curative-kill of the animals is planned because of the remote possibility of brucellosis being communicated from

the wild buffalo to domestic cattle located on ranches many hundreds of KM to the S.

Albritton, Claude C.:

author of works on geohistory since -30Y.

alchemy:

Al-Khemeia, in Arabic literally means *matter of Egypt*. Ancient science seeking the means to combine the opposites in nature thereby symbolizing its hidden principle of Oneness. Members of the craft sought the secrets of nature, including the basis of life, in a contemplative way. The Arabs ascribed alchemy to Thoth (or Hermes). Alchemy and astrology form the core of the *Great Work* of Hermetic writings. W Alchemy emerged from Hellenistic Egypt and was transmitted to the Europeans through Arabic scholars.

Alchemical terminology unashamedly was ripe with reproductive metaphors with "copulations" and "marriages" figuring prominently in specific procedures. The apparatus had a symbolic purpose: the pestle was associated with the tree of life, the crucible with the vulva and the *bain-marie* with the uterus. The sexual images overtly depicted the many subtleties of the spiritual union of the material substances. Mary-Sophia was the goddess of both Gnosticism and alchemy.

Many of the early chemical discoveries were made by alchemists who isolated the strong acids and several humors, including ethyl alcohol (aqua vitae). Eventually the A. practitioners became mired in the same literalism that dogged Christianity thereby obscuring much of their original vision. Paracelsus began the transition toward what we call chemistry by concentrating on iatrochemistry (chemical pharmacy) rather than on the isolation of pure metals. Many participants in the "scientific revolution" also practiced alchemy: John Dee, Isaac Newton, and Georg Stahl (fire or phlogiston theory), to name a few. Modern chemistry separated from alchemy when LaVoisier's oxidation principle replaced the older metalization principle.

Alchemists have been accused of practicing a quasireligious art rather than science. At times the alchemists seemed to be seeking a lost deity. A. shares its roots with the devotees of Wicca and so alchemists were persecuted in

the same manner as witches. Their main heresy seemed to be a preoccupation with matter, which the church viewed as a "base" (evil) substance. The question of its efficacy has been reduced to an academic question in that the A. tradition was decisively ruptured when the master to apprentice succession was broken. The modern judgement that alchemy was a "failed" science ignores not only the metaphysical content of its symbols, but more tragically the alchemists hope of bettering and prolonging life through a subtle understanding of nature's unity.

Alcock, Norman Z.:

physicist, one of the founders and long time director of the Canadian Peace Research Instituted, *fl* -35Y. Alcock contributed an early survey of the effect of the outer planets upon triggering solar activity in the context of solar variation influencing human behavior. Recently, in retirement, he has investiaged the possible inclusion of the Fibonacci Number Series [1,1,2,3,5,8,13,21,34,...] in Megaliths and in cultural expressions of early within the age of writing. The Fibonacci Series in reverse suggests a *q/* sequence in which large changes rapidly converge toward some developmental limit. Alcock suggests the ancients has some insight about how natural processes focus rapidly toward an end-state and that they artistically included this feature into their creations.

alcohol, drinking of:

an organic compound of numerous classes, some poisonous, others intoxicating and potentially dangerous, these latter constituting the potent element in alcoholic drinks such as beer, wine, whiskey. Individual differences of habit, character, and genetics provoke different responses to differing consumption quantities and rates. Drunkenness is as old as alcohol consumption which is as old as humanity, practically speaking. Even so small a dosage as an ounce can produce visibly "excesses" of every basic trait of HS, such as paranoia, obsession, compulsiveness, affection, catatonism, aggressiveness, megalomania, so that it can be called an "exaggerator." For some people, drinking may aid the imagination and lend courage; since both courage and imagination are required for creativity, and are not afforded everyone who is otherwise qualified, a certain limited relationship to alcohol may be indicated. Generally speaking, depending upon a person's pre-existing constitution and the preferences of his associates, the effects of drinking may be "good" (though most rarely after ingestion of more than several ounces), or "bad," and, furthermore, "good" effects may be transformed into "bad" as a situation develops (driving after convivial drinking, *ex.*) or the amount of drinking increases. Sickness and death following excesses are common. Accidents to the drinker, other parties and property following upon alcohol consumption inflict enormous emotional, physiological, and pecuniary damages upon societies where N and E European cultures prevail or are prominent. No race is exempted from experiencing typically alcoholic effects. A slight genetic predisposition to alcoholism is observable, but cultural strictures are most prominent in shaping the habit. Holding cultural factors constant, outright prohibition of alcoholic consumption not only invites increased criminality but deprives many light and moderate drinkers of a continuous and emotionally healthy pleasure. There seems to have been no change in the basic culture surrounding alcohol since humanization occurred; alcohol affects mammals analogously with HS; hence, alcohol may be said to have been irrelevant to humanization or to the broad shape and speed of civilized development. This statement does not contradict the statistically

large engagement of mankind historically and prehistorically in alcohol-influenced behavior. Alcohol has typically been resorted to in most cultures in the face of cosmic dread, as when celestial phenomena appear to be threatening or to ward off an expected threat or to suppress memories of cosmic disaster and may be part of cosmic ceremonies.

alcohol:

an organic compound of carbon, hydrogen, and oxygen whose molecule has 1 or more hydroxyl radicals [OH] linked to carbon atoms (which are not formed into an aromatic ring). Polyalcohols like ethylene glycol, a di-alcohol [HOCH₂-CH₂OH], is used to modify the surface tension of water to better resemble the physiological properties of body humours. Glycerol, a tri-alcohol [HOCH₂-CHOH-CH₂OH], is the backbone of the fats and oils in living things. Triglycerides are esters of glycerol and three aliphatic fatty acids.

Only ethanol is drinkable. Methanol causes blindness, isopropanol is used only externally, amyl (five carbon) alcohols are byproducts of biological fermentation which are named "fusel oils" by the whisky makers. Drinking alcohol is stored in wooden barrels to absorb out the fusel oils. The aging process is to remove higher alcohols which cause the drinker to react badly to the alcohol. Fusel oils "spoil" the taste and aroma of the booze. Distilling also helps separate unwanted side products of the fermentation process.

Alcor:

fourth magnitude star whose Arabic name derives from *al-khawwar*, the faint one. The star's name is most commonly ascribed to the names *al-jaun*, the courser, and to *suha*, which means the lost one. Alcor is located close enough to the brighter star Mizar, the middle handle star in the asterism of the Big Dipper, that its detection traditionally was considered a test of acute vision. There is speculation that Alcor has brightened or has separated from Alcor since the Medieval years.

Some say Alcor was unknown to the Greek astronomers, while others link the star to the Lost Pleiad Electra, who supposedly wandered away from her companions. An early German legend connects Alcor with the frozen toe of the giant Orwandil which Thor broke off and threw at the middle horse of the Wagon (the German name for Ursa Major) where Alcor remains today. A later German story tells of a wagoner, named Hans, who opted to drive his heavenly cart across the Universe as a reward for his providing the weary Christ a lift. Others view Hans' failing his master and so his perpetual odyssey becomes a punishment. An Arab story has Mizar as the mother and Alcor as her new-born infant. The matrix of traditions associated with this star lead one to doubt the concept of the immutable heavens, in consonance with other *q/* clues.

Alcyone:

the brightest star in the Pleiades star cluster. Alcyone was once thought to be the central star in the Universe around which all other stars revolved. The Pleiades cluster has long attracted attention in legends ascribed to peoples around the world. The Australian aborigines celebrate the New Year in honor of this star cluster. *t/* states that one of the Pleiades has been lost from view. The cluster is linked to legends of the Flood and the celebration in various ages of a festival of the dead. Such commemoration is found in the festivals of the Hindus, Egyptians, Persians, Peruvians, Mexicans, and Druids. When still practiced the celebration is dated to the time of evening culmination of the Pleiades, which occurs early in November. In India the 17TH of November is the time of the Durga festival. The Universal Deluge is commonly linked to the 17TH day. The Druids celebrated the Festival of the Dead at the beginning of November. In Paris the cemeteries are repaired and lunch is eaten among the graves of ancestors. The Welsh and peoples of Cornwall light fires at this festival. The Japanese celebrate the festival of landhorns in this season and reckons time using the Pleiades. The Egyptians associate the stars with the dismembered parts of Osirus.

Aleutian arc:

a ridge curves southward from the Alaskan peninsula into the Pacific Ocean until it almost joins the Kamchatka Peninsula of Asia. The mountains of the ridge rise to heights near 650M, except in the Aleutian Range where the peaks commonly exceed 1.2KM. Offshore to the S the Aleutian terrace forms a sloping seabed whose bottom drops away from the land to a depth of 4km where it drops into the Aleutian trench which at some places is deeper by another 3KM. On the N side is the Aleutian basin whose floor lies some 3.5KM beneath the Bering sea.

The orogeny represented in the Aleutians differs from other island arcs in that there no outer non-volcanic basin which preceded its appearance. The arc is *c/* begun as a pile of oceanic sediments and basalts which piled to a maximum thickness of 10KM by the early Miocene Epoch. Added volcanic debris has elevated the ridge above sea level while attendant sedimentation has reduced the depth of the Aleutian basin. Early basaltic volcanism has more recently become andesitic. The A. ridge supposedly has remained stable since the Pliocene Epoch.

The Aniakchak volcano on the Alaskan Peninsula rises to 2KM and is close to 40KM wide at its base. It is located just N of the Aleutian range. Its summit caldera reportedly collapsed in the Early Pleistocene Epoch. The feature is breached by the Aniakchak river. Ash layers up to 100M in thickness cover local features over 2500KM² of the region.

On Unimak island at the W end of the Aleutian range the 2.8KM high Shishaldin volcano is the most active site in the entire arc. The neighboring Fisher caldera, 18 by 11KM and 1KM deep, may be the source of extensive depths (to 20M) of pumice found in the valleys and across the peaks of the Tugamak range.

The Katmai National Monument located where the Alaskan Peninsula abuts the mainland contains the Valley of the Ten Thousand Smokes,

where there was a significant eruption in -88Y.

The elongated but thick nature of the Aleutian arc is *q/* explained as the final stopping point of material overriding the lip of the Pacific Basin, once likely occupied by material which today is the Earth's Moon. The climactic event which removed so much crust from the Earth's body was global in its impact. The ancient crust of the planet instantly was fractured and then explosively projected across the hemispheres ending up nearly at the places where we find those crustal fragments today.

Alfven, Hannés:

Nobel Laureat in Physics, in -30Y, for discoveries concerning cosmic plasmas. Alfven's pioneering work *Cosmic Electrodynamics* was published in -50Y. In it he writes: "if the Sun and stars had no magnetic fields, electromagnetic phenomena would be of little importance to cosmic physics." Later in *The New Astronomy*, -45Y, he notes: "Nearly everything we know about the celestial universe has come from applying principles we have learned in terrestrial physics... Yet there is one great branch of physics which up to now has told us little or nothing about astronomy. That branch is electricity. It is rather astonishing that this phenomenon, which has been so exhaustively studied on the earth, has been of so little help in the celestial sphere." On the occasion of receiving the Nobel Prize Alfven spoke about the operation of the sun stating: "the cosmical plasma physics of today is far less advanced than the thermonuclear research physics. It is to some extent the playground of theoreticians who have never seen a plasma in a laboratory. Many of them still believe in formulas which we know from laboratory experiments to be wrong." He then mentioned plasmas in space. "Several of the basic concepts upon which the theories are founded are not applicable to the conditions prevailing in the cosmos. They are *generally accepted* by most theoreticians, they are developed with the most sophisticated mathematical methods; and it is only the plasma itself which does not *understand* how beautiful the theories are and absolutely refuses to obey them..." By -12Y Alfven's after a score of years of data obtained in space have been added to his experience with plasma behavior in the laboratory has become convinced that, "99% of the universe consists of plasma -- ionized gas that can conduct electricity." In his view the, "the universe is criss-crossed and sculpted by titanic electric currents and magnetic fields."

algae:

photosynthetic plants most of whom have cells with a definite nucleus. Some algae are unicellular. Filamentous algae, like slime, are internally complex in their organization. A. prefer an aquatic or damp land environment. They are the chief aquatic plants of the World which range in size from microscopic to the giant (30M long) kelp plants. As a group the algae are about twenty times as efficient at photosynthesis than are land plants. They supply oxygen to the water and the air nurturing other life forms. As agar, algae are a staple foodstuff in the Orient.

The reproductive process distinguishes A. from other plant species. Each unicellular A. can convert itself into two gametes (haploid) in order to reproduce. Pairs of gametes from different plants unite to restore the diploidal structure in the new generation. Multicelled members similarly may form fertile gametes from each of their cells. One algae strain, the *Euglena* and its analogues, are free swimmers which are capable of ingesting food like animals.

In *c/* theory algae are among the early forms of life and their presence is deemed crucial in the generation and maintenance of the breathable oxygen in the atmosphere. In *q/* terms the adaptability of the algae and its reproductive uniqueness bespeak of the continual need for restabilization of surviving species to both subtle and dramatic environmental swings.

Analysis of Antarctic ice suggest that during the last Ice Age that there was more dust and less carbon dioxide in the atmosphere than are found in cap ice formed before the time of the Industrial Revolution. It was suggested that the diminution of carbon dioxide might be caused by a blooming of the algae during the Ice Age. But, ice cores analysed by workers of the Lamont-Doherty Geological Observatory of Columbia University indicate that if anything there were fewer diatoms (the most common algae in Antarctic waters today) in the Ice Age water rather than after it.

algebra:

a discipline of mathematical reasoning that deals with abstract symbols on which particular formal operations are defined. It began as a rhetorical subject expressed in words, written in full. It advanced into a syncopated period in which abbreviations were introduced. It progressed into symbolism, as used today: $ax^2 + bx + c = 0$. The earliest document including algebraic rhetoric is the Rhind Papyrus, ascribed to Ahmes thought to be a scribe, but maybe is the first pharaoh (*A'h-mosè*) of the 18TH Dynasty of Egypt.

The Greeks solved many algebraic identities using geometric reckoning in the three centuries between -2600 and -2300Y. The process begins with Thales, reputed to be the first Greek interested in mathematics. He unified astronomy, geometry, and the theory of numbers. It peaks at Euclid, whose "Elements" define the geometry which bears his name. After Euclid algebra began the transition from a geometrical into an analytical subject. Diophantus of Alexandria (»-1725Y) used an algebraic symbolism and treated many problems analytically. Many of his equations remained indeterminate.

Algebra developed in India only during the Christian Era. In China algebraic problems are posed in the rewritten work *K'iu-ch'ang Suan-shu* (Arithmetic in Nine Sections) composed in -2175Y by a merchant Ch'ang Ts'ang after the burning of the books in -2212Y by the order of the emperor Shih Huang-ti founder of the Ts'in Dynasty. Some of its content predates the book burning. The name algebra comes from al-Khowârizimi's (»-1175Y) work entitled *al-jabr w'al-muqâbalah*. Vieta (»410Y) suggested the term "analysis" had more meaning in the European languages than did "algebra." Vieta's term is used in connection with modern "higher" algebra.

It can be said that the human brain works in algebraic terms making ratio comparisons, judging equalities and inequalities, and juxtaposing sums or differences in two quantities while equating them to a third. Once the wish

is present and the analogues are retrieved, the remaining cognitive operations can be formulated according to a few basic functions. Different languages vary in their codes and produce interesting ideological configurations in their speakers but they are probably not of essential importance in creating sub-classes of human nature or of human thought.

Algeria:

a N African Mediterranean nation of Arab culture, Sunni Muslim for the most part, strongly influenced by French (which had been forcibly introduced until Algerian independence was won), 2.34MKM in area, with a rapidly growing population of 24M. The Berbers, an original people, who some say are connected with the Basques of Spain and France, and perhaps survivors of the sinking of Atlantis *q/*. Algiers, the Capital, was founded by Berbers on the site of a Roman city, Icosium. The long rebellion against the French ended with independence in -38Y, and was followed by heavy French colonial and Arab Francophiles to France. Despite enormous oil resources, the population is not prosperous, nor is the country developing apace.

The Tanezrouft Basin in the S near the E border of Erg Chech is called "the Land of Terror" because of its desolation. It has scattered salt flats, star dunes, and from satellite may be observed a number of depressions with different shapes that appear like wood knots or protozoans under a microscope. They have different depths owing to the different Paleozoic Era rock formations that have been scooped out by aeolian action. That this took millions of years or a few years *****

alginate:

-- component of the cell walls of many [rhodophytes](#) and [kelps](#). Alginates have an affinity for water, and so help to slow dessication when the algae are exposed to the air; they are commercially important in the production of paper, toothpaste, beer, and frozen foods.

Algonquian, Algonquin Indians:

Amerindian linguistic group of Canada and USA, related to Mosan and Ritwan, stretching from the Atlantic to the Pacific Oceans. The Algonquin Tribe of E N America was friendly to the French; it was defeated and dispersed by the Hokan-Siouan Linguistic group people, the Iroquois Federation of Tribes, by -3CE. The remnant groups of the Algonquins mainly reside in the Canadian Provinces of Quebec and Ontario close to the urban centers. The tribal name is sometimes spelled Algonkin.

The Blackfoot tribes of W N America are a branch of the Algonquian-Wakashan linguistic group. Their original range was generally between the Upper Missouri and the N Saskatchewan Rivers across the W to the Rocky Mountains. They are named from their practice of dyeing their moccasins black. The three main tribes are the Siksika (or Blackfeet), the Piegan, and the Kainah (or Bloods). These tribes united only to defend their lands in warfare. The Blackfeet were hostile toward neighboring tribes and they repelled intruders efficiently. They acquired horses from S tribes after which they developed a nomadic plains culture largely dependent upon the buffalo herds. When these were extinguished their lifestyle was threatened. They now reside upon large land reserves and are supported by Governmental aid. There are over 8000 Blackfeet living in Montana and nearly half that number in Alberta.

Atlanteans have endeavored to trace connections between them and Celtic immigrants in ancient and medieval times. Contact is possible between Polish mariners and the natives of NE Canada and US America in the days before Columbus reached the American Hemisphere (-508Y).

alignment:

patterns of stones are found everywhere organized around what seem to be astronomical rising points. At some sites avenues of stones are directed toward a particular azimuth. At others the stones are arranged into henges (rings of markers). In some cases the stones are clumped around particular positions while in others they are more or less evenly spaced. usually the stone monument is located on flat ground situated near a prominent hill. In a few places the hill shows a visible notch. Often the hill has the direction of a solstial or equinoctial sunrise or moonrise viewed from the plain. Astronomical applications are assumed nowadays, but some of these locations may have had ritualistic or artistic goals, possibly in addition to any astronomical significance.

More substantive structures have oriented portals implying that astronomical events might have been observable looking outward through notches in the walls or by facing toward doorways framed by interior colonnades. At Chichen Itza, remains of a building looking in every way like a stone version of a modern observatory was discovered. In the lower structure four doorways are directed toward the cardinal points. The tower has narrow passages directed toward alignments which are hypothetically useful in observing moonsets when at the extremes of the annual lunar amplitude. At Uaxactun buildings, mounds, and stellae in the E group seem to be placed so that equinoctial and solstial sunrises could be observed from a 4.6M high platform above mounds further east of the stela on the platform.

Alignments noted at widely-separated locations indicated the the builders of stone monuments and temple buildings had a tendency to mark azimuths associated with the division of the year into eight parts; with the 19Y cycle of lunar phenomena; with the rising points of planets and some brighter stars; as well as with the direction of local topographical systems (mountain peak, valley orientation; habitation). The astronomical directions of interest for risings are mainly clustered in an smaller arc than

that between E and NE (or between E and SE). Choosing the object for a discerned sight-line can be difficult. The choice is complicated because of precession of the direction of the earth's rotational axis toward the celestial sphere constantly changes the coordinates and hence the rising azimuth of the "stars." Much of the pioneering investigation of ruins showing alignments were made by persons who became convinced that astronomical factors were involved with the structures. At the time the notion of astronomical significance was a new idea. *c/* Scientists have attempted to employ obvious sight-lines to identify the time at which the ancient structure was actively in use to observe the stellar object which they have decided was under observation there. Such dating is improper for a planet subject to *q/* saltations of significance. Thus considering even possible *q/* events demands cautious interpretation of "precessionally deduced dates of occupation or operation" of ancient structures.

Alisar, Alishar Hüyük:

Hittite fortress, located near Boghazköi, in Asia Minor. The site was devastated by several natural catastrophes. In the Early Bronze Age (Alisar Ia) grey and black glazed pottery occurs. Engraved pots are found and red pottery appears. Alishar was destroyed in earthquakes and fire, in a calamity common to the entire Near East. The restored site (Alisar Ib) is dominated by red pottery items. After a second earthquake a much smaller city (Alisar III) is rebuilt. Its artifacts are identified with the Middle Bronze Age. This settlement is destroyed by a great fire after which cuneiform texts appear in the artifacts. Middle Bronze Age tombs are evident (Alisar II) in this layer. The settlement is destroyed again in an event common to all Asia Minor habitations. After a long hiatus settlement resumes (Alisar IV) as the post-Hittite culture (Phrygians).

Alisar III has been *c/* identified as being contemporaneous with IXX Egyptian dynasty. Carbon dates favor *q/* redating by 800Y bringing its existence closer to our time.

alkali metal:

the elements of the first group of the periodic table. They are lithium (Li), sodium (Na), potassium (K), rubidium (Rb), cesium (Cs) and Francium (Fr). Cesium, francium and some isotopes of rubidium are radioactive. Along with the non-metallic element hydrogen (H) the alkali metals have a single valence electron. This electron is readily lost forming a stable M^+ ion leaving the same outer electron configuration possessed by the noble gas elements adjacent to them in the periodic table. The alkali metals are highly reactive. Their atoms increase in size and density with atomic number. Their ionization energy declines with the atomic number of the atom. For (H it is 13.6 volts) Li it is 5.39 volts; Na 5.14 volts; K 4.34 volts; Rb 4.18 volts; and by Cs it has dropped to 3.89 volts; for Fr it is $\gg 4$ volts. The second ionization requires much more energy (in Li 75.6 volts are required) and so M^{++} ions are not found chemically. The melting and boiling points decrease as one goes from lithium to francium. They react with water and tarnish rapidly in air (by oxidation). The metals form strongly alkaline hydroxides which gives them their name. Their salts are generally soluble in water. They will react with chlorine, bromine, sulfur, and hydrogen. The elements lithium and sodium and some of their compounds are detected in stellar atmospheres and in plasma regions surrounding the planets.

alkaline rock:

igneous rocks containing a high amount of sodas are called alkaline. Some also contain significant lime (feldspar, hornblende, augite) and are called calc-alkali. Nearly all basic igneous rocks are basalts. Basalts are fine grained and are black or greenish-black in color. Pliny attributes their name to the Ethiopian word for black rock. Basalts are characterized by the presence of feldspars and pyroxene. Feldspars consist of potassium-aluminum silicate, sodium-aluminum silicate, and calcium-aluminum silicate in various forms. Pyroxenes are calcium, magnesium or iron metasilicates. Other metals may substitute for the three noted. Pyroxenes have the structure $MSiO_3$ (where M is the metal involved) in a crystal forming a stout prism.

The mineral olivine $[(Mg,Fe)_2SiO_4]$ is found in basalts rich in magnesium. Rock glasses (like obsidian, 75% SiO_2) may be present, as may quartz $[SiO_2]$ and calcite $[CaCO_3]$.

More than 90% of all volcanic rocks are alkaline. When underground molten basalt is called magma. Magma contains a considerable amount of dissolved gas and vapor. As magma reaches the surface dissolved substances are freed (sometimes explosively). The still viscous basalt becomes lava which flows across the landscape until it freezes. Two major forms of lava exist; aa and pahoehoe. Lava dispersed explosively freezes into tiny fragments called ash which settles as tuff. Tuff may become consolidated into rock.

Horizontal stratified accumulations of basalt hundreds of meters thick and covering up to 50,000HA are called flood basalts. They are found in the Columbia Plateau of the NW United States, under the Altiplano of the S American Cordillera, and the Deccan Plateau in Western India. No major intrusions of basalt predate the Triassic Period.

Investigation of the Nubian shield rocks in the E Desert of Egypt indicate six periods at which alkaline rocks came to the surface. All seem to coincide

with abrupt changes in the mantle and surface elsewhere. The global nature of these events hint at a catastrophe happening to trigger the intrusions.

Alkman:

Greek lyric poet who flourished about -2600Y. He is quoted in a papyrus from Oxyrhynchus (#2390) published in -43Y. Alkman's writing is discussed on the editorial page of *Lyrica Graeca selecta*.

There, Alkman is reputed to say that in the beginning the material of everything was confused. Nothing was made. He then claims "the masculine" came into being which arranged everything. Then a passage (*poros*), like a beginning (*arche*), came into being, and when the passage had gone past, a sign (*tekmor*) followed. The passage is like an origin and the sign is like an end. Alkman goes on to state, "when Thetis came into being, these became the beginning and end of everything, and all things have a similar nature to that of bronze, and Thetis to that of the craftsman, and the way and the sign to the beginning and the end... on account of sun and moon not yet having come into being but matter (*hule*) still being without distinction. There came about therefore... passage and sign and darkness. Day and moon and thirdly darkness; the flashings; not merely day with the sun; first there was only darkness, after this it was separated (maybe distinguished)..."

The passage referred to by Alkman is linked with Aisa, eldest of the gods. Asia is more commonly a divine dispensation or decrees. It is sometimes translated as "fate." The *poros* may be compared to the assembly of souls on a meadow before returning to the sky for reincarnation (in Plato). The souls travel to a spot where there is a pillar extended from above through all the sky (*ouranos*) and earth, looking like a rainbow in colour. The column (*kion*) is either 'column' or 'going' depending upon the pronunciation. Elsewhere *poros* is used in the context of gathering for a contest, as a place of gathering and as a road or route.

Alkman is describing the reconstitution of the world which in *q/* terms occurred in the centuries closest to his time. He communicates some notion of earlier ages when the cosmos was different.

All Saints Day & All Souls Day:

holiday of Nov. 1 observed officially by the Catholic Church since after -835Y, called variously All Saints and All Souls and preceded in some countries by Halloween Eve, 31 Oc., when costumes and masks are worn and scarifying people is practiced, usually by the young, acting instead of the dead. A plausible origin for the holiday is the murder of Osiris (Egyptian), the dethronement of Saturn (Greek), a sky event involving the planet, and the possible nova of Saturn that preceded the Great Flood of Noah, *t/* -6MN. The dead or their spirits return on the anniversary annually. Graves are decorated. Special foods are taken. Masses are held.

Allacia Hüyük

site in Anatolia. The artifacts of the first inhabitants include Helladic pottery. The original habitation was destroyed by a natural calamity (earthquakes and fire) during the Early Bronze Age (between levels III and II). Reestablished site is noted for the royal tombs of the Hittites. Alacia Hüyük was again wrecked by earthquakes, felt simultaneously all over the Near Eastern World. Among the relics of the renewed habitation (ascribed to the Middle Bronze Age) are found artifacts resembling those found widely across the region. Another destruction, common to the rest of Asia Minor, follows after which the inhabitants produce artifacts characteristic of the Late Bronze Age. Stag and bull icons from this site resemble Galacian rock art. Saharan rockart contain elements of both traditions.

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Allah:

the Mohammedan Arab and thenceforth Muslim name of the single deity, "the (one true) god," descended, because the *Old Testament* is accepted by the Muslim, from Elohim and Yahweh, and interpreted by the Prophet Mahomet. The acceptance of Allah and Mahomet is considered the sole prerequisite declaration of the Muslim faith.

Allchin, F. R.:

in -44Y, reported stone alignments found in S Hyderabad. In -37Y he reported on an excavation in the Deccan which shows bulls bearing torch structures between their horns. He relates them to representations on painted burial urns found at Harappa. Bull fire rituals surviving in S India are today connected with the winter solstice.

Allegheny mountains (USA):

C section of the Appalachian Mountain range in the E United States.

Allen, Richard Hinkley:

compiler of a work titled *Star Names and their Meanings* published in -101Y. The work was reprinted in -37Y under the title *Star Names: their lore and meaning*. The book presents a variety of old and the modern designations for the stars and constellations. Beside the more common Arabic, Babylonian, Chinese, Egyptian, Greek, and Roman entries it contains derivations from Persia, the Hebrews, Pagan and Christian Europe, South American and Pacific Natives. The list of constellations includes many no longer included on modern star charts.

allergic reaction:

a hypersensitive response of the immune system to foreign material: food, animal danders, feathers, insect venom, pollen, mold, yeast, or chemical irritants. In the first exposure to a particular allergen a potentially sensitive individual reacts by producing an antigen against the intrusion. Later exposure generates the allergic response because an antibody now exists which prompts the excessive release of histamine from the mast cells within the tissues of the allergic person. Histamine fosters inflammation in the form of local irritation, redness, and swelling. It may take the form of eczema, hives, hay fever, bronchio-spasm, or gastro-intestinal distress. A localized allergic reaction follows insect stings or bites, exposure to chemical irritants, ingestion of some pharmaceuticals, or in individuals so predisposed, to the ingestion of shellfish. In severe cases anaphylactic shock may threaten life. Treatment of severe reaction includes antihistamines, cromoglycates, or steroids. Epinephrine (adrenaline) is required in life-threatening cases.

Like the hyposensitive responses of the immune system, which are more serious (*ex* AIDS, chronic fatigue syndrome, and possibly cancers) the hyper-response of an individual to irritation from both natural and man-made environmental agents and to foods appears to be increasing in incidence. In some allergic patients the stress resulting from the immunological hypersensitivity eventually leads to adrenal insufficiency. The increases of allergic persons, as of the growing hyposensitive population, may be an outcome of industrial pollution, a creeping poisoning of crowded life settings, and an indiscriminate production of biologically stressing chemicals.

alligator:

aquatic, carnivorous, reptiles. The American alligator once attained a length of 6M, but intensive hunting of larger reptiles has led to the average length dropping by a factor of 2 to 2.7M. Survivors are found mainly in the swamps and sluggish streams of Florida and Louisiana. The nearly extinct Chinese alligator, found in the Chang (Yangtze) River valley, is about one meter smaller than the American species. Alligators live up to 75Y.

Alligators are ectothermic (cold blooded). They bury their eggs. The sex of the developing young seems to be determined by the temperature at which the eggs are incubated.

Alligators are a surviving species of the sub class of Archosaurs which appeared at the Permian-Triassic boundary and were nearly extincted at the Cretaceous-Tertiary boundary. Some of the extincted archosaurs may have been endothermic (warm blooded).

allochthonous

Material that is formed or introduced from somewhere other than the place it is presently found. In impact cratering this may refer to the fragmented rock thrown out of the crater during its formation that either falls back to partly fill the crater or blankets its outer flanks after the impact event. Also refers to plant or animal species whose apparition is recent in a given region.

allocthons:

rock-masses that have been transported to their present location, whether by moving waters or wind. They can be sparse and occasional or of enormous extent.

allogenic sediment:

sedimentary consolidated and unconsolidated material that is presently to be found in a location other than where it was originally deposited. The term covers so many types of sediment and modes of transfer that it can be applied practically everywhere. It needs only a minute shift in Earth motion, climate, meteorology, surface waters, folding and thrusting, sinking or rising or compression or relaxation, or any other spatial or locational change to deprive organic or inorganic matter of its birthplace. The same motions usually change its composition. Certainly the study of sediments concerns in large part their dislocation. Many a debate of *c/* and *q/* ensues from doubts over the original position of fossils and sedimentary rocks. One *q/* microchronal position regards all chronological distinctions based upon stratification as illusions created by the zoning of fossils through drift, flood, wind, and earth movements. This would be contradicted if *c/* would present a table of randomly sampled sedimentary facies from around the world showing that the regularity of the *c/* fossil and rock succession is statistically beyond question.

alluvial fan:

a cone-shaped deposit of sand and gravel left by a stream as it emerges from a narrow valley onto a plain. The fan is thickest at its origin; it thins and widens as the stream divides into a number of smaller channels (distributaries). The alluvial fan is analogous to a river delta.

A large fan has been deposited where the Kosi River emerges from the Siwalik Hills near Chatra, Nepal. It has an area of 15,000KM². Near the fan's apex the land slope is 1M/KM. The gradient decreases across the fan to nearly 0.2M/KM near the Ganges River. The Kosi river drains the highest portion of the Himalayas Mountains. Ninety percent of the 130 to 165CM/Y rainfall occurs during the summer monsoon. During the summer floods the river reaches a width of 30KM on the flat Ganges plain. During the flood of -32Y the flow was 25,840 cubic meters/s. Most of the river sediment is suspended clay. Between -264 and -36Y the river has migrated W by 110KM developing the fan as the channel shifted progressively. The dislocation occurred because deposition of silt raised the level of the fan. The river reacted by falling onto lower terrain. This same process is beginning on the eastward end of the fan so that the river's migration might reverse.

In the Xinjiang Province of China a series of alluvial fans have deposited runoff from the Tian Shan ranges (elev. 3KM) onto the Tarim River Basin. Melting snow provides the water. The several levels of fans present have Quaternary Period age. The older fan surfaces show mineral oxidation. The climate in the valley is arid with an annual rainfall below 10CM.

Basins within the Zagros mountains show well developed alluvial fan structures. In the valleys rainfall is about 5CM while in the mountains falls between 20 and 50CM are recorded. The high relief and non-organic sediment load favours rapid runoff. Flash flooding is common after storms. Coarse gravels and boulder sized particles are transported onto the fans of the valley. The particle size diminishes moving down the fans. As in the

Tarim Basin sand dunes are located nearby. Dunes are often found near alluvial fans in arid regions.

Fans formed at the interface of the White Mountains of California and the Owen's River Valley are enhanced and reshaped both by mountain runoff and from the action of sporadic earthquakes. Very large boulders can be transported several kilometers in a single earthquake of moderate intensity. The mechanism of transport involves the larger material rafting on a vibrating sea of smaller rock and sediments.

Alluvial fans are widespread. They are dynamic structures, indicating their recency.

almond

Juergens and De Grazia have drawn attention to the resemblance of a thunderbolt in the hand of Zeus to a plasmoid. Greek *amygdale*, almond, may be Egyptian *ames*, sceptre; the hieroglyph is of an almond-shaped object. Gad is the name of Baal, the force above. The prophet Jeremiah, I:11, writes that he saw the rod of an almond tree. This is followed two verses later by his reference to a seething pot in the sky. *Sema*, Greek for a sign, is probably the Hebrew *shem*, name. According to Crostwhaite, *Sema* could be a reversal of the Egyptian *ames*, sceptre.

Alpha (α) Helix:

a chain of the amino acids of a protein coiled around its long axis. In this configuration there are 3.6 amino acids per turn of the helix. The side *r/* groups of the amino acids point outwards. Hydrogen bonds between successive turns stabilize the helix parallel to its axis. Not all proteins use the α-helix. In some globular proteins, like the fibroin of silk, β-pleated sheets alternate with the α-helix. These sheets involve folding the molecule back upon itself in the same plane. In other proteins "random" sections also contribute to a three dimensional configuration of the globules. Enzymes are typically globular proteins.

Most of the structural proteins, like hair, use the α-helix exclusively. Several interwoven α-helices make up an individual hair-strand. The helical configuration forms an electrically dense and physically strong structure. The single handedness of the amino acids incorporated into the helix is responsible for the tightness of the resultant helix.

alphabet:

an arrangement of the components of a system of writing of a language, once or ordinarily a live language but occasionally persisting in written form alone. Hieroglyphics and picture writing generally are not precisely alphabets but evolve into them or tend to disappear, because of the conveniences of alphabets that employ a limited number of signs to compose syllables, words and larger constructions. Syllabaries (as in Japan) tend to be alphabetic but with letters changed into syllables, an unfortunate complication from the standpoint of learning and certain mechanical and electronic transformations. Mathematical symbols or signs are non-phonemic alphabets, without any especial order. The ordering of the alphabet must be of significance but this is mysterious. At any rate, the adjoining charts portray a few alphabets of some significance to present-day Roman letters.

Alphabets acquired order as part of their origination. This process must have a meaning; mnemosis is perhaps an adequate explanation: the "ABC's" of childhood learning are the "alpha-beta..zeta" of the Greeks that passed down to the European present, but this too was part of an ecumenical alphabetic order of the Near East. The Romans were the modifiers and transmitters of the Greek alphabet to the modern world and to all peoples that lacked a written language and the Roman characters have since conquered writing in countries that have found their own systems of writing less useful, whether for domestic use in the face of new technology or in order to deal better with the outside world. The actual signs used are not without intrinsic significance and also acquire their own meanings from usage, so that the psychological connotation of a letter exceeds its strictly technical purpose, which is to convey a phoneme, that is a particular sound. But the letter of the alphabet, especially the vowels (in English: a,e,i,o,u) can come to represent more than one sound, and there are sounds in practically every language that are impossible to sound unless a person has been born to the language group.

Alphabets *c/* are regarded technically, not psychologically, as having been the result of long evolution and transfer from some point of invention. *q/* finds it of possible significance that alphabets came almost simultaneously, whether or not from a single source -- Moses, or the god Hermes (Thoth, etc.,) -- to different lands. Egypt, Israel, Mesopotamia, Greece, Crete, and other places may have achieved an alphabet around -34CE *c/*; an *q/* alternative time may have been around -27CE: in either case the propelling force may have been a general catastrophe, driving the human mind into a schizophrenic state that would include scientific as well as heightened irrational behavior.

About -35CE *c/* would be the date presently assigned to the transition from the pictograph to the phoneme sign, attributed to people from Syria and Palestine; this may be 4CE later if *q/*'s elimination of the Dark Ages and reduction of dates generally were to be accepted; in either case, the possibility of the alphabet developing under the tutelage of Moses in Egypt and going along with the Exodus is not to be dismissed. At Ugarit on the Syrian coast an alphabet of 30 characters in cuneiform from a later date was discovered; the nearby Phoenecian trading cities spread their alphabet around the Mediterranean (Malta, Cyprus, Sardinia, Southern Spain, Carthage) around -25 to -27CE. The Greeks developed their alphabet along Phoenecian lines at this time, but of course knew writing before this, the so-called linear forms A and B that were Minoan and Mycenaean being superseded directly in the period of diaster and conflict involving the exoterrestrial disturbances of the Earth, the Trojan War and the migration of peoples. The *c/* that believes the Greeks lost writing for 4 to 5CE is contradicted by finding that Greek alphabet had acquired at least by the -31CE *c/* Levantine forms and did not therefore wait until the centuries-later Phoenecian transference; actually, there was no major gap except catastrophic disturbances between the abandonment of the Linear B and the taking up of the Levantine script, now being freshly employed in many places.

Evidence accumulates that the alphabet (extended to include the earliest

complexes of hieroglyphics, runes, cuneiforms, and oghams) originated from a cultural melange that involved the zodiac, numbers, sky lore, and games, themselves all coming out of an obsession with the affairs of the gods and the heavenly bodies. Not only is this process, by which events and imaginings converged upon icons, to be found in the Near East, but also among the Greeks, Iranians, Celts, Chinese, East Indians, Mayans, and others. Stecchini (-39Y) proposed the theory that "all alphabets derive from a basic alphabet of 16 letters arranged according to a rational principle in a square with letters on each side. This alphabet in turn derives from the simplest form of abacus, the pentagramma of five lines enclosing four spaces divided into four positions. All early computing devices were used as an instrument of divination... At some point the idea was conceived of letting the oracular device talk (the ouija board); some grammarian was able to decompose the spoken language into phonetic elements." An original Greek alphabet was of 16 characters placed into four rows of four letters. Thus, limiting the scope of letter-formation out of magical, numerical, game-playing, and sacred reasons forced the transposition of a full language into generally understandable and handily communicable form; thousands of years later, men everywhere looked back upon the invention as a triumph of pure rational intellect.

alpine:

a term describing any high mountains and the environment they have. One speaks of alpine climate, alpine glacier, alpine plants, and alpine soil in the sense that they do not resemble the corresponding features found at lower altitudes.

The alpine regions of the earth are characterized by their recency. The greatest mountain building epoch (orogony) occurred in the Tertiary Period. At that time the mountains of W Europe and N Africa (Pyrenees, Alps and Atlas), those of Eurasia (Caucusus and Himalayas) and the Cordillera of the Americas (Andes and Rockies) were raised. The distinctive feature of these mountain systems is their visible youth. Sharp, soil poor, peaks are separated by rugged chasms which contain fast-flowing streams and rivers which carry erosional debris from the mountains to the fertile valleys. One is tempted to suggest the orogony was *q/* in nature; it happened abruptly and was accomplished quickly. Local erosional agencies have not yet had sufficient time to age these alpine features.

Alps Mountains:

highest mountains in Europe dividing Italy and Yugoslavia and Albania, politically and climatically, from countries to the North. The mountains are highest to W and S. Four composite zones are recognized: the Pre-Alps (including the Jura Mountains and the Po Basin), Calcareous Alps, Schist Alps and the High Alps. Offshoots include the Appennines, the Dinaride/Pindar and the Carpathians. The ranges extend 1200km and give birth to the great rivers of Europe. The higher peaks hold active glaciers. Beneath the Alps are several deep caverns. The fertile valleys long have attracted human settlement.

c/ orogeny occurred -180MY when Atlantic Ocean began to spread and Africa moved northward colliding with Europe at several places at different times. In the Triassic Period basalt was released flooding the lowlands and forming new crust. Iberia jugged against the Pyrennes in the Cretaceous Period. By the Miocene Epoch the Turkish/Aegean plate shifted along the Anatolian fault. The present Italian Peninsula migrated eastward into position late in this same epoch. Greece separated from Turkey somewhere between -8 and -6MY *c/*. The Vosges and Bohemian massifs were raised in the late Paleozoic Epoch. The Rhine and Bresse grabens dropped. The Swiss plain dates to the close of the Oligocene Epoch. Strong crumpling and buckling produced the magnificent Alpine terrain of today before the Pleistocene Epoch. Intensive erosion widening the valleys to their present forms are suggested during the Riss and Würm glacial episodes.

The core of the Alps is igneous and metamorphized-igneous rock: granite, gneiss and mica schist are common. Around the core are sedimentary rocks: hard limestones, weaker sandstones and shales.

q/ Suggestive formative event associated with extensive cracking and rafting of crust in a series of changes following the disintegration of Super Uranus, the Sun's original companion. In this *q/* the Moon was blown out of

the Pacific basin which allowed the crust, broken in the catastrophe and driven by resident electrical charges, to raft rapidly from its ancient place toward the modern locations. This climactic event might be dated no more than -11.5KY on the short-timescale corresponds to the geological Cretaceous Period, with its admitted "catastrophes," which are not only recognized but are highly publicized by conventional scientists. This *q/* episode left global scars of a unique cast which led *c/* earth-scientists to postulate a series of dramatic changes to the configuration of the Earth's surface lands.

Human artifacts (stones and bones) from the Pleistocene Epoch have been discovered at great altitudes in the Alps. This human presence at the height of "The Ice Age," when ice and snow certainly would be expected to preclude habitation, seems baffling. An occupied cavern at Wilddirchli, atop the Ebenalp, has an elevation of 1.5KM. Even higher is the cavern of Drachenlock on a steep massif at 2445M, which today is snow covered. Stone Age man also occupied sites, at 2440M, high over the present Lake Geneva. An *q/* explanation is that the Alps were uplifted after these human habitations. Many observers have noted the extremely youthful terrain of the predominant mountains of the Earth, the Alps included. Both the Ammersee and Würmsee of the Bavarian Alps have been tilted since their formation. Likewise the base of Bodensee (Lake Constance) rose 10M when its bed was tilted at the end of the Neolithic Age. Other Alpine lakes as well as several in Scandinavian show similar signs of late upheaval. From pollen found in peat bogs "a radical change of life conditions" indicated that oak was replaced by fir at the same time as fir trees disappeared from new (and likely recently uplifted) highlands where it had once grown. Evidence from the Bronze Age indicates the movement of humans through presently difficult mountain passes. Mines at St. Bernard were suddenly abandoned at the same time as the mountain passes ceased to be traveled.

Alt, David:

geologist currently active in the study of W portion of N America. He has noticed the similarity of flood basalts in America (and India) the basaltic maria of the moon. Altman has speculated that cratering rates on the Earth and Moon should be comparable. He has also commented upon the similarity of preserved mounds, thought to have been produced by the ancient Missoula flood, to patterns called "ripple marks" found in lake bottom deposits.

altar

The altar is originally a device for bringing the electrical force, fire, lightning, god, whatever one chooses to call it, down from the sky to earth. Originally, a god could not be gratified by the sweet savour of roasting meat rising from the altar unless first the victim had been struck by a bolt coming down. The Greek *bomos*, altar, is raised. In Homer, it can be a stand for a chariot, or for a statue. *Eschara* is a hearth, or an altar for burnt offerings. *Thumele* is an altar in the orchestra of a Greek theatre, from which the chorus was directed. In Egyptian it is *khaut*, in Hebrew *harel* (*har* = mountain). Etruscan *ar* = fire, Latin *ara* = altar. The Latin *altaria* means ritual utensils on the altar. *Anclabris* is a sacrificial table, *anclabria* are its vessels. The Etruscan *cletram* is a litter or chariot for offerings. *Batillum* is a fire-shovel. In Hebrew such altar equipment was *qadhosh*, holy.

Alter, Dinsmore:

reported the work of E. W. Brown in -71Y, in the *Monthly Weather Review* in which he noted the combined "tidal" influence of Jupiter and Saturn on the Sun anticorrelated with the solar activity level over three cycles. During the time of Alter's study these planets were together, as they were again in the days of *The Jupiter Effect*, around -18Y (three resonances later), when interest in their combined influence was again high as the planets once more passed in the sky. Beats between Jupiter-Saturn's combined motion and the solar cycle recur in just under 25Y. Alter reported, as others did later, that the sunspots were surely tidally triggered. Between Jupiter Saturn conjunctions these tidal notions fall into disfavor until the next in phase occurrence revives them.

alternation of generations:

-- Life cycle in which **haploid** and **diploid** generations alternate with each other.

altiplano:

high plateau region in the S American. Elevations exceed 3KM. It begins in Peru, crosses Bolivia and ends in N Argentina. It is surrounded by the cordillera. Lakes Titicaca and Poopo are prominent centers of the altiplano. Great salt pans (playas) cover parts of the central A. at elevations above 3.6KM. Salar de Uyuni with an area of 9000KM² is believed to be the largest salt pan in the world.

The altiplano is actually a great raised depression. To the west (mainly in Chile) is a plateau of Cenozoic Era volcanic material. On the E are found post-Cambrian Period rocks which have been folded. Much of the world's supply of tin is mined here. Some of the soda lakes of the altiplano are partially filled with fluvial (and glacial) debris, beneath which is ash. Local volcanic sources are found 5.3KM above sea level.

The average rainfall on the altiplano is 300MM. Evaporates present suggest continued aridity. The only water inflow is by the Rio Grande de Lipez and from some minor drainage from the E. During the rainy season brine covers the playas to a depth of 250MM. By the dry season the basin is again caked, or at best moist below the surface. The Andes trough has no outlet. Floor deposits 10M thick (mostly halite) are very porous and show very low relief.

During the Pleistocene Epoch the altiplano supposedly was inundated by water, whose surface area is estimated to have covered 43000KM². As the "lake" shrunk in size deposits of calcium carbonate formed as limestone on the "lake" margins. The remaining dissolved materials became concentrated in depressions on the altiplano floor. The waters might have been more than 100M deep when the flooding was most extensive. Analysis of the brines of Salar de Uyuni show high concentrations of lithium. The source of the lithium is unknown.

Lake Titicaca, on the altiplano, is the largest and deepest mountain lake in the world. Its area exceeds 8300KM². Its surface has an elevation of 3.8KM.

It is 300M deep. Lake Titicaca contains freshwater. Marine crustaceans are found in the lakewater and in the sediment layers nearby. Mollusks such as *Paludestrina* and *Ancylus* in these sediments show them to be of recent age. Meanwhile the lake maintains its level despite receiving about 700MM of precipitation annually. Even during the dry season the evaporation is low. One reason is that a thin skim of ice forms on the shallow water on the lake's shallows nightly. The lake empties into the Rio Desaguadero at the SE end. This river drains into Lake Poopo 270KM to the SE. Lake Poopo is saline. It is *c/* considered to have shared water with the nearby salt pans in the past.

Abandoned settlements at the city of Tiahuanacu, beside the lake, contained residues dated by radiocarbon to ages less than -4KY. The mountain fortress of Ollantayparubo, northwest of the lake at an elevation of 4KM, is today uninhabitable. It is built of red porphyry blocks which seem to have been transported for a considerable distance across steep slopes, turbulent rivers, and up precipitous rock-faces. It is suggested that the local terrain must have been very different at the time of construction. Supporting evidence comes from the presence of mollusks from the dried up lakes, and tilted shorelines in the nearby strata. Certainly the sediments of the region conflict with its present elevation.

Various *q/* mechanisms have been posed by both *c/* and *q/* scientists to explain the altiplano. By one theory the plain formed beneath the sea and was uplifted. By another a great ocean wave became trapped within the basin. A third theory has a lost moon of the Earth falling very close to the surface near the Equator resulting in the raising of at least a 4KM tide which was held for some time until this ill-fated moon finally crashed into the Earth. The released tides retreated poleward leaving the valley devastated as we find it today. using *q/* theory the Andes trough was suddenly inundated by the ocean on one of the occasions when the Earth's polar axis was realigned as the result of a cosmic event.

Altitude (Or Elevation):

First, find your azimuth. Next, the altitude (or elevation) is the angle between the Earth's surface (horizon) and the sun, or any object in the sky. Altitudes range from -90° (straight down below of the horizon, or the Nadir) to $+90^\circ$ (straight up above the horizon, or the Zenith) and 0° straight at the horizon.

altitude:

angular coordinate locating the direction of a celestial body vertically. Altitude is measured along a meridian between the horizon and zenith.

Alvarez, Luis Walter:

Nobel Lauriat in physics (-32Y) for investigation of transient resonance sub-atomic particles. With his son Walter became leading spokespersons for a theory that a comet collided with the Earth extinguishing the dinosaurs. The event is dated to the end of the Cretaceous Period.

In -20Y the Alvarazes and co-workers announced discovering anomalous amounts of radioactive iridium in Italian (30x normal), Danish (160x), and New Zealand (20x) limestones coincident with the fossil break between the Cretaceous and Tertiary Periods. Since their investigation other locations have been shown to be marked by this and other chemical markers.

AM Herculis:

many suspected binary stars appear single in telescopes. Their duplicity is inferred from periodicity noted in some phenomenon associated with the star: wobbling proper motion, varying spectrum, or periodic outbursts. AM Herculis is an x-ray binary in which a white dwarf star is thought to be in orbit about a large star. Some form of gaseous exchange between the pair is blamed for the periodic outburst of x-rays noted for this star system. Close binaries, such as AM Herculis, containing stars of *c/* widely separated evolutionary ages need explanation. How does an old star end up orbiting a younger one? A pair such as AM Herculis might be created by some mechanism whereby a single star fissions quite unevenly. Unequal division of stars through mechanical modes have been predicted by calculations based upon widely different premises. A *q/* model by which the ancient sun divided into a binary which survived into the Age of Mankind employs a system not unlike that suspected for AM Herculis.

Amargorosa fault:

a fault in the E Mojave desert where a 12.2KM unbroken sequence of Precambrian and Paleozoic Era rocks has shifted W onto older rocks. The fracture has been termed a gravity fault in that the faulted rock moved downhill.

Amarna Letters:

in -113Y a Bedouin woman digging in her yard at Tell el-Amarna uncovered clay tablets bearing cuneiform inscriptions. Sample tablets sent to the Louvre Museum were declared forgeries. Later reconsideration recognized their genuineness. The tablets are the state archives of Akhet-Aton, city of Akhnaton. The city was only occupied for twenty-five years before the King's fall, after which his city was deserted. The tablets are mainly letters between Akhnaton and his father, Amenhotep III, and their correspondents. They provide historians with a snapshot of the state of Egypt, neighboring states, and how they were linked at a specific historical moment. The time of the letters is sometimes called the Amarna Period.

Amarna, tell-el:

site with modern name of the city, Akhet-Aton, the City where Aton Rises (Aton being possibly the god corresponding to renegade planet Venus which appeared bright like the Sun) built by the spectacular, brilliant and heretical Pharaoh Akhnaton to revolutionize his society, constructed above the prior Capital of Thebes in Upper Egypt. Akhet-Aton was destroyed soon after his dethroning or demise or voluntary exile by reactionaries who seized power. The cult of Amon was replaced by Aton for 25Y. Textbooks put the period in the 14THCE. Velikovsky moved it to the Ninth (-2870/40Y) at the time of King Jehoshaphat in Jerusalem, P.James and Rohl to the Eleventh, Heinsohn and C. Marx to the -27CE, and M.Sieff removes it again to the -29CE, all evidences of the mounting attacks against *c/* dating, considered far too old. The site has been excavated, revealing many masterful creations, many in new styles, and a rare archive of letters from the Pharaoh to Asiatic rulers. Aside from fixing the many revelations of the Amarna letters about rulership over a large territory, a proper dating may introduce Jewish kings of the Bible to historical events in Egypt and Asia for the first time. Moreover, if, as is plausibly advanced *q/* Akhnaton is the model for the Greek stories of Oedipus, then the brief history of Amarna, with its individuality, monotheism, and freedom of expression, becomes a direct influence upon the Greeks a century before the catastrophic period known by the planet-god Ares-Mars and as the time (again *q/*) of the Trojan War. In short all chronologies are younged by 5CE, Minoan, Assyrian, Egyptian, Greek, Palestinian, even Roman.

amateur:

a person entering upon the activity of a field of learning, sports, or otherwise, who is regarded by persons fully occupied with the field as being untrained for it, probably inadequately skilled, and, usually, therefore, is so regarded by any public that happens to observe the activity. Numerous fields of knowledge, literature, science, invention, and philosophy have been initiated or entered with great success by amateurs. In a strict sense, the theory of any new field is produced by an amateur, or by a professional acting wittingly or not in the role and capacity of an amateur. Indeed, the successes are so numerous as to give rise to a common belief that to be an amateur is a distinct advantage in entering upon a field, so that, for every insult hurled at the amateur, there is a corresponding insult to be hurled at the professional (the "establishment").

It would seem simple to avoid quibbling over names by setting down the rule that whoever produces a result that is beneficial to knowledge, say, is to be credited and properly received, whether trained or untrained for the field. Such a view is, to say the least, naive, or "amateur" in the colloquial usage of the term. The amateur will almost always lack the resources and the readied audience of the professional or regular worker. He or she will lack the vocabulary, the cocktail-hour awareness that lends "inside dope" to one's perspective. The press media are trained to ignore or denounce-ridicule the amateur.

History will back them up, for while the amateur fails nakedly, the professional fails guarded by his institutions, and also most problems are framed or set up for professionals to solve. The professional, like the graduate of the exclusive school, is guaranteed to succeed unless he or she commits the absurdity of behaving like an amateur. In the end, there are no rules to distinguish in advance among right-headed and wrong-headed amateurs, which is one reason why their approach sends establishment professionals fleeing in dismay or lined up in a wall of resistance. The setting of enormously complicated and multi-handed tasks such that the

amateur can never hope to enter, to participate, is often only another way of walling him out. However, amateurs who cause trouble are usually superior in the skills of the field than the average recognized and compensated member of the field establishment. To exclude amateurs from any field is a prescription for its stagnation: this is particularly so of theory and research. It is often also true of teaching in the field.

Amatitlan, Guatemala:

site, 100KM W of Guatemala City, situated near L. de Atitlan and 3537M high Atitlan volcano. The high altitude site, on the W flanks of the C American Cordillera, is once reputed to have been innundated by a catastrophic flood or tide.

Amazon submarine channel:

sonograms of the seafloor off the coast of NE Brazil indicate the presence of a deep-sea fan, a continuation of the Amazon River. The detected feature consists of a complex of meandering channels, levees, and oxbows comparable in every way with the onshore river system. Development of a fan of such maturity would seem to require conditions now found on land, including a continuous high-volume flow of sediment through the system. Such conditions are contrary to the *c/* view that deep-sea fan features result from intermittent turbidity flows. The Amazon-fan reinforces the *q/* notion that the ocean basins have not always been topped with water. Here, as off shore from most major rivers, we have evidence of abundant flows of water cutting into the continental shelves and cascading off of its edge into the deeper regions. The channels were not likely underwater during the outflow.

Amazon:

Greek name for several peoples in N Africa, Anatolia and the Black Sea area. Derived from the word *a-mazos* which means breastless. The name is erroneous in that depictions of the Amazons show no such mutilation. The idea of a tribe of breastless women may have arisen from Asiatic icons of the Primal Androgyne which was drawn with no right breast.

"Amazon" societies worshipped the mare-mother. Commonly their women accompanied the men into battle. Around the Black Sea (known also as the Amazon Sea) the women rode horseback astride, dressed like men and fought wars with them until two hundred years ago. Scythian women used the sickle as a battle weapon: It was also employed in religious ceremonies and for agriculture. A Scythian girl was unable to marry until she had killed three enemies in battle. The Greeks mention islands (Taurus, Lemnos, and Lesbos) populated only by women. These Amazons were reputed to consort with men only when they wanted to conceive children. These tribes of women were traditional enemies of the Greeks. The Amazons fought on the side of Troy in the Trojan War. Achilles is reputed to have slain their Queen (Penthesileia) in the battle. The Berbers of N Africa, survivors of the Lybian Amazons, today call themselves Amazigh. The mythical Valkyries of N Europe were fierce warrior-maidens. The Celtic armies who battled the Romans and the Viking raiders of later years were accompanied and led in battle by female warriors and priestesses.

Amazon River basin:

giant river draining one-third of S America. Amazon river is 6500KM long; seven of its thousand tributaries exceed 1500KM in length. Drainage basin of 7MKM² is nearly as large as the continental US. The Amazon carries more water than any other river, 6300 cubic-kilometers/year, which is about 15% of the Earth's flowing freshwater. The discharge does not drop delta deposits of consequence, yet the outflow dilutes the salinity of Atlantic 150KM from river's mouth. The flow is moderated because the river straddles the equator, receiving peak water from the two hemispheres in different months of the year. As well the immense floodplains moderate the river because they store water as the river rises and release it when the river falls.

The headwaters are in the Peruvian Andes within 150KM of Pacific coast. Two major paths merge to form the navigable Solimões river, which later joins with Rio Negro (named for absence of sediment) to become the Amazonas. The coastal plain has the lowest gradient of any river and so tides affect the river's flow to 1000KM inland, but the land lies enough above sea level to not be swampy even during the monsoon rains. The delta is a maze of channels populated by a myriad of islands, some sizable. About 65000KM² of the delta are covered by *varzeas* (forest covered plains of the Holocene Epoch). Large *campos* (grasslands) line the river's banks. Several major mouths empty the Amazon into the sea, the largest is 400KM wide.

The Amazon basin contains the largest remaining rainforest on Earth. Near the river's mouth there are mostly Mangroves. The dense interior forest crosses parkland of the Central plateau and continues upland to the Andean treeline. Clearing of the rainforest has rapidly destroyed the fertile soil which nurtured the intact forest. The average basin temperature is 26°C. Near the watershed and along the coastline rainfall exceeds 3M annually. In the interior about 2M of precipitation falls. The local air is highly humid, in part because of the extensive canopy of giant trees.

The earliest Europeans to visit the Amazon found extensive settlements along the River basin perhaps as far as the foothills of the Andes. Human occupation sites existed also on the Island of Marajo at the mouth of the Amazon, and a culture with advanced pottery and jade carvings of perhaps some thousands of years ago on the Tapajos River nearby. Elsewhere, tens of thousands of hectares of raised fields connected by causeways suggest the former existence of advanced farming. By -300Y this had all disappeared.

In the Venezuelan portion of the basin charcoal layers are found in soil cores. Humans are known to have occupied this land for 3700Y but some ashes carbon date to -6300Y. The fires producing these ashes were of an ferocious intensity because slash and burn cultures residing in the Amazon Basin have never produced noticable ash layers, the products of local burnings become incorporated into the humus so rapidly that they do not deposit separtely.

The Amazon basin consists of sedimentary deposits of recent age. It is flanked by Mesozoic and Paleozoic Era sediments in the Andes and by PreCambrian Era rocks of the Guianas and Brazilian shields. The basin *c/* hypothetically formed in the Cretaceous Period when orogony drained the sea from its floor and quickly raised the Andes Mountains. The basin was then submerged by freshwater (Amazon Lake) which later broke through to the Atlantic Ocean and drained when the Andes asumed their present form.

q/ theory envisions a recent formation of the present Delta and basin, after the Continent was sliced from Africa, moved W, encountered the Pacific Basin and folded making the Andes, and brought on the enormous river complex with its hundreds of tributaries; there would have been shallow bodies of water here as elsewhere around the world.

Amazonia:

when the first Europeans sailed up the Amazon, in -460Y, there were well populated cities on the flood plains. These cities were swallowed up by the jungle by -300Y. Their existence belies the thought that the lowland tropical lands had too harsh a climate to nourish advanced societies. Aerial sensing, magnetometry, and archaeological digging now has confirmed the early habitation of the Amazon lowlands.

A site on the 40,000KM² island of Marajo at the mouth of the great river has produced 400 huge dirt mounds, one 20HA in area and 0.75M cubic meters in volume. Nearby on the Tapajos River elaborate pottery, finely carved jade, and traces of a culture possibly c/ -7MN in age was exposed. In other locations hundreds of hectares of raised fields interconnected by causeways are identified. Where the inhabitants came from and how they relate to the Incas and N civilizations of C America are not known.

A case has been made that rainforest terrain like that in the present Amazon have properties in common with the ancient Earth at the time of the legendary Garden of Eden. Researchers from many lands have sought the location of the ancestral garden to no avail. It likely covered the whole Earth in a time when shallow freshwater seas covered lowlands, when eternal mists obscured the heavens, and when vegetation was plentiful. Such an environment still survives in miniature within the basin of this greatest river on the present Earth. That civilized men do not believe they can thrive here indicates that q/ man rather than the Garden has changed.

Amber, origins of its names:

Various names have been given to amber among different peoples.

1. *Ambra*, for the French, Italian and English, yellow amber, for amber. *Ambar* and *Ambaron* for the Arabs, *Amber* for the Persians, which is the name of a sweet smelling precious resin, but also of amber. According to Stinner and Eccard, it comes from the ancient German *anbernen*, for "setting fire to." Amber itself is called by modern arabs and Persians *Karabe*.

2. *Bernstein* it is called among the Germans, and in local variants *Börnstein*, in Lower-Saxony *Barnstein*, from the old verb *bernen*, *barnen*, meaning to burn. In Lesgian (roughly today's Azerbaidjan) *Beri*, and in Lykophon (probably from old-persian) *Perra* are the names of the sun. From which derives, at the time of the Ptolemies in Egypt, *Berenice*, the name of several queens, to which we must add that according to Eustathius (*Odyssee* D. 42) *Beroniki* commonly referred to electrum, whence also *Berniki*, *Vernix*, varnish, *vernix*, in Persian *pirusah* and *firufah*, a lacker made of amber (german *Firnis*).

Remarkable, too, are the homonymous cities, namely: 1) Berenicae in Epirus, built by Pyrrhus the Young; 2) Berenice, in Solinus: Beronice, one of the five cities of Kyrenaica, otherwise called Hesperis or Hesperides, at the extremity of the bay of Kyrene; 3) a city founded by Ptolemy Philadelphus which carried on a heavy trade with India; 4) Berenice Epidires, a city of the Sabeans on the Arabian Gulf, on the promontory of Aethopia, not far from Dere; 5) Berenice Panchrysos, also a city on the Gulf of Arabia, between the two former ones, in the country of the Troglodytes; 6) a well known city in Koilesyria also called Pella, or Butis; 7) another one in Cilicia and 8) a city known only from Stephanus, which was formerly called Chius - all cities which may be known from their rich amber trade. Even at a much later date, a Germanic king managed to make Emperor Nero a gift of 13,000 pounds of amber.

3. *Elektrum*, "Elektron" for the Greeks, who also gave Apollo the byname

Elector, and named his sister Elektra. According to Adelung (*Aelteste Geschichte*, s. 5) the word is Phoenician, from the arabic *Ilk, Elek*, resin. The Anglo-Saxons, according to the Thesaurus of Schilters, have *Elothr*, deriving either from the above *Electrum*, or from the old-Nordic *Elldur, Illdur*, fire, and related to the Greek *eilo*, I radiate, shine, and *Eili*, the sunlight, radiating. The *alectorius lapis* in Solinus is probably only a corrupted form of *Electrum*.

4) *Sentar, Jantar* in old-Prussian, *Jentar* in Russian, *Gyantar* in Hungarian, in fact a lighter, from the local German, still used in Franconia and Bavaria - *kenten, ankenten*, meaning to light, set alight, to which belongs the english to kindle, and our own *Kien*, a match. The fact that the Arabs also name it *Kinthar* becomes more explainable when one knows that Arab coins are often found along the coast of Prussia. (See for the latter Tychens' study of the arabic coins, so common in the regions of the Baltic, in the *Repertorium für Biblische und Orientalische Literatur*, Vol. 3, p. 382-95 - Leipzig, 1780).

5) *Gläsum, Glesum, Glessum*, on the authority of Pliny and Solinus, among the inhabitants of the northern coast of Germany; *Gläsisvol*, in the Edda, is the land of amber, and *Gläser* the ash-tree Yggdrasil; originally one and the same thing as our *Glas*, (glass) old-prussian *Glasso*, Estonian *Laas*, from *gleißen*, to coruscate, shine, from which the old *Glast* for shine, and *Glastum* for pasture, icelandic *Glasungur* for an icy surface, *Glacies*, and Low-Saxon *glisseken* for skating on ice (French *glisser*...) Greek *ialos* signifies glass, crystal, also, for the ancient Greeks, transparent resin, amber... Also related is the Latin *loser*, resin, pitch, as well as *Lasur*, German for glazing, varnish. See my *Keltenthum*...6) *Rav, Rau*, in Danish, whence Raunonia, also Basilea, the old name of the amber island, about which more in *Keltenthum* p.87) From the old-Egyptian *Ra, Rue*, sun, king - therefore, in fact, sun-stone.

7) *Sakrium*, according to Pliny among the Scythians, *Sakal* for the Egyptians, maybe the same as *Schecheleth* in Moses, related to Syrian *schachal*, to drip, like the latin *Succinum*, from *succus* and *sugere*, close to german *siegern, sickern*, meaning "to trickle."

8) *Som-r*, according to Reinegg, among the Finns - supposedly from the

Arabic Somgh, Sumgh, amber; *Somi-sum'n*, is a Finn and *Someletn* is Finland, because the Finns formerly held the amber coast. We leave to others the proof of this assertion.

In Japanese amber is called *Kowa-ku*, in Estonian *Lerre-kiwwi*, sea-stone, which might help explain the word *makabi* with which the Greeks designated the larger pieces in the amber trade.

The large diffusion of the northern names all the way to the farthest peoples of the South and the East furnishes proof that those people knew our north, and traded with it from the earliest times.

Amber:

Origin of amber is plainly in catastrophe according to the myths of the nordic peoples. It seems that no specific telling of the breaking up of Phaethon survived as such among the people of our North, but for sure there are some tales about the origin of amber. According to the Edda, it dripped from the world ash-tree, or Ygdrasil, named "Glaser;" a myth from which the Greeks and Romans took the notion that it dripped from the *populus niger* black poplar, or, also, from some kind of fir tree. More remarkable though is an information from Favorinus. According to him, the Celts explained that the Elektrum was not born from the tears of the Heliades, but from those of Apollo when, despondent over the death of Aeskulap, despite the disapproval of his father (Jupiter) he went to the Hyperborean or when, because of the killing of the Cyclops, he was compelled to do forced labor. Where Favorinus, who was able to use for his dictionary many manuscript pieces now lost to us, found this information is not known; as it is too short in itself, we must also save its interpretation for another place. About the returns of Apollo to the Hyperboreans, see also my *Keltenthum* pp. 10 and 15.

High value of amber; Elektra walking back towards the North.

As the shattering of this great heavenly body had attracted the attention of all contemporary peoples towards our North, they must also have become attentive to the abundance of amber which now, associated to the stones fallen from heaven, must have appeared to them as a new, almost heavenly product. Whence the great worth which amber found among ancient peoples. (So, for instance, as late as in Julian do the gods throne on golden couches, but Jupiter on a couch of electrum, by which was meant the usual mix of gold and silver, a metal in imitation of amber. Soon after this event, kings and princes gave their gold-haired sons the shiny name of Elektryo, and their daughters the name of Elektra or Elektryone, and only rarely the name Chryseis (Golden One).

The most remarkable is the daughter of Atlas and Pleione, Elektra, with

whom Jupiter sired Dardanus who took one part of his people to migrate from Upper Moesia into the Troad. With her six sisters she was placed into the heaven by Jupiter, where they made up the constellation of the Pleiades. But she left her position in sadness over the destruction of Troy and the annihilation of the race of Dardanus. (From the Northwest of Thrace, the Dardanians had moved into Troy whence, after the destruction of the kingdom, one part of them saved itself by returning back north). She isolated herself ever more from the games and dances of her sisters and wandered off with a wildly flowing head of hair towards the North Pole, so that now she appeared to mortals as a comet. She then disappeared, and reappeared from time to time, always with flowing hair and a glowing face, always a foreboding of misfortune to mortals. As, for instance, according to Servius commenting on Vergil's Aeneid, when this red star appears in the form of a brilliant ornament on the helmet of Aeneas and threatens the Celtic king of the Rutulians, Turnus, with imminent defeat. Compare, about this Elektra, the informations given by Eratosthenes, Ovid, Hyginus, Apollodorus, *et al.*

The late Roman women wore the yellowish hair of Germanic women as wigs, and Domitius, as reported by Pliny, compared in a poem the hair of his wife Popaea to amber (*succina*). According to some, the Rhine and the Xanthus, but according to Ovid the Krathis and the Sybaris, made one's hair turn the color of gold and amber.

amber:

fossilized resin derived from evergreen gums. Amber originates in a viscous substance exuded from living trees. It supposedly survives the death and rotting of the source trees, unaffected by wood rotting fungi and bacteria. It is preserved (in the *c/* view) in the soil from which it is washed into the sea. Amber is brownish-yellow in color and translucent in character. Amber can be cut and polished. It was used for its electrical manifestations in past ages.

Remains of lizards, frogs, insects, and rodent hair have been found within pieces of amber. Some of the insect fossils are identical to present European species. Others represent extinct species bearing affinities with tropical breeds. *c/* scientists date amber to the Oligocene Epoch and to a particular conifer designated as *pinus succinifera*; so named because of the high succinic acid content of the resin. Making the fossil contemporaneous with the amber encasing it, in some instances, has required considerable temporal tinkering. A piece of amber from the Oligocene Epoch encasing a rodent hair from a Caribbean mammal traced back to the Pleistocene Epoch is an example. An intact frog found in an amber mine in the Dominican Republic has become by far the "oldest" Mesoamerican fossil by virtue of its amber matrix.

Extensive deposits of pure amber have been found in Prussia and from other countries bounding the North Sea. There are no apparent source trees nearby. The resin has a low relative density which facilitates its transport across large bodies of water. It is suggested *c/* that the Baltic deposits represent outwash from upland conifer forests of the N. If so a *q/* event likely is implicated.

Amber was valued by the ancients. Pliny described amber as a product of pine trees. He noted how it hung suspended in water and that it was thrown up on the coastal beaches. In this sense amber is referred to as *glaesum* (flotsam and jetsam).

A Greek fable suggests that amber was formed when Zeus, annoyed with Phaethon's perpetual disobedience struck him dead with a bolt of lightning. Zeus then transformed Phaethon's mourning sisters into trees. Their periodic grief taking the form of resinous tears which harden into amber. The Greek word *electron* (amber) has two meanings: the tears of the Heliades, sisters of Phaethon, shed when he was killed trying to drive the sun's chariot through the sky; and a metal alloy consisting of four parts of gold to one of silver. There is uncertainty about the gender of the word.

The form *electros* is both masculine and feminine, while *electron* is the usual neuter form. It may be connected with *elektor* meaning shining of the sun. A link with *helko* (pull) is suggested because of the attractive power of the resin. It is used as beads strung at intervals on a gold chain.

The Greeks made a varnish of amber and poetically termed it Bernice, after the golden-haired queen. In this form the amber may have been used to coat the wood of boxes made from layers of metal and wood which were used for electrical charge accumulation, as in the Ark of the Covenant. If so the word *elektron* groups into *el-ek-thronou*, meaning *god out of the seat* in Greek. For a sufficiently charged ark-box the act of rubbing its amber varnish might produce sparks of light (controlled electrical discharges). A similar vessel, shaped like a lamp, might have been the container in which genii lived. The rubbing of the lamp would liberate the electrical manifestation, the genii.

The Greek connection of amber with Zeus and Phaethon (*the blazing one*) is not accidental. During the period, very roughly, between -35 and -25CE there is evidence of knowledge and application of electricity throughout the region bordering upon the Mediterranean Sea. The *q/* events associated with the planets Mercury, Venus, and Mars fall within this time. Electrical discharges (Zeus' thunderbolts) and the close passage of bright planetary bodies (Phaethon in the stolen chariot) fit the events. The notion of slow fossilization is open to question. How one traps a living frog in slowly accumulating layers of tree sap without it starving and decaying before the fossilization can begin is a mystery. The presence of intact remains in chunks (once globs) of amber bespeaks of a rapid transformation, likely the effect of an electrical flow or maybe by lightning.

Amber:

Amber has recently been found that is supposed to be as old as the first dinosaurs and contain the diversity of microbiolife two hundred twenty million years ago if time is correct. The study was lead by Schmitt, Ragazzi, Coppellatti and Roghi.

Amber generally has been found with insects also timed in early history.

ambivalence:

a two-sided opposite affectional regard of one person for another, usually, but for one's inner selves, also, or even toward the world as a whole or any object or idea within it. In homo schizo theory *q/* it is universal and inherent in humans. It is manifest in the ways in which people and cultures choose to differ in every way that they can, from one another, and within themselves. Alter egos must emerge in and out of oneself, and take up an emotional contrariness. To be at peace with oneself and with the world is a goal almost never achieved, perhaps impossible, yet would seem to signify this wholeness of the self wherein ambivalence is not to be found. Cannibals can be divided into those who eat their enemies and those who eat their friends. Levi-Strauss, the anthropologist, writes that the incest prohibition is the only universal culture trait, but this, too, can be, if not refuted, clarified strikingly: some incest rules stop with parents, others with nuclear families, others with uncles and aunts, others with clans and so on in various combinations. By their very complexity and worrisomeness, the rules reveal the ambivalence of idea.

Societies have had rules about all subjects that can be discerned; they can have been on the opposite side of any issue. As with murder, murder has always been regulated, that is, distinguished from killing. All societies claim the right to be totalitarian, even as they constitutionally deny it; they are not to be denied the right to change their mind on every question. "Rules are made to be broken," for without infractions there would be no rules, which, more subtly, is close to saying that infractions have a social position, to gratify the desire of others to punish an infraction and in order to let what is right be known.

Similarly, to say that a god is all good is to say that his bad is the fault of a devil or another god or of a person, which person also becomes an enemy of god who is hostile to god, and this person accepts and punishes himself or lets himself be punished, thus denying his ambivalence to the god; but in other cultures, a god is not all good, or the concept of goodness has no validity, but the god is superior in so many ways that it is impossible for

one and all mankind to oppose him (her) successfully, and mankind then lives in a perpetual state of ambivalence to the god, hating and loving at the same time; significantly, there appears to be little difference in happiness between the one who exercises his sacred ambivalence hypocritically or openly.

Humanity often finds the sources of both hatred and love in the sky, and pictures the total cosmos as a battlefield of god or evil that projects his moral preferences skyward; but it is not at all accepted that the original sources of this morality were human *c/*, for it is equally possible and more logical that the human (*homo schizo in q/*) has been created by the forces of the erupting skies and that his hopes and fears are founded upon the sky that has helped and punished him, both, so that his very ambivalence is tied up with the good and bad of creation and the world of nature. Whoever survived to be created human, had to be imprinted with the sources of the disorder of the split personality and its split mind, therefore was imprinted with ambivalence, which is projected back upon the gods and thence back to oneself and one's fellow humans: there is no contradiction, the fabric of mentation of HS is seamless and untorn.

The myths of old, the dreams of the normal, and the autistic reveries of the schizophrenic proper, are basically alike in purpose and structure, in seeking to manage the unmanageable. When from time to time, catastrophe succeeded upon catastrophe, whoever survived had to believe that they were the chosen people of the gods. All the aspects of the changed environment that helped them to survive seemed to have descended from the gods -- to kill enemies, heal wounds, find food, and carry on skilled operations. Good new gods are invented upon every disaster, or heroes or epiphanies or angels of the parent gods. The gods are readily subsumed within the ambivalent brain as mother figures, providing a double-bind for the child in nourishing and depriving her child, that to the schizoid mind, in one generation after another going back to the beginning can only find this basic logic, to hate and to love at the same time or in an endless and incurable on-off way, as in a binary computer.

Ambraseys, N. N.:

author of seismological studies of earthquakes of -30Y to -20CE in Near East, numbering 3000. Frequency hardly seems to have decreased although ancients seem to have been more concerned. Problems of data collection are great, also measures of intensity and scope.

ambrosia

the food of the gods. In the poems of Sappho and Alkman, it is a drink. It is an unguent in *Iliad* XIV:170. Hera began her toilet by removing all dirt from her beautiful skin with ambrosia, and then anointing herself with olive oil.

There is a possibility of confusion over the words *ambrosios* and *ambrosia*. The Sanskrit '*a mrita*' means not dying. Semitic '*anbar*', ambergris, is a magic perfume. Ambrosia may originally have been an adjective, with food or fodder as its noun. *Ambrotos*, *a-brotos*, means not mortal. *Ambrosios* is rarely used of persons, but is applied to night and to sleep.

It is applied to all property of the gods, e.g. hair. *Iliad* 1:529: Zeus nodded with his dark brows; the ambrosial locks fell forward from the Lord's immortal head; he shook great Olympus.

Iliad V:338: Diomedes attacks Aphrodite. He strikes her hand through the ambrosial garment that the Graces had worked for her. Ichor, the immortal (*ambrotos*) blood of the goddess, came out.

ambulacra:

-- Row of tube feet of an [echinoderm](#)

<http://www.ucmp.berkeley.edu/echinodermata/echinodermata.html>.

Ameghino, Florentino:

Argentine paleontologist and anthropologist, fl -120Y, author of over 30 volumes of research, discovered many extinct species, was widely acclaimed, then ridiculed because of claims of discovering a "man of the Pampas." He lost his position at the University, and his reputation has never been restored, though he always retained a respectful local following.

He placed his *Homo Simiento* in the Pliocene Epoch and an apparently incised jawbone of a creature whom he called *Protorotherium* on stratigraphic grounds in the Eocene Epoch, c/ -30MY ago, an age not even contemplated for the hominid discoveries in E Africa. He claimed to have discovered four hominid races in all, all with human traits. At the Canyon of Moro (N of Necochea) he described finding skeletal material of a people rather over 1.2M tall, long-headed, prognathic, small-brained, small-tooth, and bone structures removed in appearance from homo sapiens. He called the group, uncharitably *Homo sinemento* (mindless). He was visited by Ales Hrdlicka and Bailey Willis, highly reputed American scientists; they did not agree with his findings. Hyrdlicka was a strong proponent of a short-time 12KY ancestry to man in Aemrica. He found human utensils and dwelling-places associated with giant fauna of the late Pleistocene Epoch. He speculated that humans dwelled in the 1.5M diam. carapaces of giant turtles that he found containing bones and flint tools. He even spoke of an eocene man or hominid, and therefore claimed that the origins of the human race were in that region of S America.

He argued for the onetime existence of land bridges between the Americas and Europe, possibly the fabled Atlantis and regarded Brasseur de Bourbourg as correct in his appraisal of Meso-American early civilization and Mediterranean (Tethyan) connections. He called the central Atlantic bridge the "Guyana-Senegal" connection. (Actually, the proponents of continental drift whether c/ or q/ lock the two continents at this point. It is also close to the so-called Antilles-Mediterranean link that Suess,

Lapparent, and other geologists and paleontologists at that time perceived to have existed in the Tertiary Period).

He wrote in one place, "I believe that one can regard as susceptible to nearly rigorous truth the following facts: 1) The American population is not a unique and homogeneous race but the product of crossings of different races. 2) One finds individuals and tribes representing races of the Old World, but the mass of people is distinctly different...5) Emigrations from the Old World always found the Americas peopled by natives...7) While Europe was still peopled with savages, America possessed very advanced peoples living in great cities and constructing grandiose monuments. 8) At different periods, different emigrations took place toward the Old World...10) The most ancient peoples of Europe, Africa, and America were in communication. 11) The communications were facilitated by land, today disappeared. 12) The existence of this land can be demonstrated by tradition, prehistory, archaeology, ethnology, linguistics, philology, anthropology, botany, zoology, paleontology, and geology. 13) Up to now, science has not been able to determine in what corner of the globe man or his precursor made his appearance for the first time.

Amelan, Ralph:

Israeli-British quantum revolutionary and journalist, fl -30Y, early collaborator with British Society for Interdisciplinary Studies, specializing in Hebrew history and contemporary scientific politics.

Amen, Amon, Amun:

1) primeval Egyptian god of the electric discharge. The word Amen may mean the abode of the hidden god, A. Amen's name, like that of his Hebrew counterpart Yahweh, was unuttered because it represented an inutterable manifestation. The reference may refer to Amen's appearance as the glow at the top of the Pyramid, which was not accompanying sounds, as was the electric arc. When the pyramid was build Amen was always present but later the Earth's electrical differences became too feeble the pyramid discharged only intermittently. Then it was said that Amen hid himself. Amen was ruler of the air and he was venerated as the god of the invisible wind (lightning discharge).

After the 11th Dynasty he was the Lion god with the awesome eyes. Pairs of obelisks were a part of Amen's temple at Thebes in Upper Egypt. Serpent-like fire may have emanated from their tips during periods of high electrification. The temple doors were made of acacia wood, the same material which lined the Hebrew Ark of the Covenant. The temple building possibly was a gigantic capacitor used to accumulate "god's electrical fire" which was bled to the pair of obelisks outside.

Amen became the king of the gods and was venerated for his fertility (as Min). The ram was his sacred animal. In the reign of Akhnaton he was merged with Ra to become Amen-Ra. He is identified with the Greek Zeus. After Thebes fell his cult prospered in Ethiopia and among the oasis dwellers in the west.

2) magical word which the Hebrews interpret as "let it be." It is used to evoke divine response to prayers.

American cultures, -502 to -9Y:

the ways of life and beliefs of the inhabitants of the Americas from the contacts of Columbus onwards. General divisions of cultures would afford the Northern Canadian, Canadian-usA Maritime (Pacific and Atlantic), a Lake and Woodland Eastern, a Southern Farming Complex, a Desert Complex, and a Plains Culture. In Mesoamerica, the Olmecs, Mayans, Toltecs, and Aztecs provided Urban-farming States. The Pacific Coast of South America provided rich fisheries and river valley irrigation farming, the uplands, irrigation farming and herding. Empires were assembled, the most prominent being the Inca, centered on the great flat ridges stepping down from the Andean peaks.

The voyages of Columbus were part of the Renaissance of invention, learning, and art in Europe, and within a few years, there were Spanish and Portuguese colonies at all major points of civilization in the Americas, busily importing all that came with the Roman-Catholic Church-Renaissance heritage, an immense overloading of Amerindian cultures, forcibly imposed. Comparing Germany, England, the Scandinavian countries, and most of the rest of the world, the average level of subsistence and popular culture of the Amerindians over the two continents was in no wise deprived. The spark of the Golden Age of Greece (a brief period in a few cities of Greece, Anatolia, Southern Italy and Sicily) seems to have had no counterpart in the Americas. Individualism and experiments in democracy seem not to have prospered at any time, but so little is known that invidious comparisons should be eschewed. From all appearances, the human diet throughout the Americas was better balanced than the diet of the world today. The low population densities and reluctance to depend solely upon one or two major crops gave the Amerindian diets superior to, say, the English, Scots, and Irish until the present moment. A wide range of wild plants and medicinals were consumed. Beans, fowl, fish, specially bred dogs, amaranth, and some 30 other substantial foods are known to have been part of the diet in the Tehuacan Valley of Mexico. A number of types of game, large and small,

were hunted. By *c/* dating, which may be compared with Egyptian and Mesopotamian dating, and the Chinese of the age as well, life-style at 8kbp in the watered valleys of Mexico would appear considerably better.

Given the balanced diet and elaborate old cultures, the cannibalism practiced on a large scale (some say 200K persons devoured per annum in Montezuma's reign in Mexico) is puzzling. Not only the heart, but the whole corpse was ultimately parcelled out for eating, with the distribution going down the social scale. In *q/*, one appreciates the convenience for a militaristic nation of having this way of sacrificing to their War God who resembled in most significant ways the god and planet Mars of Europe, Huitzilopochtli, for whom 20K victims were sacrificed and devoured on one occasion of dedicating a new temple. The justification of this and other such mass sacraments was to keep the sun and the sky in order and functioning correctly.

Cotton was grown and woven, by -4KY *c/*, perhaps earlier than civilizations within the Indus Valley or Mesopotamia. As excavation and research goes on, Amerindian cultures are appearing older and older, richer and richer, so that, whether dating systems are correct or incorrect, the movement into broad-based cultures seems to have been worldwide at around the same time.

A radical *c/* can now claim that full cultures were in place by -40KY, a conservative maintaining that they had all in place by -6KY: thus, Shoshone bands of -7KY *c/* lived precisely as they have up to the -2CE. By *c/* figuring, add to the culture calendarism, hieroglyphic writing, monumentalism in architecture, systematic astronomy, highly planned settlements and temple compounds, all by -4500 to -3500Y, when a major *q/* occurred.

A reformulation of *c/* would play into *q/* theory, that argues on behalf of holo-genesis within and among earliest cultures, and possibly microchronal reckoning of the history of culture, and, too, the historical occurrence of catastrophes that struck around the world at the same time. For the

Mesoamerican culture-phases, at least, and in much more unsatisfactory ways the Andean and northern Amerindian cultures, can be roughly correlated as the reigning gods, the behavior of peoples in the throes of destruction and thereafter, liturgies, and mythology.

American hemisphere:

the N and S American continents, extending from the N polar region to the Antarctic Ocean, comprising about 16.3% of the Earth's land surface and a 8.2% of its population, historically isolated by oceans and cold climates to the N and S and by oceans to the E and W. No matter how finely drawn are distinctions between this "New World" and the "Old World," their number is but a fraction of their similarities; these point to "One World," descended from common chemical, biotic, climatic, geographical, physical and cosmogonical ancestors. After strenuously denying the closeness of their affinity -- some going so far as to deny humanity to the Amerindians -- scientists and scholars have now granted that the two worlds were once united *c/* and *q/* but, according to most of them, this unity was last experienced, except at the Bering Straits, as long as -100MY ago *c/*, whereas certain *q/* argue that the parting could have come as late or later than 11KY, about 9100 times as recent. The two extremes cannot both be right, nor the can the remote extreme with certain creationist scientists (also *q/*) who would defend a date even as close as the Noachian Flood that they place at -6KY.

Especially notable in the macro-geography of the Americas are the following: the close fit of Eastern crustal outlines to European and African; the absence of fit of the Western crustal coastline, with isolated minor suggestions of shared contiguity; a mountain range that runs from the Arctic to the Antarctic as a Western backbone of the two continents; but also the different displacement of the backbone N and S; the thin neck and multitude of islands between the two continents; the chain of lakes running diagonally NW to SW of N America; the vast interior plain of N.America; the vast interior tropical river basin of S America; the areas believed (*c/* and many *q/*) to have been ice-covered, much of N America, less of S America; earthquake regions generally associated with most recent orogeny; the Allegheny Mountains of Eastern N America; the few species of large animals since shortly after the arrival of humans; the paucity of pre-Columbian humans, whose arrival has been put at -12KY *c/*.

The earth sciences *c/* handle these problems by their typical combination of a large simple theory (for the past few years it has been gradual continental drift by force of radioactivity and tectonic plate shoving), and as meticulous a description of the detailed features of the Americas as research funds and faculty-student energies will permit. Radiochronometry guarantees their *c/* macrochronalism, even extending it farther backwards, and cultural anthropology, paleontology, and evolution fortify the *c/* geographical interpretation. This general method is opposed by *q/* with its theory, that achieves by microchronalism and catastrophe the same two Americas that meet the observing senses. Without the resources of *c/* it proceeds by middle ground logic, continuous attack upon every conceivable weak point of *c/*, and cannibalizing the studies of *c/*.

Examination of maps strongly suggests a fit of the lands separated by the Atlantic Ocean; the S American-African connection is especially plain, with the NW hump of Africa pushing into the Caribbean region of today. Certain *q/* theory would suggest that the Tethyan Sea would be a shallow Sea already in place girdling the globe with a tropical water belt. The split could have been a day's work of catastrophic forces *q/*, a matter of inching over 225MY *c/*.

However, on the W the two continents face a vast ocean, with no match of outlines but perhaps a few splotches of rock in common. For no reason whatsoever, says the *q/*, *c/* theory has the continents ending irregularly at the seashore; why should Pangea be bounded by waters covering nearly 3/4 of the globe, a floating island of sial crust?

A N-S cordillera, tall mountains thrust E-W toward the Western sides of the continents. Proof, says the *q/*, that the whole length of the Atlantic was in motion at the same time and shoving the American land mass westward, folding the resisting rug of the very deep Pacific hole.

But the N American Cordillera stands back from the W coast while the S

American rears up right upon the coast. This major feature, unexplained *c/*, is ventured by *q/* as produced by slower movement in the N Hemisphere because the largest blow-out of continental crust from a fully sial-covered Earth was to the present-day S, the enormous Pacific-South Seas area.

The thin Central American neck and Caribbean islands are principally, by *q/*, sial, volcanized, of the ancient shallow Tethyan Sea, whence it crosses the Atlantic (then opening up) to enter the Mediterranean.

The string of lakes that carry sporadically from Alaska to the Carolinas are possibly, says *q/*, a drawback because of a lesser Coriolis effect or slow-moving (ice-loaded) or astrobles from a stream of meteors striking Earth from the NW (including, say some, a mighty crash where today stands the Island of Bermuda.

The plains of NA and jungles of SA are portions of flat Pangea, that have suffered immense floods, tides and winds *q/*, and have been thereafter re-sedimented with grasses and tropical foliage respectively.

Ice covers the polar caps today to varying thicknesses, remnants, say *c/* of a far more extensive Ice Age ending about -11KY ago. Still *c/*, most of Alaska and some of Siberia was never covered with ice, strange *q/*, since there have been several Ice Ages postulated and at least one should have covered these areas. Were N. America and S America in part (with Antarctica) scraped bare by glaciers or by other ice or by quick melts, by exo-terrestrial blasts, by tides? Only the glaciers and a gradual melt are worthy of consideration, says *c/*.

The S American cordillera and the N American (but not C American) Pacific coastal region are subject to many earthquakes and much volcanism. Still, severe earthquakes can occur elsewhere (S Mississippi River Basin, *ex*), seeming to contradict the *c/* idea of volcanism and quakes occurring always in close association with the major fracture lines and tectonic plate jostling.

The Allegheny Mountains are old *c/*, witness their generally rounded measures, innumerable streams and dells, etc.; they are young *q/*, because the reason for them is young, the explosion of a gigantic meteor in the Atlantic over Bermuda, whose landwise rim is the Allegheny formation.

The poverty of large species is assigned by *q/*, if explained, to their massacre in a couple of thousand years by the hunters newly arrived from Siberia. The *q/* is more likely to suggest a natural catastrophe, pointing to the huge assemblies of remains commonly found (and not resulting from hunts)

Finally, in summing up the outstanding features of the Americas, the *c/* contention that Amerindians came very late (now less believed) *vs* the *q/* position that people were always present from the time of Pangea, but may have been entirely or in large part wiped out by the catastrophes that created the Americas as such.

American sign language:

language marks the breaking of the instinctive bond between man and nature. It use immerses humans in delusion in that non-existent objects, or facets of them, are given meaning in the brain and used to communicate something else. Speech is systematic symbolism. It is not an utterance of written words. The reverse is likely true, written words are symbolism upon the symbolism represented by speech itself, a code of a code.

The American Sign Language is a means of communication using hand signals. It is a complete language used by persons with normal hearing and speech to communicate with the deaf, and by deaf persons to communicate between themselves. Wit, humor, poetry, and song are within the capabilities of sign language. This language without speech illustrates the origin of human language comes from the brain rather than from the larynx.

Amerindians, ancient:

people of the Americas prior to -11CE. Constituting an estimated 2000 language-groups, divided into thousands of tribes and several nations, two at least of imperial size when conquered by the Spaniards, the Amerindians were almost entirely or heavily of Mongolian racial stock, but with as great an internal variety as would be true of Caucasians and Negroes. Likely they received, after their separation from the basal race, special infusions from all three great racial strains. Certainly there were cultural contacts; too, there were before Columbus features and statures identifiable as Negroid and Caucasoid *c/*, *q/*.

Indians *c/* were recent arrivals, according to early and current theory; it was said that no remains from before -12KY are to be found, and a reason for this was that humans were incapable of crossing the Bering Straits once the last Ice Age had dwindled and open water separated Asia and the Americas; Amerindians, too, were racially akin to the tribals found in Northern Siberia. (A suppressed psychological reason for promulgating this view and teaching it widely would have been to justify the seizure of two continents from people who had, after all, been here themselves only a short time.) All three arguments are weak *q/*: many human remains or traces have been discovered and dated to remote times; the effectiveness with which great stretches of ocean have been traversed by different human and animal groups has been demonstrated (even if one accepted the *c/* view that the continents have not shifted in recent times to make travel inconvenient); numerous precedents exist for humans of one race having invaded and replaced and assimilated another race, taking on some or most of their culture, as Greeks, Celts, Teutons, Magyars, Bulgars, Bantu, Indo-Aryans, etc. have shown. The Normans did so in half a dozen places, including what are today France, England, Sicily, and S Russia.

The questions arise: what could have been alternative origins of the Amerindians? And, what are the dates of ancient Amerindian culture? They could have been aboriginal *c/*, *q/*. First, they might be so old that their

origins are hidden in the past of all mankind. But this would imperil the theory of the origin of humans in the African rift region and points south. One would have to push aside the African material as a side-show to human development, and look for an origin and spread of homo sapiens elsewhere, possibly at the next stage, which would be of homo erectus, who has been found in every continent except the Americas. But homo erectus *c/* is not necessarily the ancestor of homo sapiens, though a new reason is found *c/* for thinking him so, that he would relieve one of the need to consider an American origin for mankind. There are several disturbing indications for this argument: recent American finds of humans offer datings by *c/* means of up to -500KY; a century ago, Ameghino offered findings of a Pampas Man in pre-Pleistocene, pre-Ice Age, Pliocene Epoch setting; he was rejected. He also believed *q/* that the continents were sundered or at least put out of touch by the foundering of an "Atlantis" that had existed between the Old and New Worlds.

If a *q/* theory, that argues for a universal human existing prior to the sundering and thrusting apart of the continents, were adopted, then the presence of aboriginal Americans would be expected; they would be ravaged and reduced in the turbulence of the separation of the continents, and afterwards replenished by men out of Asia. Then *q/* can also accommodate a view that the origins of some Europeans, including the Cro-Magnons, Basques, and Canary Islanders, and then possibly modern man generally, would have been aboriginal Amerindian. A few scholars *c/*, *q/* believe that the people of Tierra del Fuego and others came from Tasmania or other South Pacific islands. And one view holds that the "Lost" great Fleet of Alexander the Great, readied to invade India, was discomfited by his sudden death and sailed off ever Eastwards, bringing people and culture to Polynesia and ultimately to Peru.

Soviet opinion affords the Amerindians -40 to -30KY. The -12 to -10KY fixation was not overturned by this fact but is severely threatened by more recent American defections and tests of time. The carbon-14 and racemization tests of Amerindian barbecue ashes have begun to give

datings in the -50KY range. "About fifty excavated sites have yielded eleven human skeletons, more than a thousand artifacts, and three times that many bones of extinct animals. From the evidence, we have obtained more than fifty radiocarbon determinations earlier than -12KY" (R.S.McNeish). Up until the seventies, tests seemed to follow theory, all about -12 to -10KY; since then almost no test has shown under -15KY, practically all over that. Claims have been made that the oldest skeletons found, near Los Angeles, California, are well over -50KY and are a generalized Indian-European race. One Clovis point, a sophisticated obsidian projectile and tool, was found deeply buried with other materials near Dallas, and produced -38 to -37KY datings on associated bone and charcoal. This is a great deal older than the European -20KY equivalents. It cannot help but suggest to non-*c/*, non-*q/* scholars such hypotheses as an ancient pre-glacial or inter-stadial occupation by Asiatics, or a primary source for the human race in America, this so long as they subscribe faithfully to macro-chronology in geology. Indeed, they increase their investment in long-term dating by its triumph in regard to the Americas. One *q/* view, on the other hand, sees in these developments further confirmation of a primeval origin and ecumenical culture of the human race, in a previously unsuspected location, though it might be what is called and placed in so many parts of the globe "Atlantis", which spread both E and W, when the Americas and Euro-Africa were like Siamese twins, girded by the Tethyan Sea. Should the *c/* macrochronal Aemricanists win over the *c/* microchronists, at, say, a civilized "Sunnyvale" age of -70KY, what would happen to the origins of the human race being set in the Old World at -50KY? This might cause yet another time regression down the line to hominids, who have already been allowed another 5MY on top of 3MY by some anthropologists just to gather their heads together to create a pebble culture.

amino-acid racemization dating:

method of assignment of absolute date to preserved or fossilized bone and tissue employing the (believed) constant rate of spontaneous change of left-handed (l, laevo-) to right-handed (d, dextro-) molecules, especially aspartic acid. Amino-acids survive in the protein collagen for up to *c/* -300MY, but the most useful time-span falls between the -40KY allowed to reliable carbon-14 dating to the -100KY where potassium-argon dates apply. The half-life of the aspartic acid reaction has been set following laboratory experimentation to 15KY @ 20°C. Temperature limits the dating therefore to objects in moderate constant enclosure. The method is calibrated from carbon-dating, thus takes on the faults as well as virtues of C-14 dating, and the method can hardly be validated using by C-14 beyond -50KY at most. The method has been used to crack the *c/* traditional dating of American objects to no more than -12KY, giving dates of -48KY at Del Mar, -44KY at La Jolla, and -70KY at Sunnyvale (all California), but at Sunnyvale a skull and ulna were aged by C-14 as 30KY younger. The test is complicated and costly, and suffers the usual perils of contamination, preferential publication, etc.

amino acid:

organic compound occurring universally within the biosphere. Amino acids follow a general formula whereby the simultaneous presence of the amino (NH_2) and carboxyl (COOH) groups make the compound amphoteric. There are a score of biologically occurring side chains *r/*, ranging from H in glycine to beta-indolepropionic acid in tryptophane. Amino acids form polymers of various lengths by combining the carboxyl group of one amino acid to the amino group of the neighbor. The bond so formed is called a peptide linkage. The polypeptide chain contains mostly covalent bonds, only the two end groups (one a carboxyl and the other an amino) and some of the side *r/* groups are ionizable. Very long peptide chains form the proteins necessary to the structure of living things. In proteins the amino acid chain spirals into a distinct helical form which is held in position by many "weak" hydrogen bonds formed between the atoms of now adjacent side chain groups. Each protein has a unique sequence of the common amino acid units. Even a bacterium contains a million protein molecules, of 2000 kinds with an average molecular weight of 40000 atomic units.

Of the biologically important amino acids the human being can only synthesize half from precursors. The remaining ten are "essential" in that they must be obtained in the diet.

The biologically important amino acids are classified as α -amino acids in that the amine and carboxyl groups are on the same carbon atom. All of these compounds (except glycine) are optically active: they rotate a beam of plane-polarized light passed through a solution of them. They were named dextrorotatory (d) for clockwise rotation, and levorotatory (l) for counter clockwise rotation. Only d-amino acids participate in biologically assembled molecules. Chemical reactions produce equal amounts of the "d" and "l" forms of these molecules. Biological systems contain an enzyme which converts the biologically inactive form into the active one. *c/* theory posits that over time d-amino acids can be inverted into the l-form by

entropic processes. This forms the basis of the racemic dating system which assumes that any amino acid found in nature began as biological material. The degree of randomness in a sample of these acids is used to date how long natural inversions have been occurring. The method has offered scientists hope in estimating the age of bones for which radiometric methods have produced ambiguous ages (which are ascribed to contamination of the bone matrix). The efficacy of the method has yet to be demonstrated in that bones from a single stratum can show different degrees of racemization.

amino acid:

-- unit molecule from which proteins are constructed by polymerization.

Ammizaduga tablets:

the great-great-grandson of Hammurabi, was reputedly Ammizaduga, who was *c/* the last ruler of the First Babylonian Dynasty. Among the cuneiform tablets ascribed to his era are a series purported to describe the motion of the planet Venus. The tablets were unearthed about -150Y at Küyünkik (ancient Nineveh) and belong the collection known as the Library of Ashurbanipal. They are part of the collection in the British Museum. Translations and transliterations are available. Though most workers give these tablets greater antiquity there is evidence that they refer to events not before -2700Y. This first led to an attempt to separate the tablets from the king. More recent analysis of the Babylonian strata indicate that the recent date may apply to the king as well as to the tablets.

Discrepancies between the data on the tablets and the modern motion of the planet Venus has led several scholars to the conclusion that the tablets are poor copies of originally correct data. Others, taking the *q/* position have attempted to deduce different possible motions for the Earth at the date when the tablet observations of Venus were inscribed. This technique is famous in that the motion of Mars (before -390Y) was used by Kepler to fix the Earth's orbit about the Sun.

Ammon, Amon:

god of Siwa and its oracle at Ammonium. Rock drawings show him as a ram bearing the celestial disc. The god is related to Amen-Re. Alexander the Great considered himself to be a son of Zeus-Ammon.

Sal ammoniac: colorless crystals of ammonium nitrate used as a fertilizer and in the making of explosives. Possibly this salt was generated by lightning discharges at sites sacred to Amen in his aspect as originator of lightning. Ammonia fumes likely were present during episodes when the oracle was active.

Ammonia, Ammonium:

Ammonia can occur as an atmospheric gas, and may be called ammonium when it occurs as a deposit as a salt of ammonium, such as ammonium

hydroxide or ammonium nitrate. A peak ammonium deposit is found in the Justinian Q year of 539, but then again it is found in the non-Q year 1014. But 1014 probably saw an immense cloud descend and kill thousands in England alone by "smothering." This may have been space debris from a close-missing comet that was observed in China. Dendrochronology also shows ammonium aberrations at this time.

"The chance of finding enhanced ammonium (in ice cores) at the exact start of the two greatest plagues in the last two millennia is about '1 chance in 56.'" Thus either ammonium or associated chemicals would likely condition the great plagues. The source of the ammonium is exoterrestrial. Arrival of poly-aromatic-hydrocarbons (and methane) occur in association and indicate exo-terrestrial sources that may have much to do with the sources of petroleum and natural gas on Earth.

amnesia, collective:

if the human was created in the midst of catastrophe, the original amnesia was a personal affair, that became collective as soon as she could find others like her, or she so managed the group to which she belonged that they were affected by her teachings. It is logical to assume that individuals possessed of individual amnesia would be intensely motivated to universalize it. It would not do for one person to suppress a traumatic event himself while tolerating the free expression of others. The person who suffers (at any level, aside from the catastrophic) wants others to appear to suffer and preferably actually to suffer the same tortures of recollection as himself. This is not a simple foolish conduct of a damaged individual, as is commonly believed, in the face of so many occasions for the same. It is a universal principle of behavior: the suffering human cannot let others go uncontrolled because his own suffering will be uncontrolled. Unfortunately (fortunately for him), everyone else, at least after the first days of humanity, needed no training; they agreed with him and the only problem was how best to introduce torture, punishment, sacrifice, perpetual but tolerable fear, into the next generation and all generations to come; how to perpetuate unspeakable memories of real experiences: thus began cultural indoctrination and civic education; thus began all education; this was the first course of humanity: how to suppress catastrophic fear through religious institutions; what is called today science comes as a late afterthought out of the conflict of cultures. Science has discovered that a limited set of rules operating as the scientific method can cope with a vast range of problems without going too deeply into the human psyche and stirring up traumatic ancient memories. However, at the same time, it has to be wary, for basically homo schizo is a trouble-maker, profoundly disturbed. Historiography *q/* has never approached the status of objectivity of a number of sciences, precisely because it has had to perform a double function of reassuring its clientele of a non-repetition of catastrophe, otherwise giving them a way out through an historical religion, and yet striving to tell what really happened. This two-faced posture has infected the stories of personages, sects,

nations, and the human race in general. History, that is, reflects the collective amnesia. The collective amnesia, at any given moment in time, consists of the average or other defined statistical dimension of the presence of unconscious fears in a population, which fears *q/* are in significant part a derivation from the terrorizing experiences of the first humans.

amnesia, individual:

the failure to remember, even under some but not necessarily all stimulus to recall, what has been experienced and stored in memory tissues of the animal, including humans. Animals have memories, "remember everything" a pet owner will remark, but actually animals behave as if they have stored a narrow band of experiences; nevertheless within this narrow band, experimental horrors continuously applied, will bring about apathy, even death. *c/* memory is an impression upon brain cells of an experience image, that, under analogous conditions, will return to consciousness. Although this appears correct in a limited sense, it is more useful *q/* to regard memorizing as the accommodation of the traces of an experience in brain tissue (which is fairly well-marked), such that the traces can be vaguely called back to mind, including a variety of sensations related to the experience and transferred to the new situation and event. This opens a path for some of the most important and perplexing aspects of memory and forgetting, such as why some experiences are remembered more than others and some are forgotten. Again *c/* would support a commonsense view that one forgets the unimportant event. By contrast, a basic principle of *q/* is that the most deeply forgotten into dead storage are the worst experiences. A great effort is required even to approach such stored memories. Psychiatry and especially psychoanalysis are devoted in considerable part to locating, sorting out, analyzing, interpreting and counselling on the basis of such memories.

The *q/* scenarios are not pleasant; they picture humans as having undergone numerous episodes of fright and threat and observation of disasters far beyond the ordinary fearful experiences of life (even though the worst experiences of humans has been in history the deliberate conceiving of heinous tortures by men who have probably been unable to cope with their unconscious fears and are projecting them upon others and recapitulating them, thus easing their own anxieties). When nature truly explodes, even in a single volcano or earthquake or tornado or huge wave, it leaves an indelible memory; a widespread multiple catastrophe,

especially coming from the gods of the sky, is even more damaging to the psyche. The memory is rather soon suppressed and can be recalled only in its more or less vague outlines; if the memory is repetitive, terrible noise without end, multiple lightning flashes, a sea of tornados, for example, the reinforced memory goes into a state of massive resistance against recall. On occasion *q/* the memory is insufferable, forcing a person to react somehow to relieve his anguish. Unfortunately, one of the most successful therapies is to relieve the trauma, unreasonable as it may appear, and in the end destructive to the self and others. The human, faced with the unbearable memory that he may not even recognize as such, but only an intolerable anxiety and fear, strikes out with some or all of his force at whatever person, animal, object he is trained to punish or to hate or perhaps "just losing his head," that is, without being able to discern or come up with any justification or rationalization. The *q/* would maintain that some of the most critical behaviors of all individuals are affected by this depository of the most ancient memories of horrible transgressions of nature and their human behavioral accompaniments. They are transmitted conceivably by some genetic marking of the soma, but far more likely by the astonishing power of a culture to imprint its members.

amniotic egg:

-- n. An egg that can be laid on land due to the presence of a fluid-filled amniotic sac (**amnion**) that cushions and protects the developing embryo;

amniote- n. Any of a group of land-dwelling vertebrates that have an amnion during embryonic development, including reptiles, birds, and mammals.

amoeba:

protozoan animal of irregular shape which moves and feeds by extending pseudopodia in specific directions. They have no muscles. Possibly the amoeboid protoplasm is maintained as a sol rather than as a gel so that the amoeba can relocate it. How the amoeba accomplishes motion or sustains the transition of its internal fluid is not understood.

The amoeba is in constant motion. They seemingly are immersed in a sea of free energy (averaging around 0.04 electron-volts). Expressed as a wavelength this energy has about the same size as the amoeba, »0.01MM. Possibly the amoeba utilizes environmental energy to its purpose; sustaining the fluidity of its protoplasm and directing its flow as required to surround food. Freud compared the libido extending from the human ego to an amoeboid pseudopod.

amoeboid:

-- Having no definite shape to the cell, able to change shape.

Amojjar Pass:

located near the town of Atar in Mauritania (NW Africa). The pass is a wadi (dry riverbed) carved through sandstones forming a flat topped plateau. The topography is reminiscent of scenes often encountered in the American SW states. Vertical crags top the canyon walls while the lower talus slopes are littered with rocks and sands once loosened from the cliffs. The region is arid, with rainfall as low as 3CM per year. Sparse vegetation, principally acacias, are found on the valley floor.

The wadi follows a fracture in the original rock. It has widened afterward.

Amos:

shepherd from Tekoa in the S Kingdom of Judah, during the life of Uzziah. Amos became a prophet and preached in Israel during the reign of Jeroboam II when that kingdom was at the peak of its power. He foretold of a coming destruction of the Kingdom. The book of Amos, written posthumously, contains versions of the prophesy, likely a catastrophe. Amos' ministry reputedly was in the three decades between the traditional dates of the founding of the Olympads and the Era of Naonassar, but *q/* dating places him much later. In Amos' time *q/* theories suggest that the planet Mars was periodically threatening the Earth. At each repetition geologic upheavals and electrical manifestations were experienced leading to a final conjunction maybe as late as the -25CE.

amphibia:

class of four limbed vertebrates first appearing in the Devonian Period of uncertain ancestry. Early forms seemingly had scaly skins now rare. Modern representatives fall into three orders: legless caecilians; salamanders and newts; and toads and frogs. The amphibians have become terrestrialized and have specialized. They prefer to live near water or in damp places. Many species hibernate during winter. They reproduce by either internal or external fertilization (despite the males having no penis). Most amphibians return to water to lay eggs, but a few species bear live offspring from internally carried eggs. Their eggs lack amnions hence they must be kept moist. Until it turns into an adult the gill-breathing larva of amphibia is usually solely aquatic. Adults have glandular skin through which they take up oxygen. The adult amphibian is carnivorous.

c/ The ancient representatives declined in the Permian Period, some of them surviving the Mesozoic Era, until conditions enabled new species to appear and thrive. In general the actual situation in the biosphere is the reverse of what is posited here for the amphibia. The phanerozoic record can not be used support evolution as process of increasing diversification. The incident of the Amphibia rather than supporting a *c/* evolutionary position supplies an example of the *q/* concept of genetic realization. Following a cataclysmic disruption of the Earth's environment the amphibia transformed to harmonize with newly available environmental niches.

The catastrophic conditions *q/* posited for the time of the Exodus led to a plague of frogs descending upon Egypt. Modern reports speak of frogs falling as a part of notable rainstorms.?

amphibole, amphibolite:

from the Greek word meaning doubtful. A chemical series of metasilicates with the general formula $MSiO_3$ where M may be aluminum, calcium, iron, magnesium, potassium, sodium, or titanium. Their simple crystals are long and slender unlike the similar pyroxenes which have complex, short and stout crystals. Amphiboles are common in basalts. Many are developed into metamorphic minerals (amphibolites) occurring in deep-seated rocks.

Amphibolites contain minerals such as biotite, feldspar, garnite, muscovite, and quartz along with amphiboles. The presence of large masses of these rocks suggests a deep-seated origin for the igneous rock. Amphibolites are commonly found along with gneisses, schists, and other metamorphic rocks believed to be based upon sedimentary forms. This suggests a common formative mode. Amphibolites are found in New England and New York states of the United States, all of the S parts of the E provinces of Canada, Scotland, and the Alps of Europe.

amphiesma:

-- The outer covering of a dinoflagellate
<<http://www.ucmp.berkeley.edu/protista/dinoflagellata.html>>, consisting
of several membrane layers.

amplitude, seasonal:

seasonal amplitude is the angle along the horizon between the extreme sunrise (at the solstice) and the E point (site of the equinoctial sunrise). The amplitude is determined by the latitude where the observation is made and by the obliquity of the ecliptic. At present the obliquity is $23^{\circ} 26' 21.4''$. The obliquity generally has been declining over the historical period but its value is a complex function of time which oscillates over the lunar nutation over 19Y. Daily values are published in the *Astronomical Almanac*.

For the $q/$ epoch the values for midsummer daylight are:

Latitude	Amplitude	Time
2°	23°.45	12 H05
32	27.97	14H03
42	32.36	15H01
52	40.25	16H27
88	<i>na</i>	24H00

Solar amplitudes are used to determine the age of temples from the orientation of their faces. As well they are used in archaeology when sundials or gnomons are found. Clay tablets or textual material giving day lengths are also dated in this way. A problem arises where the material was not used at the location where it is unearthed. More serious is the $c/$ assumption that the present function relating the obliquity and time holds during the historical period. Disruptions of the position of the Earth's axis of rotation, and of the rate of the rotation, are to be expected if $q/$ encounters between the Earth and celestial bodies are taken as a reality. There is certainly enough evidence of $q/$ changes to caution researchers from dating artifacts solely using inferences based upon seasonal amplitudes as currently related to time.

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Amudar'ya delta:

the Amudar'ya (river) arises in the mountains of Afghanistan and Tadzhikistan and for most of its length its course defines the boundary between the Turkmen and Usbek Republics. Along with the Syrdar'ya, the Amudar'ya flows into the Aral Sea. The waters of both rivers are heavily used to irrigate the Kyzyl-kum (desert) region. Since the Aral Sea basin receives less than 1.1M of precipitation annually any reduction of the river flow has enhanced the increasing salinity of the Aral Sea. Its level drops more than 1m annually due to evaporation. Despite water losses by evaporation and irrigation en route to the Aral Sea, the Amudar'ya still discharges about 1500 cubic metres of water per second at its mouth. Spring floods follow glacial melting and are accompanied by a heavy increase over the average sediment load transported by the river.

Sometime before -25CE the Amudar'ya, then known as the Oxus river, changed its course. It is believed to have flowed originally through the Sarykamysk Depression (of the, now, Kara-kum) into the Caspian Sea. It was the largest river in C Asia.

The present course takes the Amudar'ya River between the two deserts. Well developed fields of active dunes are found on the wind blown sands of the Kyzyl-kum to the E. Salt flats and soft sediment bluffs dominate the karst topography of the Kara-kum along the W bank. Excessive evaporation of the river waters, passing through this arid region, results in high sedimentation along the river channel which meanders greatly before it splits into many distributaries in the lower delta. Turbid plumes are visible as river detritus penetrates the Aral Sea water. About 100MT of suspended material and another 5MT of bedload are deposited in the Amudar'ya Delta annually.

Between the channels much of the delta plain consists of dried alluvium and salt pans. Low portions of the delta have are high-salinity algal flats and saline lakes. Other depressions are salt marshes bounded by algal flats.

These depressions *c/* are identified with older states of the delta. Near the coast barrier dunes protect salt and algal flats from the action of sea waves. The diversion of the Amudar'ya from the Caspian Sea into the Aral Sea most likely occurred during the last recorded *q/* incident, possibly in the period between -2775Y and -2686Y.

amulet:

a charm worn to ward off evil or to prevent injury. The amulet is believed to possess some natural property whose presence is beneficial to the wearer; its action is not attributed to any manifestation of a deity working through the object. Amulets may be worn on the body, adorn portals, or hang prominently on walls. Amulets may take the form of a spoken (*abra-cadabra*, once-upon-a-time) or written formula (numeric geometric arrays, magic numbers) or they may be a diagram or symbol (aten, cross, mezuzah, pentagram, swastika, solar wheel).

Animal parts are commonly worn as amulets (rabbit foot, shark tooth) as are vegetable matter (dried herbs, garlic clove). Manufactured items sometimes symbolic of living things (spun cord or cingulum, stitched or knotted strands, horse shoe) can be amulets. In the manufacture of amulets ritual words are spoken and traditional procedures are followed to ensure the potency of the resulting amulet. Sometimes stones, especially the precious gems, are thought to possess amulet power. In modern life the wearing of a wrist watch, miniaturized communication device, and personal ionizer bear aspects of the traditional amulet in that they keep the wearer aware of the passage of time, in contact with the demands of the workplace, and ward off environmental hazards of civilization.

Amulets are discounted as superstition and/or as ineffectual manifestations of discredited magical traditions. They seem to have *q/* significance, in connection with rituals commemorating the survival of catastrophes, and/or of the epidemics and plagues which inevitably followed them.

Amundson, Roald:

reached the S Pole, in -89Y (De 14). He commanded the ship Gjøa on a three year voyage (the first through the Northwest Passage) ending in -94Y. Amundson crossed to the N Pole in -74Y riding in the dirigible, "Norge," built and piloted by Umberto Nobile. He died in -72Y, lost in an air search for Nobile over the Barents Sea. It is ironic that Amundson and Nobile had earlier become embroiled in a bitter controversy over their successful polar flight. Data compiled by Amundson in his extensive exploration of both polar regions of the Earth provided up to then unavailable climatological and geological evidence used by later polar explorers and scientists.

Ana, Anat(h):

Ana was first the grandmother goddess (crone), mother of Anna (sometimes [H]Anah or Di-Ana) and her twin Mari. She was the Canaanite goddess of providence and the Roman Anna Perenna, mother of the Aeons (*ages*). Later she is also Jana (Juno) mother of the New Year. Early Israelite chieftains called themselves her son. Her sanctuary Beth-Anath was located in the Temple at Jerusalem. She was known in Phoenicia as Anat by Greek-speaking peoples. In Sicily a Phoenician settlement was named Mach-Anath. The Greeks called this Sicilian goddess Panorma, the Universal Mountain Mother.

Anath is depicted as mother-consort, and sister of various gods. Late *q/* in the Saturnian Age Anath's curse, the *anathema*, was exacted upon the sacred-king, Mot-Aleyin. Anath was both his mother and bride. Mot, as alter ego killed his brother Aleyin. Anath was furious and resurrected the dead twin. She sacrificed Mot in his place without interference from the boys father, Baal. The forsaking of Mot by Baal parallels that of Elijah with Jesus. In ceremonies commemorating Mot's sacrifice Anath breaks Mot's reed sceptre (ritually castrated him) after which she slew and then dismembers him using a sickle.

In a later incarnation, dated by *q/* to the Venusian Age, Anath became the maiden sister of Baal. In this story Mot kills Baal and Anath wrecks terrible revenge upon him; she rips Mot to pieces with a sharp knife then burns him in a fire, and grinds his remains in a mill before scattering them over the fields using a winnowing fan. Anaths sister Mari is the supreme deity in the Basque tradition, she wards off lightning with her sickle. Basque Christians to this day place a sickle (symbolic of her) in front of their houses to protect them from lightning.

Sacrificial rites of Anath are reported in the Ras Shamra texts. Her fertility was sustained by the blood of men, thousands were sacrificed to her image which had been smeared with "rouge and henna" before the rite. Her

likeness supposedly thrived on the blood and gore produced by the slaughter performed in the house of cleaving. The penises of her victims were hung on her goatskin apron (*aegis*).

The Egyptians referred to her as warrior "mistress of all the gods." She carried a shield, spear, and axe. She also wore a high crown of two ostrich feathers. In Egypt priestesses hoisted their skirts while dismembering the Apis bulls so that their loins would be bathed in the bull's spurting blood. The Aztec "Lady of the Serpent Skirt" similarly created life from Quetzalcoatl's genital blood.

Priestesses of the Greek Athene wore a goatskin breastplate along with serpents (*pthalli*) and the head of the Gorgon. Athene, too, was both creatrix and despoiler, as was the Hindu goddess, Kali-Nath. Mother Ana ruled the Celtic tribes. As Nanna she was the mother-bride of Balder in Nordic legend. Some traditions name her Morg-ana, the Invincible Queen Death.

As the Christian Saint Anne she was first the virgin mother of the Virgin Mary, but later she was turned into the Heavenly Father's dutiful daughter, who by three husbands bore many saints. She is patron of midwives and miners, both of who extract something hidden in darkness and bring it into the daylight. Ana's history clearly shows this triune goddess as crone, mother, and maiden.

anaerobic:

-- Pertaining to the absence of free oxygen. Anaerobic organisms do not require oxygen for their life processes, in fact oxygen is toxic to many of them. Most anaerobic organisms are [bacteria](http://www.ucmp.berkeley.edu/bacteria/bacteria.html) [<http://www.ucmp.berkeley.edu/bacteria/bacteria.html>](http://www.ucmp.berkeley.edu/bacteria/bacteria.html) or [archaeans](http://www.ucmp.berkeley.edu/archaea/archaea.html) [<http://www.ucmp.berkeley.edu/archaea/archaea.html>](http://www.ucmp.berkeley.edu/archaea/archaea.html).

Anafi island:

site of investigation of pumice deposit from explosion of Thera-Santorini -3±0.5KY, 24KM E of Thera, and to leeward of the blast, Anafi still received beds of pumic at heights of 50, 160, and 250M at distances of 350, 750 and 1650M from coastline. Notable, too, are the abrupt vertical cuts in the beds, and the layering of about 2M of alluvion on top of them, indicating fast-acting disastrous events some time after the volcanic tsunami. The low-lying areas of the Island are bare of pumice.

anagenesis:

-- Evolutionary change along an unbranching lineage; change without speciation.

analog logic:

reasoning in which the data are represented by something believed to be representative of the original (by analogy). Comparisons are made on a continuous rather than on a discrete scale. An example would be in forming a spectrum of possible shades of green in terms of the apparent yellow-ness to blue-ness of some colored samples. The number as ordinal is another. A third method is to interpose an act of indeterminate consequence against an understood, purportedly similar, set of behaviors in order to make a judgement. Scientists often use this form of logic when the problem at hand seems "insoluble" from general principles and so they replace it with a problem they can solve and assume the problems are similar by analogy.

In human thinking "reason" allows us to encode problems faced to take care of delayed instinctual responses. It produces appropriate public symbolic behavior aimed at a solution. To say that "all men are mortal; Socrates is a man; and therefore Socrates is mortal," forms a trite lesson in logic. To extend the reasoning to state that "all men die; therefore Socrates must die" and then to execute him for his deviance from the behavior of proper humans is a particular human use of reason to ensure his ultimate conformity to the human norm. use of the syllogism above forms a classic deductive proof. It has long been known to reflect the structure of the human mind and not a quality of the reality being processed. Animals seeking food certainly use the syllogism in relating the outcome of past chases to produce an expectation for the current chase. Only the philosopher has to labor with elaborate symbolism to arrive at the same end. In *q/* terms the reason lies in the confused human neurology which forces instinct to be justified by reason.

The separation of the perceptive (to know), conceptive (to wit), and affective (to be able) in the human mind has produced a being where natural links must be reconstituted in "reasonable" terms. There is no question that we should know the "natural laws" which govern the

universe instinctually, but we seem not to be able to merge the "voices inside." In effect education diverts humans from a primordial muddle to philosophical meddling. The edifice of modern science reduces to a grand attempt to redefine human behavior into non-instinctual formats.

analytic & linguistic philosophy:

surfeited with the endless discussions of philosophers over values and the True and Beautiful and Bad and Ugly, modern philosophers have ascended (sunk?) to a new plane of dialogue, this time over the meaning of words and language. In numerous cases, well-placed and prestigious philosophers have devoted their professional lives to ever more exacting questioning of statements purporting to describe reality, especially as they generalize reality, and in the process have subjected the language of inquiry of science and the humanities to such scathing criticism that there may be detected in the quarters most influenced by such philosophers a tongue-tied fear of committing oneself to any statement or to any statement about the statement in unending series.

On the other hand, the disease that has called up these therapists, mostly of the dominant schools of the Twentieth Century so far as style and acclaim are concerned, has warranted such treatment. Either the traditional philosophies have had nothing to tell the present generations around the world or else what they have told them is unobservable and insupportable: in either case, the disease is apparent and world-wide. At least, analytic and linguistic philosophy have taught the best of the young minds to distinguish and not to tolerate nonsense in verbal affairs. If, meanwhile, they have failed in a more pretentious claim of the old philosopher, to affect properly practical judgements and behavior, then the modern philosophy may lose out in the balance. It has vivified a special part of life, and surrendered the rest of it.

Ananta:

the coiled world upon which the Hindu god Vishnu sits, he being an Indian Saturn-like god. The snake, here as elsewhere in world mythology, symbolizes the turning of the world, the electrical force energizing the world, the wisdom of the god.

anapsid:

-- n. A vertebrate distinguished by a skull with no openings in the side behind the eyes, e.g. turtles.

anatexis:

end state of metamorphism. It results in partial or complete melting of rocks which remain in their original, deeply-buried, location during the metamorphic change.

Anatolia:

known also as Asia Minor, Anatolia occupies the Asian part of Modern Turkey. Peninsula bounded by Black Sea to the N, Aegean Sea to the W, Mediterranean Sea to the S. The Taurus Mountains parallel the S coast. The Anatolian plateau (elev. 900M) occupies most of the peninsula. The Köroglu and Pontiac Mountains are in the N. Linear lakes dot the fault produced valleys of the peninsula. The capital city of Turkey, Ankara is located in N Central Anatolia.

Anatolia is located at the junction of three crustal plates. The North Anatolian Fault lies along the line where the Eurasian Plate merges with the other two. The Anatolian and Arabian plates meet at the East Anatolian Fault which joins the North Fault at the edge of the Turkish-Iranian Plateau. Mount Ararat, whose summit is 5165M, is nearby. The North Fault runs between the Sea of Marmara in the W into Lake Van on the E. Parts of the Murat and Euphrates (*El Furat*) Rivers follow valleys associated with the East Fault. Earthquakes have offset the many local faults by many kilometers at several places. In a single earthquake displacements by tens of centimeters are visible.

The collision of land masses shaping the present Anatolia *c/* began in the Miocene Epoch closing the Tethys Sea which earlier occupied the region. The process is reputed to have begun late in the Cretaceous Period. The convergence of the Arabian and Eurasian plates continue today forcing the Anatolian block westward along the two major faults. Opening of the pie-shaped Anatolian block has produced the Aegean grabens (valleys between parallel faults) in the S and W. In *q/* terms the collision and deformation of Anatolia is located closer to the present time and was of short duration, as are the geological ages represented in the *c/* story.

The great ancient civilizations intersected in Anatolia: The Greeks to the W, Persians in the E, and Mesopotamians of the S. all occupied lands in Asia Minor at one time or another. The indigenous civilization is termed

Hittite and was based around Boghazköi (or Boghaz Keui). They used a pictographic script. Based upon links with Egyptian Chronology the Hittites *flourished* between -1800 and -1200CE, when they mysteriously disappeared. A recent *redating* suggests that the Hittites and Chaldeans are *alter-egos* of one people. This view has been suggested by several scholars of other ages because more than one ancient Hittite event seemingly influenced "Neo-Babylonian" politics supposedly happening six centuries after the time of the Hittites. Notable ruins are found at Alaca Hüyük and Troy.

Anatolia was overrun in turn by the Persians, Greeks, Romans, Vikings, Arabs, and the Seljuks, before modern Turkey emerged in the wake of World War I (-1918). A modified Roman alphabet has been in use since -1074. The majority religion is the Suni sect of Islam.

anatomy:

study of the bodily structure of animals and plants. The term applies to gross structure. Similarities and differences are the basis of the system of biological classification. Morphology is the arrangement of external anatomical features producing a taxonomic array which expresses the notion of an *e/* arrangement within living forms. Here organisms are filed with each species in its folder. The classifications are theories about the natural order that have been, are, and will continue to be subject to reassessment as scientific opinion changes.

Anatomy also includes embryology, the study of the development of plants and animals before birth or hatching. The internal anatomy of cells, cytology adds further detail. Animal bodies contain four kinds of tissue (groups of specialized cells): connective, epithelium, muscle, and nerve. These are investigated under histology.

The smallest animals are protozoans whose structure is that of the cell. Protozoan cells contain organelles which perform special functions such as digestion, excretion, reproduction and respiration. In multicellular organisms cell groupings become specialized and function together in rather loose association. In sponges and similar forms the body is organized around a single cavity laced with channels through which food and oxygen flow. The coelenterates are multicellular organisms formed around a digestive organ. The obelia, jellyfish, and corals are examples. Further organization produces tissue: groups of similarly specialized cells to perform necessary functions, epithelium and muscle, *ex.* One or more tissues combine to form organs, such as bladder, gonad, liver, or stomach. Increasing complexity requires more coordination. Overlap of coordinating functions is universally noted. Circulatory, nervous, and sensory systems keep the cellular base in contact with specialized functional units as well as with the organism as an entity. Eyes (camera or complex) and other organs of sense provide environmental information. One or more brains advise the body of the sensations received. In the vertebrates a single large

multi-levelled brain has developed with many interconnections. Here the process of sensing is inextricably mixed with sophisticated, though rapid, interpretation between the input and response. Equally basic is the advent of gills or lungs which remove the need for every cell to respire. This luxury requires a circulatory organ and network to distribute nutrients to the cellular level and another system to handle the removal of metabolic waste.

Differentiation of body cells precedes by the formation of two or three germ layers from which the tissues, organs, and systems arise by a mechanism whose process is well mapped but whose mode of activation is not explained. The development of a skeletal structure and a spinal column produces animals with complex appendages and of superior mobility. The basic structure allows the specialization of organisms to fit into any available environmental niche.

From the study of anatomy it is tempting to suggest the taxonomy of living things indicates complexity somehow has resulted from simpler forms; that single cells give rise to multicells, thence to animal organisms with tissue, organs, limbs, shells and spines. Within the plant kingdom a similar hierarchy of complexity passes from bacteria through the multicellular colonies of the algae, liverworts (where embryo is distinct from the rest of the plant), club mosses (vascular plants in which nutritive fluids circulate), ferns (segmented plants), conifers (having unprotected seeds), to the flowering plants, which like the vertebrates dominate the living forms.

Taxonomic classification schemes, based mainly upon anatomy, arrange organisms into a two-dimensional field where diversity is represented horizontally and complexity vertically. To equate complexity with elapsed time with little evidence is tendentious. Existing natural forms are accepted as survivors of a great interspecies competition within the terrestrial environment for viable niches. All living forms have a claim to equal status, still, biologists continue to assign higher value with increasing proximity to the human form. Simpler structures, rather than being viewed as

adaptations to less demanding niches in nature, are equated to an earlier emergence of such species among the living types of the earth. There is no way in which this supposition can be validated because the rock strata have in part been classified and ordered in time using the simplicity of any biological remnants encased within them as a guide.

Preservation of the remains of ancient and modern organisms require special conditions. Where are contemporary fossils being formed? How did a broken mammal carcas (precariously stacked vertically and crossed by several distinct stratigraphic layers) remain undecayed for millions of years while the sediments accumulated to engulf it? The available evidence suggests *q/* events accompany, and likely cause, the preservation of living forms as fossils.

Many scientific taxonomies are thinly disguised "wishes" about how anatomy ought to have developed across biological history. The notion of a biospheric cornocopia with single cells at its apex and the current multiplicity of vertibrates and angiosperms at its outlet is challenged by the evidence unearthed everywhere. The record indicates an original diversity of living forms which reached a maximum soon after life appeared. Thereafter living forms were eliminated rather than expanded. All modern life is based upon varieties of a small number of currently viable anotomical designs.

The now extinct species contributed to the development of surviving ones: whereas by *c/* they represent failed options, in *q/* terms they may be earlier stages which rapidly transmogrified during cataclysmic (earth reshaping) events into comparable surviving forms. The apparent recent appearance, at the end of the Cretaceous Period, of the now dominant lifeforms suggests an environmental saltation. Closely linked to the same time the geological record is markedly discontinuous. A great adaptation of living forms seems to occur at every geomorphological vault. They are always accompanied by meteorological, chemical, and radioactive changes of the environment. Maybe plant seeds have become enclosed within an ovum for the same reason that most animals became marsupials and mammals: if

the environment increased markedly in harshness as the Tertiary Period began the noted biospheric change could be invoked. All chordates likely are similar anatomically because whatever genetic change was required for survival was common to all of them. Hierarchical elements long have been proposed as a part of the natural laws to be discovered. Such principles, it is suggested, govern cosmic events from the level of the fundamental particles to the arrangement of stars into galaxies.

Anaxagoras:

Greek philosopher born at Clazomenae, ~-2500Y who died at Lampsacus in -2427Y after fleeing Athens. He is reputedly the teacher of Socrates. Anaxagoras thought the Sun was white hot while the Moon had the character of the Earth (that is, it reflected the Sun's light rather than generating light of its own). He knew the cause of eclipses was the blocking of sunlight from reaching the orb of the Moon. He noted that the occasional interposition of other bodies (besides the Earth), below the Moon, can block the light; a phenomenon unknown in modern time, but possible in the historical-time *q/* encounters.

He taught that the terrestrial axis changed its direction in the past, which might refer to a disruptive change in a catastrophe as well as it would refer to the later discovered shift of the Earth's rotational axis by precession.

Anaxagoras suggested that each part of the universe was unique in its qualities, as opposed to others such as Empedocles by whose view all substances were made of the four primal essences. He believed that matter was infinitely divisible and hence the universe was potentially infinite. He suggested that the air had substance. Anaxagoras visualized the world as forming from the whirling of matter driven by an all pervading mind (nous) which separated the seeds producing the forms known to man. He is classified as an early physicist by some scholars.

Anaximander:

born at Miletus, ~2610Y, pupil of Thales. Offered the suggestion that the diverse form of existing things must have originated from a primal substance, possibly water. He postulated the prior existence of the indefinite (*apeiron*) and suggested that motion had separated from this void the opposites (such as hot and cold, moist and dry). Materialization into the multiplicity of known worlds and forms followed. He suggested that decay would return each of them into the indefinite from which they originated. He mapped out the known world from which he visualized the Earth as a cylindrical form floating freely in space at the center of all things. He postulated the celestial bodies were hollow wheels filled with fire which was sometimes visible. He presented an early scenario for biological evolution. Anaximander believed that life had begun from moisture, that man had developed from fish and had achieved his current state by adaptation to the environment. Anaximander died in -2546Y.

ancestor:

-- Any organism, population, or species from which some other organism, population, or species is descended by reproduction.

ancient astronauts:

the concept that the Earth was visited by intelligent beings from outer space. usually important effects are also claimed, including genetic in the direction of intelligence among earthlings, new techniques, astronomical and other scientific knowledge, but rarely government, at which earthlings were apparently not docile save for the worship of the invaders. In the 1960's G.H.Williamson and T.C.Lethbridge in England, Pauwels and Bergier in France, and others advocated the idea. Hawkins, MacKie, and Dames treated it gingerly but seriously. R. Temple research the origins of the idea in Dogon (Central Africa) myth, that is remarkably specific and prescient in its astronomical knowledge, especially concerning the Sirius binary. The best-sellers were produced by Erich von Daniken, who put together the scrappy evidence with a paranoia projected upon the Establishemt such as often can lock into a large public. In general, claims of Peruvian carvings and sculpture have been disproved, with some indications of multiple fraud or inordinate stupidity; hopes that the Nazca ground lines had to be an airport for spacemen have been dashed; Heyerdahl has demonstrated the incredibility of ancient astronanuts having carved and set up the huge statues of Easter Island; the Mayan tablet showing "an astronaut taking off in his space ship" indicates no more than common Mayan religious and artistic symbols; and a huge cave in an Ecuador mountain, extending hundreds of miles underground, housing a museum of carvings, plastic furnishings, and a library of various metals; nor have the Great Pyramid and its sisters in Egypt, Mexico and elsewhere survived explanation as the creations of exoterrestrial designers and slave-drivers. Presently, practically everything up to and including basic organisms can be well-proposed and defended as possibly to some extent exoterrestrially acquired; the more complex organisms, including gods, angels, devils and the like, and all their works, are not yet admitted (or, better, readmitted) by empirical logic or evidence to what is owed by Earth to Universe.

ancient consensus:

similar or identical factual and moral beliefs possessed by the earliest people around the world. The issues are whether there is to be found this ancient consensus, and how can it be discovered; what are its contents: how widely are they shared; then, how is such a consensus or lack thereof to be explained? Whether a consensus existed among the ancient peoples of the world depended upon whether they were of a single stock that became human and developed a culture in a period of time not excessively long thereafter; or, whether humans originated of different hominid stocks and therefore must have independently acquired some culture prior to being in contact with others; or, whether the separation of peoples occurred so abruptly after their appearance that they did not have time to develop a culture. The *c/* has generally thought that humans descended from an isolated group that eased into the quality of homo sapiens by incremental trait-acquisitions, possibly precipitated or assisted by genetic mutation, and that this group dispersed to continue breeding at removed locations where increments of culture were gradually devised. From time to time, *c/* by travel, by trade, by warfare, by proselyting, different clans or tribes would transact and acquire traits and objects of the other; an especially successful trait or object would embrace many groups, perhaps a whole region, until one had a civilization. There would then develop several civilizations, with a number of uncivilized or partially incorporated fringe groups. usually theory of this type lacks high priority and scholars develop data here and there in a number of places showing that a and b groups were in continuous touch, witness their language, their acquisition of rituals, their similar dress, agriculture and so on. By contrast, a strict theory that lends itself to short-time evolution, genetic and cultural, is that a single hominid mutated into a human and the growing number of his family developed cultural traits of a basic sort, and that thereafter sometime they split up and became isolated by choice or from natural causes such as boatwreck or abrupt change of river channel, afterwards developing separate cultures, independently inventing many different ways of satisfying the same needs. Customs and beliefs do not carry the label,

"diffused from a to b" or "independently invented by both a and b and very much alike nevertheless." using one's modern logic may be risky, when deciding a case involving primeval humans. Was the boat invented once or a number of times as people found themselves clinging to rafts and resolving to build something more substantial, that could not only rescue them but take them where they wished to go? Is the notion of gods part of the mental equipment of the first humans and carried over by all succeeding divergent cultures, continually being altered and redesigned, though never quite forgotten? Or was the idea of a divinity spontaneous in diverse separated groups after they had gotten around to inventing a number of other useful ideas and things? If it can be shown that as far back as they can be taken, every group has a similar set of beliefs, the conclusion would be that these were part of the original baggage of the primordial group before it began to split up. Data is not abundant and often confusing and capable of conflicting interpretations (c's and q's). Religion, strange to say, for its should be too complex and vague to be analyzed with the little data available turns out to be the richest source of convincing evidence of an original ecumene of the world's people. The god Uranus is found everywhere that a creation legend gives its version of the first Heaven. Megaliths are found around the world, in India, the Mediterranean, Africa, Europe, East Asia and Oceania; too often to be coincidental they share forms, orientations, hole drillings, even expressions of such of them as are anthropomorphized. "As we follow the clues -- stars, numbers, colors, plants, forms, verse, music, structures, -- a huge framework of connections is revealed at many levels. One is inside an echoing manifold where everything responds and everything has a place and time assigned to it. This is a true edifice..." (The archaic ecumene as Santillana and von Dechend generalize it.) A survey of 200 features of Old World culture to discover whether an ecumenical culture was shared by the Old World and New World in ancient times revealed that 1 in 8 were found in Mesoamerica, and probably another 20, totalling 18%.(I. Sorenson) It must be agreed that pre-Columbian contacts were extensive: for instance, the Maya astronomers and those of Han China worked both with an eclipse calendar of 11,960 days; the Mayans also used "solar mansions" like the

Chinese to mark the progress of constellations, even indicating constellations like the Han, by circles connected with straight lines, something not seen in Europe until 1785. But, more important is the primordial ecumene. There it can be argued that the earliest peoples held a consensus in the great field of cosmogony that came from a single source at the very beginning of humanity. Evidence for this would come from oral legends, ethnology, archaeology, and the history of religions. A *q/* could profess to find the following thirteen elements in an ancient consensus wherever one touched upon the earliest cultures. Thus:

1. Earliest humans saw that the sky, air, and earth merged without a break in a kind of ball or globe.
2. The same humans would say that the atmosphere had cleared partially amidst turbulence and chaos
3. They claimed to see a great body in the north and one in the south, the first as bright as the sun and lasting for ages.
4. They observed huge "moons" that were actually planets, the dense planets, first Mars, then Venus, then Mercury, these being close in and saw also huge gaseous planets farther away, always in motion relative to the Earth in whose bosom he dwelled.
5. There had been and would be more explosive battles in which the Earth suffered grievously. These were wars of the planetary gods and their soldiers, meteoroids, asteroids, shooting stars.
6. First one great god moved into obscurity (Uranus) and was replaced by a second (his son Saturn) who was replaced in turn by a third divine body (Jupiter), these three having a great many different names given them later on.
7. These bodies and the planets, who were gods, too, moved erratically and showered debris upon the Earth, partly in the course of their own battles in the sky.

The Earth became littered and covered by patches and films of exoterrestrial materials of many kinds.

8. The Earth had paused once, twice or more for brief periods, it had slowed and gained, as the battles in the sky were waged. Whenever this

ahppened, mountains sprang up, the earth quaked, volcanoes burst forth, tides and floods swept the earth to fearful heights. 9. The wars of the gods, angels, demons, giants and dragons employed deluges of water, blankets of fire, winds of hurricane velocity, and electric bolts and balls of enormous charge.

10. The earliest humans all recalled their own "creation," and ascribed the event to one or more of the aforesaid sky actors and actresses.

11. All believed that they were in bondage to these principals and would be punished fearfully for failing to understand what was asked of themselves and for failing to fulfill the tasks given them.

12. They all believed in something called "bad" and "good." There was no escape from the one or the other except by appeasing the gods and controlling themselves and others at all costs to conform to the basic wants and merest whims of the gods and goddesses. A contemporary scientist, transported to any spot on the globe in the earliest days after early man reached to the extremities of the globe, would feel at home if he possessed knowledge and gave credence to the aforesaid twelve-point credo. He would do well, says the *q/*, not only to use the knowledge opportunistically, but also to regard it as a probable natural history of the age of Holocene catastrophes and the birth of humanity; he would also comprehend why all subsequent developments, in every aspect of culture, from sex and diet to ideology and science would reflect most subtly the primordial consensus. The *q/* would also point out that the reason why the ancient peoples and their descendents to this day insisted upon the scenarios or sublimations thereof is that they made no distinction between animated and unanimated beings and the sky bodies seemed to project not only unlimited power but an infinite intelligence to penetrate the recesses of the human mind (this by the psychological mechanisms of projection followed by retrojection, ending with the human getting back whatever he sent out, amplified). Most social scientists, leaning upon the advices of their natural science counterparts, would deny the physical scenarios of the ancients, and ascribe them to illusions on a grand scale, a grand set of uillusions affecting all peoples, possibly because the human mind cannot image a variety of such scenarios but is driven to this particular set of

points. Jungians would accredit the scenarios as archetypes, therefore similar everywhere. Euhemerism would interpret the myths as traditional accounts of historical personages and natural events, adding that they became distorted and greatly exaggerated, and should be considered local in character, experiences all peoples have that they expand into universal stories. Interpreted seriously, the myths would provide modern cosmogonists -- astronomers, geologists, physicists, with the following hypotheses for investigation:

1. All planets and moons exhibit evidence of recent thermal and explosive experiences on a large scale.
2. Solar system bodies show a declining but considerable set of electric fields and electromagnetism, and solar system space is in the process of clearing up its ionized gases and plasmas. Space is getting cleaner.
3. Remanent binary behavior is evidenced by Jupiter and by the gaseous outer planets as a group.
4. Continental drift theory requires reconsideration as a late break-up of a totally land-covered Earth.
5. Astronomical motions are to be regarded as short-term regularities until new laws are found to govern their behavior, which probably implies electrical laws.
6. Present behavior of lithosphere, atmosphere, hydrosphere and biosphere is to be studied as "tailing off" from a set of quantum evolutions.
7. The human brain and the conduct it inspires needs to be reformulated as the by-product of extreme convulsions of nature.
8. Human culture, following the abrupt transform of the brain, must be a holo-genesis.
9. Radiochronometry and its subservient modes of measuring time require re-evaluation in the light of possibilities that very late quantum evolutions occurred and, additionally, destroyed their theoretical foundations. The ancient consensus, a creature of shreds and patches of evidence, is nevertheless a disturbing challenge to *c/* and appears to demand, if not acceptance, then new integrated theory of large scope.

ancient eclipses:

old recorded accounts of eclipses of the Sun which occur when the shadow of the Moon touches the Earth's surface. More frequently the Moon is eclipsed while it passes through the Earth's shadow. The recurrence of eclipses is governed by the combination of the Sun's, Moon's, and Earth's motions. At present a solar eclipse is followed by another 173.3D later. Lunar eclipses may occur 14.765D after or before a solar eclipse. The regular occurrence of eclipses are recorded in historical *Cannons* which date back to -2280Y. A Chaldean tablet, the Saros Cannon, follows an eclipse cycle of 18Y 11D back to -2572Y. Claudius Ptolemy noted that eclipses before -26CE were problematical.

The question of what happened before this date remains unanswered. Surely the Moon (whose syzygies with the Sun cause eclipses) was in orbit about the Earth. It is implausible to believe that humans suddenly acquired an understanding of the timing of eclipses. The *q/* understands this incongruity because astral encounters were still disturbing the Earth as late as -26CE. This event seemingly involved the planet Mars and the Earth's moon, Luna. It likely altered the Moons motion sufficiently that eclipses began with some regularity shortly after its occurrence.

c/ scientists often claim that eclipses predate the period of regularity noted above and cite several specific historical eclipses in evidence. The problem with these "ancient" eclipses is that their occurrence is not connected to earlier and later members of a series as they are for the eclipses listed in the *Cannons*. The prospective ancient eclipses have been relocated (once or twice drastically) as astronomers change their mind as to the "cycle" to which the eclipse should belong. Three notable "ancient" eclipses exist: -3062Y *c/* in Babylonia; -2776Y in China; -2763Y in Babylonia. The records for each country are unique in that they represent the only recorded "eclipses", all others are ignored. All of the dates are problematic. For example the Babylonian eclipse occurred on the 26th day of the lunar month (when eclipses are expected on the 29th or 30th day). The Chinese report is in *The*

Book of Songs, it is not specific about the site of the observation. It is reputed to Y-hang who noted a predicted "eclipse" did not occur 55Y later in his time. Y-hang supposedly informed the emperor that "the sky changed the course of the planet Venus." The Assyrian chronicle locating the eclipse in time necessitated the Biblical chronology thereafter in use be supplemented with an additional 44Y to accomodate its location in Ashur.

A recent recomputation which dislocates an eclipse upcoming in the next CE from its location (calculated a century ago) up the St Lawrence valley to a parallel track off the Atlantic Coast of N America must caution one about retrocalculations of "ancient" eclipses. Such calculations are greatly affected by small alterations which are commonly recorded for the rotation of the Earth and for documented changes in the Moon's motion, which cumulatively alter the time of the Moon's return to the position necessary to produce an eclipse. Many reports of early events have included the phrase that the "sun" or "sky" was obscured when this or that noteworthy event occurred. In *q/* terms these reports are **not** descriptions of eclipses but are reports of great cataclysms often involving encounters with celestial bodies passing at close range. The researcher is cautioned to examine reports of "ancient" eclipses at first hand to determine the meaning of the text in question rather than accepting any authority which ascribes the events to a common eclipse using *c/* reasoning in isolation from the context -- such simplistic *c/* interpretations require most of the available evidence to be ignored so that the eclipse can be fitted into one of several available time-slots for the location in question.

ancient knowledge:

the learning communicated among peoples of the pre-historic and proto-historic eras. Animals teach the young and each other; humans are the greatest of teachers and learners. Since they may be presumed to have evolved from animals, they would have inherited all the knowledge of smart primates, and gone on from there. Inasmuch as the extent of animal learning is not fully known, the baseline is continuously shifting. Moreover, in becoming human, the animal may well have surrendered the possibility of much learning, and, actually, deprived of much instinctive (pre-learned) knowledge, might at first have known less than many animal species, and had to learn very quickly how to survive in what was subjectively a new world. Thus the great pressures of becoming human may be a reason to suspect that the first people made enormous strides, and did not proceed to evolve their culture by one tiny increment after another. In knowing, there are the two factors of discovering (learning) and reciprocal communication of the knowledge between teacher and learner. A teacher can be a whole culture, a learner can be all other cultures. This introduces the problem of the diffusion of knowledge: how fast does information, trait, or thing "A" move through the world? Three questions arise from this one: Who can understand and incorporate the knowledge being spread? What is the need for the knowledge under consideration? What are the tangible obstacles to the diffusion of knowledge? Obstacles to the flow of learning have generally been exaggerated. Reasons for doing so are complicated and subtle, perhaps to explain the gap between so-called superior and inferior cultures, perhaps to lengthen the time required by evolution of culture if it is to match the long times chosen by geology and physical anthropology and those archaeologists who had nationalistic and religious motives for lengthening the age of their ancestral cultures. A multitude of quick spreads of knowledge is to be had: the Japanese changed from a fully closed and medieval society in 1854 to a world-leading industrial-scientific nation today; the steel axe spread immediately upon its introduction in the Age of Discovery to the far corners of the world; USA. culture spanned 5kkm in

100y, the Spanish five times as much (but leaving many cultural pockets) in 50y. If speed of transmission is a requirement, nothing ever was known that could not be spread to the last outposts of mankind in under a year, going back to the fleet-footed (if weight and bipedalism are considered) hominid-like first human. Also the high fear-flight component of primordial people would have sent them flying to all parts of the globe, much more so than the restless French Jesuits and trappers, American mountain men and Spanish conquistadores. Once settled (or should one say, parked?) in communities, hostility to foreign intrusion and innovations occurs (there is no reason to believe the primordials were less ambivalent than the English who demanded the right to travel and stay anywhere while rejecting the right of foreigners to use their country). Undoubtedly this lengthens the period of time for people and their culture traits to get from one place to another. There have been many Tibets in human history. But tribal societies have been if anything excessively open to foreign intrusions, and at any given point in time, no more than several tribes or a couple of nations would have interrupted the flow of knowledge. The question of need therefore arises: knowledge is or seems not to be transmitted because it is not felt to be needed by the recipient. He and she have their own gods, rituals, social structure, cuisine, dress, legends and myths about how the cosmos originated and works today. Seeming exceptions arise: there is lost knowledge; the ancients knew of much that we do not know and know that they knew; much is not known by us or them to have been known; some knowledge that we possess was once known, then lost, then had to be rediscovered. Moreover, there is knowledge that is needed now but that once was not needed, and therefore cannot be counted against the capabilities of ancient humans, such skills as organization, high specialization, accounting, even grammar and lexicons: not only recalcitrant children today, but vast cultures got along without the need for lexicons and they cannot be condemned for lack of knowledge if they got along within the bounds of their self-conception by blurting out commonly understood phrases. A measure of the problem of ancient knowledge would be, not how much of what we call knowledge today would they have possessed, but what is the ratio of knowledge felt to be

needed to what was possessed. That is, $O=K_n-K_p$, where O effectively signifies knowing everything. Given such guidelines and questions, one may proceed to consider some of the areas in which at an early time, parallel achievements are to be found in various sections of the globe. Fields of comparison may include food procurement, living-conditions and health care, celestial observations, internal organization, inter-group relations, language and symbols, rites and religion, modes of conveyance and travel, and basic ethical values. In all of these regards, a major conclusion of contemporary ethnology is that every organized human aggregate fulfills respectably the obligation to fulfill the ordinary expectations of its members in every one of these regards. The many apparent exceptions are peoples that are under direct attack by foreign cultures, physically or by infiltration of unassimilable traits and artifacts. Occasional exceptions come from a marked change in environment, produced by natural disaster or unrealized effects of human behavior. The house of a Roman gentleman or American lady should not be compared with the hut of a Congo Pygmy on grounds chosen by the lady and gentleman. The issue settles upon whether the Pygmy gentleman regards his dwelling as satisfactory in relation to his taste and needs. The same is true of living conditions generally: the Pygmy toasts caterpillars deliciously, it is attested. The mythology, religion, social organization, and environmental exactions of the Pygmy may be compared in detail, say, with the German or the Japanese equivalents; the knowledge ratio would be the same, the applied satisfaction ratio may be superior. This is to say that appeals to "higher values" may be well and good in their place, but they are outside of the logical context of scientific questions. How far back can one carry this type of argument: would the first human have the knowledge of an Aristotle; of course not; he would have a difficult time composing his mind; however, he would probably be observing directly happening in the sky events that Aristotle many thousand years later would be referring to as the knowledge once held by our ancestors. Now, too, given the K_n-p ratio for religion, for social organization, for environment in the most advanced societies, whether capitalist or defunct communist, it would be hard to deny that the advanced societies are quite

out of control. Ultimately, in trying to affix a ratio and a sum to the $K_n - K_p = 0$ formula, in these and all regards - in an average for the needs and fulfillment ratio for a society, the USA., and other advanced societies would score perhaps, not 0, but between 40% and 60% and it is probable that the very first societies on Earth, cannibalistic, terribly anxious, priest-ridden, control-oriented though they might have been, would not exceed the modern average on the ratios of life. (Once more, of course, the architecture of St. Peter's and the Sears Roebuck Tower are, to our notion, incomparably better than the mud hut of the earliest settled folk of Israel, Syria, and Olduvai Gorge. That is, if knowledge is tied to the fulfillment of needs, progress since the quantavolution of mankind has been, on the average, zero. This is the kind of truth that *c/* cannot tolerate because the doctrine of progress was deeply ingrained in Darwin and his followers, including the geologists, astronomers, biologists and anthropologists. The result, however, of their ideology of evolutionary progress is not to keep up human morale, as so many have believed, but to perpetuate precisely the delusions and self-destructiveness that seem to prevail in the contemporary mentality and social structure and had their origins in the earliest age..

Andean volcanism:

found in the 2000KM long Antofagasta (Bolivian) segment of the Andes Mountains, which run the entire length of the S American continent, there are hundreds of stratocones exceeding 5KM elevation. These features are dated *c/* from the Late Tertiary Period to the Holocene Epoch. The word *cerro* preceding their names indicates that most are now extinct volcanoes. Others are dormant and a small few remain active. Activity here, in the C Andes, is lower than along the rest of the range. The area dotted with stratocones is unusually wide, exceeding 200KM on the Puna Plateau.

The Plateau is filled by Cenozoic debris to the 4KM level. Most of the current relief was produced by newer volcanoes and by unburied portions of the older ones. Most of the basins of the region are landlocked leading to the formation of salt pans, some of which contain sodium nitrate. This latter salt is not a volcanic product.

Subductive motion of the offshore Nazca crustal plate into the Earth beneath the Andes is linked to the high activity in the past activity. For 1650KM S of the Antofagasta segment active volcanism still is occurring. The lower elevations of the Andes are formed from Mesozoic Era granites and are not volcanically active. The recency and majesty of the volcanic remnants within these mountains supports the *q/* maxim that the primitive earth underwent transmogrification, unexcelled within ancient time, simultaneously with the occurrence of human settlements along the altiplano and nearby, whose civilizations were disrupted by earth shaping events of high-intensity and short-duration.

Anderson, J. L.:

chemist, born in Tennessee, specializing in evaporative rate analyses. In 1951 became aware of that certain disintegrations of carbon-14 were not in accord with the randomness assumption usually made in association with the radioactive decay process. The *c/* theory maintains that each nucleus breaks down independently within its own species and regardless of its environment. Anderson's experiments using mono-molecular layers of carbon deposited onto aluminum and other metal oxide substances suggest statistically significant departures from the random expectation.

Anderson warns that an "unreliably" factor must be incorporated into age dating calculations involving radioisotope decays of all kinds. He is not the only investigator to have found behavioral anomalies for radioactive substances. Anderson notes that, "in general results challenging the random hypothesis for nuclear disintegrations have been disregarded, discounted, disbelieved, or have been attributed to trivial non-nuclear causes." Anderson's work implicates an influence from adjacent atoms on the decays. Other experiments with cobalt-60 and cesium-137 showed some sensitivity of radioactive decay processes to environmental factors such as a strong electrical field surrounding the decaying source.

Andes Mountains:

nearly impassible Andes cordillera curves along the western edge of S America. Range consists of several chains of tall mountains separated by high plateaus. The Peru-Chile trench extend some 7850KM from western Columbia to Tierra del Fuego. In Bolivia the cordillera spreads to 600KM wide, double its average width. The Andes invade the sea as a chain of mountainous islands near Cape Horn. The highest peak, Aconcagua 6.96KM, rises between Argentina and Chile.

The oldest Andes rocks are found in the Cordillera Central of Peru. These rocks, which date to the Pre-Cambrian Period, show evidence of later deformation. Linaments and faults are in evidence. The Rio Marañon follows one such fault. The rocks on its west bank (ascribed to the Jurassic Period) are considerably younger than those to the east. The high Cordillera Blanca reaches nearly 7KM. These mountains are composed of intrusive rock from the Tertiary Period. To the SW lies the Rio Santa valley whose rocks are ascribed to volcanism in the Quaternary Period. This valley is one of the more densely populated in Peru. Frequent earthquakes occur triggering avalanches of mountain snow and valley muds. To the SW are the Cordillera Negra whose dated mainly to the Late Cretaceous Period. These fold mountains show the most recent deformation in the Andes.

In Bolivia the Andes split into E and W ranges with an immense altiplano basin between them. The E mountains are composed of folded Paleozoic Era sediments. Volcanoes of the late-Tertiary Period are found on the altiplano and have deposited important minerals which are extensively mined.

c/ It is believed that the Cordillera region was a seabed whose bottom was hardened into shale and limestone strata, atop which sandstone was deposited. Folding and lifting occurred until 70M when running water supposedly lowered the uplift into gentle rolling plains. A later upheaval

provoked new highland into which deep valleys were subsequently eroded. A third uplift is imagined in parts of range.

During the Pleistocene Epoch ice sheets of great thickness engulfed the Andes carving flat-bottomed glacial valleys, dropping erratics, creating fjords and the long narrow lakes of the altiplano. Several active volcanoes are *c/* linked with the continuing slow uplift, hypothetically 10CM/CE.

q/ The Andes seemingly resulted when earlier terrain was suddenly uplifted possibly when S America rafted from its earlier position to the E onto the freshly created rim of the Pacific crater, blasted out when the Moon was removed from the Earth by a passing celestial body, named Uranus-minor to conform with the attested succession of celestial bodies worshipped by early humans.

In the foothills of the Andes there are many abandoned towns ascribed to a vanished civilization. These inhabitants cultivated terraces that intrude into now snow covered slopes. Areal surveys show great ruins in the dry belt west of the Andes. In the Upsalla Range (at 2KM elevation) there is a forest of petrified trees whose trunks are broken more than a meter above the present ground level. Darwin concluded that these trees "once waived their branches on the shores of the Atlantic," now receded more than 1000KM to the E from the Andes. He was equally amazed to find undersea lava deposits at this mountainous place so far from the shoreline. Equally mysterious are huge thick-ice islands, deposits of fresh water-ice, on the surface of brine lakes found high on the altaplano of the Andes. A *q/* explanation suggests that sea water was washed across the Artentinian pampas into the existing, and then ice-filled, depressions of the Andean trough. This tidal flood might be associated with a sudden relocation of the Earth's rotational axis. Today many high-altitude brine lakes persist. They show a thin surface layer of melted fresh water which refreezes nightly. Insolation is consumed daily in remelting the ice thus stalling evaporation of the lake into the thin, dry, mountain air. The large lake Titicaca is exceptional in that it contains only freshwater, likely indicating the depression containing it was likely fully filled with ice at the time of the suggested inundation. Great deposits of ocean gravel at more than 7KM

elevation in Peru add credence to this *q/* theory that this desert altiplano was once inundated by a great tide originating from the distant sea.

The great caliche gravel deposits of Chile are anomalous. This band rich in Chile saltpeter (NaNO_3) is found along a narrow strip stretching across 2250KM of the Chilean Desert of Atacama and extending into adjacent areas of Peru, Bolivia, and Argentina. It has been suggested that Pacific Ocean water became landlocked and left the gravel deposits after evaporation. Marine skeletons support this view, but the absence of bromine suggests an origin not involving seawater. Thunderstorms have also been suggested as the source of the nitrates yet elsewhere such deposits are absent even in areas of great thunderstorms. Copper, iron, manganese, molybdenum, gold and silver coexist with the nitrates. The Incas report a memory of fire descending from the heavens creating stone. A *q/* view of the Chile saltpeter is that it results from "cosmic" discharges occurring during close passages between the earth and another planetary body. Elsewhere gold is reported to have fallen from a sky raining thunderbolts during a great upheaval.

andesite:

extrusive igneous rock, consisting chiefly of minerals known as feldspars. Andesites were originally found in the Andes of S America, but are now known along the N American Cordillera, from Alaska to California. Andesite is the surface equivalent of the deep seated rock, diorite. Rocks of the feldspar type make up an estimated 60% of the earth's crust.

Andrew's Star:

a 6TH magnitude flaring star discovered at the Armagh Observatory in Ireland. It is located 1°E of 26 Aurigae. In -36Y sudden variations in the star's brightness drew attention to it. In a span of less than two hours the starlight changed in intensity fifteen-fold. Two weeks later another flaring took less than one hour. The star is classified as "B" (blue giant). Flaring stars are generally red dwarfs of Class-M leading to the suspicion that the brighter star is accompanied by a close companion suitable to an eruptive existence. If Andrew's star is binary it could resemble electrified pairs preposed in $q/$ formulations.

Andriessen, Poul:

in -24Y, communicated to the editors results of Potassium/Argon dating tests performed, in a Dutch laboratory, on metamorphic rocs found side by side on the Greek Island of Naxos. One rock dated between -5 and -15MY, its neighbor was -200MY old. Such scatter is not uncommon when rocks are dated radiometrically, regardless of method.

androgeny:

a depiction showing female and male characteristics integrated into one body. There are so many androgynous representation of the primal deities that numerous writers have claimed that the ancient deities were originally bisexual. Religious writings such as *The Brhadaranyaka Upanishad* claim the primal androgene was "of the same size and kind as man and woman embracing. Other sources suggest the male and female elements existed combined in one body, experiencing spiritual completeness and perpetual bliss. Jewish depictions of Adam and Eve united them into a single body.

In the Greek tradition the bodies of the original humans were made from clay by Prometheus and were given life by Athene. Zeus is reputed to have punished the androgenous people of the Golden Age by tearing them apart. This, the legend explains, is why women have an orifice that bleeds and men have a dangling appendage that craves to return to the female body from which it was torn. Tantric mating techniques are likely an attempt to restore the prolonged bliss of the former bisexual existence. Cults seeking such bliss are widely condemned by the majority of humans fearful of any behavior so suggestive of hedonism. Their repression suggests a deep fear that somehow the world was destroyed by god or the gods because primal man was devoted to personal pleasure.

Androgenous representations may show both sexes in one body, sometimes with two heads and four arms. In some depictions the right side of the body is male, and the left is female. In others the male side is white and the female side is black. If the genitals are shown they are depicted side by side or, less often, closely above one another.

Some interpret the androgenous image as a cosmic rather than a physiological reality. To others the images depict the primeval mother out of whose womb the cosmos emerged. A third interpretation would suggest a once existing mental state whereby the early humans did not divorce the gender roles as completely as moderns do. In Jungian

terminology they accepted the co-existing *anima* and *animus* within themselves and derived pleasurable satisfaction from that state of harmony.

Aphrodite Urania is related to the "night star or sun." She possesses great antiquity, she is known first in Asia and her cult diffused N and W toward Sicily, Carthage, and Latium. She is identical to Astarte of the Semites. Her worship is associated with Phaeton (the star of Venus). In the oldest temples to the Virgin Mother she is often represented with a beard. Astarte, Athene, and others, including Ishtar, may appear in masculine form with all the characteristics of the masculine sex. Brahma, and other Saturn equivalents, are likewise known with feminine attributes. The ankh, a cross with a handle, is associated with the goddess Aphrodite. It is a symbol combining the phallos and vulva. The ankh also has cometary connections, associated with the planet Venus. Association of the androgene, particularly Aphrodite, with Phaeton or a comet represent the dragon Typhon, destroyer of worlds, a clear *q/* depiction which was especially strong about -35CE or -27CE. Within the Christian Tradition we find the Satan depicted with androgenous attributes.

Across the spectrum of the Indo-European traditions are religious depictions in androgenous form. Ardhanarisvara was a combination of Shiva and Kali. Vishnu, as well as Brahma, are bisexual. In the Orphic creation story Phanes was a merger of Eros and Psyche. Hermes' wisdom derived from his androgenous form, Hermaphroditus, where he co-existed with his mother, Aphrodite. The androgene also appeared as simultaneously born male and female twins. Isis-Osiris and Artemis-Apollo are notable. Such twins often copulated and conceived another deity from their union.

anemophily:

-- Seed plants which are pollinated by wind are said to be anemophilous.

Anemospila, Crete:

site of excavated north-facing hillside temple, containing 4 skeletons, including a priest and sacrificed youth (sole Minoan skeletons yet unearthed). Victim trussed on altar, sacrificial knife on bones, blood half-drained. Others killed instantly probably by earthquake and collapsed stones. Premises then consumed by fire of unknown origins, possibly lamps, or scorching gas blast (bones not consumed). Absence of rescue efforts, despite probably public ceremony and involvement of priesthood. Perhaps rite was to ward off precisely type of disaster as here occurred.

Angel Falls, Venezuela:

deep in the wilderness of the Guiana Highlands of Venezuela the Rio Churun plunges over a 980M cliff forming the highest waterfall in the world. The Guiana shield is made up of Precambrian Era crystalline rocks upon which a thick section of Mesozoic Era sedimentary rocks lay unconformably. The Mesozoic layers are eroded into flat-topped mesas and small plateaus. Local relief exceeds 1.2KM. Angel Falls plummets from the edge of one of these mesas, Auya'n-Tepu'n (The Devil's Mountain). The fallen water ends up in the Rio Carrao.

The sandstone layers of the buttes (known as the Roraima Rock Series) are fractured vertically allowing trickles of water to create fissures. Here and there underground streams spurt out of the rock wall adding to the cataract into the large plunge pool below with its furious spray.

Below the falls, and elsewhere on La Gran Sabana, the Guiana Shield is covered by dense rainforest. The region has been probed from orbit using radar reflection to produce images by backscatter. In this way foreslopes and backslopes are detectable. Good optical images are nearly impossible to obtain because of the extensive cloud cover common to the region. Rivers and their tributaries sometimes join at sharp angles (with the inflowing tributary aimed upstream at the river) leading to the suspicion that the rivers/ may have reversed over their existence. Seemingly channel carving through relict arid landscapes is still in progress suggesting that the rivers are young relative to the land surface over which they flow. Such an explanation would imply a much drier past than the present climate, similar to "dryness" normally expected with in a "glacial" period, or a shorter erosional timescale that it is comfortable for *c/* scientists to admit. In *q/* terms we are speaking of a Holocene Epoch age for the region, its climate, and erosional features.

angel:

immaterial yet visible and recognizably formed manifestations, according to professed visitees and the majority of most populations and their religious counsellors. The *b/* Old and New Testaments carry 207 references to angels, in 195 verses. The term angel-.. is Greek for "messenger," but originally must come from the messenger "of God" or *El*. Types of angels are numerous in the religions and mythologies of the world, having different appearances, tasks, and habitats. Demons are equally numerous and varied. Comparable to angels are the Hindu Apsaras who provided sex for the blessed, Greek Horae, Middle East Shakti, Persian Houris, W European Fairies, and Teutonic Valkerie. Practically all of these are females with sexual appetites supposedly universally appealing to men. Islam, which de-sexes its angels, following Judeo-Christian doctrine, heavily underscored by St. Paul, still promises a goodly supply of lovely maidens to the better type of after-death Muslim.

But even if not philanderers, and in fact are arguably without sex -- there having been many a heated debate on this point in medieval times -- Judeao-Christian angels are heavily employed. The Bible's first angel is sent to console the childless and abandoned wife of Abraham with the promise of child-birth. Abraham himself was visited by three angels; his nephew Lot sheltered three angels; Jacob wrestled with an angel somehow; an angel came to smite the first-born of the Egyptians on the brink of Exodus; an Angel provided two pillars of fire by which Moses and his Hebrews could find their way in the darkness of Exodus; guardian angels protect the Jewish nation, and later on Christians and Muslim; an archangel struck down the 185,000 Assyrian soldiers of Sennacherib as they besieged Jerusalem; archangel Gabriel let St. Mary know that she would become the virgin mother of the Lord; an angel freed St. Peter from jail; another guarded the tomb of Christ.

Most judeo-Christian cults subscribe to such beings and their doings. Pope John-Paul, for instance, on a visit to the Shrine of the Virgin of Fatima

(Portugal) in -9Y, told the 300,000 people in attendance that he credited the Virgin with having intervened to save his life on two occasions; five prophecies of the Virgin to the three children who 74Y earlier claimed to see her, are said to be coming about, including the rise and fall of communism, the fifth prophecy, held secret by the Vatican, supposedly foretelling a dreadful cataclysm.

Scientists, both social and natural, and most humanists, dispense with angels entirely, as with all spirits, and almost all discount their possessing any phenomenal base. But *q/* maintains that many angelic phenomena have occurred, as with fully divine theophanies, in connection with exoterrestrial and atmospheric disturbances, providing therefore scientific hypotheses to explain the most significant of angelic appearances. Thus the destruction of the Assyrians by Gabriel is considered an historical event in a period of hyper-activity of the Planet Mars affecting Earth, and possibly involving an immense gas-ball lightning blast, of the type that likely to have exploded over Tunguska, Siberia in -92Y. Further *q/* suggests that a traumatic residue from intense ancient experiences encourages collective anxiety encourages reports of spiritual experiences of this nature and children are imprinted with the anxiety and the literary plots in the first years of life.

To the *q/* the presence of naturally occurring angels is logical and historical, and the question is often whether they are planets, comets, or meteorites. Thus astronomers Clube and Napier argue a history of encounters with unidentified comets, which are given many different names by people around the world and end up providing the heavenly host. Others *q/* attempt specific identifications, aided by mythological analysis, matching reputed angelic and satanic missions and conduct, as recited by every religion, with most plausible scientific scenarios of errant sky bodies.

angiosperm:

has a seed contained within a carpel. Describes the fruit of flowering plants which bear seeds within a mature ovary. They are the dominant plant form, about 250,000 species exist. Angiosperms range from gigantic trees to tiny herbs.

The flowering plant has seven tissue layers. The flower is enclosed within a sepal layer inside of which are the petals, then the stamens (from which comes the pollen), and the pistil (forming the upper end of the plant's ovary). Within the ovary are ovules which contains the gametophyte which bears eight eggs, one of which is viable. The plant egg is fertilized by a nucleus within the pollen microspore. Two other nuclei within the pollen fertilize additional eggs which create a nutritive coating for the fertilized seed. On the botanical level the angiosperm (or seed vessel) is the structural equivalent of the most complex atoms in the periodic table of the chemical elements.

A flowering plant starts as a seed which grows, then blossoms. The blossom is biologically attractive which assists in its fertilization. Pollen is transferred from the stamen to the pistil by insects attracted to the nectar contained within the flower. The ovum once fertilized produces fruit. When ripe the fruit falls from the plant, and if not eaten, decays leaving the seed from whose internal food the germ can sprout nourishing another plant when a propitious growing season next occurs. The wind can act as an alternative agent to disperse fallen seeds into an environment where they are viable and can germinate.

Isolated angiosperm fossils have been found in Triassic and Jurassic Period strata of the Mesozoic Era. The first undisputed representatives of the angiosperms are from the Cretaceous Period which ends that era. Angiosperms became dominant in the Cenozoic Era. These plant forms are suited to the present earth environment where botanical life is seasonal. The flowering process seems to be hormonally controlled using a complex

mechanism seemingly triggered by the light/dark cycle operative in the plant's locality. In *q/* terms the angiosperms likely originate as early as botanical forms considered to be more primitive but their numbers multiplied when the earth environment became more to their liking. This does not preclude the possibility of some genetic realization to better fit these lifeforms into now existing environmental niches. The appearance of the flower plants suggests biospheric transformation accompanying the physical restructuring of the earth's surface. The re-speciation of the plant world represented by the flowering plants, like that in the animal world represented by the mammals, is one ensuring survival of the species in the face of an increased harshness in the physical environment.

angiosperm:

-- n. A group of plants that produce seeds enclosed within an ovary, which may mature into a fruit; [flowering plants](http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html) <<http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html>>.

Anglo-saxons:

Germanic settlers in England at the end of the Roman period.

Angola:

state in SW Africa known officially as the People's Republic of Angola. Angola is bounded on the N and NE by Zaïre, by Zambia in the E, by Namibia in the S, and by the Atlantic Ocean in the W. The area of Angola is 1.25Mkm². The population of 9.1M is dominantly Bantu with significant minority of Bushman and Portuguese, the latter reflecting Angola's former colonial status. Angola's population is largely illiterate. Angola has a well developed agricultural economy. Coffee is a major cash crop. Hydroelectric power, diamond mining, and petroleum deposits are currently exploited intensively. Their existence complicates Angola's political situation and the aspirations of the majority of the population. The country is also rich in mineral resources with notable deposits of copper, iron, and manganese existant but not yet intensively mined. The Bié Plateau, with an average elevation of 1.83KM, forms the center of Angola. The Angolan interior drains into both the Zambesi and Congo basins.

anguilliform:

ten families of snake-like fish, commonly called eels. Anguilliformes have minute scales embedded in their skin. The largest group, the morays, are sharp toothed and vicious.

Except for breeding eels live in freshwater. They are found in the coastal rivers of Europe, near the Mediterranean Sea and throughout eastern N America. The eels spawn in the Sargasso Sea near Anguilla Island SW of Bermuda. The European eels take several months to travel (some over 5000KM) to the spawning ground, after reproducing they die. Their larvae drift in currents, like the Gulf Stream, for three years before reaching the fresh river waters of Europe. The American eels breed similarly except the migration and return is of less than a year's duration. The American females spend most of their lifetimes far from the sea. Their lifespans which end at spawning may be as long as 20Y. Some freshwater eels are indigenous to the Asian mainland.

The European eels have 114 to 115 vertebrae whereas the American breeds have only 104 to 111. It is conjectured that the eels from the two continents once shared the common coastal waters near their respective home rivers when the Atlantic Ocean first opened *c/* 130M. As the continents separated opening greatly their spawning waters the various eels expanded their mobility. In *q/* terms the weed filled Sargasso Sea, once a part of the old Tethyan world-girdling shallow freshwater sea, is still the best suited environment for the eels to breed. The eels faced with adaptation or extinction obviously are better suited to a long migration than to finding new spawning grounds or to spending their long adult lives in saltwater. The *q/* notion of rapid continental rafting opening the Atlantic Ocean and a growth of bounds of the Sargasso Sea seem to conform better to the story of the eels than do longer timed *c/* alternatives.

angular momentum:

the rotational analog of linear momentum for rectilinear motion. Planets in orbit, electrons within atoms, elementary particles, and photons all possess angular momentum. Angular momentum is a vector quantity and so its direction as well as its magnitude are unalterable except from outside influences.

The principle of conservation applies to angular momentum, so no internal change of configuration can alter the total angular momentum of a system unless it is influenced by something external to the system. Thus, a planet moving around the Sun supposedly does so with constant angular momentum. Likewise an electron within the atom retains its angular momentum: it may exchange angular momentum with another electron so long as the total remains fixed.

Absorption or emission of a photon of light by an atom changes the angular momentum of the atom by an amount numerically equal to Planck's Constant. Fractional amounts of angular momentum can not be exchanged by atoms. It follows that larger exchanges of angular momentum involve integer multiples of the basic unit.

A curious anomaly arises with regard to planets in orbit. If the gravitational attraction takes no-time to be transmitted between the Sun and the orbiting planet then the gravitational force is directed radially and the orbit motion should accordingly conserve or maintain its initial angular momentum. If instead gravity is communicated at the speed of light between the Sun and planet then the gravitational force is not directed toward the Sun's center, rather its direction will lag behind the Sun by the amount of the aberrational angle for the particular planet involved. Such a geometry suggests that planets should slowly lose their angular momentum. This possibility has long-timed implications for the orbits of the Solar System and for others elsewhere in the Galaxy.

Conservation of angular momentum is involved in the slow precession of the Earth's rotational axis in space. The equatorial bulge of the Earth does not lie in the plane of the Ecliptic and so the various bodies of the Solar System attract the bulge toward that plane. The rotational angular momentum resists that action resulting in a wobbling of the axis taking about 26KY. Precessional motion would not remain unaltered if a major $q/$ had changed the Earth's state at some time in the past or were to change it in the future, so that calculations through a $q/$ event would constitute a meaningless computational exercise.

angular velocity:

used to quantify rotation. The Earth rotates around its polar axis in 24H relative to the Sun. Its angular velocity is thus $15^\circ/\text{H}$.

Angular velocity is a vector quantity defined as directed upward (perpendicular to the plane of motion) for a clockwise rotation or orbital motion. Application of a torque alters the angular velocity. If the torque is directed tangentially with the rotation the rotation will be increased. If the torque is directed across the rotation then a precession will be produced. A torque can be exerted over an instant or can span an aeon.

In *q/* terms a torque exerted upon a spinning and orbiting planet by a closely passing celestial body can alter the orbit, length of day, and direction in which the planetary axis of rotation is currently aimed. In the Earth's history, on several occasions, torques seemingly have produced transitions of the Earth's motion in orbit and to its rotation and axial direction.

anhedonia:

the avoidance of pleasure. It is tied to the philosophical notion that pleasure is evil. Anhedonia has been called the most consistent and dramatic behavioral sign of the "disease" of schizophrenia. It is the absence of an individual's capacity to experience pleasure. In contradiction to the mistaken belief that humans are hedonistic (pleasure seeking) animals the psychiatrist would note that man is only hedonistic if self-destructive and other anhedonistic behaviors can be termed pleasurable. Only if whatever the organism seeks is defined as pleasureable can man be hedonistic.

Two centuries ago the psychology of hedonism has become central in Western societies under the guise of democracy and socialism. The United States, particularly took up the idea enthusiastically. Critics of the American civilization note that the attempt at hedonism has failed miserably.

In reality the pursuit of hedonism is at best a secondary social aim. All societies are ideologically committed to the principles of anhedonia: pleasure is evil; pleasure brings punishment; suffering is good; pleasure is a release from disciplined suffering; pleasure is to be tolerated only upon the celebration of a disasterous anniversary, as an orgy inviting repentance.

Anhedonia is born from the human persons who make up society. Pleasure-phobia is logically implied in the *q/* theory of the fearful polyego. The mental construction of the human is fundamentally unsettled. The frustrations of existence -- to satisfy needs and evade the blows of nature (and society) -- write an undulating pattern over this basic unsettlement.

Is it not strange, even ironic, that pleasure should be regarded as natural whereas people who are anhedonic should be regarded as mad, when, more naturally, is it not the hedonist who should be taken to be mad? It would seem that the definition of pleasure itself is the greatest failing of hedonism as a philosophy. As expressed in, "eat, drink, and be merry," the hedonist turns out to be a superficial psychologist who has a rationalist

uni-dimensional view of humans. Operationally what is defined as pleasurable is synonymous with "voluntarism," in short, doing what one's superiors deem proper. But of what does voluntarism consist in primeval humanity? Assuredly it fills those devices which are animal in kind: feeding, fornication, fighting, and fleeing. But it does more than that. Hanging around where one can feed and fornicate and feel free from danger the next time on each cycle. Yet it also includes typically human actions: to refuse food, sex, to fight instead of flight. And then it goes even farther, to use all of one's imagination to channel these elemental desires in ways that will establish and secure the most wanted triple-control over self, others, and the gods. The earliest legends of mankind have humans doing highly unpleasurable things. The most pleasurable kinds of enjoyment are interdicted by taboos. Only certain food is eaten at particular times. When good foods are available bad foods are eaten instead of the good ones. Humans eat in peculiar ways, giving a portion of the best food to the gods however hungry and insecure they might be. Humans fast. They devour the flesh and blood of their gods as well as their enemies. A great oral tradition exists concerning what food to avoid. At great expense priests are employed to instruct upon diet, food preparation, and copulation ideology. Their rules transcend ulcer, desire, need, and often common sense.

The urge to mate producing sustained pleasure (to linger after coition is particularly human) become equated with meeting with death and surviving. The more pleasurable the mating the more one moves toward the real death. Existential fear is damped by the need to conceive of children who will serve the gods/ of society. The joy of birth is channeled into the pain of birthing.

It is natural to defend, as it is natural to flee, but to attack deliberately (with one's guts roiling as a machine rolling toward death) is uniquely human. Hesitation brings as certain a death (by friendly fire) as that from a reckless charge against the foe.

From the records of the earliest civilizations we find without exception

stress upon the pains of existence rather than the sublimated pleasures of the mammalian and human ideal. The anhedonia of primordial and schizophrenic humans is understandable: existential fear demands, not pleasure, but relief. This relief results from activities that are hardly pleasurable: self-mutilation, sacrifice, cannibalism, and exhausting ritual. The ambivalence of the gods and of the self warn against pleasure. The original sin was the imitation (seizing) of god's fire (power). Far more institutions, ancient and modern, have been created for the suppression of pleasure than for its enjoyment. But without the suppression of *instincts* few believe that civilization is possible. The nobility of the savage of three centuries ago restates the anhedonia imprinted upon the human creature. Human institutions "hate pleasure" as human pets "hate doors." So, we "all" must suffer. Anhedonia is not apathy, but is pseudoapathy, a tense and anxious (an armored) state: its final form is catatonism, which in reality is "playing possum" with the fates.

animal behavior:

patterns of activity characteristic of various species. Almost all animals ingest, digest, excrete, and reproduce. One may postulate reproduction as the end-game, whereupon ingestion, digestion, and excretion are evaluated solely as they relate to the ability to reproduce the individual and thereby -- although the individual has no such end in mind -- do its bit to preserve the species, which is probably not to be extincted anyhow by forces under the command of its members but by quantavolutions, including the appearance of man with gun and trap and poison. With this in mind, it is useful to discuss separately the behavior of animals under conditions of maximum environmental indulgence and animals under extreme stress. In both cases, special attention needs be given to psychological, sociological and physiological responses and their projection into established and inovative forms of behavior. Under conditions of indulgence the animal, whether speaking of the flatworm or the chimpanzee, exhibits maiximally its instincts. Instincts prepare it totally for its life and reproduction. It is questionable, from this perspective, whether any species is ever or has ever been enabled to be totally normal. Instinct itself, it would appear, allows for variation in the stimuli of the environment. Animals appear to cooperate with the theory of evolution and quantavolution. They do seem to be according to the best aavailable evidence related to one another in many ways; else, for instance, how could man harbor extremely diverse phylka in his body, not only as diseases but as veritable conditions of continuing his life. Further, to take commonly employed examples, practically every species can be shown to be related bodily to a different set of species, its family or order. Further, although the theory that "ontogeny recapitulates phylogeny" was originally trumped up and then universally touted, before being exposed as such, it is beyond any possibility of accident that in embryo a species will develop and then before or after birth shed traits marking it unmistakably as a member of a family or order of being. So there are teeth and lips in embryonic birds and there are gills and tail in embryonic man. Evolution can be accepted and then its means discussed.

But the theory of natural selection, which is the mainstay of the theory of gradual evolution, is quite unacceptable. The most successful of organisms would be the simplest and least evolved, the virus, which, whatever its numerous forms, is always ready to make a new one. It can live in space, in deep rock strata, in desert and pond, in all conceivable conditions challenging the capacity of life to persist. If humans invert the measure of natural selection, it is because they postulate gods who have demanded of nature a peculiar product of evolution that turns out to be none other than man.

The theory of quantavolution depends upon catastrophe and electronics to alter species, which puts humanity at the mercy of natural forces originating in outer space and conceptualized by most humans in history and today as divine and sacred. A logical outlet for the animal that wishes to change his nature is to pray that beyond nature or within it are gods unknown who have incomprehensibly taken it upon themselves to govern human life. Another logical and rational outlet is to attempt to "live oneself by one's bootstraps," which devolves onto experimenting with oneself in various ways hoping to find a satisfactory mode of existence that can be counted on into the far future. The "lower animals" have no chance either to pray or to rationalize; they can only exist, and, if thankfulness were a beast's habit, he would thank the nature of existence for not having given him the capacity to reflect upon his frequently miserable condition, together with a fairly complete set of instincts to govern its behavior and make the most out of what is ordinarily available to it in its environment. Under extreme stress, animals tend to behave more humanly, evidence that stress is typically, not unusually or abnormally, human. Stress is contradiction in being; this is the very essence of humans but excluded by instinct in animals. Snakes become sociable and emerge into the light when an earthquake occurs. Many species seek human company when a volcano or earthquake happens. Panic seizes animals, especially mammals when they are frightened by natural forces or extreme experimental stimulation. Increasingly, "human" traits, heretofore conceded only to the higher

primates, the great apes, are now given to "lower forms" down to the flatworm that can be trained and obeys rules. It is not quite a closed question -- Lamarckianism -- that violent blows of the environment cannot influence the soma to the point of being inherited.

animal breeding:

controlling the conception and life of animals for human purposes, distinguished from domestication in that many animals can be bred but not domesticated, meaning that breeding can be under conditions of such control that the animal cannot escape attempts at its manipulation, whereas under conditions of domestication the animal submits voluntarily to the principal restrictions on its life. An increasing number of species are bred, owing to technological advances, for example, the dolphin, and some dolphins show signs of domestication in that they will venture forth but return to their masters whether upon command or to satisfy basic needs, including human companionship. Breeding is useful for many human purposes, as to obtain horses that are genetically docile for mounting, or rats that can intelligently resolve a maze, thus proving a learning theory and providing an article in "Science." Furthermore, as more animal species are exterminated, artificial maintenance of the species must be resorted to, adding to the burdens of state and philanthropic budgets, but also preserving a most instructive set of links with the past. There are a goodly number of limits to breeding, as the human species illustrates better than most. However, with genetics providing increasingly extensive means of inducing variances in species, it will soon be possible not only to modify most traits of a species, at hand or capturable, through breeding, but to break by breeding what used to be considered the inviolable boundary of breeding, the ability to reproduce between two members of (or of what were) different species. The means by which genetic transformations are achieved will reproduce the conditions of quantavolution when the breeder is able to jump a species as if playing checkers: what will be the key chemo-electric signals that will produce the moves. Once known, science may ask whether such conditions existed naturally at certain critical periods of the past.

animal instinct:

an unorganized neurological tendency to initiate, direct and release directed energies, possessed by animals, but also by plants, humans, and even by crystals and other mineral forms, the salient feature of which is that no intervention of intellect or reflection is observed. usually, theorists of instinct seek to generalize and classify them, thus, sex, deference, feeding, cleaning, aggression, etc. The capabilities of instinct are such that even the most elaborate mental plans and techniques of a "thinking animal such as man" can scarcely approach them; in fact, is notable for being uniquely clumsy and poor in instincts. Humans lack, for example, the horseshoe's internal mechanisms for determining and responding to moon and tide in congregating annually for breeding and egg-laying, a most complicated behavior replicated with rarest exception in all individuals of the species. There is an essential vagueness about the concept of instinct that lets it approach the generality of all animal behavior. That is, all behavior is modified instinct, the instinctive part being the more or less rigid tendency that moves out of the organism to encounter the environment. The butterfly emerges from the cocoon, the kitten from the cat's womb, each structured so that it will seek in its own ways its felt needs. In this sense, instinct is an emanation of structured process seeking fulfillment. All organisms seek to reproduce and must feed. Failing this one or two activities will destroy a species if universal, the individual if unfed. The fixed ways of achieving feeding and reproduction seem almost infinite among the species of the animal world. The fixedness of the mineral world contrasts with the slack instinctiveness of the human; rock finds perpetuity of a sort in its obduracy, the human in his flexibility in a changing world; the animal is attuned to natural conditions of a certain sort, a form and mode of existence in between the two.

animal:

a living organism, that is, organized protoplasm that reproduces itself but cannot survive on a diet of sunlight, atmospheric and soil chemicals. The term is useless scientifically but helpful in ordinary discourse. Animals cannot manufacture food in the same way as plants but do transform and process many chemical compounds. Their basic character cannot be transformed by thermal, electric, and pressuring conditions as can rock from sedimentary to metamorphic or water to ice; they die, or cannot change or pass on the change. Animals move but so does the Earth and the continents and the rocks, not to mention plants, whose branches respond to tropisms and whose pollen can outdistance many an animal species. They do move more than most plants as adults, though not the tumbleweed; they lack cellulose. It is doubtful that they exceed in variety plants and rocks. They have a nervous system, unlike plants or rocks. But if a nervous system is chemical and electrical, rocks are chemically and electrically active and so are plants. Increasingly plants are discovered to have "feelings," to respond to acoustical forms known as "music" and even to one composer as against another. Withal, animals can be distinguished and classified (as can any form of existence) and their categorizing advances scientific analysis if not taken dogmatically. One begins with protozoa, proceeds to jellyfish and corals, to flatworms, to mollusks, annelida and sea urchins and star fish, all of which come more or less out of nowhere in the evolutionary process. The mollusks give squid, oysters and slugs. The arthropoda might have been listed with the early arrivals as well because of their fossilization in most ancient rocks and they begin to produce diverse families of insects, centipedes, shrimp and lobster, and spiders. Not mentioned in the first phyla was the chordata or vertebrate that include an immense clan of jawless fish, cartilaginous fish like sharks, bony fish, amphibia like frogs, reptiles, birds, and mammals from which, to use the glorified classificatory language, spring prototheria, metatheria, and eutheria, corresponding to such families as duckbilled platypus, marsupial kangaroos, and placental whales, varmints, bats and man. The list of phyla and families is abbreviated.

animals

An object in the sky with two projections was held to resemble a bull, cow, stag, goat, horned snake, or dragon. If the body or tail of a comet was reddish in colour, and was the scene of what appeared to be lightning discharges, mutilation, murder and bloodshed, such as were attributed to, for example, Kronos, Zeus and Athene, this was taken as a hint that the action in the sky should be copied on earth, to ensure victory for the forces of light and of law and order. Errant bodies must be brought low. Animals must be stunned and blood spilt. The sensitivity of living creatures of all kinds to electrical fields is noteworthy. Ambitious politicians and military men copied the priestly practice of dressing up in the skins of animals. Just as in Crete and elsewhere there were ceremonies in which experts jumped on bulls, killed bulls, or were killed by bulls in the *agon*, arena, or labyrinth, so an Homeric hero or Celtic chief would wear a helmet, probably with horns, imitating a wild and powerful animal either on earth, or in the sky, i.e. divine. Herakles wore the skin of lion of Nemea.

animism:

1) belief that all natural objects contain a spirit or force that governs its existence. In holistic terms distinguishing between the inanimate and animate, cosmic and earthly, and between physical and mental processes has no meaning. *c/* everything in the universe had individuality, including a transcendental spirit responsible for good and evil.

2) the term also applies to the life principle or vital force ascribed to living things but not to the inanimate. As such the study of the biological realm can not be reduced to the mechanism of physics and chemistry.

In *q/* terms primeval man did not own a neuter gender. Everything in the world was alive. He did not have to acquire an illusion permitting him to reify or anthropomorphize. He never had made nor did he now have a reason to make a distinction between the living and the inorganic. Upon humanization projection to objects as living things was immediate. The gods came into being, too. The traits the gods came then to possess were the actual traits of a god witnessed. The traits of a god later remembered were the feelings of mankind in chaos and birth combined with such traits of lifeforms on earth as mankind perceived and found to be analogous to his own and those of the gods. What he saw in the sky confirmed and strengthened his projections and he let them be incorporated into his own traits even more strongly. Each repetition became a self-fulfilling prophesy producing a growing obsessiveness enhancing the belief that one was being threatened by sinister natural forces.

In practical terms the animate world has never been and is not now limited to life. Everything is alive at some level. Thus the world may be controlled by incorporating it into oneself. Considering the "natural reason" supposedly granted to humans, it should be simple to draw a distinction between natural forces and inanimate forces. Yet it was not and is not done. In fact, the more disturbed that people are, the more they see themselves in animals, plants, rocks, and skies. This phenomenon is closely

related to paranoia, as for example, is the belief that eyes are watching one from everywhere. The "all-seeing eye" is one of the earliest and most universal symbols. It is inscribed upon the "Almighty Dollar" and the Seal of the United States of America.

The attempt of science to "deanimate" the cosmos has a corollary in that it first needs to deanimate the human observer. The process of denying the life force concept has an accompaniment need to reduce biological processes to equivalents of common inorganic mechanisms. The cosmos sapped of life though foreign to humans is natural to automatons.

ankh:

circle resting upon crossarms and vertical stroke (ÿ). As a religious symbol, symbolic of life, the crux-ansata is widespread. It represents the female vulva united with the male phallus. In the Egyptian "Book of the Dead" an illustration of the sunrise shows the ankh. The translator (E. Wallis Budge, in -105Y) considered the scene showing the ankh as a mere vignette intended to accompany the Hymn to the Rising Sun, which is a part of the introductory matter to the book. In the Papyrus of Ani we see the "sun's" disc supported by a pair of arms from which emerge the ankh. This, in its turn, is supported by the pillar which symbolizes the tree-trunk (which contained the corpse of Osiris). Both papyri are associated with the Theban Recension, dated *c/* to the 18th Dynasty.

The ankh is securely identified with a cometary form, especially in association with Venus. In association with the comet the ankh has ominous indications in that the comet being discussed was a "head" which had dropped its "tail." The victim of this event was not only the two-sexed god concerned but also the Earth on which the tail descended with disastrous consequences. This incident, it was suggested, was "The Great Terror." It variously had the form of Phaeton, Typhon, Lucifer and Pallas. The castration image of the dis severed comet is fully apparent in the legend of Typhon and in the associated celestial and terrestrial events. Whether the "terror" refers to a single, or to a series of, catastrophes is not known. The recension papyri contain portions of texts etched onto coffin lids dated to the Middle Kingdom, and inscribed on the walls of pyramids constructed in the Old Kingdom.

Much later the terror-stricken humanity managed to analogise these catastrophe-laden prime ideograms to similar-sounding phonetic writings and spellings of less frightful character. The displacement is complete because today the ankh symbol is defined in hieroglyphic dictionaries as a stylized depiction of a sandal strap. In psychatric parlance the word "foot" is a frequent substitute for repressed thoughts and words about the

phallus. The sandal-strap binds securely the foot, thus in reverse imagery, to keep it from falling off like a comet's tail. One might speculate about the English word "ankle" and its relation to "ankh" as "ankle-strap." Allemannic (Swiss German) once contained a word, "anke" meaning "butter." In both German and English the word "butter" is confusable phonetically with "foot." This might be stretched back to "ankle-strap" and its ancient connotations.

The association of ankh with maleness and femaleness ties to the symbolic connection of the female circle (derived from the letter A) and the male cross (from the letter T). Union of the sexual essences creates life. In ancient religious rites electrical displays played an important part. At times, especially near the time when *q/* encounters between closely passing celestial bodies (comets) were about to cause global catastrophes, electrical disturbances became especially intense. New forms of life were created just as many forms became extinct. Unless one employs a *q/* paradigm relationships such as those present in ankh symbolism are hard to explain.

Anluck, x.:

Astrophysical theoretician

annelida:

soft bodied segmented worms. Of the 8600 species most are aquatic (both fresh and sea water) but some, like the common earthworm, occur in moist places on land. They live in protected habitats, from the deep ocean bottoms to high mountain glaciers. Three classes exist the oligochaetes (earth and freshwater worms), leeches, and marine worms. Annelida are biologically related to the molluscs and arthropods.

A Palaeozoic Era specimen, *Opabinia*, (found in the Burgess Shale) was perceived as an primitive arthropod with no visible head appendages (that characterize the arthropods). This opinion led to the speculation that *Opabinia* might be the ancestor of both the annelida and arthropods. Reinterpretation now recognizes no direct line between *Opabinia* and living species. The failure to link potential evolutionary relationship between the invertebrate species illustrates the widespread finding that the palaeontological evidence favours original diversity followed by sequential extinction of members within an age, and marked shift in the species present between ages. In *q/* terms this represents biospheric decimation accompanying physical catastrophes accompanied by simultaneous adaptation of the survivors to the modified environment.

anniversary:

holy days. They are celebrations of divine destruction and near escape from destruction. Every truly religious anniversary celebration is therefore ambivalently tragic and joyful. Anniversary excesses and orgies (characterized on a spectrum from extreme sombreness to exuberance) are occasions for the relief of dire memory, more or less deeply suppressed. Anniversaries cluster around the great cycles of the ages, which give indication of being common to most of the world's cultures. Calendar diversions, not physiological changes, have driven apart the commemorations in different cultures; they are more distant in days than they are in mind.

The end of the year inspires the Hebrew Chanukkah, the Christian Christmas, and equivalent saturnalia rites in many cultures. Roman and Greek Catholics churches mark a different Easter holiday for unessential reasons. Anniversaries are sometimes pulled together in a given culture by their original proximity during a cycle such as a solar year and by their psychological resemblance. The Roman Lupercalia and the Christian Feast of St Valentine (both devoted to the coming year's fertility) follow by half a moon the Pagan Imbolc and the Christian Candelmas (which themselves are echoes of an invocation to Demeter involving the resurrection of the life force). Today Candelmas is rationalized as the half-way point of the Sun on its annual journey between the Winter Solstice and the Vernal Equinox, yet arithmetical reckoning shows Ground Hog's Day (another name for Imbolc) to be celebrated two days before the "middle" day of the interval. The *q/* recognized Bronze Age catastrophes involving the planets Venus and Mars occurred in March, around the Vernal Equinox. The holidays ultimately merged, and are submerged at Eastertime in Christendom, which itself is layered upon the pagan festival to Eoster or Oester celebrating the binding of the cosmic monster safely into an egg, and to the mysteries of the resurrection of Osiris (in his many incarnations world-wide). An important part of the Christmas and Easter rituals are the exchange of symbols (gifts and eggs) which in part subdues the monsters

within and the monster without.

annual layer:

processes tied to the Earth yearly journey around the Sun. Biological and physiographic actions are tied to the cycle of the seasons. Perennial plants experience growth spurts each spring identifiable as layers in the stem. Torrential rainstorms are in many places seasonal leaving varves, or layers of sediment. Glacial snows are deposited in winter and melt in summer producing laminae of debris from the melt waters of ablating glaciers or piling identifiable accumulation layers onto growing ice caps. As well each autumn, as lifeforms prepare for the annual dormant period, fruit, leaves, and other biodegradable material can be deposited in ways which accumulate and are compacted one upon another. Where hunter-gatherer cultures are involved seasonal occupation at a propitious campsite leaves a residue of garbage which might be layered in identifiable ways.

All of the processes and situations described above, as well as others which are similar, lead to dating attempts by scientists who presume that seasonal signatures dominate the applicable deposits. This produces tree ring, varve, and ice core chronologies which are widely used to date epoch making happenings in the remote and recent past. Methods based upon annual repetitions of some phenomena are not always reliable. While seasonal cycles exist, sporadic events also occur -- a rare and intense rainstorm outside of the normal rainy period, a flash flood produced elsewhere, an interruption in the season (by excessive cold or dryness) which can terminate or delay growth so that two maxima (or minima) appear in the record. Longer timed cycles (such as a drought lasting several seasons) can interrupt or severely curtail the characteristic annual signature. Nomads may follow an alternative trail for many years before returning to their normal annual *bilibong*, or in favourable times return there several times in a single season. Sporadic happenings can not be anticipated, nor can they be deduced unambiguously from a depositional record. There also remains the *q/* objection that major interruptions of natural cycles have changed the cycle-durations themselves while contributing, sometimes, immense deposits of their own between layers from quieter years. Many

occupational "dark ages" or "sterile layers" result from q/λ deposition.

anode

(gr. *ana*, above, and *hodos*, road) an electron-deficient region in an electric discharge. It is the place towards which electron flow occurs, and can be the source of an ion current - the ions being electron-deficient atoms. Arrival electrode of the electric current in an environment of different conductivity.

anoint:

application of oil to the body, especially in a ceremonial context.

In Celtic tradition fires were extinguished at the Samhain (Halloween). When this festival ended altar candles were extinguished signifying entry into the "dark-half" of the year. New candles were lit at the Yule signifying the rebirth of the year. During November, between these festivals, candles were dressed, anointed, and consecrated with incense and oil. Ritual tools and the altar itself required anointing. Oils used for healing were made by soaking the healing herbs in the oils before pressing. Fresh herbs were added to the freshly pressed ritual oil. Magnetically potent oils were treated by placing a magnetite crystal in the oil between New and Full Moon. The ultimate purpose of ceremonial oils was linked to the color of the candles that were burned. Candles were dyed appropriate to the task -- red for life, green for growth, pink for love and purple for strife.

Rituals involving the anointing of the body used oil mixed with other fluids or solid materials, making an ointment. Bodily fluids, blood, ash, dirt, and excrement have been used in such ceremonials. Their inclusion has symbolic and memorial significance. The fluids were seen as transformative aids assisting the anointed one between aspects of life or between this world and the next. Solid substances may have been added in commemoration of *q/* transformations of the earth environment at times crucial to the tradition being celebrated in the ceremony.

Electrical manifestations associated with the mountain priesthoods and later with the ark, particularly with the Ark of the Covenant, required rituals by which adepts could be "grounded" to the earth and simultaneously "insulated" for the ark during ceremonies. The preparatory rituals involved washing of the feet and anointing particular body parts with oils. In later ages when the power of the arks declined their operation required the addition of petroleum based oils which could be ignited by the electricity. Ritual washing and anointing remain a part of

contemporary Middle Eastern religious rites.

In the Catholic and Orthodox traditions of Christianity the dying can be given a sacrament in which the eyes, ears, nostrils, lips, hand, feet, and loins are annointed by a priest as absolutions are sought for sins committed. In the Eastern Churches the ritual has become rare in part because three priests must participate. There, it may also be performed on the healthy to ward off possible impending sickness.

anolis:

common name of brightly coloured lizards (cameleons) found in the warmer latitudes of the Americas. Lizards and snakes appear in the Cretaceous Period at the time when the Dinosaurs became extinct.

An intact anolis has been found in a specimen of amber unearthed in the Dominican Republic (in 1911). Its color was not preserved. X-ray analysis failed to detect an intact pectoral girdle and so the specimen was labelled "incompletely preserved." What seemingly remains is a fossilized horny interior. The sample, dated *c.* in Basel at 20 to 23MY, has been ascribed to the Miocene or possibly the Oligocene Epoch. Finding such a large specimen trapped in resin and preserved "whole" stretches any *u.* explanation to the point of credulity.

anomaly:

significant departure of any geophysical element from the current state (presumed to be its long-term value). Anomalies can be positive or negative. For example, a gravitational anomaly is determined by comparing the observed gravity reading and that computed for an idealized planet. In the ocean the salinity is locally anomalous if it deviates from the mean salinity of the oceans. Meteorological anomalies occur when abnormally cold or warm weather persists for several weeks thereby producing a difference between the long term and immediate mean temperatures.

Geological unconformities produce another type of anomaly. These occur where an apparent gap appears in the geological deposition -- where apparently no deposition occurs for some time. The magnitude of such anomalies depend upon the span of the missing time. In some areas entire eras are missing. Folding and subsequent erosion are suggested as another mechanism by which unconformities are produced. Here, older layers seemingly are deposited upon layers of suspected younger age. In other locales, block transport of older material on top of the younger strata have been advanced to explain the unconformity. A group of massives lying along the front range of the Rocky Mountains in S Canada and the N United States exhibit Cambrian Period limestones above well eroded Cretaceous Period shale. Between the layers there are unnoticeably disturbed lamina of coal. Somehow these older rocks supposedly rode over the younger ones without breakage of the carbonaceous material that now separates them.

Geochemical anomalies exist in places. Often large superficial, yet structurally integrated, deposits of material which differs from surrounding rock occur. The Sudbury Basin of Canada, rich in nickel, and the great surface iron ranges of Minnesota (in the US) and in Venezuela do not conform to their surroundings. Other significant deposits of iron occur in Austria, Sweden, Russia and India. A huge copper deposit in Zaire is

comparable. Following investigation of terrain located in the dry American SW where metallic deposits are located along the broken rim terrain of fossil astroblemes, a meteoric origin is suspected for such chemical anomalies.

Palaeomagnetic anomalies are defined as domains of rock differently magnetized (in direction or strength) than the local mean. A glaring case exists when adjacent rocks are oppositely polarized. Much of the evidence for Continental Drift is based upon geomagnetic mapping of differently magnetized bands of rock. Some ambiguity in the meaning of "reversed" magnetism is apparent because to reverse global magnetism would appear to be a long-timed process yet evidence of magnetization in very recent sediments indicates apparent magnetic "reversals" do occur on the timescale of a few decades.

Discordant radioactive ages produce temporal anomalies. Single materials dated by different isotopic methods can indicate "ages" which do not agree between the methods. Zircon from gneisses of Minnesota dated using uranium-238 and uranium-235 lead signatures indicate 900MY missing years from one of the series. Similar failing occurs in the dating of sea-bottom cores and from the content of sea-floor sediment lying above the cores when comparing Uranium with Strontium ages. Everywhere, different parts of the same rock can yield significantly different dates. The older the rock the less likely its ages agree between different methods of dating. If nothing else this supports the *q/* notion that earth structures have been seriously disturbed, many times and likely by global events, since the rocks were formed. Only the elapsed time is open to question.

From the anomalies of an old science spring the theory of a new science. "And when the science is renewed its new formulas often have more of the voice of exceptions in them than of what were supposed to be the rules."
{William James}

anseriformes:

an order of migrating birds which includes the geese, swans, ducks, merganser (hook-billed duck), and other similar species. Ducks are the most numerous, they are divided into surface-feeding, diving, and fish-eating varieties. One species of anseriform, the mallard, is found in Asia, Europe, and N America. It is the ancestor of all ducks domesticated by early humans except for the Muscovy which originated in S America. Like some birds ducks make long migrations annually. Ducks thrive in coastal marshes where they winter and in the shallow lakes of the continental interiors here they spend the summers. The continental locales where breeding occurs is regarded as the home territory. Harshness of the inland habitat in winter may explain why migration occurs. The annual long journey undertaken by some species must be considered as both dangerous and a hardship. It is undertaken only because survival on the home range is difficult. When conditions allow wintering over some flocks stop migrating. Sanctuaries located within urban environments where water (warmed by flowing through heat exchangers) and supplies of food are available often accumulate many year-round feathered residents who tolerate very cold weather conditions successfully. Perhaps migration began when the earth's axis was tilted in a *q/* originating the seasons with which we are all familiar. Rapid adaptation of the birds would have had to follow.

Antarctic dryland:

a series of ice free valleys is located near the McMurdo Sound in the region of Mt. Erebus (3.74KM). The valleys are arid and reportedly have been ice free for thousands of years. In the sense of their dryness they compare to valleys on the planet Mars.

Even at the polar latitude ($\sim 78^{\circ}\text{C}$) the summer rock temperatures are warmer than the mean air temperature, which is near -20°C . In -40Y the winter minimum temperature was -51°C . The light winds, average between 3 and 4M/s, are predominantly from the W.

The exposed rocks are old, dating to the Precambrian-Paleozoic Era boundary, and folded. The sediments present are cut with large sills and dikes. Also present are mobile sand dunes lying transverse to the prevailing easterly wind direction in the lower Victoria Valley. Over 8 years these dunes did not move noticeably nor had their shape altered. Beneath the dunes are beds of frozen sand and snow. The underlying structure is inconsistent with the dunes above, suggesting a deposition during the southern winter. Winds blow sand and snow across the active dunes sculpting them. Elsewhere in the valley crescent shaped dunes migrate across the glacial drift. Some of them are 5 to 10m high and more than 250m wide. Cornices, of mixed sands and snow, commonly form at the crest of dunes. They drop off when the snow sublimates.

Antarctic Ocean:

The waters surrounding the Antarctic Continent provide the the main environment hospitable to life in the Antarctic Region. Except near the Scotia Island Arc the westerly winds rage freely producing the greatest waves on the planet. The S Polar ice pack extends to between 60 ° and 50° latitude by the end of the winter season. During the summer the ice retreats toward the coast, however only the W shore of the Ross Sea can ice free access be gained to the continental coast. Near the Scotia Arc the Waddell Sea is covered by a permanent ice-pack resembling that in the Arctic Ocean.

The temperature of the Antarctic seas rises in two sharp steps traversing from S to N. Near the continent the water temperature is barely above freezing, due to the low salinity (<34%). An offshore current eventually meets more stationary waters at the Antarctic Convergence. Here the waters may be as warm as 3.5°C. The surface waters have a high concentration of CO₂, phosphates, and nitrates providing a nutrient rich layer for phytoplankton and animal plankton forms (with siliceous shells). The sea bottoms are rich with diatomaceous muds admixed with coarse rock shards and silts, presumably of glacial origin. The crustacean Euphausia (commonly known as krill) feed on the diatoms and in turn provide food for the fin whales, smaller fish, squid, small seals, and emperor penguins. The squid are food for the sperm whales and elephant seals.

The Antarctic seas though a barrier to human access to this cold and barren continental landscape influence the weather and tidal water patterns globally. As in the Arctic semi-permanent storm centers spawn cyclones which migrate into the temperate latitudes providing moving weather centers along the boundaries of the great air-masses. A major storm track originates in the Ross Sea, crosses Marie Byrd Land into the Weddell Sea. Precipitation from these storms is mostly in the form of snow but rainfalls have been experienced in every month of the year in Grahamland. In

general the winds across the Antarctic region exceed those in the Arctic.

Antarctica:

the South Polar continent, containing a tenth of the continental crust of Earth and carrying 90% of Earth's ice. The seas around it contain islands that once held vast bird and sea-mammal colonies, largely exterminated over a century ago by as many as fifty ships at a time. A single cargo of sealskins would bring in China a lifetime's fortune. The "Roaring Forties", the roughest and coldest seas of the world, took their human toll, however. Antarctica holds many exploration camps but no permanent human population. Its several hundred species of mosses, lichens and other hardy vegetation are but a faint reflection of the abundant even tropical life of the continent in past ages. Too, animal fossils have been turning up with increasing frequency, dinosaur specimens included. Fauna presently is confined to penguins and sea mammals that can readily escape for their own predatory maritime hunting. The continent is estimated to have been ice-covered (there are dry stretches of exposed ground) for 3 my *c/* and the ice has been calculated to have grown continuously over the past 12ky. Ice has gathered as an immense mound capping the continent, over 3km tall at its summit. The outlines of the continent are mapped, but it has shelves so thick, with water in part below, that the determination of where the true land lies is often uncertain, and it is possible that the continent may be not singular, but several islands, or it may be traversed by a strait. If the enormous weight of ice were removed, the continent in rising would deform the existing coasts and in places rise to thousands of feet high. An old map, whose sources disappear into antiquity, pictures the Antarctic continent free of ice and with coastal outlines as they are known today; it is thought *q/* that this is evidence for a warm period ("The Golden Age of Saturn" perhaps, as the ancients called it) when the continent was at least partly ice-free. The global fracture system relates to Antarctica in uncertain ways. The world fracture appears to have split off South America, Australia, and Africa, creating the continent. But some part of the fracture may be buried under ice. There is a remarkable division of Antarctica into two types of geomorphology. Below South America and the South Atlantic, the rocks continue the Andes in mineral composition and

are even folded into Andes-like mountains; volcanism has persisted strongly up to the present and in the islands to the North. The opposing side of Antarctica appears strongly to resemble geologically the plateaus of Australia and Africa. A great deal of fossil life is to be found here in the thick sedimentary beds some of which are of limestone and coal. Between the American and the Australian regions of Antarctica there a great horst or steep long ridge, a block-faulted scarp, that extends along the western and southern sides of the Ross Sea and probably crosses over to the Weddell Sea. Conceivably this may be a major fault of the global system. If the "New World" traits cease with the traverse fault, this would indicate *q/* that the American cordillera was driven westward and upfolded after the global fracture raced down the Atlantic and Eastward-around and/or through Antarctica; a large piece of the world morphology puzzle would be fitted in.

Antelope County, NE:

An ashfall entombed prehistoric animals in Antelope County, NB. The remains of herds of rhinoceroses, three-toed horses, camels, tiny sabre-toothed deer were found jumbled in a layer of abrasive dust along a stream bed in the N part of the county. The disaster which produced a sudden and catastrophic end to the lives of several hundred animals assembled here blanketed hundreds of square-kilometers of the Nebraska countryside. The ashfall is described as being on a vaster scale than the debris from the recent eruption of Mount Saint Helens in Washington state.

c/ Scientists conclude the assembled animals were stricken as they used a local watering hole beside the stream. The catastrophic burial is placed in the middle of the Miocene Epoch *c/* 10M years ago. A *q/* opinion would agree that the event occurred in the Tertiary Period, but would suggest a date of thousands rather than million of years ago. Likely the catastrophe was global rather than local and that the animals died elsewhere before their broken remains were blasted to their final resting place.

Antelope Valley, CA:

A long ridge of gravel is deposited down the center of the western end of the Antelope Valley in California. The valley is located 900m above sea level. The gravel ridge is not level but varies from the valley floor by 30 to 45m. A tiny creek runs at the bottom of the valley for less than 1500m. The valley has a dry climate, annual precipitation is about 15cm (more than half of it as snow) and produces little runoff so that even the ditches remain mainly uneroded. The most likely source of the gravel is from a *q/* oceanic flood the effects of which are widespread in this part of S California. The generative even has been suggested as a part of a catastrophe which re-directed the earth's axis of rotation.

anther:

-- The pollen producing tip of a **stamen**; part of a flower. [More info?](http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html)
<<http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>>

antheridium:

-- The organ on a [gametophyte](http://www.ucmp.berkeley.edu/glossary/glossary_G.html) [<http://www.ucmp.berkeley.edu/glossary/glossary_G.html>](http://www.ucmp.berkeley.edu/glossary/glossary_G.html) plant which produces the sperm cells.

Anthes, Rudolf:

Author, in 39, wrote xxxxxxxxxxxxxxxxxxxx, notes that, "the concept of the Eye of the highest god was mentioned in the story of the heavenly cow. The Eye occurs either as the Eye of Horus or the Eye of Ras, though not exclusively: we have encountered the Eye of Atum before. The characteristic of the Eye appears to be that its removal from the highest god means disturbance, while its return means pacification and the restitution of order."

Anthony and Cleopatra:

Anthony and Cleopatra, a play attributed to William Shakespere, written during the First Elizabethan rule (ÿ300). The drama is saturated with *q/* images and themes. The principals are respectively identified with Mars and Venus (Isis). Their love, and the perturbation it causes to their world, portrays an attraction between heavenly bodies which threatens the earth (Rome in the play). Anthony in wavering between love and duty represents an errant planet unsure of his orbit around the sun (Ocatvius in the drama). Cleopatra in her dalliance with Anthony discards her guise as an obedient (stable) planet and takes on the mantle of a world-destroying "comet."

The enduring popularity of Shakespere's rendition of this historical melodrama is likely tied to its cosmic undertones which appear to reflect events shaping human societies during the period marked by imperial conquests, following one on the heels of another, between about 2900 and 2686. It is possible to visualize the earth being battered by a succession of cosmic encounters which motivated crazed humans to emulate what they saw in the sky by ravaging and pillaging the catastrophized remnants of neighboring civilizations. In this era the civilized world was politically reshaped, just as the physical world had been reshaped by even worse global disasters in the millennium preceding it. The conquests ended when the heavens became calm, but the victors were not content until a social revolution was effected which produced the Classical Societies (Greece and Rome) from which western traditions descend. Possibly this cultural revolution was seen as a placation to ward off future recurrences of the *q/*.

anthophyte:

-- A flowering plant, or any of its closest relatives, such as the Bennettiales, Gnetales, or Pentoxylales.

anthropism:

The Anthropic Cosmological Principle states that our relation in the Universe is necessarily privileged to the extent of being compatible with our existence as observers. By this principle the basic features of the Universe (including its physical properties, age, and natural laws) must be *observed* to be of a type that allows the evolution of observers. Further, the principle implies that seemingly improbable properties of the Universe need to be considered in the context that they are necessary prerequisites for the evolution and existence of observers.

The anthropic principle can be expressed at three levels: the weakest statement implies that the laws of nature are such that life is a possibility; in a stronger form -- life must occur in the universe we inhabit; and the strongest version can be stated to posit the belief that the universe exists so that the life force may be expressed.

Anthropism has become popular in recent decades as scientists realize the tenuousness of the biological principle of "natural selection," heretofore held responsible for the development and adaptation of life on the planet Earth. To have life arise from the random combination of chemical substances and to assemble the combinations by chance into a living cell seems more and more improbable as possible ways and conditions by which the process happened have been examined. As presently conceptualized the universe is much too young and too sparsely populated with matter to give rise to life as a result of random occurrences. The solution has been an attempt to define the improbable as probable by implanting the anthropic principle above the other laws by which humans (particularly humans who declare themselves physical scientists) think nature operates. In the biological and behavioral sciences a parallel school of "anthropic" thinking has produced debates about whether the code of universal laws includes a hierarchical requirement: one which dictates the form into which biotic materials shall be assembled after abiotic synthesis has produced the raw molecular materials from atoms. More practical

thinkers have "solved" the problem of the existence of life on Earth in the context of a universal "purposeness" at the level of the fundamental units of matter rather than on the cosmological level.

In the *q/* context where the life environment is subject to sporadic, drastic, physical and chemical transmogrifications some method by which existing life can reference itself to markedly altered conditions is required. A concept such as "genetic realization," by which the genetic material of all living forms contain information which can be used to rapidly modify the form and operation of the organisms facing huge environmental disruption might enhance the survival of life after it comes into existence. For *q/*, facing the geological and palaeontological records squarely as records of planetary decimation, the survival of life is as important a question as those into how or why life began.

anthropology:

major field of teaching and research concentrating upon ancient humanity, its origins and cultures, and modern humans, their types, habitats, and cultures. Among its principal engagements are discovering the physical history of the species and its first tools, discussing the issues of evolution both physical and cultural since the beginnings, pursuing the balance of diffusion and independent invention among human cultures, finding rules governing the myths and thought, the patterns of settlement, and the modes of life of distinct tribes and groups. All of these are pursued through time. A. is simultaneously heavily physical and cultural, classificatory and change-conscious. A. is a critical science in the consideration of *c/* and *q/* argumentation, aided to be sure by overlapping jurisdictions of geology, archaeology, linguistics, pre-history, ancient history, comparative ancient literature, history of religion, history of science. Generally, *c/* maintains that Humans evolved physically by seemingly ever-lengthening time-routes in Southeast Africa, without evidence of evolution actually occurring or who was the first human, that culture evolved just as slowly, beginning with the club and hand-held stone, that reasoning evolved as well, that progress (improvement) is an unwritten code behind human and cultural change. Notable social tasks of A. are to indoctrinate the so-called advanced peoples with the notion of universality and relativity of ethics and conduct, to provide them with self-awareness and deprive them of unjustified feelings of superiority; also to protect the rapidly disappearing tribal peoples of the world, on all five continents. It is presumed, moreover, that such general principles of human behavior as may emerge from A. research will be applied to the advantage of public policy everywhere. A's are staunch defenders of macro-chronism and of Darwinian evolution. The methodology of A. is an assemblage from sociology, ethnology, archaeology, and geology, granting that these fields and others draw from A.; that is, there is no peculiar A. method, though there may be some habits commonly found in its research and writing; a different organization and different topics distinguish, say, an A. text from a text in sociology or earth sciences or city planning. The field suffers, like all historically and

theoretically oriented ones, from minimal funding of research and field investigation. The diplomatic skills of its experts in the field are frequently extensive, because they must enter intimately upon strange cultures and intrude upon sacred ground, both mentally and physically. *q/* has made no inroads upon the field; only most rarely are alternatives given to A's. To redress the balance would require a reconsideration of the history of humankind based upon a catastrophic scenario, aretracing of the patterns of human migrations to observe their conformity to the aftermath of catastrophe. Also, A. would ask what brought about the abrupt transform of the humanoid into human and whether this has not affected all of culture, art, group relations, and conduct generally because of the way in which it came about. The absurdities of requiring 2my development from a hand axe to a sacrificial Etruscan axe, not to mention the 5my from the humanoid to the handaxe, have to be faced. A's Malinowski, Keith, and Kroeber once expressed dating doubts and postulated an "all or none" quantavolution of culture, hologenesis, it could now be called. Early human fossil sites have to be reviewed and new ones opened in full awareness of the potential catastrophic destruction that sealed the site for today's investigators. They must be carefully surveyed on micro-chronal hypotheses as well. The myths and legends of peoples everywhere require review and analysis for the occurrence systematically of *q/* referents. The collective unconscious and collective amnesia have to be restudied together. Naive acceptance of the dating methods of chronometricians, particularly those engaged in carbon dating and potassium-argon dating (not to mention traditional stratigraphic allocation), can better be replaced by scepticism, analytic logic, and critical retesting of the tools themselves in the light of their premises of constancy, considering what is more and more known about the disruptive effects of catastrophe. It is understandable that A., which has had its share of frauds and is one of the newer disciplines, with heavy dependency upon other fields and low resources, should strain to maintain a darwinian, rationalistic, and uniformitarian consensus, practically unanimous.

anthropomorphism:

lending human form and attributes to non-human existence and beings, such as animals, rocks, plants, gods. Some of the world's oldest art, as in the Altamira (Spain) caves and at Nieux (Ariege, France), exhibits images of bulls with men's faces; a religious effect is to be presumed. Throughout the Near East, early sculptures, some magnificent, especially lions and bulls as in Egypt and Chaldea, carry human features. The sphinx of Gizeh, with its modish head, is a prime example, and much myth is built around it. Few peoples ever have resisted the pleasure of picturing their gods as themselves writ large on the screen of the heavens. Less inclined than many cultures to portray gods directly with animal features than most ancient cultures, whether in art or in language, Judeo-Christianity has nevertheless given a parcel of traits to its God, and Jesus, being Son of God, has had to bear with a continuous portraiture as all of the Holy Family save God himself, whom only a Pope and Michelangelo might conspire to paint on a ceiling, the Cistine Chapel. In sum, all human qualities have at one time or another been consigned to the gods, and divine operations are nothing more than human motives and behavior. Even lowly and despicable qualities and behaviors are ordinarily ascribed to gods. That Uranus urinated upon the Earth, that He shat upon it with gold feces, are stories not alone of the Greeks but of other civilized religions. "Genesis" has God creating man in his own image, a crowning blasphemy to start off with. If one were to assemble a mosaic of all the qualities given to God in the chapters that follow, one would have a Person who looked exceedingly like Moses was and is supposed to look and besides acts as Moses did act or would have liked to act. In Jung's "Answer to Job," Job's clever game with God is brought out; Job even turns out to be superior morally to the Lord, in modern terms, if not in ancient Hebrew. For the schizoid Job is trying to control God, and to do so makes God ambivalent. God piles one misery after another upon Job, who manages, however, to keep one step ahead of Him. Job is trying to make a fool of the Lord, an unreflective instinctively reacting animal. usually it is said that gods are not like men because they possess an infinity of the virtues. But the traits that appear

infinite in the Divine Mirror are extensions of the traits valued by humans, especially theologians. Gods are all-powerful, all-loving, present everywhere, omniscient, all-creative, absolutely just and so on. Granted that the human can know only what is an extension of himself, the self becomes the model of the real, and no trait can be imagined that is not present already, even if in an "inferior" "unenviable" form. In this anthropocentric sense, all divinity must be anthropomorphic. Even when gods try to resign from the world (usually they are overthrown), like Saturn, they are compelled to remain witnesses: "An otiose God, then, surveying unmoved `this dusty, fuliginous chaos,' is the residuum of all this furious apostrophising." (F. Harrison)

anthropophagy:

The eating of man by man, "human-eating," or cannibalism. No one alive today comes from a people that has not practiced a. at one time or another and, often, in successive ways, under various guises. It can be detected, beneath a layer of historical censorship, in ancient Egyptian, Hebrew, Greek, Mesopotamian, Phoenecian and Northern European custom and religion. The passages in Deuteronomy (28:53-75) are warnings of what may happen based on what happened in the past in the way of infanticide and cannibalism. The Jewish and Islamic taboos against the eating of pork may have originated not only in the dietary and physical analogies between the two species, but in the similar taste, of pork and human flesh; in turn, this would be construed as a source of disgust, but also as a stern attempt to suppress any suggestion of cannibalism. The Greek omophagia was a cannibal orgy in which a party tore apart a victim and ate him raw. The word barbecue comes from the barbricot of the Carib Indians, the grill on which victims were roasted for dinner: in the Age of Discovery, numerous tribes and cultures were discovered to practice cannibalism. It is not unnatural to human kind, else it would not be deemed so repulsive in ordinary life nor so dreadful, that when individual cases are uncovered, as with starving explorers or survivors of an isolated plane crash, popular literature gushes off the presses. Nor, if it were so unnatural would it be so frequently incorporated into the heart of widespread religions. Yet, the suppression of cannibalism has to be regarded as one of the most successful sublimations every achieved by mankind. In this one sees the clever human at work, "having his cake and eating it," that is practicing a. and suppressing it as unthinkable and the worst of crimes. Cannibalism is spontaneously human. Several profound impulses promote it. The human is born after living off the body of the mother; the mother is often heard to say to a baby, you are so cute I could eat you, and there are in every culture such culinary threats, make-believe, of course, except that make-believe reflects hidden wishes. It is not rare to find actual infant-eating engaged in clandestinely, or for religious reasons. Stories and myths are common: the Greeks had a number of myths in which parents ate their children, whether

deliberately or by accident or by the trick of an enemy, even a father. "Eatability" is to be considered a compliment. But this is only an offshoot of more fundamental causes; after all, mammals hardly ever eat their infants or kind, and few other species do. Going back to beginnings, anthropologists generally believe that cannibalism was widespread among the earliest men. From Ethiopia, in the Valley of the Awash River, comes the Bodo hominid skull. It appears to have suffered ritual defacement and probable removal of the brain for eating. One had better presume that the eaters, whether hominid or human, had a culture, for tools were used. By one theory *q/*, that of *Homo sapiens schizotypus*, a. develops quickly upon humanization, the signal for which is self-awareness or the creation of a multiple self, which inspires a perpetual fear and a corresponding need to govern oneself (become a whole and single animal again) and by projection to control others, whether in the sky or on land. He sees himself in others, and others in himself. He seeks to assimilate himself and others. It is mixed up with aggression as well as sacrifice. Hector's mother in the Iliad wanted to tear out and eat the liver of Achilles, killer of her son. Yet the nations and religions that have killed and murdered other people most profusely have been the most insistent upon the evils of cannibals; indeed, explorers have observed the relative gentleness of some cannibal tribes; it was Hollywood that gave cannibals a bad reputation. Perhaps the very reason for the wholesale murder of warfare may be that humans of societies that deny the religious and edifying effects of eating the kill are all the more frustrated and furious therefore, although they will never admit such a connection. Customs of eating also convey uneasy suggestions of a.: often the host feels insulted when guests will not eat, almost as if he were asking them to eat him; that is, he takes personally their behavior; perhaps the guests, at the same time, are in effect saying that the host is not worth eating. Too, the psychiatrist may ask: why should eating be a pleasure, and the rare people who eat to survive be regarded and act as if they were ill? The ceremonies of eating have a sacred origin and unconsciously these persist in often lampooned etiquette. Margaret Visser (1991) has published indications of the fear of being eaten as the basis for some table manners, the restraints on using knives showing a general nervousness concerning on whom they

might be used. Anyone can eat animals or vegetables; to eat a human is very special, done everywhere with much ceremony, and usually a religious act. Especially is the human impressed by the gods that eat not only men (as giants and dragons, for instance) but also other gods. Thus, the greatest of Gods, Saturn\Kronos, whose Hebrew identification would have been Elohim, was seen to regularly ingest his own infants after his wife gave birth for fear of their rebelling and superseding him as he did his own father Uranus. One suggestion *q/* is that, following a great explosion or nova, the Planet Saturn was observed to absorb some of his own debris afterwards; a corollary of this theory suggests that Jupiter (who in turn overthrew Saturn) originated from Saturn in a late explosion and was hidden in dusts clouds or a far orbit or behind Saturn until it returned to repel Saturn into farther space. The higher the god, the more frequent the human sacrifices and a. Not only Greek, but Mesopotamian and other theologies had gods battling and ingesting one another. Nowhere was cannibalism more sacred and widely practiced than in pre-Columbian Mexico. Tens of thousands of prisoners were taken by Aztec expeditions and nourished, sacrificed and eaten each year. Priests and nobility ate the heart and choice portions while the larger carcasses would be distributed among the multitude in order of rank. The priests made the prisoners holy and their eating became a sacred act (also one providing needed proteins in the face of a poor diet, according to one scholar). The Spanish priests and soldiery were revolted by such practices, and were more cruel than they might have otherwise been to the natives whom they conquered. However, the Spaniards, like most Christians, themselves were either practicing sacred cannibalism or were denying their own religion. For Jesus according to the Gospel of John said the following words to his disciples, "Most truly I say to you, unless you eat the flesh of the Son of man [Himself] and drink his blood, you have no life in yourselves. He that feeds on my flesh and drinks my blood has everlasting life, and I shall resurrect him at the last day; for my flesh is true food, and my blood is true drink. He that feeds on my flesh and drinks my blood remains in union with me, and I in union with him." (6:53-6) St. Paul stressed this literalness of the Gospel, warning of damnation if a Christian took communion without understanding it.

Thus the Eucharist, Holy Communion, the peak of Catholic ritual, is a. but sublimated to the highest degree, regretting the killing, which was done by others, Jew and Roman, and transforming the body and blood into humane forms, making its supreme demand upon the mind to not believe what it sees to be what it is.

anthroposphere

the totality of social organizations, religions, and modes of life on Earth at any given epoch. In Quantavolution's examination of the circumstances surrounding the Exodus, evidence of abundant changes in the anthroposphere allows to posit that: "Every culture complex in the world changed radically in mid-second- millennium." We know that the Egyptian Middle Kingdom underwent the political and social traumas of a takeover by the Hyksos. Most often, as Claude Schaeffer has shown, "sedentary occupancy" of an area "was replaced by the nomadic." In Persia, Mesopotamia, and the Caucasus, he writes "there is no continuity between the civilizations of the Middle Bronze Age and the Recent Bronze Age."

A recent corollary of this hypothesis is: "No god of before mid-second-millennium B.C. remained without change of status or family change or serious incident."

Zeus found a new daughter, Athene. The Hindu goddess Devi conforms to all appearances with Athena, with the same violent entrance upon the skies and the human mind. Yahweh appears and explains to Moses, rather unconvincingly: "I am the same god of your fathers, but different." "Not different enough," replied a great many Jews and they insistently chased after Baal - represented in the young Baal-bull.

anti-semitism:

a hostile attitude toward those deemed to be Jews, and associated hostile practices extending from one to many areas of life. Peoples speaking a semitic language, as defined, such as Hebrew, the ancient tribal tongue and now the language of Israel, are in vast majority Arabs, not Jews, of whom, in fact, a majority do not speak Hebrew. Most European Jews once spoke Yiddish, a Germanic tongue with local and Hebrew overtones. Hence anti-semitism often proceeds against people who speak only the language of their persecutors (and usually better). The hostility need not bear any relation to knowing Jews personally; many uncognizant anti-semites have taken it for granted that Jews exist, are a group, and are to be disliked and harmed. Attitudes of this type are usually inculcated through the family and street talk in childhood. Various feelings exist as to who are Jews: that they constitute a race, a mixed race, a religious group, a cultural group, or anyone who calls himself a Jew, or whose parents and grandparents called themselves Jews or practiced Judaism. Most self-labelled Jews subscribe to one or a combination of the above as well. Depending upon the definition in the minds of anti-semites or proclaimed by the laws of a country, anti-semitism may contract or expand in response to a number of factors, such as Christian revivalism, economic depression, Israeli intransigence, conspicuous anti-social acts committed by Jews, and ideological revolution. For purposes of discussion, it is well to consider Jews as those who are both regarded as Jews by others when asked about them and/or who regard themselves as Jews. The number of "Jews" in a population accordingly varies with definitions, and no census by these terms exists. About eight million Americans would fall into this grouping. The "separation of church and state" is usually given as the reason for not seeking to learn the number of Jews or other persons claiming religious affiliations, whether Catholic, Lutheran, etc., in the United States. So the only information on numbers comes from doubling the number of Jews to which Jewish religious organizations lay claim, which corresponds more or less to the numbers produced from occasional questions in public opinion sample surveys. Jews never were nor are they a pure racial set. Evidently

they were hardly distinguishable physically from other tribal peoples of the Near East, although there is some indication that they numbered more red-heads (whether naturally or artificially) than the surrounding peoples. That would put them originally with the Mediterranean sub-race that amounts to perhaps half of the Caucasian race, 3/4 if the 800m East Indians are included. However, their miscegenation with Alpine and Nordic Caucasians from the Russian steppes to Hawaii, and with Africans and Afroasians in Southern Arabia and Ethiopia, has been so great that any sampled group in America or Israel will display a wide range of sub-racial and locally-based traits. None of these racial traits have any relation to neurology or behavior, so far as is known. Experts are almost unanimous in this position. In fact, any contrary position, for lack of evidence, has to be based upon faith, whether held by Jews or anti-semites or others. Although here, too, the lack of evidence is surprising, there seems but little doubt that the Jews hold very high indexes on whatsoever scales are used to measure creativity and correspondingly, in the intellectual occupations and the professions, but also in business and the arts. Occupations dealing with the media -- combining business and the arts -- are heavily Jewish. Political posts, labor union leadership, and associational leadership generally are disproportionate to numbers Jewish. The causes of Jewish prominence in a great many fields is in some part attributable to the element of truth in the anti-semitic allegation that Jews stick together to favor and advance one another, although this is scarcely more the case with Jews than with any other grouping in the population of ethnic or religious or political faith. Nor is it because the Jews hold tenaciously to their wealth and positions, since they are by far the most philanthropic group in the populations where they reside or to which they may belong, and give not only to their own poor and to education and culture, but to those people and institutions that are largely gentile (as the non-Jewish population has been termed since ancient times). (It would be naive to think that none of this is "protection money.") One must look much more deeply into age-old habits and circumstances of the Jews. Monotheism was a powerful organizing force, so was the belief in a Messiah to come; so was the fierce concentration upon the written word and its disputation. Holy writ and its

legends helped to hold the Jews together and lend intellectual sustenance wherever they went or were driven to go. Hardly measureable is another conditioning force; unlike Christians (cf especially black Christians) and Muslim, Jews do not believe in a delightful Heaven where all the problems of life will be washed away forever for the true believer upon death; there is a Shoul, a comparatively unattractive place tacked on to Judaism in a late phase and believed in by some. In consequence, Jews have been more "earthy" and materialistic and ready to seek for the goods of this earth in their own lifetime. The Lost Tribes driven into exile by the Assyrians ended up probably in the Caucasus and were perhaps the basis for the much modified but nevertheless culturally prominent element, believed Slavic *c/*, that converted to Judaism and merged ultimately with the Jews moving into Russia from the West and Southwest. This and other cases may be alluded to in the debate over whether outsiders can become Jews, an issue that has some prominence in Israel and stirs up some anti-semitism. At times Judaism has been open to outsiders. The idea that Judaism may be claimed and can be assigned if only one's mother might have been Jewish, which is prominent in Israel, is an argument that borders upon the racial and hints of dark times under bondage when "it was a wise man who knew his true fathr." Jews are generally, if believers at all, divided into congregations as they practice more or less of traditional Jewish ritual and life-styles. There are also small cults, verging on to non-believing Ethical Culture and Jews for Christ (who, after all, was a Jewish leader of some prominence). Even when quite "non-rational," a belief-system subject to continual discussion and argumentation, bristling with alleged historical facts and numbers, inculcated under conditions good and bad from childhood onwards structures a group to attack many other kinds of problems, particularly when the group is actually restricted to occupations employing in some part these talents, as money-lending, peddling, magic, and the occult arts. This is especially true, considering the degraded boorish unskilled level at which the population as a whole has subsisted over most of history and, in better, more recent times when the population was freerer, more comfortable but weak in level of aspiration, undisciplined of mind, and given to drugs and lethargy. Driven by anxiety

and tradition, the Jews could not afford such luxuries. To a degree, the superior indices of Jews are attributable to the prejudice against them, that is, anti-semitism itself. Separated out, isolated, trained to cooperation in the group, given the wisdom of dealing with all kinds of outsiders, made tenacious and patient at the same time, book-learned, trade-smart, the Jews had highly useful habits of mind whenever they could enter the broader societies of Christianity or Islam. And when the French Revolution, espousing the rights of man, burst the bonds of the Middle Ages in Europe, thence in the Americas (along with the American Revolution), Jews everywhere benefitted greatly in the new world culture of humanism and science, assuming within two generations leading roles in many areas. However, "this is a poor way to run a railroad;" it is injurious to the anti-semites themselves and to the general society, that is, the gentile population in which anti-semitic attitudes and behavior may be found, if only in trace elements, among a majority. And it is not quite consoling to Jews or those potentially definable as such, knowing that such "ordinary" discrimination may accelerate and blow the lid off society, as it did to Germany, resulting in the Holocaust. So it occurs that discerning Jews have always been in the forefront of movements that promise to give or restore dignity to all persons everywhere. This in itself has given rise to anti-semitism, because numerous studies have shown that those people who are especially anti-semitic are also engaged in depriving other kinds of people of their rights, whether these be workers, blacks, women or others. It has also caused trouble to Jews in general when a movement that they have supported for its stress upon human dignity, such as marxism, destroys the property-owning class, and otherwise turns to the suppression of liberty and human dignity. They are then suppressed for their "bolshevik tendencies" (even while being persecuted as "capitalist money-bags." Other sources of anti-semitism may be cited. Manetho and other ancient writers of Egypt and the Near East attributed invasions of Egypt (the Hyksos) to Hebrew tribes. The Bible itself is a harsh document preaching tribalism, depicting the genocide and massacre of tribal enemies, and dwelling upon the theme of the Jews as the "Chosen People of God." Persecutors of the Jews could always claim "turn about is fair play,"

therefore, whatever the powerlessness and disinclination of later Jews to go into the massacring business, except in fantasy. The ever-controversial legend of the killing of Jesus serves to stimulate anti-semitism; it is pap on which practically all Christians have been raised; it evades the fact that Jesus himself and his many followers were Jewish, that his chief judge was a Roman sceptic, Pontius Pilate, that he preached "forgive your enemies," in direct contradiction of the Old Testament and of the idea of punishing the Jews for his death.

anticline:

Horizontal folding of the Earth's crust generally deforms the surface into a horizontal "S" form. The anticline is the part where the crust arches upwards. The adjacent downfold is called a syncline.

Anticlinal arches may be broad, producing a gentle ridge; sharp with steep slopes; or complex, in which case the anticline is fluted into many minor folds. Weathering tends to act more strongly on anticlines, exposing parts of the strata which make up its core. Deposition tends to fill synclinal basins.

There is considerable argument among geologists about the mechanisms which might produce crustal folding. Even more disagreement arises when the time taken to produce the fold is considered. The anticline (as a dome of surface material) is explainable in terms of any process increasing the sub-surface pressure. Since anticlines and synclines often are found side by side, repeating alternately to form a great ranges of ridges and valleys, an agent other than pressure acting vertically is indicated. Horizontal squeezing of the crust provides a reasonable alternative. How horizontal pressure can be generated is another problem since the Earth's continental crust, where synclines and anticlines are noticed, is not continuous. Plate tectonics, whereby the Earth's crust is divided into plates hypothetically floating in and driven by materials located in the Earth's upper mantle, is one possibility. Motions bringing two plates into collision might cause crumpling if the driving motions can be continued after the plates contact. Alternately diapirism has been suggested. This process involves the formation of centers of spreading, implying the addition of crustal material which leads to surface deformation. Diapirism *c/* implies the intrusion of magma onto or into the crustal layers from below, but *q/* the addition could be exoterrestrial.

Fold mountains are *c/* seen as arising over many millions of years. The pressure which causes the surface to deform must thus be sustained for a

long time. The Plate Tectonics model suggests that the Earth's mantle is viscous and that the mantle material is divided into cells which slowly convect carrying the continents floating within it. This produces Continental Drift in which collisions lasting tens of millions of years are envisioned. Diapirism would seem to be a shorter timed process. It implies some episodic cause releasing gasses and causing normally plastic materials to liquify. So, folding induced by crustal spreading might take considerably less time to accomplish than folding ascribed to continental drift. Even less time is suggested for $q/$ modes which could induced crustal folding. The lunagenesis event provides an example. There, the crust cracks explosively and the continental plates are rafted rapidly into collision. Continental Rafting suggest the plates can be crumpled into folds on a timescale lasting days or months. Even the diapir can be $q/$ linked. A burst of energy activating the crust could provide the explosive power to produce a spreading center which acts rapidly on nearby relief deforming it. Examples of concentric rings on the planetary surfaces attributable to spreading centers abound. After the crust has spread sub-surface material or exoterrestrial drops can refill the area. This last formative mode might produce the synclines and anticlines in hours.

Antillia:

A long chain of islands separating the Caribbean Sea from the Atlantic Ocean. The largest islands are the Greater Antilles: Cuba, Jamaica, Hispaniola, and Puerto Rico. The Lesser Antilles consists of several smaller clusters of islands stretching between the coastline of Venezuela and Puerto Rico. The third part of Antillia are the Bahama Islands which span the gap between Florida and Hispaniola.

About 30 million people inhabit the islands. The majority of them are of black African descent. Dutch, English, French, Spanish and American influence is evident.

The smaller outer islands of Antillia seem logically to be related to the *q/* creation of the Bermuda Deep. The Greater Antilles look like detached extensions of the Florida Penninusula. The process separating them might relate to the collision posited above, however the separation of N and S America could have produced the fragments now forming the islands. Extensive amber and mineral deposits common to the area suggest some exoterrestrial agent has acted.

antiparticle:

Subatomic particles have mirror-images called antiparticles. A. possess the same mass as their partner particles but have opposite electric charges, magnetic moments, and intrinsic spins.

Particles and their antiparticles are created together (pair creation). A. are annihilated (destroyed) if they meet any particle. Annihilation liberates energy equal to the matter-energy of the disappearing particle and antiparticle in the form of a photon pair, strictly a photon and an anti-photon. No observable distinction exists between the two photons since they both annihilate the in same way when they encounter matter.

Because antiparticles do not persist the cycle of creation/annihilation can be looked at as a brief fluctuation in the material content of the Universe.

Antofagasta mudslide:

A killer mudslide in 9 (Jn 18) descended upon hillside slums of the city of Antofagasta, in N Chile. Sixty-one persons were killed and scores of wooden shacks were swept away. About 750 people were injured in the mudslide which followed five hours of rare, torrential, rains for this part of the Atacama Desert, which is one of the most arid regions on the Earth. Storms were reported in several other towns across the desert. Strong winds accompanied by rain and snow were reported at Calama, 215km E of Antofagasta. To the S (along the highway between Santiago, Chile and Mendoza, Argentina) severe snowstorms occurred in the Andes Mountains blocking the road.

Intense storms, such as these in S America, tend to be decadal (maybe following the waxing and waning of solar events). The damage they cause is often responsible for most of the local erosion. Episodic processes intervene with *c/* mechanisms which ascribe erosional events to gradual processes whose average intensity is deemed to accomplish the main local erosion. Ages dependent upon such average conditions are inherently inaccurate. Further, *q/* events of much greater amplitude (but of very short duration) can erase the erosion of centuries in less than an hour. How then can gradualistic measurements be taken as anything except a hope of how things would change if the Earth is completely safe with regard to the occurrence of disasters. The record is in disagreement.

Anubis:

Egyptian god whose form was a dog or jackal. At Assiut Anubis' epithet was "lord of the cave mouth." Anubis resembles another dog-god, Wepwawet, "opener of the ways", who guided the dead to their rest. From the earliest times the standard of Wepwawet was carried in battle and featured prominently at the victory celebrations.

Anubis predates Osiris as "lord of the dead." In the last judgement he weighs the hearts of the deceased against the feather of truth (Maat). Certain aspects of Anubis are represented by the Greek Hermes.

Anubis was mated to Nephtys (underground sister of Isis). Plutarch ascribes to him a power resembling that of Hecate. Dog worship was wrapped in secrecy. In India Shiva has a canine incarnation.

Anura:

Frogs and toads, tail-less amphibians with hind legs suitable for jumping and swimming. Frogs are found throughout the world excepting for the S part of S America and Australia.

The amphibians seemingly emerged during the Devonian Period, flourished in the Carbonaceous Period, and were nearly extinct during the Triassic Period. The Anura are one of three surviving Orders of the Class Amphibia. A drastic change in climate, a *q/*, is suggested as the reason for the decline of the amphibians.

anus:

-- End of the digestive tract, or gut, through which waste products of digestion are excreted, as distinct from the mouth.

anvil:

A block of hard metal with a flat top upon which malleable metals are shaped by hammering.

Anvils were associated with the gods, especially Thor and Zeus who hammered thunderbolts on his anvil and hurled them at both at worlds and at other dieties who were wrongdoers. In the Iliad Zeus reminds Hera of the time he punished her by suspending her in the sky and clouds with anvils attached to her feet. Even the hurricanses and the sea driven by the N Wind had no power to free her.

A celestial connection for anvils may arise from meteoric stones, called *akmones*, which fell near Troy. These hard iron fragments may have been the prototype for later models. If the meteorites fell accompanied by loud electrical discharges then the association of thunderings in the sky and anvils becomes understandable.

anxiety:

A person's generalized organically sensed and mentally disturbing displeasure containing elements of threat and fear, which may be of any degree of self-awareness. The basic cause of anxiety may be *q/* human nature that is condemned to internal conflict over controlling its identity *s/* and therefore *a.* may stand for this unending self-uncontrollability. The medium for the reduction of and discipline of such natural anxiety is the practice of animal and social rules of behavior, where reassurance and reduction of anxiety comes from the uniform soothing conditions of routines and habits, promoted and indulged. Cultural change, actual threat and deprivation, and disturbing media or personal experiences -- psychological trauma, that is, which may or may not be "physical" -- are common extensors of anxiety levels. Each individual can be rated on a general anxiety scale that can be upgraded by a number of individual particular and generally effective experiences, and similarly downgraded. The particular and general vary to make every person unique in one's anxietability and the directions that the upgraded and downgraded anxieties take. Thus the trauma of an automobile accident may diffuse into compulsive -obsessive thoughts and behavior in a number area -- all travel, heightened anxiety for family members everywhere, antagonisms of various kinds, etc.

Fear can be distinguished usefully at times from anxiety, usually by specifying a particular object of fear, that is, less generality. Freudian theory stresses the chance that anxiety signals the arousal of an unconscious desire (incest, etc.) whose realization would be dangerous, and therefore the person exists in a state of troubled discomfort. Existentialism prefers to regard *a.* as a global "angst," or "malaise" or an "anomie" arising from the loss of a sense of world order, or a sense of meaning to life.

Aorounga, Chad



The Aorounga structure is situated within the Sahara Desert of Northern Chad, about 110 kilometers southeast of the Emi Koussi volcano in the Tibesti Massif. This structure is poorly explored and its exact size and formation age are still disputed. French researchers have collected samples from the structure, which show evidence of shock metamorphism. This shuttle image clearly shows the two broad concentric rings that delineate the Aorounga structure. Each ring rises approximately 100 meters above the surrounding plains, and the two are separated by a depression of uniform width. A central uplift would be located within the central depression. The sandstones forming the outer ring dip steeply toward the depression. The streaks mark the prevailing wind direction and represent sand deposits that occupy shallow, linear, wind-cut valleys. (*Space shuttle image STS38-77-005.*)

Location: 19°6'N, 19°15'E **Diameter:** ~13 kilometers **Age:** <350 million years



This second image of Aorounga Crater was acquired by the Spaceborne Imaging Radar-C/X-band Synthetic Aperture Radar (SIR-C/X-SAR) on April 18 and 19, 1994, onboard the space shuttle Endeavour. The processing steps were similar to those of slide #16. This image shows that the relatively flat tops of the two concentric rings are rough, blocky, and probably composed of solid rock. The dark appearance of the depression, on the other hand, probably indicates that the trough is filled with a relatively thick deposit of dry, unconsolidated sediment. The irregular feature in the upper left corner is a portion of a feature that has been proposed to be a second crater, but there is no confirming evidence for such a suggestion. The area shown is 22 kilometers by 28 kilometers. (*P-46712 courtesy of JPL/NASA.*)

apastron

the greatest separation of the principals in a binary. It is a homologue of *apogee* for an Earth satellite, and *aphelion* for a planet. The term *apocentron* is used in place of apastron to describe the farthest point on an orbit.

apathy:

a torpor of manner, posture, and speech indicating an attempt to resign from the world and the struggle among the person's internal selves. It goes beyond pleasure-avoidance or anhedonia and is related to but not so severe as catatonism. Inducements of many different kinds will not serve to arouse one, nor often even negative stimulation by electric shock, injustice or deprivation of the necessities of life. That there may be both genetic roots and traumatic experiences behind most severe cases of apathy is recognized. Since apathetics are not trouble-makers or romantic figures, they have been poorly reported in ancient and modern literature. However, it appears to be a basic response to fear, one of withdrawal and retreat inwardly, rejecting even physical flight, and as such *q/* is to be considered when assessing possible conditions under which humans originated and how humans have reacted to catastrophes anciently and recently. Apathy is hardly self-protective; it is a side-step away from depressive suicide; how could it develop as an aid to species survival? In an individualistic sense, it could be part of the freudian "thanatos," or death instinct, whereby the individual achieves the satisfaction of "let what will happen happen to me, and be done with the world." The cowering dog or other animal, who puts his throat at the mercy of his enemy, would appear to have some relation neurologically and homologically to pathological apathy in humans; as is to be expected, the human displaces the emotion in all directions, lets himself be partially paralyzed by fear and displays the anti-libidinal apathy in all areas of behavior.

aperture:

-- Small opening, for example the opening in the test of a foram.

Aphek, Caanan:

Archaeological site located twenty kilometers ENE of Tel Aviv-Jaffo. Excavations of a "Canaanite" city have unearthed a "Hittite" seal, associated with the reign of Ramses II of Egypt, and now a tablet reputed to be a letter from Takina, the ruler of Ugarit, addressed to a high Egyptian official, Hy. The text consists of 41 lines of Akkadian writing.

Aphek and its "Canaanite" habitation was destroyed by some calamity. When habitation was restored, a new culture was in evidence. An inscription was found with scripts resembling those of Cyprus and Crete but not similar to any known writing. The post-destruction habitation might be ascribed to the intrusion of the Assyrian Sennacherib who laid waste to the region around ancient Joppa. It is premature to decide whether the destruction layer at Aphek can be ascribed to acts of pilage by the Assyrians or to a larger natural disaster *q/* in whose wake the Assyrian invasion was enabled.

aphelion:

The most distant point of a planet as it orbits the Sun. Earth presently reaches A. on July 5 at which time the Sun is 101.7% times its average distance.

Aphrodite:

Greek goddess of love and of the Moon, though also often identified with planet-Venus. "Foam-born," (afrogenis), born from the sea and the sperm-blood of the genitals of castrated Ouranos (Roman Uranus). Foam *q/* suggests a raging sea and catastrophe; on the Beaufort Scale of sea weather, "Beaufort 10" has the sea foaming. Certain ancient peoples were called Proselenians because they lived before the Moon was born, and *q/* this belief deserves weight. The Moon was also called Selene. Planet-Venus was also and probably later called Aphrodite, and the Romans later transported the name of the Italian goddess, Venus, to Aphrodite and named the planet Venus, calling the Moon 'Luna'. The Romans also made the correspondance A.=Minerva, Roman goddess of Moon and hunting. Earliest sources place A. with Ouranos, god of the skies, father of Saturn, grandfather of Zeus or Jupiter. Thus a goddess more ancient than Saturn, probably existing before Jupiter, who had been a fearful presence at one time came to be personified as beauty and voluptuousness. Homer introduces a second A.-Pandemos, who is a daughter of Zeus, who is also connected with the foaming sea and with the destructive monster *q/* comet Typhon, and may well have been connected with planet-Venus. So the confusion may have started here. There are other A.'s as well. In India, in the war between gods and giants, the goddess Sri, or Lakshmi, was born and produced from the sea and represents the Moon. In certain cultures, the Moon carries a masculine character, and is on occasion bisexual, and as the cosmic virgin A. is both father and mother goddess. The Virgin Mother is found in very ancient statues sometimes to be bearded. In Carthage, lunar Astarte represented Aphrodite Urania under the appellation of Celestial Virgin. A telling case for Aphrodite as the Moon, even in later times, is to be found on the Berlin "lekytos," where the Moon is in full view behind the painting of Aphrodite, alongside whom stand Ares, her lover, and Eros, god of love. She is probably the Venus de Milo statue, and the missing arms, here as on other similar statues, were occupied with spinning yarn, holding the spindle with the one hand, drawing the thread with the other, this activity constituting an occupation of the Moon, and

being precisely represented in Meso-America and Egypt. A. is a friend of Poseidon, old god of the sea, and an antagonist of goddess Athena, who was also an enemy of Ares, and who is probably better associated with planet-Venus than A. The love affair of A. and Ares (Mars), was the juiciest divine scandal of the "Iliad" of Homer.

The shadow of the Moon makes a cone against the ground and symbols and representations of this cone are to be found throughout the Near East and may have excited the production of menhirs in various regions; the cone is often pictured or sculptured in the presence of Aphrodite. The close physical association of the planet Venus and Moon in the sky, as well as the ancient successive cosmogonies and succession of divinities, fostered confusion as to astronomical connections of A. and Venus; if this was true in antiquity, it is more true now, when *c/* scholars are prone to dismiss any connection between astronomical history and reality.

apical meristem:

-- Group of cells at the growing tip of a branch or root. It divides cells to create new tissues.

Apis bull

Pliny writes that in Egypt the Apis bull was killed by drowning. Death by drowning was thought to release the divine element. The dead bull became Osiris, the underworld god. In Chapter XIII I quoted from the *Book of the Dead*. Osiris Aufankh refers to the "flame that comes into being from out of the fire which blazes within the water".

The connection between the tripod cauldron and the bull (the cauldron, *cortina*, could 'moo' and breathe steam) suggests that funeral rites, the heating of water in a cauldron, the washing of the body, and anointing it with oil, are based on a procedure for the resurrection of the soul of the dead hero. See *Iliad* XVIII:343 ff., for the funeral of Patroclus.

It also appears that in early times kings of Egypt feasted on the flesh of the bull. The king wished to absorb the strength and divinity of the bull. The running of the bull along land boundaries, and the wearing by the king of a bull's tail, show the connection between the bull and agriculture. The Latin *arare* is to plough; *aratrum* is a plough. A derivation from *ar*, electrical fire, seems possible. The hoof of the bull, like that of Pegasus, had magical power.

Apollodorus:

or **Pseudo-Apollodorus** (born ca 180 BC), author of the three volume *Bibliothēke*, a grand summary of traditional Greek mythology and heroic legends, the only one of its kind to survive from classical antiquity. (ca. 64 BC - 17 AD).

Freedman of Emperor Augustus, superintendent of the Palatine Library, prolific author, most of whose work is lost; *Poeticon Astronomicon* (attribution now disputed).

Apollonius Rhodius:

(ca270 - ?BC; flourished 222 - 181 BC) Hellenistic epic Greek poet, chief librarian of the Library of Alexandria; *Argonautika*.

arc-second

the smallest unit of angular measurement using the scale where the circle is divided into 360 degrees. The degree has 60 arc-minutes. Each minute consists of 60 arc-seconds.

archegonium:

-- The organ on a [gametophyte](http://www.ucmp.berkeley.edu/glossary/glossary_G.html) [<http://www.ucmp.berkeley.edu/glossary/glossary_G.html>](http://www.ucmp.berkeley.edu/glossary/glossary_G.html) plant which produces the egg cell, and nurtures the young [sporophyte](http://www.ucmp.berkeley.edu/glossary/glossary_S.html) [<http://www.ucmp.berkeley.edu/glossary/glossary_S.html>](http://www.ucmp.berkeley.edu/glossary/glossary_S.html).

Arnobius of Sica:

(died ca. 330 AD), Christian apologist, *Adversus Nationes*.

Arthur:

Mythical king of Britain c. sixth century.

asexual reproduction:

-- A type of reproduction involving only one parent that usually produces genetically identical offspring. Asexual reproduction occurs without **meiosis** or **syngamy**, and may happen through budding, by the division of a single cell, or the breakup of an entire organism into two or more parts.

asteroid

(gr. *aster*: star, *eidos*: aspect) Any of the numerous small rocky bodies in orbit around the Sun. Most asteroids reside in the "main belt" between Mars and Jupiter, but some have orbits that cross Earth's orbit and could strike its surface.

Astronomical Twilight:

This is defined to be the time period when the sun is between 6 and 12 degrees below the horizon at either sunrise or sunset. The sun does not contribute to the illumination of the sky before this time in the morning, or after this time in the evening. In the beginning of morning astronomical twilight and at the end of astronomical twilight in the evening, sky illumination is very faint and might be undetectable.

astronomical unit (AU)

the present value of the Earth-Sun distance. It is equal to 149.6 gigametres (149.6 million kilometres).

astrosphere

the totality of phenomena observable in the sky at a certain epoch, or at all epochs such as recorded in the historisphere, or hypothesized from observations of phenomena in the holosphere, or astronomical retrocalculations.

Athenaeus of Naucratis:

(fl.ca 200 AD), *Deipnosophistae*.

atmosphere

a layer of gas surrounding the Earth, or a planet, constituting its outermost envelope. In Quantavolution's examination of the circumstances surrounding the Exodus much evidence of atmospheric turbulence is available. A rationalistic and literal interpretation of the Bible at the time of Exodus seems to point to high electrostatic levels, high radioactivity levels, dense and persisting cloud covers, high carbon content in the air, oppressive darkness and falls of a spectacular type -- quail, manna, barads, fire etc. Quantavolution proposes that "There were radical disturbances and some lasting changes in atmospheric electricity, radioactivity, temperatures, winds, climates and solar radiance in the mid-II Millennium." Radiocarbon dates for the years involved require adjustments of serious consequence, as Suess and others have disclosed.

ATP:

-- "adenosine triphosphate". A relatively stable, high energy molecule used to fuel chemical reactions within cells.

Aulus Gellius:

(ca 125 AD - after 180 AD), Latin author and grammarian, his *Noctes Atticae* ("Attic Nights") contain 20 volumes of notes on all kinds of subjects; *Noctes Atticae*.

Aurora, Artificial

On July 9, 1962, the United States detonated a 1.4-megaton thermonuclear device in the atmosphere 400km above Johnston Island. The event produced a plasma whose initial spherical shape striated within a few minutes as the plasma electrons and ions streamed along the Earth's magnetic field to produce an artificial aurora.

Concomitant with the aurora was a degradation of radio communications over wide areas of the Pacific, lightning discharges, destruction of electronics in monitoring satellites, and an electromagnetic pulse that affected some power circuitry as far away as Hawaii.

The event was recorded worldwide as the plasma formed at least two intense equatorial tubes, artificial Van Allen belts around the Earth. These tubes, or plasma toroids, contained relativistic electrons bound by magnetic fields, the source of intense amounts of synchrotron radiation. The radiation lasted far longer than expected; the decay constant was of the order of 100 days. (Mankind, unknowing, has viewed synchrotron radiation from the Crab Nebula for centuries. The only known mechanism that produces synchrotron radiation are electrons spiraling about a magnetic field at nearly the speed of light).

autotroph:

-- Any organism that is able to manufacture its own food. Most plants <http://www.ucmp.berkeley.edu/plants/plantae.html> are autotrophs, as are many protists <http://www.ucmp.berkeley.edu/alllife/eukaryotasy.html> and bacteria <http://www.ucmp.berkeley.edu/bacteria/bacteria.html>. Contrast with consumer http://www.ucmp.berkeley.edu/glossary/glossary_C.html. Autotrophs may be **photoautotrophic**, using light energy to manufacture food, or **chemoautotrophic**, using chemical energy.

Avalonia:

-- n. A separate plate in the Early Paleozoic consisting of much of Northern Europe, Newfoundland, Nova Scotia, and some coastal parts of New England.

axe

the Greek sacrificial axe was the *pelekus*. The word resembles the name of Peleg, in the book of Genesis, "in whose days the earth was divided".

An Egyptian hieroglyph meaning god, divine, resembles an axe or hoe [a single, not a double, axe]. The word is *neter*. The word has the same consonants as the Greek *antron*, cave.

The Latin *dolabra*, axe or hoe, is similar to *tlabrys*, axe, a word which occurs in the language of Lydia, a country in Asia Minor which has Etruscan connections. Initial t and initial s are sometimes dropped, so we have in *tlabrys* the Lydian version of *labrys*, double axe, Latin *dolabra*, which symbolises lightning, and gave its name to the labyrinth.

Dolabra is *ar falando*, sky fire. *Falando* is an Etruscan word meaning iron, and the sky whence iron falls in the form of meteorites.

At Mycenae, in the Peloponnese, the mould for a winged axe has been found. The Latin *bipennis* means axe; *penna* is Latin for a feather.

The chief Roman magistrates, who had executive authority, were each entitled to be accompanied by a bodyguard of lictors, who carried the *fascis*, a bundle of rods and the axe, *securis*.

The Hebrew *maghzerah* is an axe. This word resembles the Latin *magister* and *magistratus*, e.g. consul, praetor etc.. These words are probably *magh*, great, *set*, and *ar*, the divine fire, Latin *ara*, altar. The altar was the place to which priests tried to attract the electrical fire from heaven so that it could strike and mark the victim.

At Knosos, axes are found, resting on a base of horns. This may be an indication that the electrical deity was perceived as a single force behind the two symbols. Horns are also found on altars. In Greece, suppliants, and people taking solemn oaths, would touch an altar, probably a horn of the altar.

The Cretan *tlabrunth* is assumed to mean "place of the double axe".

axil:

-- The angle formed between a leaf stalk and the stem to which it is attached. In flowering plants, buds develop in the axils of leaves.

Azimuth:

The azimuth (az) angle is the compass bearing, relative to true (geographic) North, of a point on the horizon directly beneath the sun. The horizon is defined as an imaginary circle centered on the observer. This is the 2-D, or Earth's surface, part of calculating the sun's position. As seen from above the observer, these compass bearings are measured clockwise in degrees from North. Azimuth angles can range from 0 to 359°. 0° is due geographic North, 90° due East, 180° due South, 270° due West, and 360° due North again.

bacteriophage:

-- [Virus <http://www.ucmp.berkeley.edu/allife/virus.html>](http://www.ucmp.berkeley.edu/allife/virus.html) which infects and destroys a bacterial host. Some phages, however, will incorporate their DNA into that of their host, and remain dormant for an extended period. For this reason, they have become essential tools of genetic engineers.

Balor:

Ancient Irish god, grandfather of Lugh.

Baltica:

-- n. A separate continental plate of the Early Paleozoic composed of the United Kingdom, Scandinavia, European Russia and Central Europe; named for the Baltic Sea.

barads

a biblical term which can be interpreted as the fall of meteorites from the heavens. The Seventh Plague of Egypt. Stones such as are found in great fields on the Arabian desert.

basal group:

-- The earliest diverging group within a clade; for instance, to hypothesize that [sponges](http://www.ucmp.berkeley.edu/porifera/porifera.html) are basal [animals](http://www.ucmp.berkeley.edu/phyla/phyla.html) is to suggest that the lineage(s) leading to sponges diverged from the lineage that gave rise to all other animals.

beard of Odin

One of his epithets was 'the long-bearded one'. His beard may have been compared to the tail of a comet.

bees

The eating of honey may have been thought to give divine power; mead produces intoxication. The Cretan name of Phaeton is Adumnos. Greek *hedus* means sweet, *menos* is strength and high spirits. The buzzing of bees may have been compared to the sounds on a rocky mountain ridge warning that a lightning strike was imminent. Herodotus reports in Book V that the farther north one travelled, the more bees there were.

belly

To Crostwhaite, the Greek *gaster*, belly, stomach, suggests *ka*, Set and *ar*. The word for treasure, *gaza*, applied by Vergil in *Aeneid* I:119 to the treasure lost in the shipwreck off Carthage, may be related. The most important treasures were the apparatus used for capturing and controlling the electrical god. This would be especially the case on the occasion of the exodus of the Hebrews from Egypt, and perhaps that of the Trojans from Troy. De Grazia, in *God's Fire: Moses and the Management of the Exodus*, gives a full account of the apparatus and technique involved.

Belz Menhirs:

Circa 50 menhirs were discovered in 2005-2006 in Belz, Bretagne, in the department of Morbihan. This megalithic alignment is preserved in its original sedimentary environment, which is not the case for the nearby site of Carnac, where most of the neolithic soil layers have disappeared. It bears witness therefore to the environment of the monuments and to the actions of man, from the time of its construction to the time of its abandonment. Many of the menhirs were overturned, in an apparent case of prehistoric "iconoclasm," and lie next to their implantation holes. Others were displaced and cut up for stone, probably in the Middle-Ages. Yet, the dismantling of neolithic megaliths was nothing new on the Armorican peninsula: the great 5th millennium BC menhirs of Locmariaquer were segmented in the 4th millennium BC and used to build dolmens. According to Conventional theory, the probable destruction of megaliths in the 3rd millennium BC is symptomatic of an evolution of mentalities. But more likely, or jointly, their destruction was propelled by Q events of succeeding centuries.

Benedict:

six-century saint, founder of the Benedictine order.

benthic:

-- Organisms that live on the bottom of the ocean are called benthic organisms. They are not free-floating like pelagic organisms are.

Bering Land Bridge:

-- n. The vast tundra plain that was exposed between Asia and North America during the Last Glacial Maximum, about 21,000 years ago; it served as a migration route for people, animals, and plants. Also known as **Beringia**.

biochemistry:

-- the study of those molecules used and manufactured by living things.

biological/biotic factors:

-- Living factors such as decomposers, scavengers and predators.

bioluminescence:

-- the production of light by a chemical reaction within an organism. The process occurs in many bacteria and protists, as well as certain animals and fungi.

biomes:

-- The world's major communities, classified according to the predominant vegetation and characterized by adaptations of organisms to that particular environment. [MORE?](#)

<http://www.ucmp.berkeley.edu/glossary/gloss5/biome/index.html>

biosphere

the totality of Earth's ecosystems, comprising all living beings and their environment. In Quantavolution's examination of the circumstances surrounding the Exodus, much evidence of biospheric turbulence is available, including human destruction in considerable numbers, as for instance among the Israelites and Egyptians, also concerning changes of habitat, abandonment of settlements, changes in behavior. Ovid is not to be believed when he said that the passage of Phaeton at this time burned the Earth and turned Africans to black from the heat, but it is not unbelievable that so many of the non-black peoples of Africa were destroyed that the continental population noticeably blackened after the event. Those who deny marine disasters can of course rely upon the absence of datable fossil events, but there are mammoth destructions datable to the time, and a Woods Hole Oceanographic Expedition to the Black Sea uncovered a general layer of coccoliths that occurs at the -3500 level and could not simply have died normally and drifted to the bottom *en masse*. The ancient historian Josephus said that nature, in a revolution, produced "mutations in the bodies of men, in the earth, in plants, and in all things that grow out of the earth." There is little fossil evidence yet uncovered from the period or most of what there is has been assigned to later or earlier times or ignored or is of current species. Apparently "very fresh" fossil mucks have been found, but the assignment of dates to them has progressed little.

bipedal:

-- adj. Describes an animal that walks on two legs.

bipinnate:

-- Describing a pinnate leaf in which the leaflets themselves are further subdivided in a pinnate fashion.

biramous:

-- [Arthropod](#)

[<http://www.ucmp.berkeley.edu/arthropoda/arthropoda.html>](http://www.ucmp.berkeley.edu/arthropoda/arthropoda.html)

appendages that are biramous have two branches, an outer branch and an inner branch. These branches may have separate functions; in [crustaceans](#)

[<http://www.ucmp.berkeley.edu/arthropoda/crustacea/crustaceamorpham.html>](http://www.ucmp.berkeley.edu/arthropoda/crustacea/crustaceamorpham.html), for instance, the inner branch of a leg is used for walking, while

the outer branch may be paddle-shaped or feathery and often functions as a gill. Contrast with **uniramous**.

birds

In the ancient world, birds were studied because they were thought to reveal, by their behaviour, the will, intentions and future activity of the gods. In modern terms, they gave warning of imminent electrical storms and earthquakes. They are still observed today for this purpose in some parts of the world.

The specialist bird watcher, the augur, was an adviser of the monarch and executive magistrates.

The Roman augur did not just stay at Rome and warn about likely future happenings elsewhere. Senior magistrates and commanders could take the auspices, and sacred chickens were taken on campaigns.

A broad distinction can be made between two kinds of bird behaviour studied by the augur:

1: The flight and direction of the eagle and similar birds of prey. The eagle's swoop onto a snake was particularly significant because it symbolised what was thought to have happened in the sky in the past and might happen again in the future.

2: The behaviour, generally on the ground, of such birds as the quail and the hoopoe. The hoopoe gave warning when it detected changes in the atmosphere that heralded an electrical storm. It detected earthquake light and piezoelectric charges on split rocks, in the ten or twelve hours before an earthquake.

As in other branches of electrical theology, certain key words of the augur's technical vocabulary cross the usual frontier between Semitic and Indo-European.

Hebrew *oph*, a collective noun meaning 'birds', is found in *mopeth*, omen. Bearing in mind that the Hebrew preposition *m* or *min* is 'from', we may conclude that the Hebrew conception of an omen was closely linked with the observation of birds. Teiresias, the Greek prophet who lived in Thebes, and who figures so prominently in the *Oedipus Rex* of Sophocles, had a hide, or bird observatory, *oionoskopeion*, outside the city. Thebes was a city with oriental links through its founder Kadmos. The fact that he and his wife turned into snakes may be a pointer to the meaning of his name, which suggests *ka* and the Greek *demas*, body.

bisporangiate:

-- When a flower or cone produces both **megaspores** and **microspores**, it is said to be bisporangiate. Most flowers are bisporangiate.

Black Pig:

mythical Irish monster. The Black Pig's Dyke is a defensive ditch dating back to the Iron Age.

blade:

-- Any broad and flattened region of a plant or alga, which allows for increased photosynthetic surface area.

blindness

The blinding of Teiresias was caused by his observations of snakes. He killed the female of a pair of snakes. Another story, or more probably another version of the same occurrence, was that he was called upon to settle a dispute between Zeus and Hera as to whether man or woman derives more pleasure from love. Teiresias sided with Zeus, and Hera struck him blind in her anger. Zeus made up for it by giving him long life and prophetic powers. Yet another story was that Athene blinded him when he saw her bathing. Once more we have water used for provoking an electrical display.

The story of a snake licking a prophet's ears symbolises the ability to understand bird song, thunder, electrical humming and sparking, and the rumble of earthquakes. Perhaps Teiresias's study of snakes was part of a study of Zeus and Hera, whose sacred marriage was celebrated annually in Crete. Experiments could lead to blindness, but the knowledge acquired in the augur's studies would have survival value in a turbulent world. Electricity is the link between snakes, blindness, and prophecy.

Poets too suffered from blindness, for example Homer himself, and the bard Demodocus (*Odyssey* VIII:64). The traditional view has been that a man whom blindness had made useless for ordinary work might find a niche as a court poet and survive in that way, relying on a good memory and some facility on the kithara. But Homer stood on the altar at Delos to recite the Hymn to Apollo, and Pindar used to sit on an iron throne at Delphi. The word '*sophistes*' is employed to mean 'poet', by Euripides, *Rhesus* 924, and by Pindar, *Isthmian* V:28. '*Sophos*', skilled in an art, or clever, is used especially of those who understand divine matters,

The poet had a *rhabdos*, staff. We have met the Hebrew word '*kashaph*', meaning magician, or magic.

In *Iliad* II:594 ff., Homer mentions Thamyris, son of the poet Philammon, a son of Apollo. Thamyris competed with the Muses, and was punished with blindness for his hubris.

Years after having blinded himself upon discovering his parricide and incest, Oedipus exercises prophetic powers in the *Oedipus at Colonus*, most obviously when he declares that Polynices and Eteocles will kill each other in the battle for Thebes. But Sophocles also lays great stress on the fact that Oedipus can find the place where his own tomb is to be. We are told more than once that he is no longer the guided, but the guide, alone,

without the touch of a hand to direct him. He is now as blind as Teiresias. Whereas in the *Oedipus Tyrannus* he had taunted Teiresias for being a failure as a prophet, and had been accused by Teiresias of blindness in return, he now, sightless through his own act, sees far enough into the future to find, unaided, the place of his death.

blood:

-- Fluid which circulates throughout the body of an animal, distributing nutrients, and often oxygen as well.

book lung:

-- A set of soft overlapping flaps, covered up by a plate on the abdomen, through which oxygen is taken up and carbon dioxide given off.

Characteristic of many terrestrial arachnids

<http://www.ucmp.berkeley.edu/arthropoda/arachnidasy.html> such as scorpions and spiders.

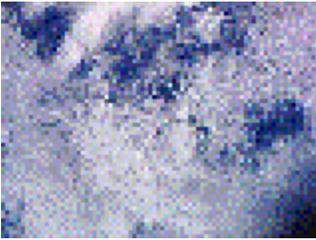
boreal:

-- adj. Describes the northern biotic area that is dominated by tundra, taiga, and coniferous forests.

Boreas and the Eumolpides:

- the Eridanus in Heaven: Eridanus in Attika got his name similar to the Celtic Eridanos (*Hridano to Keltiko*) from the one in the North because, according to Pausanias, Boreas had abducted there Orithyia, daughter of King Erechtheus, and had married her. Their daughter was Chione. According to Apollodorus she gave to Neptune a son, Eumolpus, from which descended in Attica the priestly family of the Eumolpides, the guardians of the Eleusinian mysteries. Of that same marriage also stemmed the three nordic high priests of Apollo, as we have already related in Chapter 5. But according to the Parian marble chronicle, Eumolpus, son of the Thrakian poet Musaus, had founded the Eleusinian mysteries (in the years 1399-75 BC); and according to Pausanias (*Attica*) King Erechtheus was killed in battle against Eumolpus, together with Eumolpus' son Immarradus.

As the fall of that great comet must have appeared as a whole-world event, it is not surprising that the Eridanus was admitted among the constellations. That this happened first with the Greeks seems to be proven by the name; the Egyptians called this constellation the Nile, next to which according, to Eratosthenes, Canopus shone, according to others, Gyon; the Ganges, in the cosmography of Aethikus, carried the name Padus (Po).



Bosumtwi, Ghana (impact crater) This well-preserved young crater, situated in crystalline bedrock of the West African Shield, is filled almost entirely by Lake Bosumtwi, which has a diameter of about 8 kilometers. The crater rim reaches elevations of about 300 meters above the lake level. Chemical, isotopic, and age studies demonstrate that the crater is the most probable source for the Ivory Coast tektites, which are found on land in Ivory Coast, West Africa, and as microtektites in nearby ocean sediments. The crater is excavated in 2.1-2.2-billion-year-old metasediments and metavolcanics of the Birimian Supergroup. The target rocks do not show any unambiguous evidence of shock metamorphism. Distinct impact-characteristic shock effects were identified only in clasts within suevite-derived melt fragments. The compositional range of the target rocks is significantly wider than that of the Ivory Coast tektites, but overlaps the tektite compositions. In this photo the crater lake is partly obscured by clouds, which is commonly the case in the area. (*Space shuttle image STS51I-39-031.*)

Location: 06°32'N, 01°25'W **Rim diameter:** 10.5 kilometers **Age:** 1.07 ± 0.05 million years

bow

The old spelling of the Latin *arcus*, bow, is *arquus*, fire of *qu*, or *ka*. Ariadne's bow or snake recalls Artemis, Apollo and the arrows that symbolise radiation, plague and sudden death from an electrical deity.

bract:

-- Any reduced leaf-like structure associated with a cone or flower.

brain, spine, tail, penis

According to Plato [*Timaeus*], the heavenly fire is to be found in the head and spine as well as in the sky. The substance conveying it being the *muelos* inside the skull, found also in the spine. Greek suppliant would touch a person's chin or knees, probably because the chin and knees were regarded as containers of the *muelos*, marrow. The Latin *cauda*, tail, sounds like *ka* and *uthi*, where *ka* dwells. The Egyptian hieroglyph for Set shows the animal with an erect tail. *Poros*, the path between the electrical source in the sky, and earth, was the father of *Eros*, love and sexual passion.

brain:

-- Collection of nerve cells usually located at the anterior end of an animal, when present at all. The nerves coordinate information gathered by sense organs, locomotion, and most internal body activities.

breccia

a coarse-grained rock, composed of angular, broken rock fragments held together by a mineral cement or a fine-grained matrix.

Breuil, Henri (Abbé)

(Mortain 1877 - L'Isle-Adam 1961) French prehistorian and priest. He studied extensively a great number of rock paintings and authored some groundbreaking works like: *Subdivisions du paléolithique supérieur et leur signification* (1912), a remarkable study of the evolution of tools, and *Quatre Cents Siècles d'art pariétal* (1952), a vast panorama of French-Spanish rock art.

brevitoxin:

-- neurotoxin produced by the dinoflagellate
<<http://www.ucmp.berkeley.edu/protista/dinoflagellata.html>> *Ptychodiscus*
brevis.

Bristlecone Pine:

Long-lived pine trees in Nevada.

Bruno, Giordano

(Nola 1548 - Rome 1600), Italian philosopher. The boldness of his ideas, which were diffused all through Europe, caused a scandal with the Church. He was delivered to the Inquisition, tortured, condemned to death at the stake and executed. His thoughts constitute a radical revision of the systems of Plato and Aristotle which is, at the time, tantamount to heresy. Bruno calls upon the work of Copernicus to state that the Earth is not at the center of the Universe, that the Universe is infinite, that there exist other planetary systems and that stars are other suns. He concludes that God and the world are not separable substances, a pantheist statement which earns him to be declared a heretic. He even follows Democritus in stating that the soul of the world and matter are constituted by atoms. He wrote *The Candleholder* (1582), *The Banquet of Ashes* (1584), *Heroic Furors* (1585).

bryophyte:

-- Plants in which the **gametophyte** generation is the larger, persistent phase; they generally lack conducting tissues. Bryophytes include the Hepaticophyta (liverworts), [Anthocerotophyta](http://www.ucmp.berkeley.edu/plants/anthocerotophyta.html) (hornworts), and Bryophyta (mosses).

Buffon, George Louis Leclerc, Comte de

(Montbard 1707 - Paris 1788), French naturalist. His main achievement was the writing, or, at least, the general direction of *l' Histoire naturelle générale et particulière* (44 vol. between 1749 à 1804, several of them posthumous). This work, which was never equalled in its scope and its influence on the reading public, is the result of a team work in which collaborated especially L. Daubenton and E. de Lacépède, but which clearly carries the mark of Buffon's personal style and of over which he kept a full control. He also developed, from 1739, the King's Garden (today *Jardin des Plantes*, Paris) into the first and foremost collection of plants of its times. He translated Hales and Newton, invented the scaled lens for lighthouses, and was a precursor of the theory of evolution and of paleontological research.

Buffy:

An object of the Kuiper Belt half the size of Pluto, orbiting the Sun twice as far as Neptune. It was catalogued as 2004 XR 190 and given the temporary name of Buffy. It was discovered as part of the Legacy Survey on the Canada France Hawaii Telescope. Buffy never gets closer than 52 astronomical units (AU) from the Sun, or 52 times the distance from the Earth to the Sun. Pluto ranges from 30 to 50 AU. What makes Buffy special, is its nearly circular path, which extends out to 62 AU.

calcite:

-- A common crystalline form of natural calcium carbonate, CaCO_3 , that is the basic constituent of limestone, marble, and chalk. Also called calcspar.

calcium carbonate:

-- a "salt" used by many marine invertebrates, such as corals and [echinoderms](http://www.ucmp.berkeley.edu/echinodermata/echinodermata.html) [<http://www.ucmp.berkeley.edu/echinodermata/echinodermata.html>](http://www.ucmp.berkeley.edu/echinodermata/echinodermata.html), and by protists, such as [coccolithophorids](http://www.ucmp.berkeley.edu/chromista/prymnesiophyta.html) [<http://www.ucmp.berkeley.edu/chromista/prymnesiophyta.html>](http://www.ucmp.berkeley.edu/chromista/prymnesiophyta.html), to construct their exoskeletons.

canopy:

-- Layer of vegetation elevated above the ground, usually of tree branches and epiphytes. In tropical forests, the canopy may be more than 100 feet above the ground.

carbohydrates:

-- class of biochemical compounds which includes sugars, starch, chitin, and steroids.

carnivore:

-- Literally, an organism that eats meat. Most carnivores are [animals](http://www.ucmp.berkeley.edu/phyla/phyla.html) [<http://www.ucmp.berkeley.edu/phyla/phyla.html>](http://www.ucmp.berkeley.edu/phyla/phyla.html), but a few fungi, plants, and protists are as well.

carpel:

-- A unit of the **pistil**; it is evolutionarily a modified leaf.

Cassini

family of French astronomers of Italian origin. *Jean-Dominique, aka **Cassini I.*** (Perinaldo, Imperia, 1625 - Paris 1712) organised the Paris Observatory and brought progress to the knowledge of the solar system. He discovered two satellites of Saturn and the main observable divisions of Saturn's rings. His son *Jacques, aka Cassini II* (Paris 1677 - Thury, Oise, 1756), grandson *César François Cassini de Thury, aka Cassini III* (Thury 1714 - Paris 1784) and great-grandson *Jacques Dominique, aka Cassini IV* (Paris 1748 - Thury 1845), were prominent in geodetic research and cartography.

cataclastic

A texture found in metamorphic rocks in which brittle minerals have been broken, crushed, and flattened during shearing.

cataclysm

(gr. *Cataclusmos*: inundation) generally a great, violent change caused by a natural, or other, phenomenon. In Quantavolution: a sudden dense material deluge from the atmosphere altering biosphere and/or lithosphere.

cataphyll:

-- In [cycads](http://www.ucmp.berkeley.edu/seedplants/cycadophyta/cycads.html)
<<http://www.ucmp.berkeley.edu/seedplants/cycadophyta/cycads.html>>, a
scale-like modified leaf which protects the developing true leaves.

catastrophe

(gr. *Catastrophê*: complete turn-over) a sudden large-scale, extremely harmful event; the word probably originated from two Greek roots meaning a “falling star” but came to have assigned to it two different roots, meaning “down-turning” and applied to the denouement of a Greek tragedy.

catastrophized mind

“Because of the lingering effects of past catastrophes mankind has long been in the business of producing catastrophes in order to recapture the madness of ancient disasters. Wars, aggression, suppression, compulsive and punitive behavior are connected with the primordial past. It is as if we are congenitally convinced that good comes only from greater evil -- to roast a pig we must burn down our house. The psychological de-programming of the catastrophized mind is still a little-understood process. Both the morale, and the rational invention of means, for moving directly to good without the intercession of great evils are very weak currents or motifs in contemporary civilization.

But, to an existentialist and pragmatic mind, there can be no alternative to trying. We must keep trying. Like Sisyphus we must push the great rock of reason up the mountain, time after time, prepared always to see it fall, until one day, who knows, *mirabile dictu*, whether by invention or luck, the rock will stay fixed up there and we shall have surcease from our labors.” (Alfred de Grazia, *talk to a meeting of the Society for Interdisciplinary Studies, London 26 April 1980.*)

Cathaysian terranes:

-- n. A set of small landmasses that developed in tropical to subtropical latitudes on the eastern side of Pangea during the Permian and Triassic, includes modern North China (Sino-Korea), South China (Yangtze), Eastern Qiangtang, Tarim, and Indochina.

cathode

(gr. *cata*, below, and *hodos*, road) in an electric discharge is the source of electrons for the conduction process. The cathode usually will be the most electron-rich region. Exit electrode of current in an electrolyser.

cauldron

Apollodorus, III:4:3:, tells how Ino, daughter of Kadmos and Harmonia, in a fit of madness plunged her son Melikertes into a cauldron, and fled with his corpse. Another version is that Athamas first killed Learchos, and was about to throw Melikertes into a cauldron when Ino rescued him, fled, and sprang with him into the sea. Yet another version is that Athamas killed Learchos, but his mother put Learchos into a cauldron of boiling water, went mad, and sprang into the sea with Melikertes.

To understand this, we need to recall how Medea, in the play of that name by Euripides, cut up an old ram and boiled it in a cauldron, then magically restored it to life rejuvenated as a young lamb. She promised Pelias that she could rejuvenate him in the same way. He consented, and she asked his daughters to cut him up. She omitted the spells, and Pelias died.

Tantalus killed his son Pelops, and cooked and served his flesh to the gods in a banquet. The gods realised what he had done, and Pelops was restored to life by either Rhea or Klotho. Pelops, on whom a curse had been laid because of a broken oath, had two sons, Atreus and Thyestes. Atreus became king of Mycenae, and his wife Aithra was seduced by Thyestes. Atreus banished him, but later invited him to a banquet for which he had killed and cooked the children of Thyestes.

Another story tells how Thetis plunged her children into a boiling cauldron to test their immortality. None survived.

A Greek inscription from Syria of Trajan's time (early 2nd century A.D.) has the phrase "apothotheis en to lebeti," having been made a god in the cauldron, and is dedicated to Leukothea, the white goddess who appears in the sea.

It is suggested that in all these attempts to achieve immortality we see an attempt to copy occurrences in the sky. It may be relevant that the Greek verb 'zo', I live, 'zen', to live, could easily be confused with the Greek verb 'zein', to boil. The Cumaean Sibyl is described as living in a jar suspended from the ceiling. Could it be that living in a jar was an attempt to prevent the wasting away of the divine (electrical) force that was associated with inspiration? Crostwhaite mentions the seething pot looking like a tripod cauldron, or rather the tripod cauldron looking like a seething pot in the sky. Ritual based on imitation of a seething pot was one way of trying to achieve immortality. Egyptian priests approached the problem differently, but in each case electrical theory and experiment led to the belief that the sky-earth relationship was a source of electrical influence and power, and

even of life.

caves

We have in the cave stories an attempt to explain the fact that electrical phenomena appear to arise not only from the sky but also from the earth, or from under the earth. Lightning at night was believed by the Romans to be caused by Summanus, a god who may be Pluto, god of the underworld. The name Summanus suggests the Manes or Di Manes, the Good Ones, spirits of the departed. The name would be suitable not only for a form of Zeus, but also for Poseidon, Velchanos, or Dionysus, all of whom were associated with lightning, and with subterranean thunder.

Homer refers to the 'divine Pelasgians'. 'Divine' frequently has electrical significance. The Pelasgians should probably be traced back to an area, or areas, outside mainland Greece. *Pel* is Lydian for 'cave', Greek *spelaiion*. In Greek, initial 'S' sometimes disappears, as does initial 'T'. 'Cave' in Hebrew is *me'ara*. We may here have the word *ar*, Etruscan for the electrical divine fire. 'Me' suggests an Egyptian word meaning 'fill'.

The Latin *sagus* means wise, with knowledge of the future or of divine matters. The Pelasgians were probably the people who were wise about caves and rocks, where a difference of electrical potential could be detected by sensitive creatures such as goats, and by Sibyls [unveilers], as at Delphi. Sibyl is the title *Svulare*, Unveiler, given to Apollo, the god of prophecy. In the Psychro cave a fragment of a jar was found, decorated with a leaping goat. Goats were thought to be more than usually sensitive to electrical fields, or rather to the presence of a deity. They were responsible, through their strange movements and sounds, for the discovery by the goatherd Koretas of the conditions at Delphi [Pytho] that were favourable for the 'inspiration' of a Sibyl or 'unveiler'. The Latin *caper*, goat, may be 'ka container'; compare the German *Kaefer*, beetle, and the Egyptian scarab.

Piezoelectric effects in rocks as a result of earthquakes led to the study of the earth goddess Ga, Da, or Ge. The Egyptian *neter*, divine, represented by what may be an axe, has the same consonants as the Greek *antron*, cave.

Antron probably means a cave formed by a split in the rock. The Lydian word *pel*, cave, is related to the Greek *spelaiion*. *Pelekus* is the Greek for a sacrificial axe, and it was in the days of Peleg that the earth was divided [Genesis X:25]. Furthermore, the German *spellen* means to split.

cell cycle:

-- Complete sequence of steps which must be performed by a cell in order to replicate itself, as seen from [mitotic](http://www.ucmp.berkeley.edu/allife/eukaryotalh.html) [<http://www.ucmp.berkeley.edu/allife/eukaryotalh.html>](http://www.ucmp.berkeley.edu/allife/eukaryotalh.html) event to mitotic event. Most of the cycle consists of a growth period in which the cell takes on mass and replicates its DNA. Arrest of the cell cycle is an important feature in the reproduction of many organisms, including humans.

cell membrane:

-- The outer membrane of a cell, which separates it from the environment.
Also called a plasma membrane or plasmalemma.

cell wall:

-- Rigid structure deposited outside the cell membrane. Plants
<<http://www.ucmp.berkeley.edu/plants/plantae.html>> are known for their
cell walls of cellulose

<http://www.ucmp.berkeley.edu/glossary/glossary_C.html>, as are the
green algae and certain protists, while fungi

<<http://www.ucmp.berkeley.edu/fungi/fungi.html>> have cell walls of chitin
<http://www.ucmp.berkeley.edu/glossary/glossary_C.html>

cell:

-- Fundamental structural unit of all life. The cell consists primarily of an outer plasma membrane, which separates it from the environment; the genetic material (DNA), which encodes heritable information for the maintenance of life; and the cytoplasm, a heterogeneous assemblage of ions, molecules, and fluid.

cellulose:

-- carbohydrate polymer of the simple sugar glucose. It is found in the cell walls of plants [<http://www.ucmp.berkeley.edu/plants/plantae.html>](http://www.ucmp.berkeley.edu/plants/plantae.html) and green algae [<http://www.ucmp.berkeley.edu/greenalgae/greenalgae.html>](http://www.ucmp.berkeley.edu/greenalgae/greenalgae.html), as well as dinoflagellates. Cellulose is the most abundant compound on earth that is manufactured by living things.

Celsius (degree)

the unit of temperature using the scale of 100 degrees between the freezing and boiling points of water at one atmosphere of air-pressure. It was formerly called the Centigrade degree. One Celsius degree is $\frac{9}{5}$ of the Fahrenheit degree still used in both the United States and Great Britain in 1982. The Celsius scale was created in 1742 by **Anders Celsius**, a Swedish astronomer and physicist (Uppsala, 1701-1744).

Censorinus Grammaticus:

Roman grammarian, fl. 3rd century AD. He wrote about the natural history of man, music, astronomy, philosophy, chronology, mathematics... *De die natali*.

centaur

a creature half man, half horse. Centaurs were archers, and the arrow is often a lightning symbol. The centaur Cheiron was the model schoolmaster and instructor. Pindar refers to him as the Magnesian centaur. We may have here a glimpse of ancient education in electrical theology. Kings were required to understand all aspects of augury; Herodotus mentions especially the Persians in this respect.

It is conceivable that the story of Herakles burning alive from wearing a shirt drenched in the blood of Nessus the centaur may have an astronomical origin. Centaurs shot [radiated] arrows, and Herakles is associated with the planet Mars.

central peak

the exposed core of uplifted rocks in complex meteorite impact craters. The central peak material typically shows evidence of intense fracturing, faulting, and shock metamorphism.

cephalon:

-- In [trilobites](#)

<http://www.ucmp.berkeley.edu/arthropoda/trilobita/trilobita.html>, the head shield bearing the eyes, antennae, and mouth. [More info?](#)

<http://www.ucmp.berkeley.edu/arthropoda/trilobita/trilobitamm.html>

Ceres

An earth goddess responsible for crops. Her male equivalent, Cerus, is named in an inscription on an Etruscan pot: *cerus in ceri pokolom*. *Poculum* is Latin for a cup [for libation?]; *pokol* is Hungarian for hell, the underworld, home of departed spirits. The sky, and sky phenomena, are the usual explanation, in the ancient world, for the origin of life. If the earth mother produces living organisms it is generally the result of action from above. Divine activity could come from underground, and Cerus and Ceres were concerned with the fertility of the fields. The dancing of the Arval brothers at Rome was associated with the renewal of life in the fields in the spring. It was presumably aimed at rousing these chthonic deities of crops and vegetation. *Cerritus* means out of one's mind. Much human activity was mimesis, imitation of divine activity observed in the sky or coming out of the earth.

chaetae:

-- Stiff bristles characteristic of [annelids](http://www.ucmp.berkeley.edu/annelida/annelida.html)
<<http://www.ucmp.berkeley.edu/annelida/annelida.html>>.

character:

-- Heritable trait possessed by an organism; characters are usually described in terms of their states, for example: "hair present" vs. "hair absent," where "hair" is the character, and "present" and "absent" are its states.

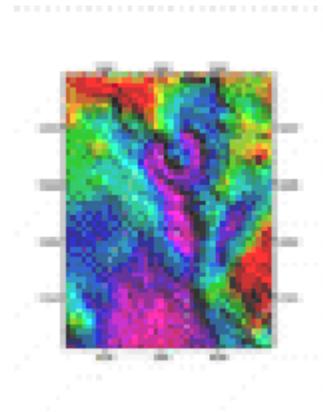
chela:

-- The claw of an [arthropod](http://www.ucmp.berkeley.edu/arthropoda/arthropoda.html)
<<http://www.ucmp.berkeley.edu/arthropoda/arthropoda.html>>.

chelicera:

-- The first pair of appendages of a **chelicerate** arthropod. Originally a short clawed appendage, the chelicerae of many arachnids are highly modified for feeding; in [spiders](#) <http://www.ucmp.berkeley.edu/arthropoda/arachnida/araneae.html>, for instance, they are modified into poisonous fangs.

Chicxulub, Yucatán, Mexico



The Chicxulub structure is not exposed on the surface; thus, only geophysical images give evidence of its presence and extent. This image shows the variations in the magnitude of the gravity field at sea level in the vicinity of the buried Chicxulub impact basin in the northwestern corner of the Yucatán Peninsula, Mexico. In general, lower than normal gravity variations (so-called negative anomalies) indicate that the near-surface crustal rocks have relatively low densities; this could indicate fracturing and other structural disturbances that increase the volume of normal rocks or could be due to infilling by low-density carbonate sediments. Positive gravity anomalies indicate dense rocks such as the low-porosity impact melt sheet or up-thrust deep crustal rocks. A gravity anomaly over the Chicxulub basin ranges from lows exceeding -15 mGals (1 milligal = 10^{-5} m/s²; magenta) to +54 mGal (red). The Chicxulub basin is expressed as a broad, nearly circular region in which gravity values are 20-30 mGal lower than regional values. A distinct 15- to 20-mGal high occupies the geometric center at 21.3°N latitude and 89.6°W longitude. Surrounding this high are clearly discernible ring-like variations in the gravity field. The pronounced ring that separates the deep annular basin (magenta and deep blue regions) from the basin flanks (cyan and green) has a diameter of ~200 kilometers. A discontinuous, subtle outer ring with a diameter of ~250-280 kilometers can be discerned particularly toward the southern part of the basin. The image has been artificially shaded using a low illumination angle from the north to emphasize broad low-amplitude anomalies. All data have been Bouguer corrected using a model slab density of 2200 kg/m³. Numbers along the margins of the image refer to Universal Transverse Mercator coordinates given in meters. The irregular white line marks the shoreline of the Yucatán Peninsula, and the straight lines mark province borders. (*Image courtesy of V. L. Sharpton.*)

Location: 21.3°N 89.6°W **Diameter:** ~250-280 kilometers **Age:** 64.98 ±

0.05 million years

chitin:

-- n. A carbohydrate polymer found in the cell walls of [fungi](http://www.ucmp.berkeley.edu/fungi/fungi.html) and in the exoskeletons of [arthropods](http://www.ucmp.berkeley.edu/arthropoda/arthropodamm.html), which provides strength for support and protection; **chitinous**- adj.

chlorophyll:

-- n. The green-colored pigment that absorbs light during photosynthesis, often found in plants, algae, and some bacteria; it includes a porphyrin ring, and often has a long hydrophobic tail. [More info?](http://www.ucmp.berkeley.edu/glossary/gloss3/pigments.html)
<<http://www.ucmp.berkeley.edu/glossary/gloss3/pigments.html>>

chloroplast:

-- A chlorophyll-containing plastid found in algal and green plant cells.

chordate:

-- n. An animal with a notochord (a cartilaginous rod that extends the length of the body), dorsal hollow nerve cord (a fluid-filled tube that runs the length of the body), gill slits or pouches, and a tail at some stage in its life cycle.

chre

One of the most commonly used words in ancient Greek is *chre*, 'it is necessary'. It comes from the verb *chrao*, 'I give an answer'. This word is used of an oracle giving an answer, and it is thought that *theos*, the god, must be understood as the subject of the verb, i.e. *chre* means 'the god answers'.

In the middle voice, *chraomai* means 'I consult', i.e., I get an answer from the god. It also means 'I use'. *Chreon* is regarded as a neuter participle, meaning 'that which the oracle says', and so 'fate', and 'destiny'.

There is an obsolete root *rheo*, 'I say', which appears in the classical Greek *rhema*, 'utterance'. It appears in *ero*, the future tense of the verb *lego*, 'say', in Attic Greek. The verb *rheo* also means 'flow'.

The Greek word *chresterion* means 'oracle'.

Crostwhaite suggests that the priest's answer to inquirers was "*Ka rhei..*" (becoming "*chre..*"), "The God says.."

chromosome:

-- Linear piece of eukaryotic DNA, often bound by specialized proteins known as histones.

chromosphere

inferior layer of the solar atmosphere, between the photosphere and the corona. The gases of the solar chromosphere appear to be hotter than the photospheric gases which lie below them. In the chromospheric region temperature rises abruptly by several tens of thousands of degrees Kelvin. Similar temperature increases have been detected across the chromosphere of other stars. This layer of solar atmosphere can be viewed as an electric double layer between the plasmas of the solar photosphere and the corona.

Cimmerian terranes:

-- n. An archipelago of small landmasses that developed in tropical and subtropical latitudes on the eastern side of Pangea during the Triassic, blocks that comprised it include modern Turkey, Iran, Afghanistan, Tibet, and Malaysia; also called **Cimmeria**.

Civil Twilight:

This is defined to be the time period when the sun is no more than 6 degrees below the horizon at either sunrise or sunset. The horizon should be clearly defined and the brightest stars should be visible under good atmospheric conditions (i.e. no moon light, or other lights). One still should be able to carry on ordinary outdoor activities.

Civilization:

Severe climatic change was the primary driver in the development of civilization, according to Prof. Nick Brooks of the University of East Anglia.

The early civilizations of Egypt, Mesopotamia, South Asia, China and northern South America were founded between 6000 and 4000 years ago when global climate changes, driven by natural fluctuations in the Earth's orbit, caused a weakening of the monsoon systems resulting in increasingly arid conditions. These first large urban, state-level societies emerged because diminishing resources forced previously transient people into close proximity in areas where water, pasture and productive land was still available.

"Civilization did not arise as the result of a benign environment which allowed humanity to indulge a preference for living in complex, urban, 'civilized' societies. On the contrary, what we tend to think of today as 'civilization' was in large part an accidental by-product of unplanned adaptation to catastrophic climate change. Civilization was a last resort - a means of organizing society and food production and distribution, in the face of deteriorating environmental conditions."

For many, if not most people, the development of civilization meant a harder life, less freedom, and more inequality. The transition to urban living meant that most people had to work harder in order to survive, and suffered increased exposure to communicable diseases. Health and nutrition are likely to have deteriorated rather than improved for many. The new research challenges the widely held belief that the development of civilization was simply the result of a transition from harsh, unpredictable climatic conditions during the last ice age, to more benign and stable conditions at the beginning of the Holocene period some 10,000 years ago.

Dr Brooks says: "Having been forced into civilized communities as a last resort, people found themselves faced with increased social inequality, greater violence in the form of organized conflict, and at the mercy of self-appointed elites who used religious authority and political ideology to bolster their position. These models of government are still with us today, and we may understand them better by understanding how civilization arose by accident as a result of the last great global climatic upheaval."

clade:

-- A monophyletic taxon; a group of organisms which includes the most recent common ancestor of all of its members and all of the descendants of that most recent common ancestor. From the Greek word "klados", meaning branch or twig.

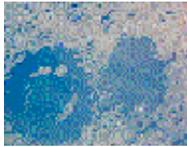
cladogenesis:

-- The development of a new clade; the splitting of a single lineage into two distinct lineages; speciation.

cladogram:

-- A diagram, resulting from a cladistic analysis, which depicts a hypothetical branching sequence of lineages leading to the taxa under consideration. The points of branching within a cladogram are called nodes. All taxa occur at the endpoints of the cladogram.

Clearwater Lakes, Quebec, Canada



Twin impact craters, which are formed simultaneously by two separate, but probably related, meteorite impacts, are very rarely recognized on Earth. This pair is situated in crystalline bedrocks of the Canadian Shield. The larger Clearwater Lake West (left) shows a prominent ring of islands that has a diameter of about 10 kilometers. They constitute a central uplifted area and are covered with impact melts. The central peak of the smaller Clearwater Lake East (right) is submerged. (*Space shuttle image STS61A-35-86.*)

Clearwater Lake West

Location: 56°13'N, 74°30'W **Original rim diameter:** 36 kilometers

Clearwater Lake East

Location: 56°05'N, 74°07'W **Original rim diameter:** 26 kilometers **Age:** 290 ± 20 million years

Clement of Alexandria:

(ca 150 AD - ca 215 AD), Titus Flavius Clement, (Saint), teacher of the Church, probably born in Athens, director of the catechetical school of Alexandria; (*Paidagogos*, I, 5, and II.)

clitellum:

-- In [annelids <http://www.ucmp.berkeley.edu/annelida/annelida.html>](http://www.ucmp.berkeley.edu/annelida/annelida.html), a swelling of the body towards the head of the animal, where the gonads are located. Both oligochaetes and leeches have a clitellum.

clone:

-- An identical copy of an organism. Most plants, fungi, algae, and many other organisms naturally reproduce by making clones of themselves as a form of **asexual reproduction**.

cnidocyst:

-- The "stinging cell" of a [cnidarian](http://www.ucmp.berkeley.edu/cnidaria/cnidaria.html)
<<http://www.ucmp.berkeley.edu/cnidaria/cnidaria.html>>.

cobra

this word is said to have come via Portuguese from Latin *coluber*, snake. The hard L and the b-v link suggest that it may be the Albanian word *kove*, bucket. The Hebrew *kobha*, bucket, may be a Philistine word, the Philistines being associated with Illyria. Etruscan *katek*, head, and Albanian *katoc*, suggest *ka* and Latin *tego*, cover, protect. The skull was the cover for the *ka*, the fire in the head.

coelom:

-- Fluid-filled cavity within the body of an animal; usually refers to a cavity lined with specialized tissue **peritoneum** in which the gut is suspended. The structure and development of the coelom is an important character for recognizing major groups of animals.

coenocytic:

-- Condition in which an organism consists of filamentous cells with large central vacuoles, and whose nuclei are not partitioned into separate compartments. The result is a long tube containing many nuclei, with all the cytoplasm at the periphery.

collagen:

-- long proteins whose structure is wound into a triple helix. The resulting fibers have a high tensile strength. Collagen is a primary component of mammalian hair.

colonial:

-- Condition in which many unicellular organisms live together in a somewhat coordinated group. Unlike true multicellular organisms, the individual cells retain their separate identities, and usually, their own membranes and cell walls.

columella:

-- A small column of tissue which runs up through the center of a spore capsule. It is present in [hornworts](#) <http://www.ucmp.berkeley.edu/plants/anthocerotophyta.html>, mosses, and some rhyniophytes.

column of light

The column of light mentioned by Plato towards the end of the *Republic* is a road from earth to the stars, along which souls travel after death before reincarnation. This is the most likely explanation of the *poros*, passage, mentioned by the Greek poet Alkman in a cosmological context. It could well be the "marvellous road to the Hyperboreans" mentioned by the poet Pindar, and photographs, taken from space, of light phenomena over the earth's north pole, show what may be what is left of the *poros* or column. The electrical god could be seen rising into the sky, associated with creation, and described by Plato as a column of light which was the path for the souls of the deceased to return to the stars. It was a god of inspiration, giving life, and, if one were struck by lightning, likely to give death as well. *Ash*, or *esh*, is fire. Buriash, or Boreas, is likely to be 'fire of Bor', the fire being the electrical glow. Priestesses of the winds are mentioned in Cretan Linear B texts, and Oreithuia was carried off by Boreas, who is the Kassite god Buriash.

Such a theory is supported by links between the far north and Crete, or at any rate Greece. We have already seen evidence of shared vocabulary.

In Norse myth the world tree has a snake at the bottom and an eagle at the top, each an electrical symbol. Is there a link with the world tree, Yggdrasil, (an *ash* tree...) and the *poros*, passage, of the Greek poet Alkman? The *kion*, column of coloured light [*ka* travelling], of Plato, *Republic X*, was the *hodos*, road, par excellence. *Yggd*, frightful, is a name of Odin. *Ross* is a German word for horse, and might be translated 'steed'. *Ill*, or *Il*, is light. Hungarian *kivilagit* means to illuminate. The Illyrians may even have been the people of the great light, since the root *ur* means great. Perhaps *Yggdrasil* is the steed [means of travel], of the light of the frightener, or the light of the frightener's steed. The name of the actual horse of Odin was Sleipnir.

In Greek myth, the father of Eros, love, was Poros, the passage to the sky. This suggests a link with Dionysus and Hermes. Hermes was the Greek equivalent of Thoth, and Dionysus was one of the deities who controlled the thunderbolt. The Greeks were aware of the connection between a deity of the thunderbolt and sexual passion.

Radiation from the gods in the sky or electricity from the earth helped Osiris to rise. Egyptian *ucha* is a pillar. Tall trees such as the pine [Greek *elate*], the sycamore and the cypress may be associated with the *poros*. Greek *hule* means wood [as a material]. If reversed, *hule* becomes *eluh*, the final

h being pronounced more like ch, as in the Scottish word loch. *Hule*, wood, is probably the tree of El, the divine pillar.

The Latin *insula*, island, may be derived from *in-*, power or presence, and *sul*, a Celtic word and divine name, meaning column. A city may have been regarded as an island, copying what the augur claimed to see in the sky. Egyptian texts refer to the island of fire, where Horus sits on the throne of his father Osiris. Osiris had an iron throne.

The Old Testament contains references to phenomena which resemble some of those mentioned in other literatures such as Greek and Latin. Jacob's dream, related in *Genesis XXVIII*, concerns an apparent link between sky and earth, and the importance of stone. At a place called Luz, Jacob took stones for pillows and went to sleep for the night. He dreamed that a ladder was set up, reaching to heaven, and angels of God ascended and descended. God spoke to him and encouraged him with promises. Jacob set up the stone that he had used for a pillow and poured oil on it. He named the place Bethel [house of God].

Coma:

Bright head of a comet.

Comet Hale-Bopp:

Naked-eye comet visible in 1997.

Comet of 541 AD:

Presumably the major sky event of the Justinian Quantavolution, the comet of 541 was the basis for much Celtic lore, as shown by P. McCafferty and M. Baillie in 2005. A full range of natural destruction and human plague were associated with the comet, reported by the medieval historian Roger of Wendover as setting the sky on fire and scattering blood in clouds everywhere. Greenland ice cores drilled to the year 541 and thereabouts revealed anomalous ammonium ions that could have been cometary in origin.

companion

in a binary system, a body which revolves about the major component (*principal*) in the system: the orbiter; as the Earth about the much larger Sun.

compound eye:

-- Found in many but not all arthropods
<<http://www.ucmp.berkeley.edu/arthropoda/arthropoda.html>>, a compound eye is composed of a large number of small, closely packed simple eyes (**ommatidia**), each with its own lens and nerve receptors.

compound leaves:

-- n. Leaves with two or more leaflets attached to a single leaf stem.

Congo craton:

-- n. A separate continental plate that rifted from the supercontinent Rodinia in the Late Precambrian; contained a large part of north-central Africa.

consumer:

-- Any organism which must consume other organisms (living or dead) to satisfy its energy needs. Contrast with [autotroph](#)
<http://www.ucmp.berkeley.edu/glossary/glossary_A.html>.

contractile vacuole:

-- In many protists, a specialized vacuole with associated channels designed to collect excess water in the cell. Microtubules periodically contract to force this excess water out of the cell, regulating the cell's osmotic balance.

convergence:

-- Similarities which have arisen independently in two or more organisms that are not closely related. Contrast with homology.

Core of 'Gas Giants':

Jupiter, Saturn and similar bodies in other systems are supposed to have been built from accreting light materials into a rocky core. But the lightness of the Jupiter core is excessive, possibly stunted (Boss theory) by solar ultraviolet winds that blew dust away continuously. A Q theory (Solaria Binaria) suggests, however, that Jupiter has given up part of its core in two successive events, a nova creating planet Saturn and a later mini-nova creating planet Venus.

corona

see **solar corona**

cosmic pressure

in the theory that the Universe is pervaded by a continuum of electric charges, the notion arises that where charge-deficient cavities (stars) exist within the Universe a pressure results driving material within the cavity into one or more aggregations (stars, planets, etc.). The materials within these bodies are confined by cosmic pressure.

cosmic rays

are highly energetic electron-deficient atoms (mainly protons) which impinge equally upon the Earth from all directions. The average cosmic ray has an energy of 7 GeV. Cosmic ray electrons exist but they are only one hundredth as abundant as the protons (Hillas). The sky "shines" as brightly with cosmic rays as it does with starlight (Watson). The most energetic cosmic rays have an energy at least 100 billion times the average. Such cosmic rays are very rare.

cotyledon:

-- n. The "seed leaves" produced by the embryo of a seed plant that serve to absorb nutrients packaged in the seed, until the seedling is able to produce its first true leaves and begin photosynthesis; the number of cotyledons is a key feature for the identification of the [two major groups of flowering plants](http://www.ucmp.berkeley.edu/glossary/gloss8/monocotdicot.html)
<<http://www.ucmp.berkeley.edu/glossary/gloss8/monocotdicot.html>>.

cratons

the relatively stable portions of continents composed of shield areas and platform sediments. Typically, cratons are bounded by tectonically active regions characterized by uplift, faulting, and volcanic activity.

Cretaceous-Tertiary (K-T) boundary

a major stratigraphic boundary on Earth, marking the end of the Mesozoic Era, best known as the age of the dinosaurs. The boundary is defined by a global extinction event that caused the abrupt demise of the majority of all life on Earth. It has been dated to 65 million years ago, coeval with the age of the 200-kilometer-diameter Chicxulub impact structure in Mexico (see Iridium).

Cretaceous Western Interior Seaway:

-- n. The epicontinental sea that formed as marine waters from the north spread over North America from around 130 to 70 million years ago (Ma), at its peak in the Middle Cretaceous (~ 90 Ma) it extended from present-day Utah to the Appalachians and from the Arctic to the Gulf of Mexico; also referred to as the **Western Interior Seaway**

Cretaceous

a geological term denoting the interval of Earth history beginning, in conventional dating, around 145 million years ago and ending 65 million years ago with the formation of the Chicxulub impact structure.

crown group:

-- All the taxa descended from a major cladogenesis event, recognized by possessing the clade's synapomorphy. See: stem group.

crystalline

rock types made up of crystals or crystal fragments, such as metamorphic rocks that recrystallized in high-temperature or pressure environments, or igneous rocks that formed from cooling of a melt.

Cuchulainn:

Hero of the Ulster Cycle.

Curie Temperature

(after Pierre **Curie**, French physicist, Paris 1859-1906) the temperature at which magnetic materials undergo a sharp change in their magnetic properties. Remnant magnetism appears in rock below this temperature and is erased if the rock is heated above it.

cuticle:

-- 1) In animals, a multilayered, extracellular, external body covering, usually composed of fibrous molecules such as chitin or collagen, and sometimes strengthened by the deposition of minerals such as calcium carbonate. 2) A waxy layer which seals the outer surface of land plants, helping to retain moisture.

cyst:

-- n. A small, capsule-like sac that encloses an organism in its resting or larval stage, e.g., a resting spore of an alga.

cytoplasm:

-- All the contents of a cell, including the plasma membrane, but not including the nucleus.

cytoskeleton:

-- Integrated system of molecules within eukaryotic cells which provides them with shape, internal spatial organization, motility, and may assist in communication with other cells and the environment. Red blood cells, for instance, would be spherical instead of flat if it were not for their cytoskeleton.

Dabbahu Afar Rift:

An opening 60km long (by December 2006) within the Afar Depression portion of the Great African Rift. In three weeks of September of that year, the crust parted by six meters, with molten rock filling the crack between the tectonic plates. At this rate, an oceanic river 50km wide would open up in 1000 years. Q theory would use this example to support its claim that millions of years were not required to open the Great African Rift.

Daedalus

A doubling occurs in the case of *Daedalus*, one living in Minoan times, the other the father of the artists called the *Daedalidae*, living in the eighth century B.C.. Homer mentions Daedalus as the builder of a dancing floor for Ariadne. The word for a dancing floor, *choros*, is also the Greek for the dance itself. The maze at Knosos was probably a dancing floor. It is described as *achanes*, roofless.

Diodorus Siculus and Herodotus relate that when *Daedalus* escaped from Crete, Minos, having pursued him to Sicily, was murdered there by king Kokalos. The description by Diodorus of his tomb, with its two stories, one below ground level, the other above, suggests a design similar to that of a temple tomb at Knosos.

The Greeks had their Bronze Age Daedalus, and a Daedalic school of sculptors, in the eighth and seventh centuries B.C.. The second *Daedalus* was held to be the first artist to have created statues standing in natural poses instead of having arms close to the sides and one foot forward.

dance

Dancing was a sacred ritual. David's dance, wearing a linen ephod (2 *Samuel* VI:14), is not the only instance of a dance before an ark. Egyptian pharaohs also danced. A tablet shows Semti, first dynasty, dancing before Osiris, who is in a shrine on top of a staircase. Usertsen danced before the god Amsu, or Min; Seti I danced before Sekhet, and Pepi I danced before Osiris. (Budge, *The Book of the Dead*, Arkana, Introduction p.40 ff.). The Greek *schematizo*, suggesting attitudes or figures in the dance, may even be related to the Egyptian *sekhem*, power.

Etruscan mimes danced to elicit the earth deity and to imitate and resurrect the dead for consultation. Skr, Latin *sacer*, when reversed, becomes rks, a Semitic root meaning 'dance', Arabic *raqs*.

The crane dance which Theseus took to Delos had harps for accompaniment. Harps have divine and astronomical significance; Hermes and Apollo were the divine harpists of the Greeks.

It has been suggested that the Crane Dance, imitating the movements of birds, symbolises the "sinuosities of the labyrinth". In the dance at Knosos described by Homer, the young men each carry a gilt sacrificial knife, Greek *machaira*. The two acrobats loose in the dance company at Knosos may be representing some sky phenomenon.

The Cretan *sikinnis* was a dance in honour of Sabazios [Dionysus], danced by satyrs. The root *skn* means knife.

The crane dance may have been associated with the 'Troy game', of which a maze was a feature. One could speculate that a maze or labyrinth might symbolise the winding course of a deity or monster in the sky, with an orbit coming closer to earth at each return. A labyrinth was the place of the double axe [the thunderbolt], and the climax of the wanderings would be a confrontation. In the sky, lightning strikes would be thought to result in the defeat, *sparagmos* [tearing to pieces], and absorption, 'eating', of the object resembling a bull, stag, or goat.

The hymn of the Salii, the leaping priests of Rome, included the words *limen sali*, leap at the threshold. This probably means 'leap over the threshold', as an invitation to the Manes to cross the threshold between the world of the departed and the world of the living, and to appear and give advice. We may compare with this the words of the prophet Zephaniah, chapter I:9: "In the same day also will I punish all those that leap on the threshold, which fill their masters' houses with violence and deceit."

Epilepsy was a sacred disease. The jerky movements of a sufferer in a fit probably suggested that an external power was in control of his or her body.

It may be that the special shoes worn by senators were originally dancing shoes, resembling the Greek *phaikades*, worn by gymnasiarchs and dancers, and the white shoes worn by Egyptian priests. The Etruscan *lucairce*, priest, is one who raises [Greek *airo*] the light [Latin *luc-*].

The Lydians were famous shoemakers. *Cothurni*, actors' boots, were of Lydian origin. The word may mean 'doorway of *ka*', *ka* + *thura*.

Board games were played in Ancient Egypt, Crete and Greece. The men on the draughts board were called dancers, or dogs, by the Egyptians.

The ark before which David danced had three main uses: it revealed the presence of the divine power, it was an oracle that made sounds and gave a visual display, and it could be used as a war machine.

In Rome the Arval brothers, an ancient priestly college, danced the *tripodatio*, a solemn stamping of the earth to ensure the fertility of the fields, *arva*.

At Delphi, the drama of Apollo and the snake was performed on a threshing floor next to the Sibyl's Rock, a rock which may have been chosen by the Sibyl Herophyle because it was split, and showed a difference of electrical potential, presumably as a result of an earthquake.

The purpose of dancing was:

- to charge a war machine, the ark;
- to charge an ark for an impressive display;
- to summon the deity at an oracle;
- to achieve the resurrection of Osiris;
- to bring to life the Manes for consultation;
- to rouse fertility deities [e.g.the Arval dance];
- to destroy monsters by sympathetic magic, as at Knosos and in Greek tragedy;
- to imitate epilepsy, thereby showing that the god is in one;
- to imitate animals, some of which were *ka*-containers.

There was considerable sharing of vocabulary and technique.
Reversals indicate the meeting of Indo-European and Semitic
speakers.

(Following Hugh Crostwhaite)

decomposer:

-- An organism that breaks down the tissue and/or structures of dead organisms.

decomposition:

-- The breakdown of dead organic material by detritivores or saprophytes.

Deep Bay, Saskatchewan, Canada



This crater consists of a near-circular bay, about 5 kilometers wide and 220 meters deep, in the otherwise shallow Reindeer Lake. Such deep circular lakes are unusual in this region, which is dominated by the shallow gouging of glacial erosion. The circular shoreline, at a diameter of 11 kilometers, is partially surrounded by a ridge with heights to 100 meters above the lake surface. The diameter of this ridge, ~13 kilometers, is likely the outer rim of the impact structure. The structure was formed in Precambrian metamorphic crystalline rocks with a conspicuous northwest-trending fabric. Although not obvious from the surface, Deep Bay is a complex impact structure with a low, totally submerged central uplift. Samples obtained in the 1960s from drilling into the central structure revealed shocked and fractured metamorphic rocks flanked by deposits of allochthonous, mixed breccias. (*Space shuttle image STS59-L08-63.*)

Location: 56°24'N, 102°59'W **Original rim diameter:** 13 kilometers **Age:** 100 ± 50 million years

Demiurge

(gr. *dêmiourgos*: creator of the world) refers to a grand original intelligence who acted to produce the real world, as described in cosmogonies of early peoples and philosophers, especially Plato.

derived:

-- Describes a character state that is present in one or more subclades, but not all, of a clade under consideration. A derived character state is inferred to be a modified version of the primitive condition of that character, and to have arisen later in the evolution of the clade. For example, "presence of hair" is a primitive character state for all mammals, whereas the "hairlessness" of whales is a derived state for one subclade within the Mammalia.

detritus:

-- Accumulated organic debris from dead organisms, often an important source of nutrients in a food web.

detrivore:

-- Any organism which obtains most of its nutrients from the detritus in an ecosystem.

deuteron

nucleus of the *deuterium* (heavy hydrogen atom), composed of one proton and one neutron. Fusion of two deuterons is one step in the thermonuclear fusion of hydrogen.

development:

-- The process by which a multicellular organism is produced from a single cell.

diaplectic glass

a natural glass formed by shock transformation from any of several minerals without melting. It is found only in association with meteorite impact craters and crater ejecta.

diapsid:

-- n. A vertebrate distinguished by a skull with two pairs of openings in the side behind the eyes, e.g., lizards, snakes, crocodiles, dinosaurs, and pterosaurs.

dikaryotic:

-- Having two different and distinct nuclei per cell; found in the [fungi](http://www.ucmp.berkeley.edu/fungi/fungi.html) [<http://www.ucmp.berkeley.edu/fungi/fungi.html>](http://www.ucmp.berkeley.edu/fungi/fungi.html). A dikaryotic individual is called a dikaryon.

Dinosaur Tissue Survival:

In 2006, soft tissue was extracted from a fossil thigh bone of a Tyrannosaurus Rex specimen from Montana, an incredible discovery given the 70 million year age assigned the beast. Blood vessels practically identical with those of today's ostriches were noted by the examining paleontologists-bioanalysts Schweitzer *et al.* Extensive molecular testing is now possible. So, too, the recapitulation of the paleo-calendar through many generations to the present may be in order. Unless the stupendous anomaly is explained in classical terms of fossilization, a collapse of time of Q proportions becomes conceivable.

dinosteranes/dinosteroids:

-- chemicals found in [dinoflagellates](http://www.ucmp.berkeley.edu/protista/dinoflagellata.html)
<<http://www.ucmp.berkeley.edu/protista/dinoflagellata.html>>, which have
been useful in documenting their existence early in the fossil record.

Diodorus Siculus:

(ca 90 BC - ca 30 BC)

Greek historian, born at Argyrum, Sicily. His history, *Bibliotheca historia*, consists of forty books; *Bibliotheca historia*, Book I, 19.

diploid life cycle:

-- Occurs when the only multicellular stage in an organism's life cycle is diploid <http://www.ucmp.berkeley.edu/glossary/glossary_D.html>.

diploid:

-- Having two different sets of chromosomes in the same nucleus of each cell. Most metazoans and plants are diploid. Compare with [haploid](http://www.ucmp.berkeley.edu/glossary/glossary_H.html) [<http://www.ucmp.berkeley.edu/glossary/glossary_H.html>](http://www.ucmp.berkeley.edu/glossary/glossary_H.html).

disease:

-- Organisms suffer from disease when their normal function is impaired by some genetic disorder, or more often from the activity of a parasite or other organism living within them. Many diseases are caused by [viruses](http://www.ucmp.berkeley.edu/allife/virus.html) [<http://www.ucmp.berkeley.edu/allife/virus.html>](http://www.ucmp.berkeley.edu/allife/virus.html), [bacteria](http://www.ucmp.berkeley.edu/bacteria/bacteria.html) [<http://www.ucmp.berkeley.edu/bacteria/bacteria.html>](http://www.ucmp.berkeley.edu/bacteria/bacteria.html), or [fungi](http://www.ucmp.berkeley.edu/fungi/fungi.html) [<http://www.ucmp.berkeley.edu/fungi/fungi.html>](http://www.ucmp.berkeley.edu/fungi/fungi.html).

dispersal:

-- The scattering of organisms of a species, often following a major reproductive event. Spores and larvae are commonly dispersed into the environment. Pollen or gametes may also be dispersed, but in this case the intent is to target another individual so that reproduction may occur. Organisms may disperse as spores, seeds, eggs, larvae, or adults.

distal ejecta

impact ejecta found at distances greater than 5 crater radii from the rim of the source crater, as opposed to proximal ejecta, which are found closer than 5 crater radii from the crater rim, and which make up about 90% of all material thrown out of the crater during the impact event.

diversity:

- Term used to describe numbers of taxa, or variation in morphology.

Divine Archer:

A Chinese figure responsible for shooting nine suns from the sky.

djed pillar

this columnar structure, seen frequently in Egyptian reliefs, has been interpreted as the backbone of Osiris, as a symbol of stability. Standing upright was closely connected with life. There is a relief on the wall of the temple of Hathor at Dendera which shows two attendants carrying what appears to be striated cable; nearby a djed pillar leans like the tower of Pisa. The snakes shown at the cable ends in what look like twentieth century thermionic valves might indicate the presence of the electrical god, rather than stone slabs; stone slabs could not possibly be lifted or carried in the manner shown. The god is to be used to make the djed pillar stand upright.

DNA:

-- "deoxyribonucleic acid". The nucleic acid which carries the genetic code of an organism. It is the primary component of chromosomes. [MORE?](#)
<<http://www.ucmp.berkeley.edu/glossary/gloss3/dna.html>>

dormancy:

-- A period of suspended growth and metabolic activity. Many plants, seeds, spores, and some invertebrates become dormant during unfavorable conditions.

double layer (electric)

the juxtaposition of an electric sheath containing an excess of electrons upon an electric sheath which is electron-deficient. Such a double layer is formed whenever two plasmas of differing electric charge densities meet, for example, between the Sun's photosphere and its corona and between the solar wind and the Earth's plasmasphere. The former double layer forms the solar chromosphere, the latter the Earth's magnetosphere and bow wave.

double membrane:

-- In mitochondria and plastids, there is a two-layered membrane which surrounds the organelle. This is believed to be the result of endosymbiosis, with the outer membrane coming from the eukaryotic cell, and the inner membrane belonging to the original prokaryote which was "swallowed".

double star

a synonym for binary star. Early-type stars are those which, using conventional star-evolution-theory sequences, must be younger. Herein, using Bruce's scheme, these are the post-nova stars. They are also, in the *Solaria Binaria* system of *Quantavolution*, high transaction stars.

Dragon-star:

Maybe that this change of orbit occurred through the effect of a collision with what was in olden times referred to as a "dragon-star," or comet, about which, according to Rhode (*About The Beginnings Of Our History*, Breslau, 1819) the old Zend Avesta writings of the Farsi give us the following information: : "The Enemy of Nature ran up from the South and found himself in the Zone of Water (i.e. the constellation of the Crab). From there, he flew over the Earth all its length, destroyed everything in the South, and darkness covered everything, as the darkness of night. Boiling hot water rained onto the trees, they died in the wink of an eye. Everything burned down to the root; the earth itself was scorched and barely still existed. It is true that in the heavens the Moon and the Sun followed their course, but the Enemy of Nature fought against the planets, he wanted the destruction of the world: and clouds of smoke flew up from the fires raging in all places. For ninety days and ninety nights the fight took place; then the Enemy of Nature was vanquished and beaten back. At that point Taschter (Jupiter) sent rain and hurled lightning; drops fell, the size of the head of a man, and the water covered the whole earth to the height of a man. Then there came a wind from heaven and in clouds it carried away the water, as if it was the soul in the body; Ormuz then collected the waters in the sea, and he gave them the land to border in. But now the Enemy of Nature broke open the earth from below and since that time he rules over it together with Ormuz, he meddles in everything and brings thousandfold misery..."

Dry Fog:

A high loading of the atmosphere with particle matter and little moisture that was noted in 536-7 just before the arrival of the Great Plagues of the Justinian reign, as well as in 1348, before the Black Death plague. It is likely of exo-terrestrial origin.

Dionysus (also Bacchus)

Dionysus was a god of the life in ivy, trees and the vine, (rather than of corn and crops from the earth). Ivy, trees and the vine all had electrical significance, ivy because it suggested an aura or glow round an object, especially round a throne. The near identity of the Latin *hedera*, ivy, and Greek *hedra*, throne, suggests that ivy symbolised the glow, Greek *charis*, beauty, that flowed over a person, or over such an object as a king's throne, or an ark when the electrical god had been caught by the priest. Trees were important, especially the pine or fir, partly because of the fiery qualities of resin, partly because of the world tree. The vine could be made into a drink which would produce sensations which the Greeks associated with electricity. The Greek poet Archilochus tells us that he could write a dithyramb when lightning-struck with wine.

His conception and birth are evidently catastrophic: Zeus courts his mother Semele in the form of a Golden Rain. She is accidentally killed by a thunderbolt from Zeus, having wanted to see her lover in the full display of his glory. Zeus saves the foetus she is carrying and sews him inside his own thigh in order to carry out the gestation.

Dionysus was a god of noisy revelry, of earthquake and of lightning. It is possible that the musical accompaniment at his rites, dominated by low-pitched [*barubromon*] drums, was meant to suggest earthquake, thunder and electrical stimulation.

Dionysus is said to have been born and raised in the island of Naxos. According to a mosaic from Delos, his nurse was Ambrosia.

At the Lenaea, a festival held in Athens, ecstatic women worshipped a draped pillar with a mask on top representing Dionysus.

The fact that he was a son of Zeus may account for the letters dio- in his name. Dio- frequently implies heaven or sky. The name of his mother Semele is the Slavonic *zemlya*, earth. The other letters forming his name may perhaps be explained by the Syracusan word *nusos* or *nussos*, lame. This is not very helpful, though Hephaestus, god of divine fire, was lame. On the other hand, the Greek *nussein* is to prick, to touch with a sharp point. This raises the possibility of an electrical explanation.

It was believed that he was born in the city of Nysa, in marshy land such as encouraged lightning.

Followers of Dionysus carried a thyrsus. This was the stalk of a plant, the *narthex*. It was the stalk in which Prometheus brought fire down to earth

from Olympus. The Greek *thu-* is fire or sacrifice, *air-* is to raise. The thyrsus could be furnished with a sharp point, which could be used to give what would be thought to be an electric, i.e. divine, shock.

All these facts, together with the account given of him and his actions in the *Bacchae* of Euripides, show that Dionysus was a god of electricity. When arrested for causing disturbances and promoting immoral behaviour, Dionysus frees himself from prison by creating an earthquake and electrical fire ["against which every effort is in vain", l.625]. Pentheus, king of Thebes, has an urge to spy on the women and watch their revels. Dionysus causes him to have hallucinations and, with the help of a pine tree and lightning, causes him to be torn to pieces [*sparagmos*] by frenzied bacchantes led by Agave, the mother of Pentheus. The chorus declare that a bull leads to disaster.

Pentheus, being descended from Kadmos of Thebes, has snake ancestry [Kadmos and Harmonia were turned into snakes]. At one level, the contest is between snake and bull.

Such a contest may be seen as both electrical and astronomical. The bull with its horns symbolises the head of a comet, the snake represents the tail. The stories of a monster in the sky, such as Zeus defeated, and of lightning exchanges on a huge scale, probably with almond-shaped plasmoids, as shown in the hand of Zeus, were accounts of what looked like a battle between the head of a comet and its tail. *Vide* the *Bacchae* l.1153ff.

According to Plutarch, the Greek seer Melampus learnt the name of Dionysus from the Egyptians. Plutarch equates Dionysus with the Egyptian god Osiris. In each case there was a *sparagmos*, a tearing to pieces, and a resurrection.

Diodorus refers to the civilising mission of Osiris, a mission like that of Dionysus, who brought wine, music and dancing on his travels through Asia to Greece.

In the period after Alexander the Great, the Egyptian deities Isis and Anubis were worshipped on the island of Delos, a great centre of worship of Dionysus.

The name Bacchus suggests *fa*, light, or *ba*, Egyptian for soul, and *cha*. The Greek letter *chi* may be onomatopoeia for sparks and lightning, and may be related to the Egyptian *ka*. Dionysus exemplifies the effect of electrical stimuli and disturbances on the brain and nervous system.

Earth axis changes:

The inclined position of the earth' axis with regards to the poles had already lead ancient Greek scientists to surmise that our planet had been thrust by an external celestial body from its earlier perpendicular position; indeed, Anaxagoras taught that at the beginning the stars had turned perpendicularly in the celestial sphere, so that the poles had been orthogonally exactly above the earth [at the zenith of the celestial sphere.] Through the shattering of the two celestial bodies, Hesperus and Phaethon, but especially through the change of orbit of the former, and through the resulting total change in the relations of equilibrium of all the planets in our system, the center of gravity of our earth necessarily had to be displaced, and its earlier position with regards to the poles be changed twice.

Atmospheric transformations on our earth.

The twice violently changed position of the earth with regards to the sun, accompanied by great fires and floods, must also have brought about multiple changes of climate - in part sudden, in part gradual - so that countries which now enjoy a temperate location burned under the hot equatorial belt or froze under ice and snow. As a witness of the times when the hot equator extended over Europe and the high mountains of Asia, the earth of Germany preserves in her lap remains of palms and giant tropical plants, where once elephants, rhinoceros, lions and hundreds of other species of animals of the hot climes thrived; but also of those times, when a deep winter had covered these same regions, so that on the south side of the mountains of Franconia, numberless rests of cave bears have been found, who could only have lived in the cold north. One suddenly falling great winter could with its breath of death have extinguished the southern plants and animals; one, from south coming great flood bury all the northern plants and animals in its deadly waves. But these sudden transformation we know already from what we have talked about before; about the slower changes, the old-Persian, Greek and Italic poets, from

whom the Romans still got their sources, gives us some information in the beautiful and true manner of the image-tale. When king Kronos or Saturn in the West, and Dsjemschid in Aria guided their peoples - so says the legends - the fertile earth, in a perennial spring shining, produced her gifts generously and richly, and the happy peoples lived without worry and pain, without fights and war, through their Golden Age; yet when (after the Ogygian flood) Jupiter had dethroned his father in Crete, a silver era became established, less than gold, but still better than iron; Jupiter shortened the eternal spring, and further parted the year into the burning summers, the icy winters and the unsteady autumns. At that time only did man seek his shelter in caves and huts, tamed the bull, and plowed the land for sowing. To this followed (after Inachus) a third race of men, of a hard spirit, prone to terrible war but not to vice, for it had made instruments and weapons out of copper. Yet since the fall of Phaethon, came the last race, of iron, made greedy by dire want of foreign lands, and able to conceive any act of violence possible. Iron rained from heaven, iron was spewed forth by burning Ida, and the Daktylian Hercules first fashioned weapons of iron for himself for wars of conquest, but he begged from the Hyperborean Celts of the Ister the symbol of peace, the holy olive tree, in order to crown with it the winners in the Olympic Games. - In an endless war then, North and South battled for the domination of the earth, and the harsh race forged ahead, driven by want and passion, from good to all evil. Already from the height of the Pole eternal ice threatened the green lands of Europa; already the happy lands of the Hyperboreans in the north of Germany were the prey of deep, lasting winters; already the many lions who in Thrace had attacked the camels of Xerxes had disappeared, and the last lions which had roared in the steppes of Skythia had frozen of the cold: yet weaker and weaker became the sound of the enemy clashes, the fire mountains extinguished, waters began to flow controlled by human art, more and more restful becomes the earth and her inclined axis will straighten itself until one day it will be perpendicular again, so that, according to Laplace the seasons will occur in the same time, and the day and night all year will be equal in length, and the long disturbed equilibrium will finally return to Earth.

Eckhel, Joseph Hilarius:

(1737-1798), Austrian numismatist, considered the founder of the science of numismatic; *Doctrina numorum veterum*, Tome III., p.152ff. This work, in 8 volumes, is still considered an unexcelled reference work.

ecosphere

the totality of human settlements on Earth. In Quantavolution's examination of the circumstances surrounding the Exodus, evidence of changes in the ecosphere is abundant, and has been presented in a number of works discussing every region of the world. Europe, the Mediterranean, the Near, Middle and Far East, and Meso-America provide evidence. Every advanced civilization suffered destruction, whether in China, Africa, the Caucasus, Anatolia, Crete, or elsewhere. Quantavolution proposes the hypothesis that "No human settlement in the world escaped destruction from natural causes in the mid-second millennium." (See Claude Schaeffer.) A corollary of this proposition, which is also related to the one on astrophysics, is that "No religious temple that was built before about -3500 and rebuilt afterwards shows the same astronomical orientation afterwards as before." Peter Tompkins, for instance, carries a diagram in his work on the Great Pyramid that shows four different historical orientations of the Temple at Luxor, one of which was probably at the end of the Middle Bronze Age. René Roussel has written a report (unpublished) showing that a rupestral temple at Ouadi es Sebous (Upper Egypt) was oriented to different winter solstices before and after -3500. A disaster occurred to the temple in between; great fire damage and layers of ash are to be seen.

ecosystem:

-- All the organisms in a particular region and the environment in which they live. The elements of an ecosystem interact with each other in some way, and so depend on each other either directly or indirectly.

ectoderm:

-- The outer basic layer of tissue in those animals with true tissues. In vertebrates, for instance, the embryonic ectoderm differentiates into the skin and also the nervous system.

egg:

-- (1) A large gamete without flagellae that is fertilized by a sperm cell. An egg cell is also called an ovum. (2) A complex multicellular structure in which an animal embryo develops.

ejecta

material such as glass and fragmented rock thrown out of an impact crater during its formation.

elater:

-- A cell or part of a cell which assists in dispersing spores. The elaters change shape as they lose or acquire water, and they will then push against surrounding spores.

electric neutrality

used in the *Solaria Binaria* system of *Quantavolution*, as a local, rather than an absolute condition. The existence of a measurable transaction between local bodies (like the Sun and the Earth) indicates that there is *not* neutrality within the locality. If the galactic neutral is one too many electrons per million atoms, while in the Solar System there is one too many electrons per ten million atoms, then a current will tend to flow between the Sun and the Galaxy in order to make the Sun neutral.

Electroponics:

Study of sounds associated with bolides and fireballs.

electrophoresis

the motion of particles (of atomic or larger size) under the influence of an electric field. Larger size particles (granules) being usually in solution or emulsion. This motion implies that the particles bear an electric charge. The phenomenon has a wide range of applications in chemistry, biology, medicine and industry.

embryo:

-- Once a **zygote** begins to undergo cellular divisions, it becomes an embryo.

embryophyte:

-- Synonym for the [Plantae](http://www.ucmp.berkeley.edu/plants/plantae.html)
<<http://www.ucmp.berkeley.edu/plants/plantae.html>>, as here defined. It includes all green photosynthetic organisms which begin the development of the sporophyte generation within the [archegonium](http://www.ucmp.berkeley.edu/glossary/glossary_A.html).
<http://www.ucmp.berkeley.edu/glossary/glossary_A.html>

enations:

-- Flaps of tissue such as those found on psilophytes.

Encke's Comet:

A faint comet on an unusual 3.3 year orbit, probably the main character in many myths.

endoderm:

-- The innermost basic layer of tissue in those animals with true tissues. Forms the gut and its derivatives: in vertebrates, these include the liver, trachea, and lungs.

endodermis:

-- Literally "inner skin", this is a layer of cells which surrounds the central core of vascular tissue, and which helps to regulate the flow of water and dissolved substances.

endoplasmic reticulum:

-- (ER) network of membranes in eukaryotic cells which helps in control of protein synthesis and cellular organization.

endosymbiosis:

-- When one organism takes up permanent residence within another, such that the two become a single functional organism. Mitochondria and plastids are believed to have resulted from endosymbiosis.

entomophily:

-- Seed plants which are pollinated by [insects](#)
<<http://www.ucmp.berkeley.edu/arthropoda/uniramia/uniramia.html>> are
said to be entomophilous.

environment:

-- The place in which an organism lives, and the circumstances under which it lives. Environment includes measures like moisture and temperature, as much as it refers to the actual physical place where an organism is found.

enzyme:

-- complex protein which helps to speed biochemical reactions. Enzymes are important in the construction and degradation of other molecules.

epidermis:

-- The outermost layer of cells or skin. This tissue often contains specialized cells for defense, gas exchange, or secretion.

epiphyte:

-- A [plant <http://www.ucmp.berkeley.edu/plants/plantae.html>](http://www.ucmp.berkeley.edu/plants/plantae.html) which grows upon another plant. The epiphyte does not "eat" the plant on which it grows, but merely uses the plant for structural support, or as a way to get off the ground and into the canopy environment.

epithelium:

-- Layer of cells which lines a body cavity; cells may be ciliated or unciliated, and may be **squamous** (flat, scale-shaped), **cuboidal** (cube-shaped), or **columnar** (column-shaped). Your stomach and cheeks are lined with epithelium.

Eridanus:

Origin and meaning of the name:

To Herodotus the name Eridanus did not appear foreign but Greek, and therefore, to him, suspicious, yet the good man should have known that his landsmen had a habit of naming many people and places by Greek names, and quite often translated the proper names of foreign individuals into the Greek language. From the Greek, the name could have meant either "the one who burned up in the east," (from *Hri*, East and *danos*, burned) - at least Nonnus refers to the river several times as "the burnt-out one (*phlekhneis*). Or, it could have meant "the bringer of gifts" (from the old *Hr*, gift, and *daio*, to give, to impart or offer), either because the Eridanus gave to its riverains the precious amber, or because the Hyperboreans conveyed their offerings to Delphic Apollo by using the river Po, from the delta of which they took to the sea near the town of Spina in order to rejoin the island of Delos in the Aegean Sea.

Some moderns derive the name from the Irish and old-gaelic Ire, Eire and Erie, the West so that, reminding one of the Vistula or the Weichsel, it points to its being the westernmost river which, in earliest times, Greek travellers might reach. Others, like Adelung, derive the name from the earlier mentioned Hr, Hri, East and the old nordic Dan, river, which is still found also in Don and Tanais, so that in connection with Germany it designated the Duna (Marcian's Rudon) in the vicinity of which the Estonians gathered their amber. If one wants to add yet more to the possible etymologies, one might advance that this river was named by the Celts Erichdan, or Kings River (from Erich, Erih, hero, king), as Virgil had called it the King of Rivers; but one must reflect here that the related Greek Erech-theus is never written with *H* (*ita*), like Eridanus, but only with *E* (*epsilon*). The derivation of the first half of the word from the Greek *D*, Δ , to flow, also appears shaky, for that same reason. Quite unlikely on the other hand is the allegation of some authors like Servius about Vergil, that the Po received its name from Phaethon, whose first name had been Eridanos. Suspicious as well is the passage in the lost work of Cato about

the origin of the peoples, that the Po was named Eridanus after the head of a colony of settlers. According to Aelianus there flowed a river of a similar name, the Iretenos, near the city of Itetia not far from Patavia into the Italian Eridanus.

esophagus:

-- That portion of the gut which connects the pharynx to the stomach.

Euhemerus:

(fl. around 316 BC), Greek mythographer, known for a rationalizing method of interpretation which treats mythological accounts as reflections of actual historical events.

eukaryote:

-- n. An organism whose cells have cytoskeletons for support and their DNA contained in a nucleus, separated from the other contents of the cell; e.g., protists, plants, animals, and fungi; **eukaryotic**- adj.

Euramerica:

-- n. A supercontinent that existed in the Late Silurian through Devonian, formed by the collision of Baltica, Laurentia, and Avalonia; included modern North America, Greenland, Scandinavia, and Europe; also called the "Old Red Continent" for the red color of its oxidized deposits.

Eusebius of Caesarea:

(ca 275 AD - 339 AD), bishop of Caesarea in Palestine, referred to as the father of Church history, a prolific writer whose work has been largely preserved. He quotes extensively - mostly in order to refute them - from ancient authors whose work would otherwise have remained lost to us; *Praeparatio evangelica*, evang. X., 10: "-- "B@ S(L(@L J@L B"D

eustele:

-- When a plant's vascular tissue develops in discrete bundles, it is said to have a eustele. See also protostele and siphonostele.

Eusthatus of Thessalonica:

(died 1198), archbishop of Thessalonica, said to be the most learned man of his time, author of commentaries on Homer, the most important contribution to Homeric scholarship in the Middle Ages. It is a vast compilation of commentaries going back to the Alexandrian school, all of which are lost, but for his citations. (Note of the T.)

evolution:

-- Darwin's definition: descent with modification. The term has been variously used and abused since Darwin to include everything from the origin of man to the origin of life.

evolutionary tree:

-- A diagram which depicts the hypothetical phylogeny of the taxa under consideration. The points at which lineages split represent ancestor taxa to the descendant taxa appearing at the terminal points of the cladogram.

evolved-star

a star which does not obey Eddington's Mass-Luminosity law. Stars in close binary systems are usually of this type, indicative in the view of *Quantavolution* of an intensive electric transaction between the principals in such binary systems.

exoskeleton:

-- n. An external, often hard, covering or integument that provides support and protection to the body.

extinction:

-- When all the members of a clade or taxon die, the group is said to be extinct.

extracellular matrix:

-- (ECM) Region outside of [metazoan](http://www.ucmp.berkeley.edu/phyla/metazoamm.html) [<http://www.ucmp.berkeley.edu/phyla/metazoamm.html>](http://www.ucmp.berkeley.edu/phyla/metazoamm.html) cells which includes compounds attached to the plasma membrane, as well as dissolved substances attracted to the surface charge of the cells. The ECM functions both to keep animal cells adhered together, and well as buffering them from their environment.

eye

Greek *ophthalmos*. *Ophis* is a snake. *Thallo* = sprout, flower. Greek *kanthos*, corner of the eye, is *ka* and *anthos*, a flower. The Greek *auge* is ray of light; German *Auge* is an eye. Greek *baskaino* is to direct the evil eye at someone, to fascinate and bewitch. The word appears to be a compound of *fa*, or *ba*, light, and the Semitic *sakin*, knife. In Latin, eye is *lumen*, *oculus*, *acies*. Hebrew *ayin* is an eye; cf. Greek *ainos*, terrible.

eyespot:

-- Light-sensitive organelle found in many groups of protists, and in some metazoans.

faculae

(lat. *facula*: small torch) irregularly shaped unusually bright patches above the solar disc generally associated with, or preceding the apparition of sun spots. They are active regions in the photosphere and have their equivalent higher in the atmosphere as chromospheric plages and coronal condensations.

falcon

The falcon was the lightning symbol of the Egyptians, and was associated with Horus.

The object appearing in Egyptian art and hieroglyphics and called the *utchat*, or *udjat*, was the eye of Horus or of Ra.

The osprey, a bird of prey like the eagle, was in Latin *sanqualis*. As with the eagle, the Romans watched its flight. The name may incorporate *sankh*; the radiation of the god was thought to give life.

The *buteo*, falcon, was watched for its flight.

Favorinus Guarinus:

(1450-1537), Italian lexicographer, author of a vast compilation of Greek authors *Etymologicum magnum sive Thesaurus universae linguae Graecae ex multis variisque autoribus collectus* (1523); he worked mostly in Florence, and was bishop of Nocera.

fear

Latin *pavor* = fear; *pavo* is a peacock, sacred to Juno. Hera may be atmosphere or radiance around Zeus. The bird's sensational display of plumage, with a pattern of what look like eyes, may have suggested a celestial phenomenon.

female:

- In organisms with separate sexes, the one which produces eggs.

fertilization:

-- The process by which an egg is made capable of generating offspring.
It is often synonymous with [syngamy](#)
<http://www.ucmp.berkeley.edu/glossary/glossary_S.html>.

fiber:

-- Elongated and thickened cell found in xylem tissue. It strengthens and supports the surrounding cells.

filament:

-- Long chain of proteins, such as found in hair, muscle, or in flagella.

fission:

-- Division of single-celled organisms, especially prokaryotes, in which mitosis does not occur. Also used to refer to mitosis in certain unicellular fungi.

Fixing the date of the flood:

The date of this mighty event falls, according to Varro, in the nine-year reign of Kranaus, successor of Kekrops in Attica, a date with which Syncellus is in agreement. In addition, he connects the event with the burning up of Phaethon over Ethiopia, but he sets the time as the year of the world 3995, or 14,659 BC. (He has Danaus arriving in Greece around 1410 BC, only). Eusebius puts both events 229 years after the Ogygian Flood, and even before the Phenician Hercules Deuso, and before the exodus of Moses from Egypt, into the year 490 after Ninus, which according to his method of calculation would be equivalent to the year 1511 BC, and would correspond to the year 1537 of Solinus, who has 600 years passing between the flood of Ogyges and the last one. It is therefore quite unnecessary to change the DC years into CC, as does Salmasius. (This Hercules is probably identical with the Idaean Hercules, whose descendant Klymenus, 50 years after the flood of Deucalion, reinstated the Olympic games, first founded by Hercules himself. According to the Parian Marble Chronicle, probably the most trustworthy document about these events, Deucalion acceded to the kingship at Lykorea in the ninth year of the rule of Kekrops (who, still according to the same document, began his reign in 1582 BC) - in 1574 BC, therefore; in the fourth year of Kranaus', Kekrops' successor's rule, in 1529 BC, he fled, forced by the arrival of the flood, first to Athens; in the year 1523 BC, after the death of Deucalion, he additionally took dominion over Thermopylae, and created the Amphyctionic League. This information of the Parian chronicle is at variance by 20 and a few years from the chronology of Eusebius.

Orosius, on the other hand, places this flood together with the Ethiopian plague into the reign of Amphictyon, the second ruler after Kekrops, into the year 810 before the founding of Rome; but he puts the fall of Phaethon, as well as the ten plagues of Egypt, preceding the exodus of Moses, into the year 805 before the founding of Rome, therefore the prior event into the year 1564 BC, and the latter into 1559 BC. Diodorus has this flood pouring down over Rhodes and Lesbos not too long before the arrival of Danaus

and Cadmus, in fact seven generations (233 years) after the life of Argive Xanthus, the brother of Inachus. If he was aligning himself with Akusilaos, his indication would point at the year 1563-64 BC, consequently fitting with the indications of Orosius; but again, in another place, he seems to consider the Inachian and the Deucalion floods, if not as one and the same, then still as very close in time.

Clement of Alexandria places the exodus of Moses into the lifetime of Inachus, in fact, into the year 1646 BC - but the flood of Deucalion, which he calls the second flood, and the fire of Phaethon, he places four generations later (of which three, according to him, represent a century), into the time of Krotopus, ruler in the Peloponnese, which gives us, according to his most distant calculation, 1514 BC. He only bestows onto Moses a higher age in order to claim for his godly hero a greater respect among the pagans.

As this terrible flood had devastated a great part of the inhabited earth, and as yet more floods and terrifying events had followed on its heels, we must not be surprised to find that the descendants of the overwhelmed survivors could only dimly remember these events, and even got to confuse them with others, that were similar.

We would be able to decide upon the date of this event much more precisely if the great Aristotle had communicated to us the calculations he made on the subject, or if experience had been able to verify his (and others') astronomical claim, namely that after every "Great Year" of 19 years - or even more so, after each great World Year - a succession of deluges and fires occurs.

Moreover, when Clement and Nonnus designate the Deucalian flood as the "second" one, we must not let ourselves be induced in error, for authors with an earlier knowledge of proto-history, such as Plato (in *Critias*) and Varro emphatically call it the third one (Deucalion). The celebrated Rhabanus Maurus, who still held before his eyes many now lost works of the ancients, names the Noachian as the first, the Ogygian at the time of Jacob as the second, and the Deucalian, at the times of Moses and

Amphictyon, as the third.

flagellin:

-- protein which is the primary component of prokaryotic
<<http://www.ucmp.berkeley.edu/bacteria/bacteriamm.html>> flagella.

flagellum:

-- n. Hair-like structure attached to a cell, used for locomotion in many protists and prokaryotes. The prokaryotic flagellum differs from the eukaryotic flagellum in that the prokaryotic flagellum is a solid unit composed primarily of the protein flagellin, while the eukaryotic flagellum is composed of several protein strands bound by a membrane, and does not contain flagellin. The eukaryotic flagellum is sometimes referred to as an undulipodium.

Flavius Claudius Julianus:

Emperor Julian the Apostate (331-363 AD), philosopher and writer, *The Caesars*.

flesh

Greek *kreas*. It may be 'flow of *ka*', implying creation, Latin *creo* or *cereo*. Another Greek word for flesh is *sarx*, *sark-*. Latin *caro*, *carn-*, means flesh.

Flood legends:

The South Americans tell us that once upon a time, at the occasion of a great flood which had descended over all of Peru, they had fled to the mountains and that after it had subsided, they had found the plains inhabited by giants, yet they, too, were unable to date this event.

According to Eschwege, the Guaykurus of Brasil have a tale of a mighty rain, which in times past had over-flooded the whole earth; according to David Kranz, the people of Groenland tell that the earth had once rolled over, after which event the sea had covered the highest mountains. A similar legend of the Arabs (transcribed in the "Universal History" of Aini, translated from Arabic into Turk, in vol. 2, and included in *Fundgruben des Orient*, vol. 4, p. 422) reports that Sa, son of Besser and founder of Sais, built a large city in the farthest oasis, surrounded by a fortification wall of 50 ells high and 20 ells broads, and deposited in it all his treasures and his books of wisdom, to save them from the Deluge.

Compare this with the *Reports of Danish Missionaries*, vol. 1, p. 264, where Malabaran priests tell of a past deluge under Vishnu, and a coming destruction of the world under a flood of fire. The Hindustani teachings about the general conflagration of our world system occasioned by a comet can be found in Bedang, also quoted by Pallas, *Sammlungen historischer Nachrichten über die mongolischen Völkerschaften*, vol. 2, page 34. (Raglof)

Cyclades:

Another consequence of this celestial event were large earthquakes and eruptions which in part had preceded the flood mentioned above. By their effect, the Cycladic islands, among others, were pushed up and, in their middle, according to Aristotle, the celebrated Delos, which received its name either from the eruption of the underground fire or, according to Solinus, because it had become visible only after the flood of Ogyges. The related name Pyrpile, Delos is supposed to have obtained because fire had been invented there, according to Aeglosthenes. When Latona was chased

all over the world by the sea serpent Python - i.e. the name of the flood itself - and by the giant Tithon, Neptune, according to legend, lifted up this island from the waves and gave it as a refuge to the goddess, who there gave birth to Apollo and Artemis. Unfortunately, history has not recorded if at the occasion of these convulsions other islands of the archipelago of the Cyclades rose from the sea as well - or if the tearing away of Eubea, Sicily and Britain from the continent, mentioned in Virgil, Servius and Pliny among others, occurred then or later. Samothrace at least was torn off at this time, if not even earlier. The inhabitants of this island tell us indeed that, even before the inundations in other lands, the Black Sea had intruded by the way of the rivers, had broken through the Kyanaeic Rocks and the mouth of the Hellespont, and had flooded a great part of the coast of Samothrace and of Asia.

The Inachian Flood

Soon after the Ogygian, another flood occurred, associated with fires running all over earth, which was named after Inachus, the first king of Argos, yet it is confused by most writers with the earlier one. According to the genealogist Akusilaos, quoted by Julius Africanus, who flourished in 600 BC, and who wrote down the history of the kings of Argos basing himself on inscriptions from bronze tablets, Inachus lived 1020 years before the first Olympics, in other words - as these took place in 776 BC - in 1796 BC; according to Syncellus and Orosius, he lived around 1790-1794 BC, according to Varro in 1854 BC and according to Eusebius in 1850 BC. In the image-language of Apollodorus, Inachus is said to be a son of Okeanos and Tethys, or, to put it in common language, he had arrived over the sea, coming from Egypt. From him the Argive river In-achus - i.e. In-brook, supposedly received its name - unless it was the reverse... Neptune and Juno having entered into a fight over the possession of the Argolis, Inachus, as a river god - or according to others, Phoroneus - dedicated the land to Juno; in retaliation, Neptune punished the land with a nine year drought such that he deprived all the rivers of the country, including the Inachus, of their waters. According to legend, Inachus ruled for 50 years. His sons and descendants were Phoroneus, which Arnobius says is an

Egyptian, and Aegialeus, the first king of Argos, second king of Sikyon; Inachus' daughter was Io, who according to Diodorus represented Isis, i.e. she was her head-priestess. The flood occurred at the time of their kinship.

It had probably started already at the time of Inachus, or it had been preceded - prepared by - the nine year drought. At this time, all of Greece, but especially Attica, according to Diodorus, was so thoroughly devastated that, along with the inhabitants, all monuments of art and writing were destroyed and the Egyptians used the opportunity to claim as their own the earlier inventions of the Greeks in the domains of astronomy and the sciences. Indeed according to Julius Africanus the land of Attica had been so utterly destroyed that it remained without a king for 189 years, until Kekrops. The Techines, who were versed in the arts and had a reputation as magicians especially on account of their knowledge of meteorology - as Diodorus tells later - had foreseen this flood and had saved themselves from Rhodes onto the continent. Of the Rhodians only a few, among them the sons of Jupiter, had been able to save themselves onto the mountains of the island. When Helios later on, out of love for the island, dried up the waters, he was honored by the inhabitants as the main deity.

According to the chronicle of Eusebius, this was also the time when the cities of Sodom and Gomorrha were destroyed in a rain of fire, and the surrounding area turned into a swamp of asphalt, the Dead Sea; in fact, five cities were destroyed at the borders of Palestine and Arabia, with name Sodom, Gomorrha, Adama, Seboim and Segor, among which Sodom, according to Strabo, had a girth of 60 stadia. Orosius sets this event, which is also mentioned in Tacitus, in the year 1160 before the founding of Rome, i.e. 1914 BC, but he places the Inachian flood, which he mistakenly calls the Ogygian, in the year 1070 before the founding of Rome, therefore in 1824 BC.

The chronological differences mentioned above between Varro and Akusilaos can easily be explained by the fact that one considered the beginning and the other the end of the fifty year period of the rule of Inachus as the beginning of the flood, or that Varro counted too many

years for the history of Rome, or by taking into account Chinese information that the flood covered the time of the rule of their three emperors Phao, Chun and Yu, therefore almost a full century, or, finally, by supposing that during this period the said flood, through external effects, renewed itself in several instances and in different places.

Phoronus: The First man. As Phoroneus escaped the flood with his family, and repopulated the land, one of the authors of a lost epic, *Phoronis* by name, from which Clement of Alexandria preserved a few lines for us, names him as being the first man. On account of the wise laws which he gave the Argives during his 60 year reign, the latter author puts him together with Lykurgus and Solon. Complete information about this flood had been given by Rhianus in his lost work *Achaica*. As for the poet Nonnus, he knows nothing about the Inachian flood, but has the Deucalian flood follow as a second to the Ogygian, which he considers to be the first.

flower:

-- Collection of reproductive structures found in flowering plants. [More info? <http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>](http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html)

flute

The Phrygian satyr Marsyas learnt to play the pipe, which Athene had thrown away because of the facial distortion involved in playing it. He had the arrogance to challenge Apollo to a contest. The Muses judged Apollo to be the winner, whereupon Apollo tied Marsyas to a tree and flayed him alive. One version of the story is that Apollo had him killed by a Scythian. The northern connection suggests that an electrical interpretation may be suitable. Music could be used to induce, by mimesis, sounds indicative of the desired electrical activity. Experiments with electricity could easily have gotten out of hand, with unfortunate results, such as cardiac arrest (as in the case of Aaron's sons) or severe skin burns (Marsyas?).

Fog:

One day, a very heavy fog descended over the Peloponesian cities of Therapna and Dienus, after which the Deucalian flood descended, and then, as Eratosthenes tells us, the cities were swallowed, first by an earthquake, then by the sea. This tremendous earthquake also had laid waste the already considerable city of Athens, with its mighty fortifications reaching all the way to the Eridanus and Ilissus, and including the mountains Pnyx and Lykabetus. The irrupting flood carried down the debris to the sea. According to Apollodorus Jupiter sent great deluges from heaven in order to obliterate the human race of the bronze age; and according to Nonnus, mighty snowfalls covered the whole earth. According to Aristotle, a huge winter descended over all of nature, but especially over ancient Greece. As reported by other Greek authors, (Lucian, *De Dea Syra*), the earth opened wide and all of a sudden great amounts of water poured out; the rivers swelled to mighty streams and the sea came in close until all the waters were united in a single flood, and the whole race of humans was eradicated. For nine days and nine nights, the Thessalian Deucalion sailed over the open sea, until finally his ship landed on Mount Parnassus. (According to the Parian Marble-Chronicle, he fled from Lykorea before the flood to join Kranaus, in Athens, where he dedicated a temple and sacrificed to Jupiter, his savior.)

Poseidon, the ruler of the sea, the earth-shaker, tore open a breach through the mountains, through which the Peneus river then flew without obstacle to the sea and Thessaly turned into an expanse of lovely meadows. In Athens, the flood lost itself into a hollow in the Temple of Zeus through which now wheat flour and honey were poured in a sacrificial offering; similar rites were accomplished in Hierapolis, in Syria, where the Scythian Deucalion dedicated a temple to Atargatis. Still in Lucian's times, people from all over Syria, as well as from Arabia and from beyond the Euphrates, gathered there twice a year and, in memory of the disaster which had been visited upon them in the time of Deucalion, they poured sea water into the cavity, and climbed on trees and on high mountains.

According to L. Ampelius and to Hyginus, Deucalion, on account of his piety, was finally emplaced into the Heavens, where he now shines as the constellation of the water-bearer, Aquarius; according to Herodotus. Pausanias and Antiochus quoted in Clement of Alexandria, the Athenians had first named this constellation after their king Kekrops, at the end of whose 50 year rule the catastrophe had occurred.

food chain/food web:

-- All the interactions of predator and prey, included along with the exchange of nutrients into and out of the soil. These interactions connect the various members of an ecosystem, and describe how energy passes from one organism to another.

fool

In old Norse, *skir* means wise, or innocent. It may appear in the name of the Cumbrian village of Skirwith. The holy fool was an important figure in Russia, and appears in the opera *Boris Godunov*.

In Hebrew, Kesil means fool, impious, and Orion. Kesil and Khima are mentioned together in the book of Amos. Khima is equated with Saturn.

In the *Iliad*, XXI:410, the war god Ares is a fool; Athene hits him on the neck with a rock.

Kesil, a fool, impious, means in the plural the constellation of Orion. He shoots a swan, an act which a Greek might possibly have interpreted as hostility towards Aphrodite, who is associated with birds. Orion was a great hunter, whose dog was Sirius, the dog star.

The Greek for 'fool' is *moros*. It is possible that the word is Semitic *m*, from, and *or*, light. *Or-* is also Greek for a mountain. We have seen that kings, for example Minos, made a practice of visiting shrines on mountain tops. It may be that exposure to electrical storms and priestly experiments on altars could result in mental disturbances such as epilepsy, the sacred disease [electrical in origin], and amnesia such as afflicted the Lotus Eaters in the *Odyssey*.

force, electrical

see **electrical force**

fossil assemblages

are aggregates of fossils uncovered at a single location. They often exhibit ecological unconformity.

frugivore:

-- Animal which primarily eats fruit. Many [bats](http://www.ucmp.berkeley.edu/mammal/eutheria/chiroptera.html)
<<http://www.ucmp.berkeley.edu/mammal/eutheria/chiroptera.html>>
and [birds](http://www.ucmp.berkeley.edu/diapsids/birds/birdintro.html) <<http://www.ucmp.berkeley.edu/diapsids/birds/birdintro.html>>
are frugivores.

fruit:

-- In flowering plants
<<http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html>>, the structure which encloses the seeds. True fruits develop from the ovary wall, such as bananas and tomatoes, though not all fruits are edible, such as the dry pods of milkweed or the winged fruits of the maple.

frustule:

-- The mineral "skeleton" of a [diatom](http://www.ucmp.berkeley.edu/chromista/bacillariophyta.html)
<<http://www.ucmp.berkeley.edu/chromista/bacillariophyta.html>> or other unicellular organism.

fucoxanthin:

-- yellowish-brown pigment found in some members of the [Chromista](http://www.ucmp.berkeley.edu/chromista/chromista.html) <<http://www.ucmp.berkeley.edu/chromista/chromista.html>>, including kelps and diatoms.

Gaius Julius Hyginus:

(ca. 64 BC - 17 AD), freedman of Emperor Augustus, superintendent of the Palatine Library, prolific author, most of whose work is lost; *Poeticon Astronomicum* (attribution now disputed) Book II., 42.

gamete:

-- Reproductive cells which fuse to form a **zygote**. Gametes are **haploid**, and may be differentiated into egg and sperm.

gametophyte:

-- The haploid stage in the life cycle of an organism undergoing alternations of generations. The gametophyte is multicellular and mitotically produces gametes. In plants, the gametophyte nourishes the zygote and young [sporophyte](http://www.ucmp.berkeley.edu/glossary/glossary_S.html)

http://www.ucmp.berkeley.edu/glossary/glossary_S.html.

Garden of Eden:

A legendary fertile place where the first human family was placed (by God) and supplied with its material needs. One may ask: did such exist? Was it divine? Did a drama of earliest man occur there? How does it relate to Q? What are the functions of the story? Dim collective memories can recall a most ancient point of origin if only because of its fertility and its memorable topography, in the Hebrew case, a spot from which issued four great rivers.

The geographical data in Genesis about the Garden of Eden (GAN in Hebrew, paradeisos in the Septuaginta Greek version of the 3rd century BC, a word of Persian origin meaning "walled garden") are the following:

- the information that four rivers are born from the same geographical location.
- the names of the four rivers: Hindikel, Gihon, Pishon, PRT (PRT is usually translated as Euphrates, but it can be related to perath=fertility, pirot=fruit, parot=cows, hence PRT would be the river of the food bearing country.
- the information that Hindikel flowed eastwards of Ashur
- the information that Gihon bordered the land of Kush
- the information that Pishon bordered the land of Havilah, rich in gold, onyx (?) and "bdellium" (usually assumed to be an aromatic substance, but Spedicato suggests asbestos).
- the information that PRT watered the Garden of Eden, located in the Eastern part of Eden.
- the information that the Garden of Eden had an eastern access (a "gate"), wherefrom Adam and Eve were expelled; the gate was defended by a cherubim (KRB) brandishing a fiery sword.

The Spedicato thesis is that a location does indeed exist on Earth where all the above geographical details are satisfied. His interpretation of the biblical data is as follows:

Eden consists of the very special mountainous region of Central Asia where four rivers spring out of the huge massif that separates the Hunza Valley in north Pakistan from the Wakhan Valley of the Eastern Afghanistan province of Badakshan. This is also the region where four mighty mountain ranges join: the

Karakorum, the Hindukush, the Pamir-Tianshan, the Kunlun. Spedicato thinks that Eden comprised at least the Hunza Valley (the Garden, GAN, in the East), the upper Gihon Valley, i.e. the Badakshan (location of the Blue Mountain, the only known mine of lapislazuli in ancient times, and probably of the prediluvian city of Bad Tibira), and the upper valley of the Mintaka Tashkurgan River, the present Karakol, down at least to the city of Tashgurkan, in which he sees "Ashur."

The four rivers are all mighty rivers, with lengths in the range of 1000 to 3500 km, with their sources a few km or at most a few dozen km from each other. They are born in the massif that separates the Hunza Valley from the Badakshan, with peaks culminating at 7785m (Hunza Kunji).

Spedicato identifies the Hindekel with the river born as Mintaka and ending as Tarim in the Lop Nor desert, after a course of ca. 2500km; the Gihon with the Panji, which carried the biblical name of Gihon down to the 19th century - it becomes the Amu Darya and ends up in the Aral Sea; the Pishon as the river variously named as Matsuj, Yarkhand, Konar, Kabul, joining the Indus after Peshawar. It may not have joined the Indus in ancient times but followed an independent course, ending up in the Hamun Lake. The "creation" event took place before the biblical Flood and the later catastrophic event referred to in the Bible as the "breaking of the Earth" at Peleg's time.

gastrodermis:

-- In cnidarians <<http://www.ucmp.berkeley.edu/cnidaria/cnidaria.html>>, the endodermis which lines the gut cavity. The term is often used instead of endodermis since cnidarians only have two tissue layers instead of three.

Gene Evolution:

Gene changes in several hundred regions of the human genome within the last five thousand to fifteen thousand years are reported. Areas concerned are taste, smell, digestion, bone structure, skin color and brain function. The areas of the sample were Africa, East Asia and Europe. The rapidity and variety of changes, accepting the dating, is already considered most remarkable. If these are typical of geological time, it would seem that too much time has been allotted to the Phanerozoic scale. The brain gene, SNTG1, was under heavy selection everywhere. A surprising lack of overlapping similar gene changes in the different populations was noted.

generalist:

-- Organism which can survive under a wide variety of conditions, and does not specialize to live under any particular set of circumstances.

genus:

-- n. A category in the classification of plants and animals between species and family; **genera-** pl.

George, Baron Cuvier:

(1769-1832), trail-blazing French naturalist and zoologist, one of the founders of paleontology, and author of classical works on comparative anatomy of fossil and living animals. Author i.a. of *Discours sur les révolutions de la surface du globe*, *Le Règne animal distribué d'après son organisation*, *Rapport historique sur les progrès des sciences physiques depuis 1789...*

geosphere

the mineral, non-living part of the earth, principally, in Quantavolution, the hydrosphere and external part of the lithosphere, which supports all plant and animal life. In Quantavolution's examination of the circumstances surrounding the Exodus, much evidence of severe geospheric disturbances are evident. The world was "shaking." Rivers were stopped and changed their courses. Mountains were moved. Quantavolution hypothesizes: "Every geophysical feature or process in the world capable of exhibiting the effects of continuous stress will show that such stress occurred around the time of Exodus."

germination:

-- The process by which a seedling emerges and develops from a seed, or by which a sporeling emerges and develops from a spore.

giant

The evidence for the existence of giants is partly literary, partly archaeological. The best known literary evidence is found in the Old Testament.

In the Old Testament we read of a giant called Anaq. His descendants were Anaqim, the Hebrew plural form of his name. The Greek *anax* is the usual word in Homer for a warrior leader, prince or chieftain. The Greek princes, men such as Agamemnon and Ajax, are generally described as being big men.

This may seem purely speculative, but there still exist today on Naxos huge stone statues of *kouroi*, Greek youth, and the island of Delos, too, had gigantic statues of Apollo and Dionysus.

In *Deuteronomy*, chapter II, we read that there were Emims, great, many and tall, like the Anaqim. They were accounted giants, as were the Anaqim, but the Moabites called them Emims.

Later in the chapter, v.19, there is a reference to the inhabitants of the land of Ammon: "That also was accounted a land of giants: giants dwelt therein in old time; and the Ammonites call them Zamzummims; A people great, and many, and tall, as the Anaqim; but the Lord destroyed them before them; and they succeeded them, and dwelt in their stead".

Deuteronomy III:2f. tells of Og, king of Bashan, and of his iron bedstead. *Joshua* XII:4 states that Og and other giants lived at Ashtaroth and Edrei. Ashtoreth and Astarte are names of an eastern equivalent of the goddess Aphrodite.

Joshua XI:21f. refers to the destruction of the Anaqim. Only in Gaza, Gath and Ashdod were any giants left.

The hint of *ka* in the place names [Gaza and Gath], the link with Aphrodite [Astarte], and the position on the coast towards Egypt, all point to intense radiation in that area as one of the possible causes. I *Samuel* XVII tells the story of David and the Philistine champion Goliath of Gath. Goliath's brother was killed in a battle in Gob [II *Samuel* XXI:19], and in another battle, in Gath, one of the four giants killed there had twelve fingers and twelve toes. There was more than one Gath in Palestine. Perhaps the name Gath is *ka* and *at*, 'power of ka', or 'ka as source'.

England has remains of giants. For example, near Aspatria, in Cumbria, there were found in a grave the bones of a giant over seven feet tall. The discovery at Amman of sarcophagi of great size gives some support to the

statement in *Deuteronomy* III that Og, king of Bashan, was a giant.

The fact that the Philistines on the coast of Palestine spoke a language that may have been Illyrian, and that Goliath of Gath was a man of unusual size, raises the question of the origin of the Philistines. The Etruscan link that begins to emerge takes us farther afield.

Two main explanations come to mind for the existence of giants. One is that Goliath and others in Palestine were the result of mutation caused by phenomena such as those described in the Bible in the books of *Exodus* and *Joshua* and elsewhere. The other is that they came from farther afield, in which case the electrical conditions associated with the north pole and the god Bor may have been responsible. Goliath and the other giants seem to have been exceptional; Philistines in general and northern immigrants were probably comparatively large rather than gigantic.

giga(metre)

the prefix giga is used to designate thousands of millions; called billions in the United States but not in Great Britain where billion refers to one million million (or 10^{12}). One gigametre is one million kilometres. The symbol G, placed in front of a unit, multiplies it by 10^9 .

Gildas:

Sixth century British historian.

Gilgamesh Basin, Southern Hemisphere, Ganymede



The crust of Jupiter's moon Ganymede (the largest moon in the solar system) is composed mainly of water ice. Situated on the plains of its southern hemisphere is the remarkable Gilgamesh basin, a multi-ring impact basin nearly 600 kilometers in diameter. This image, taken by the Galileo spacecraft, is illuminated from the left, and shows only the western two-thirds of the structure. The 144-kilometer-wide circular central depression is flanked by a broad rugged annulus of comparable width. This annulus exhibits arcuate structural features suggestive of the terraces observed in lunar impact basins. Radial features emanating from the rim of the broad ring are probably surface scour marks associated with the emplacement of debris ejected from the impact site during crater formation. Numerous 10-30-kilometer impact craters of various sizes and degradation states are seen on the surface of Gilgamesh, indicating that the large basin is a relatively ancient feature. (*Mosaic of Voyager 2 images. Image processing by Paul Schenk, Lunar and Planetary Institute.*)

Location: 62°S, 124° **Diameter:** 600 kilometers

gill arches:

-- Stiffenings which support the flesh between the gill slits of [chordates](http://www.ucmp.berkeley.edu/chordata/chordata.html) [<http://www.ucmp.berkeley.edu/chordata/chordata.html>](http://www.ucmp.berkeley.edu/chordata/chordata.html). In most vertebrates, the first gill arches have been modified to form the [jaw](http://www.ucmp.berkeley.edu/glossary/glossary_J.html) [<http://www.ucmp.berkeley.edu/glossary/glossary_J.html>](http://www.ucmp.berkeley.edu/glossary/glossary_J.html), and in tetrapods, the inner ear bones.

gill slit:

-- A slitlike or porelike opening connecting the pharynx of a [chordate](http://www.ucmp.berkeley.edu/chordata/chordatamm.html) with the outside of the body. Gill slits may contain the gills and be used for gas exchange, as in most fish, but may also be used for filter-feeding, or may be highly modified in land-dwelling vertebrates.

gill:

-- In aquatic animals, highly vascularized http://www.ucmp.berkeley.edu/glossary/glossary_V.html tissues with large surface area; these are extended out of the body and into the surrounding water for gas exchange.

glory

Latin *gloria*. Sumerian *gal* = great; Hebrew *or* = light. Greek *or-* is a mountain, *megal-* means 'great'. Great light?

glucose:

-- simple sugar, and the primary product of photosynthesis. It is polymerized to make cellulose and chitin.

glycoprotein:

-- a membrane-bound protein which has attached branching carbohydrates. These may function in cell-cell recognition, such as in human blood groups and immune system response, as well as in resisting compression of cells.

gnathobase:

-- The expanded and hardened base of the appendage of many arthropods, notably [trilobites](#)

<http://www.ucmp.berkeley.edu/arthropoda/trilobita/trilobita.html>, [crustaceans](#)

<http://www.ucmp.berkeley.edu/arthropoda/crustacea/crustaceamorpham.html>, and marine [cheliceramorphs](#)

<http://www.ucmp.berkeley.edu/arthropoda/chelicerata/cheliceramorpham.html>. Used to macerate food items before ingestion.

Goat Paddock, Australia (impact crater)



This image, taken by the shuttle Large Format Camera, shows the Goat Paddock Crater, which is located within the semi-arid plains south of the Kimberley Plateau of northwestern Australia. The crater is expressed as a nearly circular depression open to the north. Its name is derived from its natural use as a paddock (a fenced pasture) for livestock. Goat Paddock's diameter is very close to the transition diameter from simple bowl-shaped craters to more complex forms with central structures, flat floors, and slumped rim zones. Unfortunately, very little is currently known about this potentially insightful feature. (*Space shuttle image STS17-4107-1228.*)

Location: 18°20'S, 126°40'E **Diameter:** 5.1 kilometers **Age:** <55 million years

goat

goats were thought to be more than usually sensitive to electrical fields, or rather to the presence of a deity. They were responsible, through their strange movements and sounds, for the discovery by the goatherd Koretas of the conditions at Delphi [Pytho] that were favourable for the 'inspiration' of a Sibyl or 'unveiler'. The Latin *caper*, goat, may be 'ka container'; compare the German *Kaefer*, beetle, and the Egyptian scarab. The Greek words for dancing, *skairo*, *skirtao*, *orcheomai*, *choreno*, *komazo*, *enkrono*, all have links with goats or the theatre. *Skirtao* is a Greek word meaning to make movements like a goat and its consonants suggest the Egyptian *Seker*, an earth deity. The title of Seker was given to Osiris when he was imprisoned in the chest before being restored to life and raised up by electrical force. The Latin *securus* means secure and enclosed. The Latin *sacer* has the same consonants. The god Pan is half goat. Grottos were sacred to him, and the horns symbolise the electrical god in the sky. The leaps of a goat reveal the divine presence in the earth as felt where there were split rocks and caves.

A goat is in Latin *caper*. *Per* is Egyptian for a house. Was a goat thought of as a *ka*-container? The German *Kaefer* is a beetle, and in Egypt the scarab was sacred. Scarab is another of the words based on the letters scr or sqr. Hebrew *chaghagh* is to dance, or to stagger; *chaghav* is a ravine. A possible explanation of the similarity of the two words is to be found in the history of Delphi.

Plutarch, 1st century A.D., tells of the deadly accident to the Pythia when the goat needed extra drenching to make it indicate, by shivering, that the deity was present and ready to inspire the Sibyl.

Romulus was said to have disappeared during a storm, accompanied by thunder and lightning, when he was holding a meeting with the people on the Goat's Fen.

At the start of the Great Dionysia, the Athenian drama festival, a bull and a goat were sacrificed to Dionysus. The horns of a goat can be particularly suggestive of the protuberances of a comet, and stags too were sacrificed, especially in countries farther north.

The bull symbolises the power of a heavenly body with horn-like protuberances. The killing of goats, stags, bulls and other creatures was sympathetic magic aimed at checking the career of an object in the sky threatening the earth. The wearing of horned helmets, masks and bulls' tails is an instance of mimesis. If all else fails, if you can't beat them, join

them. Furthermore, resemblance to a divine phenomenon instilled obedience, reverence and fear in servants, subjects and enemies. Eating the bull, drinking the blood of goats, and so on, were more a matter of obtaining superhuman strength than of obtaining immortality, but are worth mentioning because they are all part of the general effort to cross the *limen*, threshold, between our world and that of the spirits of the dead and of the gods.

Earthquakes, which were associated in the ancient mind with divine activity in the sky as well as underground, were a source of piezoelectric effects. The goats detected the conditions at Delphi.

Goats “dancing” is also credited with the discovery of the stimulating properties of the coffee plant in Arabia.

Golgi apparatus:

-- Eukaryotic organelle which package cell products, such as enzymes and hormones, and coordinate their transport to the outside of the cell.

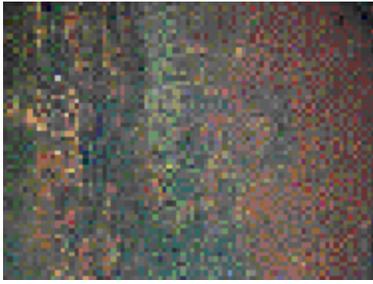
Gondwana:

-- n. A supercontinent that existed from Cambrian to Jurassic time, mainly composed of South America, Africa, Madagascar, India, Antarctica, and Australia.

goose

The goose, Greek '*chen*', was known to the Egyptians as '*chenchenur*', the great cackler. At Rome, geese were sacred to Juno; they gave warning of the Gauls' night attack on the Capitol. The great significance of the goose may be due to the appearance of a heavenly body such as a comet, with wing-like protuberances. Aphrodite is portrayed riding on a goose. The goose has a long neck, and hisses like a snake.

Gosses Bluff, Northern Territory, Australia (impact crater)



This highly eroded structure is situated just south of the MacDonnell Ranges (left part of the picture) in the arid Missionary Plain in the Northern Territories, Australia. Although it could be mistaken for the crater rim, the central ring of hills (5-6 kilometers in diameter) results from differential erosion of the central uplift within this large complex crater. The rim itself has been eroded and is no longer visible, but the circular, grayish drainage system outside the inner ring of hills probably marks the original extent of the structure before erosion. North is to the left. (*Space shuttle image STS41D-41-028.*)

Location: 23°50'S, 132°19'E **Original rim diameter:** 22 kilometers **Age:** 142.5 ± 0.5

gradualism:

-- A model of evolution that assumes slow, steady rates of change. Charles Darwin's original concept of evolution by natural selection assumed gradualism. Contrast with punctuated equilibrium.

Graffiti:

Unauthorized, unsponsored, unpaid, unruly scrawling - part lettering, part pictorial - on walls, cars, trans and other subjects of public display, ordinarily done by youngsters, and assumed generally to have begun in the 1970s, with the New York subway cars and Lower East Side slum building walls as the "canvases." The practice spread worldwide and governments spent large sums to erase and deter the art-form, to little avail. In a report to the National Endowment to the Arts that he called "1001 Questions on Arts Policy," Alfred de Grazia asked the disquieting and "outrageous" question whether graffiti should be considered and criticized as a form of art. In the 2000s, a spate of books appraising the "art-form" made their appearance.

grain:

- (1) The texture of wood, produced by the kinds of **xylem** cells present.
- (2) The **fruit** of a member of the [grasses](http://www.ucmp.berkeley.edu/monocots/glumiflorae/glumiflorae.html)
<http://www.ucmp.berkeley.edu/monocots/glumiflorae/glumiflorae.html>.

granule

on the solar photosphere about two and one half million granules exist at any moment. The average granule is 1000 kilometres across; it survives from five to ten minutes. Granules are about 100 K hotter than their surroundings. They show a turbulent motion of about 2 kilometres per second, like a bubble in a porridge pot (Abell).

grassland:

-- Region in which the climate is dry for long periods of the summer, and freezes in the winter. Grasslands are characterized by [grasses](http://www.ucmp.berkeley.edu/monocots/glumiflorae/glumiflorae.html) [<http://www.ucmp.berkeley.edu/monocots/glumiflorae/glumiflorae.html>](http://www.ucmp.berkeley.edu/monocots/glumiflorae/glumiflorae.html) and other erect herbs, usually without trees or shrubs. Grasslands occur in the dry temperate interiors of continents, and first appeared in the [Miocene](http://www.ucmp.berkeley.edu/tertiary/mio.html) [<http://www.ucmp.berkeley.edu/tertiary/mio.html>](http://www.ucmp.berkeley.edu/tertiary/mio.html).

Greenland:

Thanks to global warming, Greenland is warming fast and is beginning to grow new foods, including broccoli. Temperatures are now equal and probably superior to what they were when the Viking Erik the Red gave the island its name and attracted settlers in 250 long ships. It had diminished drastically in the 14th century, with the beginning of the Little Ice Age, which marked the end of the Viking settlements. In 2005, 224 cubic kilometers of ice have melted, almost three times as much as the average between 1997 and 2003. Greenlanders are now going through the history of mankind in a "fast forward" mode, having moved from hunting to flock tending to agriculture in less than three generations. Winter hunting has become difficult in the Southern parts, where the fjords no longer freeze over.

Groundwater:

-- Water found underground as a result of rainfall, ice and snow melt, submerged rivers, lakes, and springs. This water often carries minerals. These minerals can accumulate in the remains of buried organisms and eventually cause fossilization.

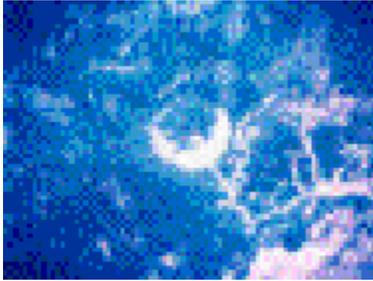
guard cells:

-- Pair of cells which surround a **stomate** and regulate its size by altering their shape.

gut (enteron):

-- Body cavity formed between the mouth and anus in which food is digested and nutrients absorbed; it consists of the [mouth](http://www.ucmp.berkeley.edu/glossary/glossary_M.html) [pharynx](http://www.ucmp.berkeley.edu/glossary/glossary_P.html) [esophagus](http://www.ucmp.berkeley.edu/glossary/glossary_E.html) [stomach](http://www.ucmp.berkeley.edu/glossary/glossary_I.html), [intestine](http://www.ucmp.berkeley.edu/glossary/glossary_A.html) and [anus](http://www.ucmp.berkeley.edu/glossary/glossary_A.html), though some animals do not have all these regions.

Gweni Fada, Chad (impact crater)



The Gweni Fada structure was first noted on Landsat images and aerial photography. Later (in the early 1990s), a team of French geologists visited the site and reported evidence of shock metamorphism within rock samples they had collected inside the structure. Erosion and infilling have modified the original crater topography, yet structural and lithological variations delineate the feature clearly. The most prominent expression of the crater is a bright crescent-shaped depression located near the center of the image. This depression encloses the southern two-thirds of an 8-10-kilometer-wide elevated region containing strongly disturbed blocks of sandstone; this probably corresponds to the eroded crater's central peak. The crescent itself is ~12 kilometers in diameter and probably represents the vestiges of the original crater floor. The material composing the surface of the crescent appears similar to the sediments occupying nearby streambeds. Surrounding the central zone to the north, and the crescent-shaped depression elsewhere, is an elevated rim consisting of outwardly dipping sandstone. (*Space shuttle image STS51G-37-034.*)

Location: 17°25'N, 21°45' **Diameter:** 14 kilometers **Age:** <350 million years

gymnosperm:

-- n. A plant that produces seeds, which are not enclosed; includes any [seed plant](#) <http://www.ucmp.berkeley.edu/seedplants/seedplants.html> that does not produce flowers.

gynostemium:

-- The central reproductive stalk of an orchid
<<http://www.ucmp.berkeley.edu/monocots/liliflorae/orchidales.html>>
which consists of a **stamen** and **pistil** fused together.

habit:

-- The general growth pattern of a plant. A plant's habit may be described as creeping, trees, shrubs, vines, etc.

habitat:

-- The place and conditions in which an organism lives.

halophile:

-- Organism which lives in areas of high salt concentration. These organisms must have special adaptations to permit them to survive under these conditions.

haploid-diploid life cycle:

-- Occurs when a multicellular [diploid](http://www.ucmp.berkeley.edu/glossary/glossary_D.html) phase, or **sporophyte**, alternates with a multicellular [haploid](http://www.ucmp.berkeley.edu/glossary/glossary_H.html) phase, or **gametophyte**. Only [plants](http://www.ucmp.berkeley.edu/plants/plantae.html) and certain algae possess this kind of life cycle, which is also called "alternation of generations".

haploid life cycle:

-- Occurs when the only multicellular stage in an organism's life cycle is [haploid <http://www.ucmp.berkeley.edu/glossary/glossary_H.html>](http://www.ucmp.berkeley.edu/glossary/glossary_H.html).

haploid:

-- Having a single set of chromosomes in the nucleus of each cell. Mosses, and many protists and fungi, are haploid, as are some insects, bryophytes, and the gametes of all organisms. Contrast with [diploid](http://www.ucmp.berkeley.edu/glossary/glossary_D.html)
<http://www.ucmp.berkeley.edu/glossary/glossary_D.html>.

haptonema:

-- Peg-like structure unique to the [Prymnesiophyta](http://www.ucmp.berkeley.edu/chromista/prymnesiophyta)
<<http://www.ucmp.berkeley.edu/chromista/prymnesiophyta.html>>; its
function is not known.

Haughton, Canada (impact crater)



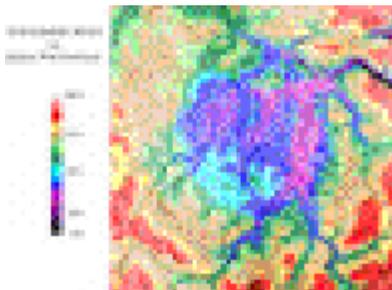
The Haughton Impact Crater is located on Devon Island, within the arctic archipelago of Canada's Northwest Territories. Dry summers, harsh winters, and acidic soil conditions inhibit growth of vegetation and make this an ideal location for assessing lithological conditions via satellite image data. This nearly true-color image was generated from the blue, green, and near-infrared bands of the Thematic Mapper and shows the dramatic contrast between the crater breccias (Tib) and the surrounding lower Paleozoic rocks on which the crater was formed. The crater formed in the Allen Bay Formation (OSA) but penetrated and excavated older rocks as deep as 1800 meters below the surface. Dramatic north-south-trending bands discriminate various lithological units in the area because this assemblage developed a very slight westward tilt prior to the emplacement of unit K-T sometime during the late Cretaceous or Early Cenozoic Periods. Now the complete sequence is exposed along an east-west traverse; the oldest unit exposed is the Ordovician Bay Fiord Formation (OCB) located to the east of the crater. To the south of the crater, this unit is located 800-1000 meters below the surface but is exposed within the crater due to late-stage uplift accompanying the impact event itself. Younger units observed in this image include the tan-colored carbonates of the Silurian Cape Storm formation (SCS) and overlying, reddish-brown deposits of the Silurian Douro formation (SDO). (*Processed Landsat TM Scene No. LT404404; image courtesy of V. L. Sharpton.*)

Location: 75°22'N, 89°41'W **Diameter:** 24 kilometers **Age:** 23 ± 1 million years



Haughton, Canada (Geologic Map on Air Photomosaic)

This image was generated by fusing two co-registered datasets, a lithological map and a digital mosaic of four air photographs. This produces an image that shows all the original information of the black-and-white photomosaic but now colored according to the lithological data. Beyond the central region still covered by impact breccia, arcuate concentric fault-bounded valleys clearly define the crater's outer flanks, from which any ejected breccias deposited have been stripped by erosional processes. In the central part of the crater, isolated exposures of deep target rocks uplifted during the late stages of the impact process protrude through the thin cover of impact breccia. The deepest unit shown is the Eleanor River Formation (shown in green); away from the crater this unit is located at a depth of ~1800 meters. Geological information indicates that these outcrops stood as isolated topographic highs on the original crater floor as a true central peak or possibly even a peak ring, as discussed in the next slide. Farther out to the east and north, shallower uplifted units are now exposed, but were most likely covered by impact breccias immediately after the crater formed. The silty deposits of the Haughton Formation document that a lake formed within the crater immediately after its formation; the deposits filling this lake indicate that this region was warm and wet 20 million years ago, and that it supported a number of animal species, including rhinoceros and rabbits. (*Image courtesy of V. L. Sharpton.*)



This image was constructed in the same manner (and scale) as the previous one, except that a color-coded digital topographic model was used as the hue contributor. The rim is located just outside the nearly circular system of steep-walled river valleys that accentuate concentric faults and fractures generated by the collapse of this complex crater. There is in excess of 250 meters of topography remaining at this crater even after over 20 million years of surface exposure. Comparison of this view with the previous one reveals that the existing breccia deposits occupy a small central basin that is only approximately half the rim-to-rim diameter of the crater. The Eleanor River outcrops in this central basin serve as local topographic highs that exceed in elevation the base level of the lake deposits originally emplaced atop the crater floor. This clearly demonstrates that these outcrops represent original crater floor topography. (*Image courtesy of V. L. Sharpton.*)

head:

-- That part of the body at the "front" end, where the brain, mouth, and most sensory organs are located.

hearth

Greek *eschara*. Cf. Hebrew *esh*, fire, and Greek *chara*, grace and beauty.
The *eschara* was a sunken hearth.

Hellas, Hellene

Different groups of inhabitants of Greece and associated areas in Asia Minor went under various names at different times, such as Achaeans, Ionians, Pelasgians, Hellenes, Dorians. The general picture is of waves of immigrants from areas mostly north and east of mainland Greece. There are similarities between the languages of Greece, Etruria, the Danube area, Poland, Lithuania, Finland, Palestine and Egypt. The preoccupation with fire, light and radiation generally, suggests that there is a connection between Pelasgians, the cave experts, and the Hellenes. The German word *hell* means bright, and may even point to the Selli, priests who shared with the Agnihotris or fire priests of the Brahmins the practice of keeping their feet dirty - a practice which may be explained by the need to establish good earth contact. Were the Hellenes named after an expert in the study of light and radiation? Were they the 'bright' people?

hemoglobin:

-- protein complex found in the blood of most [chordates](http://www.ucmp.berkeley.edu/chordata/chordata.html) [<http://www.ucmp.berkeley.edu/chordata/chordata.html>](http://www.ucmp.berkeley.edu/chordata/chordata.html) and the roots of certain legumes. It binds oxygen molecules, and in chordates serves as the means by which the oxygen is supplied to the cells of the body.

Herakles

Herodotus reporting that the Egyptians regarded Herakles as one of the twelve gods. Greeks, he says, took the name Herakles from Egypt, that is, those Greeks who gave the name Herakles to the son of Amphitryon.

Amphitryon and Alkmene were of Egyptian parentage. Seventeen thousand years before the reign of Amasis, the twelve gods came from the eight, and Herakles was one of them. Such is the Egyptian story.

Herodotus went to Phoenicia and talked to the priests of the temple of Herakles in Tyre, where there were two obelisks, or pillars (*stelae*). The priests said that the temple was as old as Tyre, at least 2,300 years.

At Thasos, he says, there was a temple dedicated to the Thasian Herakles, built by the Phoenicians who founded Thasos after sailing in search of Europe. This was five generations before Herakles, son of Amphitryon, was born in Greece. There was a story, he says, of Herakles allowing the Egyptians to bring him in bonds to a sacrifice, and exerting his strength (*alke*) and killing them all.

Herakles as hero is a link not only between god and man, but between sky and earth. From the details of his life story we may learn a little of what was happening in the sky in ancient times, just as his links with Troy may help in the reconstruction of the chronology of the times.

His conception took place during an abnormally prolonged night. '*Ternox*', the threefold night of Herakles.' The birth stories contradict each other. We read that he was the son of Amphitryon, but we also read that he was the son of Zeus, and incurred thereby the jealousy of Hera. While still in his cradle he killed two snakes (cometary symbols?) sent by Hera. He crossed the sea in a cauldron. There may be here a reference to Okeanos, the waters in the sky. To the same Herakles we must refer the story that he broke off a horn of Achelous, and that he shot Hera in the right breast, inflicting a wound that never healed. He is also said to have been given by Zeus, as an infant, Hera's breast to suck during her sleep. She woke up and some of her milk spilled, creating the Milky Way. Lycus (wolf - another cometary image?) who had killed the father of his wife Megara, was ready to kill Megara and her children at the altar when Herakles survened, coming from the Underworld, and killed him. Hera chose this moment to send Lyssa, madness, to attack Herakles, who turned against his family and killed them. Epilepsy was known as the *nosos Herakleie*, Herakles' sickness. When he recovers his sanity, Theseus takes him to Athens for purification. The Delphic oracle told him to serve Eurystheus, lord of Tiryns,

for twelve years in punishment, and it was Eurystheus who imposed the twelve labours. The connection with electricity accounts for the magnet being called the Heraklean stone.

Herakles was a god to the Egyptians; he was a mortal hero to the Greeks, but he became immortal. He constituted a link between underworld, earth, and sky, with electricity, the divine force that was detected underground, felt in one's own person, and seen acting in the sky, as the common essence of god, man, and hero.

Herakles and many other heroes at times seem to be quite plausible historical characters, leaders of migrations and general benefactors, yet at other times they rescue maidens in distress by killing monsters, fly through the sky, and defy what are thought to be the laws of nature and physics.

The confusion may be caused by the fact that terrestrial kings and princes imitated the apparent behaviour of objects in the sky, with a view to increasing their control over their subjects, and found it helpful to blur the distinction between man and god.

herb:

-- Generally any plant which does not produce wood, and is therefore not as large as a tree or shrub, is considered to be an herb.

herbivore:

-- Literally, an organism that eats [plants](http://www.ucmp.berkeley.edu/plants/plantae.html)
<<http://www.ucmp.berkeley.edu/plants/plantae.html>> or other autotrophic organisms. The term is used primarily to describe animals.

Hermes

was a messenger associated not only with sexual attraction and life, but with death, marshalling souls with his *kerukeion*, his *ka*-controller, the *caduceus* of Mercury. [The Latin *ducens* means 'leading']

Hermes and Apollo were the divine harpists of the Greeks. Harps have divine and astronomical significance. Radiation was attributed to the five planets visible to the naked eye, Mercury, Venus, Mars, Jupiter and Saturn. Thoth, the Egyptian god of electricity who was equated with the Greek Hermes and the Roman Mercury, was active in the sky. Hermes and Dionysus exemplified the physiological effects of electricity on the human being. Greek comedy with its phallic displays reveals the influence of the Electrical god Hermes in the field of sexual activity.

In ancient Greek, an initial 'h', the rough breathing, is almost a 'k'. Hermes is basically hrm, or krm. Mercury is mrk; the two names, Hermes and Mercury, superficially different, are the same, as a result of confusion over the direction of writing, probably in Asia Minor, where the Etruscans met speakers of a Semitic language. This is just one of many instances of this phenomenon.

Hertzsprung-Russell (HR) diagram

is a two-dimensional field of stars where luminosity (total radiation emitted) is the ordinate (dependent variable) and color (surface temperature) is the abscissa (determinant variable). This diagram is used extensively in astronomy to infer properties of stars whose distance makes direct measurement difficult or impossible. In terms of the HR diagram, evolved stars are either overluminous or underluminous for their color, that is, they are above or below the main sequence (q.v.) of the stars. The diagram was independently elaborated by the danish physicist Ejnar Hertzsprung, (Fredericksberg 1873 - Tølløse 1967) and the american astronomer Henry Norris Russell (Oyster Bay, NY 1877- Princeton, NJ 1957).

Hesperus, Displacement of Planet:

Among the celestial events of early times there is hardly one as momentous as that which affected planet Hesperus. According to an ancient image-tale of Diodorus, Hesperus was a son or a brother of Atlas, the father of the Hesperides, and a great scholar of astronomy. One day, having climbed Mount Atlas in order to conduct celestial observations, he was carried off by a large storm wind and his body was never found. Because of his piety and his love of humanity, the people brought him divine honors and named the most beautiful star in the western sky after him. According to Hyginus, Hesperus, as the evening star, was a son of Venus and Cephalus, who on account of his beauty was called by his mother's name, Venus. Yet Diodorus errs evidently in that, because of his insufficient knowledge of hieroglyphics, he does not translate the names of persons, by which celestial and natural features were designated, but instead he explains them in terms of real persons who would have occupied themselves with matters of the heaven or of nature.

That his approach was wrong becomes clearly apparent in the prose telling of said event, as communicated word for word to us by Saint Augustine, quoting the lost work of Varro about the origins of the Roman

people: "In the heaven there occurred an extraordinary event; for it happened that the brilliant star, Venus, which Plautus names Vesperugo and Homer 'beautiful Hesperos,' was seen, as described by Castor, undergoing the amazing miracle of changing its color, size, appearance and orbit, such as had not happened ever before, nor since. That this event took place under the reign of King Ogyges was reported by Adrastus of Cyzikus and Dion of Naples, two famous mathematicians. Such an eminent author as Varro would not have considered this to be an extraordinary event if it had not contradicted the laws of nature such as he, albeit incorrectly, understood them; for how could anything run counter to that, which happens by the will of God?" A pious explanation, to which we owe the salvaging of a piece of information about one of the major transformations

to have taken place in Nature.

The reporters of the event are impressive: Varro, most learned of the ancient Romans, keeper of one of Caesar's libraries, and author of several works among which his history of the Roman people excels all similar works in sharpness and depth; also the orator Castor, who according to Guidas originated from either Rhodes or Galathia and was endowed with the surname "friend of the Romans." He was the son in law of the Galatian king and roman senator Deiotarus, and was executed by the latter, together with his wife, on charge of having falsely accused him before Cesar. He was the author of several works on grammar and history, among which the essays (*Xronika Agnoimata*) as well as two books about Babylon, one book about the Nile, and about the rulers of the seas (*Peri Thalassokrounton*), all listed by Guidas. Adrastus of Cyzikus, a proto-historic hero, is mentioned here probably erroneously in place of Adrastus of Philippopolis, who was a student of Aristotle and a commentator of Plato and who wrote several books on harmony and other subjects.

The prophet Isaiah himself has reported about the break-up of this star when he called out, addressing the last toppled king of Babylon: "How hath thou fallen from on high, thou beautiful Morning Star? How hast thou fallen on the Earth, thou who weakened the pagans? Yet thou wast thriving in thy heart: I want to climb high in the sky, and establish my seat above the stars of God; I want to go down onto the Mountain of the Covenant towards the side of Midnight; I want to fly over the high clouds and be alike to the Exalted. Yet to Hell do you go, to the side of the abyss, etc etc..." A newer translator, supposedly closer to the original, renders, in place of "morning star," "son of red dawn" - but wasn't Hesperus, according to the mythology of the Greeks, a son of Aurora? It is remarkable, furthermore, that Rhabanus Maurus equates the fallen Lucifer to the Dragon in the Apocalypse who, similarly to Typhoeus, was thrown into the abyss after a mighty fight with archangel Michael. Which in turns helps explain why, by means of a tradition of medieval monks, the beautiful Lucifer became confused with and identified as the Devil himself.

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heterosporangiate:

-- Producing two different kinds of **sporangia**, specifically microsporangia and megasporangia. Compare with **heterosporous**.

heterosporous:

-- Producing two different sizes or kinds of spores. These may come from the same or different sporangia, and may produce similar or different gametophytes. Contrast with **homosporous**, and compare with **heterosporangiate**.

hierarchy:

-- A series in which each element is categorized into successive ranks or grades with each level subordinate to the one above.

high-pressure mineral phases

mineral forms that are stable only at the extremely high pressures typical of Earth's deep interior, but not its surface. Such pressures are generated instantaneously during meteorite impact. For example, *stishovite* is a high-pressure polymorph of quartz, a common crustal mineral, and diamond is the high-pressure modification of graphite.

Hippias:

A revolving horse-like comet described by Pliny.

histones:

-- [proteins <http://www.ucmp.berkeley.edu/glossary/glossary_P.html>](http://www.ucmp.berkeley.edu/glossary/glossary_P.html)
attached to the DNA of eukaryotes which allows it to be packaged into
chromosomes.

historisphere

the totality of events of any epoch, including legendary, recorded by any means, including oral, and handed down to the following generations. In Quantavolution's examination of the circumstances surrounding the Exodus, it appears that legendary or contemporary historical accounts from any people in the world which discuss events of, or attribute events to, the mid-second-millennium seem to mention a general and natural disaster. Much of Greek myth centers upon catastrophe-born Pallas Athena, upon Hephaestos and Dionysus. The Books of Moses center upon the Exodus disasters. The Vedas of the Hindus focus upon momentous natural events at the time of their main descent upon India from the North, which time has been generally accepted as mid-second-millennium.

The Ipuwer papyrus which conforms rather closely to the Biblical Exodus account appears to be datable to the end of Middle Bronze, hence appears to confirm the thesis of Quantavolution. Ancient pagan accounts of the doings of Moses, often unfavorable, also agree that plagues and natural destruction were occurring then.

Only evolutionary modern writers have presumed a benign history covering this period.

holosphere

the totality of modes and forms of existence on Earth's surface, whether living or not. In Quantavolution's examination of the circumstances surrounding the Exodus, evidence of extensive changes in the astrosphere, atmosphere, geosphere, biosphere, ecosphere, historisphere and anthroposphere authorize the thesis that: "All spheres of existence change together by a mutual interaction in the mid-second-millennium," or conversely, "No major quantavolution in any special sphere occurs independently of quantavolutions in other spheres." The Exodus case represents the best studied and perhaps the most documented history of the times we have, and, viewing it, we can propose: "When all spheres are quantavoluting, then the whole world is involved and the cause is universal." The forces at work are so strong and transactional that we may add an event to the workings of the Astrosphere: "There can be only one necessary and sufficient cause of the quantavolutions of the mid-second-millennium, and that must be a large-body encounter with Earth; by definition it was a cometary encounter, if a comet is considered as any substantial body pursuing an elliptical or changing orbit." The challenge is to be phrased thus: "Nothing but a god-like comet could have produced the quantavolutions of 3450 ± 60 B.P."

homology:

-- Two structures are considered homologous when they are inherited from a common ancestor which possessed the structure. This may be difficult to determine when the structure has been modified through descent.

homosporous:

-- Producing only one size or kind of spore. Contrast with **heterosporous**.

honey

Greek *meli*, Latin *mel*. It was of celestial origin; Vergil refers to *caelestia mella*, honey from the sky. The infant Zeus was attended by bees. Hebrew *melekh* is a king. Was a king fed on honey? Vergil writes in *Georgic IV* that bees come from the body of a dead ox. There is a possible link here with the head and horns of a comet at a time such as that of the Exodus and the *fimbulvetr*, when manna descended as food for survivors. In Persia it was called 'honey rain'. When Zeus put bonds around Kronos, Kronos was drunk with honey.

hoopoe

The Greek king Tereus was turned into a hoopoe. The hoopoe is a bird with a prominent erectile crest on its head. The Latin name for a hoopoe is *upupa*. In Greek it is *epops*. The Greek *epoptes* is the term for somebody who beholds the mysteries at a Greek religious centre such as Eleusis. One of the forms used as a perfect tense of the Greek verb *horan*, to see, is *opopa*, meaning 'I have seen'. There was a frieze of hoopoes at Knossos.

horse

Two important features of the horse are the mane, and the hooves. The mane is in Greek *chaite*, which can also be a lion's mane, or *lophia*. *Lophia* is also the dorsal fin of a dolphin. The hooves produce sparks; "*ignipedes equi*" are fire-footed horses.

Chaite, long, flowing hair, is sensitive to electrical fields. The hair style of some figures in Egyptian art suggests the symbol for radiation, which is seen as part of the *utchat*. Horses were often employed on the threshing floor, a holy place.

The sensitivity of horses to electrical fields and electrical disturbances is noteworthy. Their nervousness preceding storms, or earthquakes, even under the atmospheric conditions of today, is well documented.

host:

-- Organism which serves as the habitat for a parasite, or possibly for a symbiont. A host may provide nutrition to the parasite or symbiont, or simply a place in which to live.

Hour Angle of the Sun:

The Solar Hour Angle of the Sun for any local location on the Earth is 0° when the sun is straight overhead, at the Zenith, and negative before local solar noon and positive after solar noon. In one 24-hour period, the Solar Hour Angle changes by 360° (i.e. one revolution).

hubris

Attitudes towards the gods changed as a result of the gradual fading of electrical fields after a time of disturbance, and Greek and Roman thinkers concentrated, like Socrates, on the political and moral problems of living together at peace in cities, or on solving problems in medicine and agriculture, laying the foundations of the physical sciences, as did Aristotle. However, the original stories of mimesis, imitation in the attempt to control a force which was often invisible, but which had great power to destroy or to save, survived, especially in the works of the Greek dramatists, who taught that hubris, overweening arrogance, imitation of the gods, would bring blindness and disaster. Xerxes ordered the waters of the Hellespont to be lashed when his bridge was broken down by a storm. His hubris and impiety were followed by defeat in the straits of Salamis. The god's anger was roused when Salmoneus emulated Jupiter by riding in a chariot like a god running amuck in the sky, rattling brass pots and brandishing torches to imitate thunder and lightning. He was struck by a thunderbolt and hurled into Tartarus.

The dramatic technique of the Greeks, their action for dealing with the threat constituted by an errant heavenly body, was to resort to sympathetic magic, enacting an encounter so as to bring low into a safer orbit, or to destroy, the thing that was guilty of *hubris*. *Hubris* means going too high, or setting oneself up above others and claiming more than a sensible and humble mortal ought to claim. *Hubris* was the act of a heavenly body whose orbit was such as to bring it dangerously close to the earth, causing earthquakes, stone showers, floods and fire.

Hugh Crostwhaite



English schoolmaster and author. He was brought up in a country rectory half-way between the Lincolnshire villages of Gunby and Welton. His father, a classical scholar, was a parish priest and a Canon of Lincoln Cathedral; his mother was an excellent musician. There were the books, the piano, the large garden, and the sympathetic parents and brothers to facilitate and encourage learning. He was a frequent visitor to Gunby Hall, nearby, where, in the home of Field Marshal and Lady Montgomery-Massingberd, there were chamber music, an orchestra and amateur operatics in performance. At the age of nine he won a choral scholarship to St. Michael's College, Tenbury, a choir school, where his eldest brother Laurence was organist and choirmaster. He went on to Stamford School, and then read classics at Cambridge, where he played in the University Orchestra, and took his B.A. and M.A. degrees. Presently retired from teaching the classics, and when not at his research, he continues his exercises at music -- the piano, organ and bassoon -- and at walking and climbing in the English Lake District and the Swiss Alps. He resides in Birmingham.

Human migrations forced by Great Floods:

Soon after the flood of Ogyges Latona fled from the land of the Hyperboreans to Delos; some time before the second flood, the Egyptian Inachus founded the states of Argos and Sikyon in the Peloponnese; yet after the Deucalian and the Inachian flood, we no longer find separate migrations, but we see a large part of the peoples of Europe, Egypt and Asia moving on their way to find new places of residence. Out of Egypt, Kekrops founds his new kingdom of Athens; similarly, King Sesostris strikes out of Egypt to wage war on the Scythians across the Ister. His rebellious brother Danaus, or according to Nonnus, Danaus, brother of Agenor, King of Sydon, escaped to Argos and his companion Cadmus, son of Agenor, to Thebes. The secessionist priest Osarsiph, later called Moses, left Egypt around that time. Chased by his successor Joshua, part of the Phoenicians fled Palestine and, according to the memorial columns of Tingis, founded Carthage. The Scythians too may well have wandered out of Asia into the North around that time, for according to Herodotus, they counted no more than 1000 years from their first king Targitaos until the invasion of their country by Darius (513 BC). From Thessaly hails Deucalion, with his sons Amphictyon and Hellen, whose (Hellen's) own sons Aeolus, Dorus and Xuthus repopulate the greater part of Greece. We are told in many places about the new arrivals among them, the Pelasgians, or "tillers of the soil," named thus from the slavish *Pole*, field, and the Greek *asxein*, to work. With Deucalion's daughter Melanthe, Neptun - i.e. the high priest of Delos, coming from the sea - sired the Delphus. - The sybilline oracles prophesied new neighbors to the Phrygians, and lo and behold, from the north of Thrace arrive the Moesians, who found Mysia right in their vicinity, while Dardanus, coming from Arcadia together with his son Idaeus, and joining in an alliance with Teuker who had arrived from Crete earlier, founds the Kingdom of Troy, also close to the Phrygians' border!

As we have mentioned earlier, before Cadmus, the Greeks used habitually only the old image writing, as a consequence of which all their tellings of the events of these early times are composed in the old image- language.

Only from the time of Cadmus on was the Phoenician alphabet slowly introduced to them.

Hurricane (Also Called Cyclones and Typhons)

Huge, whirling tempest that form out at sea, tropical cyclones are rated according to their wind power. Those in the Atlantic are ranked on the Saffir-Simpson scale, developed in 1969 by scientists at the U.S. National Hurricane Center. The scale rates hurricanes by category. Hurricane generate winds in excess of 74 miles an hour. Strong storms - such as New Orleans' catastrophic hurricane Katrina - drive winds faster than 131 miles an hour. They can release as much energy as 10,000 nuclear bombs. They begin as ordinary storms. Atlantic hurricanes - named for Hurracan, an evil deity of Central America's Tainos people - typically form when a thunderstorm blows off the coasts of Africa, travels out to sea and gathers power over the Eastern Caribbean. A combination of high humidity, light winds in the upper atmosphere, and warm seas spins the winds exponentially.

As a tropical disturbance grows in strength, surface pressure in the area around the storm falls. The characteristic swirling around the storm's eye is a low-pressure vortex that compels higher-pressure air downward. There it is warmed by the sea and fuels storm clouds that produce driving rain.

Because warm seas and even warmer air in the lower atmosphere power these storms, some researchers have predicted that more and stronger tropical cyclones will result from global warming. Tropical cyclones are forming where they have rarely been experienced before. Katrina, for instance, formed in the South Atlantic in March 2004, the first such storm ever monitored there (source: David Biello in *The Scientific American*, Sept. 05, 2006). Under Q conditions, hundreds of cyclones form in numerous areas, the stronger of which devastate or wipe out great swaths of growth and settlements.

hydrophilic:

-- "water loving". Hydrophilic compounds dissolve easily in water, and are usually polar.

hydrophobic:

-- "water fearing". Hydrophobic compounds do not dissolve easily in water, and are usually non-polar. Oils and other long hydrocarbons are hydrophobic.

hypha:

-- n. Threadlike filaments that form the mycelium (body) of a fungus;
hyphae- pl.

hypothesis:

- A concept or idea that can be falsified by various scientific methods.

Iapetus Ocean:

-- n. A relatively small ocean that existed between the continents of Laurentia, Baltica, and Avalonia from the Late Precambrian to the Devonian.

ibis

The ibis, which had great skill in killing snakes, was associated with the god Thoth, who was equated with the Greek Hermes and was the Egyptian electrical god par excellence.

Impact craters (geographical repartition of)

Geographic locations of structures that have been confirmed to date (2001)
as being of impact origin:

Large terrestrial impacts are of greater importance for the geologic history of the Earth than the number and size of preserved structures might suggest. Currently, about 160 structures of impact origin have been confirmed on the Earth's surface. Precise ages are known for only about one-third of these structures. Crater ages can be determined by a variety of methods. The more precise ones involve radiometric dating of impact melt rocks or impact glasses or biostratigraphic dating of related impact ejecta within a well-defined stratigraphic sequence. The paucity of age data reflects not only the lack of detailed studies, but, in many cases, the lack of datable material, especially for deeply eroded or subsurface structures.

Impact Craters (terrestrial)

Impact craters are formed when a large meteoroid (asteroid or comet) crashes into a larger planetary body that has a solid surface. All the bodies in our solar system have been heavily bombarded by meteoroids throughout their history. The landscapes of the Moon, Mars, and Mercury have conspicuously preserved this bombardment record because the surfaces of these relatively small planetary bodies have remained unchanged over hundreds of millions of years. Compared to the Moon, the Earth has been even more heavily bombarded over the course of its history due to its stronger gravitational attraction. However, impact craters are not immediately obvious on the surface of Earth because our planet is geologically active; the surface is in a constant state of change from erosion, infilling, volcanism, and tectonic activity. These processes have led to the rapid removal or burial of Earth's impact structures. Thus, only about 160 terrestrial impact craters have been recognized to date. The majority of them are located within the geologically stable cratons of North America, Europe, southern Africa, and Australia; this is also where most of the crater searches have taken place. Spacecraft orbital imagery and geophysical surveys for resource exploration have helped to identify structures in more remote locations.

Impact cratering research has gained attention throughout the world following the suggestion that a large impact event caused the extinction of about 50% of all living species, including the dinosaurs, approximately 65 million years ago. The evidence that a large asteroid or comet struck the Earth at that time came from detailed studies of the thin clay layer that globally marks the stratigraphic boundary between the Cretaceous and Tertiary (K-T) geological periods. This layer is enriched in the siderophile elements (such as iridium), indicating that the clay represents a mixture of normal crustal rocks, which typically have low siderophile-element abundances, and a small percentage of extraterrestrial material. The worldwide integrated volume of the extraterrestrial material in the K-T boundary layer is equivalent to an asteroid approximately 10 kilometers in diameter - large enough to have produced a 200-kilometer-diameter crater. In the early 1990s, the subsurface Chicxulub structure in Mexico was confirmed as the long-sought Cretaceous-Tertiary boundary impact crater. An environmental crisis, triggered by the gigantic collision, contributed to the extinctions. Based on apparent correspondences between periodicities observed in the marine extinction record and in the terrestrial impact

record, some scientists have suggested that large meteorite impacts might be the metronome that sets the cadence of biological evolution on Earth - an unproved but intriguing hypothesis. Nevertheless, the study of the K-T extinction and its association with one of the largest impact structures known on Earth led to renewed and widespread interest in impacts.

The key to understanding the explosive nature of an impact event is the high velocity with which a meteoroid hits the Earth. These velocities range between 11.2 kilometers per second (the escape velocity of the Earth-Moon system) and 72 kilometers per second (the orbital velocity of the Earth plus the escape velocity of the solar system at the distance of the Earth from the Sun). Because the kinetic energy liberated on impact of an object is proportional to the square of its velocity, these high-speed meteoroids can be, gram for gram, more than 100 times as explosive as TNT!

In some cases, nonterrestrial relative abundance of siderophile elements can be detected in the impact melt rocks within large craters (or in impact ejecta, as at the K-T boundary sediments mentioned above); this provides a chemical signature of the meteorite impactor. The most commonly used chemical elements for such studies are the platinum group elements (e.g., iridium, osmium, and platinum). This is based on the fact that almost all meteorites have abundances of these elements that are higher by factors of 20,000 to 100,000 than those of average terrestrial crustal rocks. The addition of even a small meteoritic component (less than 1%) results in distinctly elevated platinum group element contents in the impact breccias or melt rocks.

Since the 1960s, numerous studies have documented another physical marker of meteorite impact: shock metamorphism. This refers to metastable or irreversible effects produced in various target rocks and minerals as the strong shock wave passes through them. As hypervelocity impact is the only naturally occurring process capable of generating strong shocks in crustal rocks, certain shock-metamorphic effects are unambiguous signatures of meteorite impact. Diagnostic shock effects include shatter cones, multiple sets of microscopic planar deformation features (PDFs) in quartz, feldspar, and most other rock-forming and accessory minerals, diaplectic glass, and high-pressure mineral phases,

such as stishovite (a high-pressure form of quartz). Even diamonds are formed by high-pressure conversion of graphite in target rocks. Researchers have recognized that the presence of shock-metamorphic effects is a much better indicator of the impact origin of a geologic structure than the presence of meteorite fragments (which are rapidly destroyed by erosion anyway). Experimental studies over the past three to four decades have provided a good database that shows which types of shock features form at which pressures. It was also recognized that the effects resulting from shock (nonequilibrium processes) are different from those resulting from static high pressures (an equilibrium process). Today, terrestrial impact structures are confirmed based on the presence of some or all of these shock effects.

Impact craters are divided into two main groups, based on their morphology: simple craters and complex craters. Simple craters are relatively small, with depth-to-diameter ratios of about 1:5 to 1:7 and a smooth bowl shape. In larger craters, however, gravity causes the initially steep crater walls to collapse downward and inward, forming a complex structure with a central peak or peak ring and a shallower depth compared to diameter. The diameter at which craters become complex depends on the surface gravity of the planet: The greater the gravity, the smaller the diameter that will produce a complex structure. On Earth, this transition diameter is 2-4 kilometers (depending on target rock properties); on the Moon, at one-sixth Earth's gravity, the transition diameter is 15-20 kilometers. (*Christian Koeberl and Virgil L. Sharpton*)

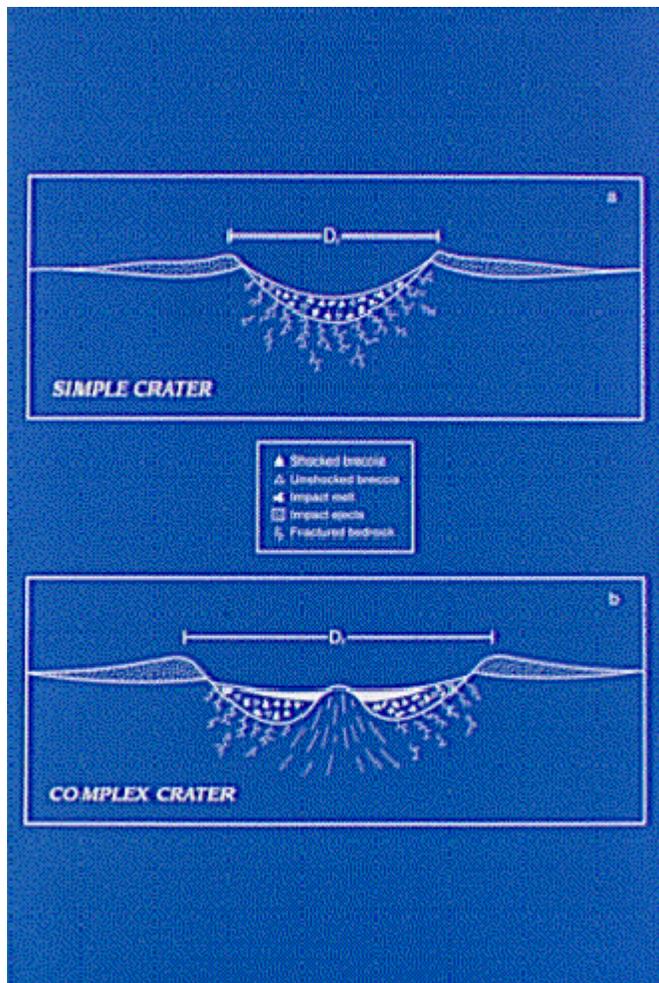
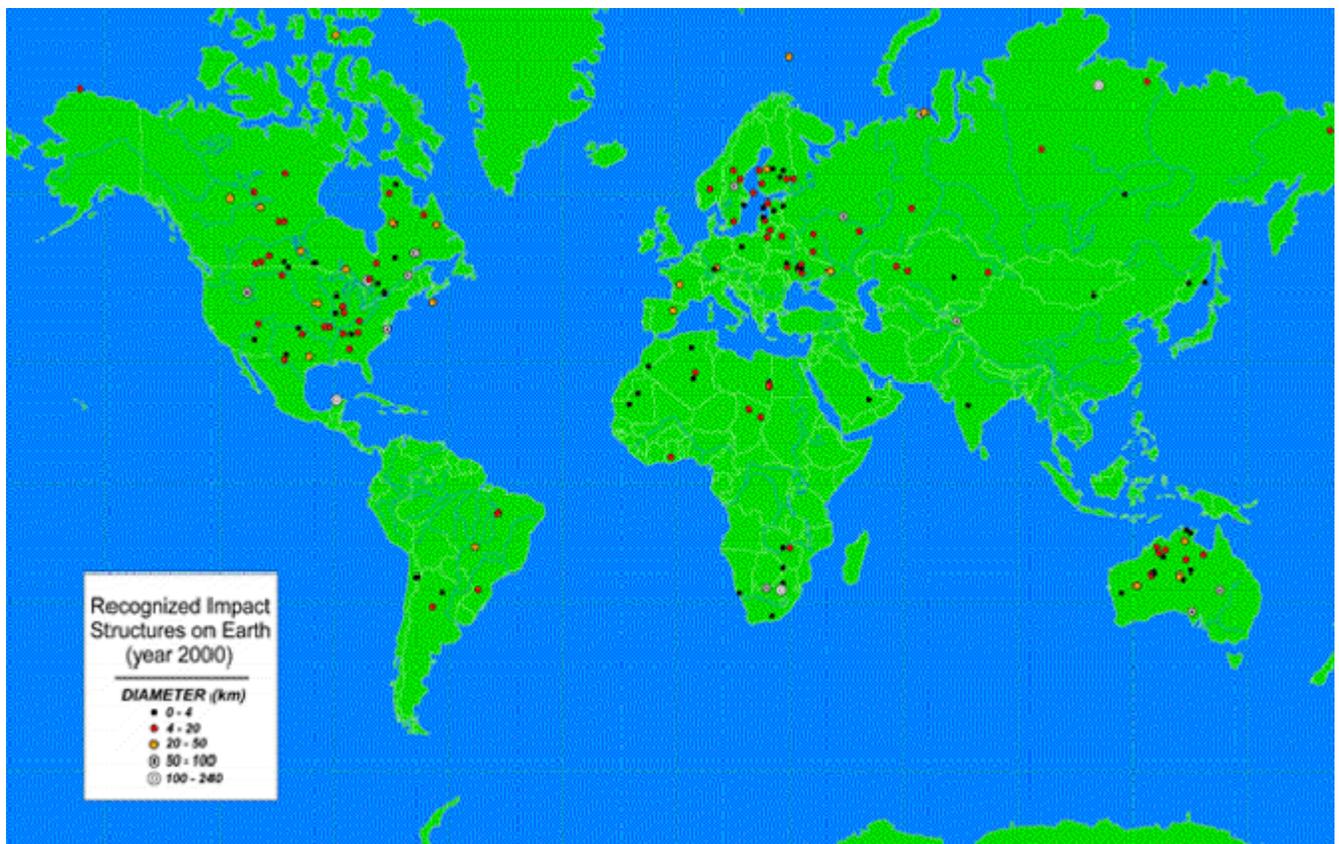


Fig. 1. Schematic cross sections of (a) simple and (b) complex impact craters, showing the idealized near-surface distribution of impact features. Simple, bowl-shaped morphologies are typical of structures with rim diameters of less than about 4 kilometers, whereas central uplifts, shallow floor depths, and slumped rims characterize complex craters with diameters larger than about 4 kilometers. The surface expression of the central uplift is typically a single peak in craters with diameters between approximately 4-25 kilometers. Larger impact structures can have complex ring-shaped uplifts.

The cratering process is traditionally divided into three stages: The contact and compression stage begins when the impactor hits the ground and initiates a shock wave that travels into the target and into the impactor, compressing the target and generating shock metamorphic effects. This is followed by the excavation stage, wherein the release of the shock compression leads to mass flow that opens up the crater and ends with a relatively deep transient cavity. Finally, the modification stage involves collapse of the steep walls of the transient crater and infilling of the crater by fall-back debris. The complete crater-forming sequence takes less time than it would to free fall from a height equivalent to the final crater diameter. In the case of Meteor Crater, the compression

and excavation phases of the crater formation were over in a few seconds. Thus, impact cratering has the distinction of being the geologic process that releases the greatest amount of energy in the shortest amount of time.

The final crater expression depends on the magnitude of the event. The central peak or peak ring of the complex crater is formed as the initial (transient) deep crater floor rebounds from the compressional shock of impact. Slumping of the rim further modifies and enlarges the final crater. Complex structures in crystalline rock targets may also contain coherent sheets of impact melt overlying the shocked and fragmented rocks of the crater floor. On the geologically inactive lunar surface, this complex crater form will be preserved until subsequent impact events alter it. On Earth, weathering and erosion of the target rocks quickly alter the surface expression of the structure; despite the crater's initial morphology, crater rims and ejecta blankets are quickly eroded and concentric ring structures can be produced or enhanced as weaker rocks of the crater floor are removed. More resistant rocks of the melt sheet may be left as plateaus overlooking the surrounding structure.



impact melt rock

rocks melted during impact, including small particles dispersed in various impact deposits and ejecta, and larger pools and sheets of melt that coalesce in low areas within the crater. Impact melts are extremely uniform in their composition, but highly variable in texture. They are composed predominantly of the target rocks, but may contain a small, but measurable, amount of the impactor.

ingestion:

-- The intake of water or food particles by "swallowing" them, taking them into the body cavity or into a vacuole. Contrast with [absorption](http://www.ucmp.berkeley.edu/glossary/glossary_A.html)
<http://www.ucmp.berkeley.edu/glossary/glossary_A.html>.

ingroup:

-- In a cladistic analysis, the set of taxa which are hypothesized to be more closely related to each other than any are to the outgroup.

inorganic:

-- Not containing carbon. Not from living things. Ex., minerals, water, oxygen, etc.

insolation

the solar energy received at the Earth's surface. Only a fraction of the insolation is absorbed, some of it reflects into space.

integrin:

-- adhesive protein of the extracellular matrix in [animals](http://www.ucmp.berkeley.edu/phyla/phyla.html)
<<http://www.ucmp.berkeley.edu/phyla/phyla.html>>.

internode:

-- The region of a stem between two **nodes**, when there is no branching of the vascular tissue.

intertidal:

-- The coastal zone measuring from the lowest to the highest tide mark.
The intertidal zone is subject to alternating periods of flooding and drying.

intestine:

-- The portion of the digestive tract between the stomach and anus; it is the region where most of the nutrients are absorbed.

ion

(gr. *ion*: going) an atom or group of atoms having lost or gained one or more electrons. In the *Solaria Binaria* system of *Quantavolution*, an atom from which one or more electrons typically present has been removed. See also, electron-deficient atoms.

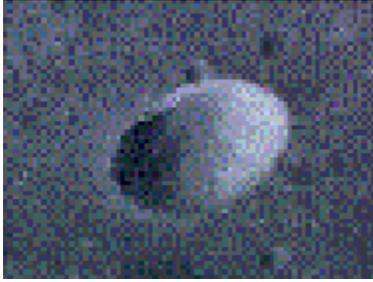
ionosphere

zone of the upper atmosphere of a planet (incl. Earth) characterized by the presence of charged particles (electrons and ions), resulting from the ionisation of gases under the effect of solar radiation. The Earth's ionosphere begins at an altitude of 56 to 90 kilometers above the Earth's surface. This layer is electrically conductive. Its altitude and density varies over the day. In theory there is no upper limit to the ionosphere, yet detection of its upper layers is accomplished only infrequently.

irradiance

the radiant flux incident upon a unit area of a surface. For sunlight it is the number of watts received per square metre of the Earth's surface.

Isidorus D, Lunar Highlands, Moon (impact crater)

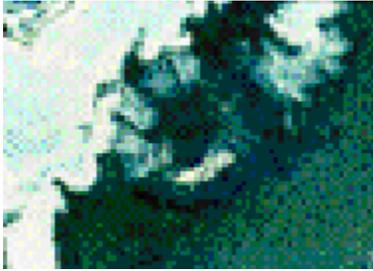


This oblique view looking north, taken with the panoramic camera on *Apollo 16*, shows a typical, simple bowl-shaped crater on the Moon. Evidence of avalanching and slope collapse is clearly visible on the inner walls of the crater. Streaks on the left wall appear to be avalanche scars; along the southeast part of the crater wall, many short irregular benches or narrow terraces mark the tops of slump blocks. The sharp break in slope, marking the rim crest, is clearly visible along the southeast portion of the structure. The transition from simple craters to complex craters occurs at smaller diameters on Earth than on the Moon because of Earth's higher gravity. (*Apollo lunar image AS16-4502(P).*)

Isis

an Egyptian goddess, sister and wife of Osiris, mother of Horus. Her cult spread all through the Mediterranean world and as far as Gaul, the Rhine and the Danube. In the period after Alexander the Great, the Egyptian deities Isis and Anubis were worshipped on the island of Delos, a great centre of worship of Dionysus. In Hellenistic and Roman times, she even came to represent the universal goddess. A Greek inscription on the island of Andros reads: "I am Isis.... I prescribe the course of the sun and moon."

Iturralde, Bolivia (impact crater)



The Iturralde Crater (also known as the Araona Structure) is a suspected crater that may have formed in northern Bolivia in the relatively recent geological past. The feature is believed to have been caused by impact into the muddy alluvial flood plain in the Lower Amazon jungle. The circular depression is now roughly 8 kilometers across and 3 meters deep. The structure was discovered in Landsat data acquired in 1988, but was not visited successfully until 1998 because the region was inaccessible. Future expeditions hope to finally determine if the feature truly is an impact crater and, if so, constrain the nature of the impactor. *(Courtesy of Scientific Visualization Studio, NASA Goddard Space Flight Center.)*

Location: 12°30'S, 67°30'W **Diameter:** 8 kilometers **Age:** unknown

Jacob

Jacob's dream, related in *Genesis XXVIII*, concerns an apparent link between sky and earth, and the importance of stone. At a place called Luz, Jacob took stones for pillows and went to sleep for the night. He dreamed that a ladder was set up, reaching to heaven, and angels of God ascended and descended. God spoke to him and encouraged him with promises. Jacob set up the stone that he had used for a pillow and poured oil on it. He named the place Bethel [house of God]. Its original name, Luz, if reversed, becomes zul. The Greek *stul-* is a pillar.

There was probably a connection between the building of pillars and columns and the concept of the World Tree, *Yggdrasil*, of northern myth. The Greek *hule* means wood, material. Reversed, this word would sound like *el uch*. Egyptian *ucha* is a pillar, so the word could have meant 'divine pillar'.

In chapter XXXII:24, Jacob wrestles all night with a man. The man touches the hollow of Jacob's thigh and puts it out of joint. He tells Jacob that he is to take the name of Israel. Jacob calls the place Peniel, "for I have seen God face to face".

There are many Egyptian references [in the *Book of the Dead*] to the God of the Thigh. These probably concern the constellation of the Great Bear in the northern sky.

jaw:

-- Often loosely applied to any movable, toothed structures at or near the mouth of an animal, such as the [scolecodonts](http://www.ucmp.berkeley.edu/annelida/scolecodont.html) [of annelids](http://www.ucmp.berkeley.edu/annelida/annelida.html) [In vertebrates](http://www.ucmp.berkeley.edu/annelida/annelida.html) [the jaw is derived from the first **gill arch**.](http://www.ucmp.berkeley.edu/vertebrates/vertintro.html)

Jiroft Inscription

A five-nation team of linguists reported in 2005 that an inscription in elamit in the city of Jiroft, near the Halil Rud historical site is 300 years older than the parallels of the Susa civilization, and thus the most ancient writing discovered anywhere. Elamit has no modern descendants. Some 120 sites have been discovered in this region along the basin of the Halil Rud River and have been placed in the Third Millennium B.C. The inscribed brick was of a palace of an Elamit king and consists of a mere two lines of carving.

jointed:

-- When stiff body parts are connected by a soft flexible region, the body is said to be jointed.

Jovean Age

see **Age of Jovea**

Julius Sextus Africanus:

(fl. 3rd century AD), born in Lybia, he lived in Emmaus and died in Jerusalem around 250 AD. He wrote *Chronographiai*, a history of the world in five volumes, from the Creation to the year 221 AD.

Kabira Crater:

Largest crater in the Great Sahara desert, was reported in 2006 by Boston University scientists, who claimed a meteorite impact of tens of millions of years ago. The crater with an outer rim surrounding an inner ring is approximately 31 km in diameter, much larger than the next biggest crater of the Sahara in Tchad, 12 km. The location is on the Southern tip of the Gilfkebir Region in southwestern Egypt. The terrain is of million year old sandstone, typical of Eastern Sahara. The impact may have been responsible for the extensive field of "desert glass," the yellow grand silica fragments found on the desert surface all over the giant dunes of the Great Sand Sea.

Kailas (Mount):

Peak in the Himalayas, , 6780m (c. 22,280 ft) high, in the SW Tibet region of China, highest point of the Kailas Range. It is near the sources of the Sutlej, Indus and Yarlung Zangbo (Brahmaputra) rivers. Hindus consider Kailas to be the dwelling place of the god Shiva, and it is the goal of pilgrimages. Tibetan Buddhists identify Kailas with Mount Sumeru, which they consider to be the cosmic center of the universe.

Kara-Kul, Tajikistan (impact crater)



The spectacular Kara-Kul structure is readily apparent in this oblique view. Partly filled by the 25-kilometer-diameter Kara-Kul Lake, it is located at almost 6000 meters above sea level in the Pamir Mountain Range near the Afghan border. Only recently have impact shock features been found in local breccias and cataclastic rocks. (*Space shuttle image STS-73-717-60.*)

Location: 38°57'N, 73°24'E **Rim diameter:** 52 kilometers **Age:** <10 million years

karyogamy:

-- A process of fusion of the nuclei of two cells; the second step in **syngamy**.

Katreus

The name of Katreus, the successor of Minos, may have *ka* as a significant component. The 'treus' is probably 'tereus', which happens to be the name of a Greek king who was turned into a hoopoe. The hoopoe is a bird with a prominent erectile crest on its head.

Egyptian priest-electricians used the term '*ka*' for the aura round a person. It is translated as 'the double', and can also mean 'bull'. The word is comparable with the Hebrew *qa* of, for example, *qadhosh*, holy, and with the Greek *kaio*, burn, *kara*, head, and Latin *caput*, head [source of *ka*]. *Tereo* is a Greek verb meaning 'I observe, I watch for something'. Tereus may be a form like the Latin present participle ending in *-ens*. *Regens*, *regent-*, means 'ruling'. Crostwhaite suggest that Tereus is *Terens*, observing, and that King Katreus was the *ka*-watcher.

The interpretation of the name Katreus as *ka*-watcher accords with the visits of monarchs to mountain shrines, with Egyptian theory about the *ka* [a word which can also mean 'bull', and is therefore linked with the electrical god in the sky looking like a bull with its horns], and with Greek, Roman and Hebrew procedure at a shrine, where the priest went in fear of the deity, risked electrocution, and wore special clothing. The Hebrew *yirah Yahweh* means fear of Yahweh. The Greek *hiereus* has a similar sound, and means 'priest'. I suggest that the original meaning of *hiereus* was 'the fearing one'.

kelp forest:

-- Marine ecosystem dominated by large [kelps](http://www.ucmp.berkeley.edu/chromista/phaeophyta.html) [<http://www.ucmp.berkeley.edu/chromista/phaeophyta.html>](http://www.ucmp.berkeley.edu/chromista/phaeophyta.html). These forests are restricted to cold and temperate waters, and are most common along the western coasts of continents. Kelp forests first appeared in the [Miocene](http://www.ucmp.berkeley.edu/tertiary/mio.html) [<http://www.ucmp.berkeley.edu/tertiary/mio.html>](http://www.ucmp.berkeley.edu/tertiary/mio.html).

Kelvin

the unit of temperature using the scale zeroed at absolute zero (the lowest conceivable temperature.) The Kelvin unit is identical to the Celsius degree. The freezing point of water is 273.15 K(elvin). Named after William Thomson, lord Kelvin, British physicist (Belfast, 1824 - Netherhall, 1907).

king, sacrifice of a

There is plenty of evidence that the supreme task of a king, ruler, or prince was to be willing to serve the gods by sacrificing himself, thereby saving his city from disaster. The example of Kodros springs to mind. He was the last of the legendary kings of Athens. When his city was under attack, an oracle declared that the army whose king was killed would be victorious. Kodros dressed himself as a common soldier and advanced to certain death.

The ritual deaths of kings in games and chariot races can be explained on the same lines. From Rome we have the story of Marcus Curtius. A chasm had opened in the forum. He saved Rome from the anger of the gods by riding into the chasm, which closed and swallowed him up.

The *Oedipus at Colonus* contains examples both of electrical technique and of the duties of a ruler. He must know the will of the gods, avoid hubris, be willing to be driven out as a scapegoat, and be ready to save his country from disaster by dying a sacrificial death. Kings were required to understand all aspects of augury; Herodotus mentions especially the Persians in this respect.

Kuiper Belt:

What is now called the Kuiper Belt was proposed in the 1940s by Irish economist and astronomer Kenneth Edgeworth, and separately by American astronomer Gerard Kuiper in 1951. The first object out there was found in 1992. Now several worlds one third as massive as Pluto are known to roam the solar system's outskirts, including one revealed in 2005 which is at least as big as Pluto.

Discoveries of binary setups in the Kuiper Belt have led experts to estimate that at least 10 percent of large Kuiper Belt Objects (KBO) have moons. In 2005, Pluto was found to have two small satellites in addition to its large moon Charon.

A KBO known as 2003 EL61 was found to have a moon. Researchers led by Mike Brown at Caltech found that it has a second small satellite. Many other KBOs could have multiple moons.

Labyrinth

The labyrinth at Knosos, built by Daedalus to keep the Minotaur, may have links with Egypt, Lydia and perhaps with the immigrants from the Danube area and from the east, including the Etruscans. The axe is a symbol of the electrical god. Its Lydian and Cretan name, *tlabrys* or *labrys*, appears in the word labyrinth [initial 't', like 's', is sometimes dropped].

Spiral designs and meanders became popular in Cretan art at the time of the Egyptian monarch Amenemhet III. This pharaoh built a 'labyrinth' in the Fayum, contemporary with the first palace at Knosos. It was a temple whose design suggested a maze.

Homer mentions Daedalus as the builder of a dancing floor for Ariadne. The word for a dancing floor, *choros*, is also the Greek for the dance itself.

The maze at Knosos was probably a dancing floor. It is described as *achanes*, roofless.

It has been suggested that the Crane Dance, which Theseus took to Delos, imitating the movements of birds, symbolises the "sinuosities of the labyrinth". In the dance at Knosos described by Homer, the young men each carry a gilt sacrificial knife, Greek *machaira*.

The crane dance may have been associated with the 'Troy game', of which a maze was a feature. One could speculate that a maze or labyrinth might symbolise the winding course of a deity or monster in the sky, with an orbit coming closer to earth at each return. A *labyrinth* was the place of the double axe [the thunderbolt], and the climax of the wanderings would be a confrontation. In the sky, lightning strikes would be thought to result in the defeat, *sparagmos* [tearing to pieces], and absorption, 'eating', of the object resembling a bull, stag, or goat.

Lagrangian point

in a three-body system the orbits can be computed if one of three bodies is negligibly tiny - in such a case the motion of the minuscule third body does not disturb the two primary bodies. Lagrange (Joseph-Louis), a french mathematician (Turin, 1736 - Paris 1813) showed that for such a "restricted system of three bodies" there existed several points, co-rotating with the motion of the primary pair, where the third body could be trapped. The L1 point is one of these points; it lies between the two primary bodies.

lamina:

-- Any broad and flattened region of a plant or alga, which allows for increased photosynthetic surface area.

laminarin:

-- a beta-glucan polysaccharide produced by many [chromists](http://www.ucmp.berkeley.edu/chromista/chromista.html) through photosynthesis.

lap of the gods

The Homeric phrase "*tauta theon en gounesi keitai*," these things lie in the lap of the gods, may refer to the apparent tendency of objects in the sky to reproduce or to eject material, afflicting the earth with, for example, stone showers, radiation, mutations and sudden death. The usual explanation is that it refers to the holding of the thread of life, or wool, for Atropos to cut with the 'abhorred shears'. But death of a person was not the only thing that depended on the gods. Much depended in the mind of the ancients on the arrival or departure, presence or absence, of objects in the sky, especially new arrivals. Much depended, too, on the power of heroes of divine ancestry, on divine inspiration and on radiation.

larva:

-- Among invertebrates, an immature stage in the life cycle which usually is much smaller than, and morphologically different from, the adult. In insects with **metamorphosis**, the larva must become a **pupa** before reaching adulthood.

Laurasia:

-- n. A supercontinent that existed from the Jurassic to Early Tertiary after splitting from Pangea; composed of Laurentia, Baltica, Avalonia, (modern North America, Scandinavia, Greenland, Western and Central Europe); eventually fragmented into Eurasia and North America in the Tertiary with the opening of the North Atlantic Ocean.

Laurentia:

-- n. A separate continental plate that existed from the Late Precambrian to Silurian, consisting of the major part of North America, northwest Ireland, Scotland, Greenland, and pieces of Norway and Russia.

leaf trace:

-- The strand of vascular tissue which connects the leaf veins to the central vascular system of the stem.

leaf:

-- An organ found in most vascular plants; it consists of a flat **lamina** (blade) and a **petiole** (stalk). Many flowering plants have additionally a pair of small **stipules** near the base of the petiole.

leaflet:

-- In a compound leaf, the individual blades are called leaflets.

least interaction action

(sometimes, least action interaction), see **mutual repulsion**

Length of Day:

This is defined to be the time of Actual Sunset minus the time of Actual Sunrise.

Length of Visible Light:

This is defined to be the time of Civil Sunset minus the time of Civil Sunrise.

Leonids:

Meteor shower apparently coming from Leo in November.

libation

As well as the Malatya relief which shows a god holding his thunderbolt over the cup at a libation ceremony, there is a reference to libation in the Egyptian *Book of the Dead* which is amenable to an electrical interpretation: Thoth "dwells within his hidden places and performs the ceremonies of libation unto the god who reckoneth millions of years, and he maketh a way through the firmament." [Budge's translation, p.392]

librigenae:

-- The "free cheeks"; separate, detachable portions of the trilobite cephalon. [More info?](#)

<http://www.ucmp.berkeley.edu/arthropoda/trilobita/trilobitamm.html>

light-year

a unit of distance. It represents approximately 10^{16} metres, the distance light travels (in theory) through a vacuum in one year (3.16×10^7 seconds).

Ligurians:

It is remarkable that Kygnus, the ruler of the mighty Ligurians, whose constellation is ever since shining in the Northern sky, should come to Phaethon on the Eridanus in order to bewail his friend in the guise of a swan and that in the same time, in Hecataeus of Abdera swans appear as the friends of the Hyperboreans: "Apollo's priests are the sons of Boreas and Chion, three brothers in number, six cubits in height. When these celebrate the feast of Apollo at the fixed time, there fly up, from the so-called Ripaic mountains in their lands, endless clouds of swans which hasten towards the temple and, after having circled over it, and in so doing having consecrated it, land in its large, admirable precinct. As soon as singers and string players elevate their harmonic song to the god, the swans join in; not wildly and cacophonously but, as if guided by the choirmaster, in a competitive zeal continuing the festive song, and sustaining with their harmonies the most expert singers. After the completion of the festive song, the winged chorus leaves, having fulfilled its customary obligation towards the godhead, having participated in the glorification of the god for one full day, having joined in the song and rejoiced the audience." The spring migrations of endless numbers of waterfowls to the North are well known; in Apollo's sanctuary, which was already honored by the Celts, it was forbidden to hurt them; one might well have been able to predict the approach of their flocks by several days by observing the arrival of their scouts, and fix the day of the feast accordingly.

A historic trace of the migration of the Ligurians into the German North, after it had been devastated by the aforesaid natural catastrophe and emptied of its people, can still be found in the names of the Ligurians, whose many tribes were still present to the east of the river Elbe in the times of Tacitus and Ptolemy. It is true also that in later times, Ligurians (they were called by that name by the Romans), according to the reports of Scylax and others, migrated out of Iberia into the regions of the Mediterranean and the Po; still, the Celts were installed almost everywhere

along the whole southern coast of Iberia, as shown in the Kelthentum of Raglof and among them the Belgi, Titthi and Germans.

lineage:

-- Any continuous line of descent; any series of organisms connected by reproduction by parent of offspring.

linguistics

science whose object is the study of language and of languages.

Given the many forays into linguistics, opened up by Hugh Crosthwaite, that the theory of quantavolution requires, even more than do the ordinary classical historical accounts, it may be useful for the general reader to have a reminder of some features of Latin, Greek and Semitic languages:

Final s may be a nominative singular ending in Latin and Greek. For our purpose the important part of, say, *logos* is simply *log-*, or even *lg*.

Greek u can be transliterated as either u or y.

P and f, b and v, may be interchanged [*vide* Grimm's Law].

Latin and Greek verbs often appear ending in o, e.g. *audio*, I hear, but an infinitive may be quoted, ending in -re, or -ein, e.g. *audire*, to hear, *airein*, to raise.

In Hebrew, the endings -im and -oth indicate the plural, e.g. *othoth*, signs, *mayim*, waters.

The letter c is pronounced in English sometimes like a k, sometimes like an s. This occurs also in Etruscan. The Greek letter *kappa* is sometimes transliterated as k, sometimes as c.

The Slavonic hard L sounds more like a w.

The Greek ending -eus, as in *basileus*, king, has a nasalised sound approaching n, as in modern Polish. The Latin present participle ends in -ens, e.g. *regens*, ruling, stem *regent-*, and in the case of a typical Greek verb, *luo*, I release, it is *luon*, stem *luont-*, so that the name of the Greek king Tereus can mean 'observing', or 'the observing one'. Zenos is a form of the genitive singular, meaning 'of Zeus'.

The Semitic q is pronounced farther back than the English k. It was sometimes replaced by g in Latin and Greek, e.g. Hebrew *qol*, voice, Greek *logos*, word. Z can be ts, ds, sd or st, as in Hebrew *zayin*, the letter z, a weapon, Set's eye [*ayin* = eye].

Onomatopoeia played a part. The rise and fall of the sound iaaoei imitates the sound made by the wind, and perhaps by an ark. The sound of the name Set, and of the Egyptian *tcham*, sceptre, suggests a spark.

There are four or five words or roots that stand out for frequency of occurrence and as the keys to many important words.

Ar: Etruscan for electrical fire, as in *arseverse*, 'turn aside the fire', a prayer to Sethlans which one might describe as a lightening conductor. Cf. *arca*, chest; *har*, mountain [where the fire often appeared]; *haram*, pyramid [fire collector]. Sanskrit *aras* means 'swift'.

Ka: Egyptian for the double. Cf. Hebrew *qadhosh*, holy; Greek *kairos*, success in raising the *ka*; Latin *caput*, head, source of *ka*.

Set: the Greek Typhon. Cf. Greek *stephanos*, crown, Set appearing; Etruscan *zichne*, Set's footprints, marks, e.g. writing.

El, Al: Semitic for 'above', implying 'the god above'. Cf. *elektron*, amber, *el ek thronou*, god out of the seat.

Is, in-, force or presence, is a Greek word that could be used in periphrasis when talking about a person, just like *kara*, 'head'. "Greetings, Oedipus!" might be expressed as "Greetings, head of Oedipus!" Latin *cortina*, cauldron, is 'power of the horns', *in-*, and *kerata*, horns. Cauldrons could be decorated with bulls' heads, and the one at Delos moored, "...*mugire adytis cortina reclusis*," *Aeneid* III:92.

In Hebrew, a short unstressed vowel, a *shewa*, is often sounded between two consonants for ease of pronunciation. The Greek *stephanos*, crown, is an example. It starts life as *setephanos*, Set revealing, or Set appearing, and ends up as *stephanos*. Metathesis, as in the Greek *kratos* or *kartos*, power, can be explained in this way.

lion

The Mistress of the Animals (Creatan Goddess, Ariadne) is associated with snakes and lions. The Lion Gate at Mycenae has a pillar with a lion [or lioness] at each side. That a lion's mane had electrical or divine significance is made more likely by the net pattern shown on some eastern representations of lions, a pattern which appears also in Crete.

Babylon was a centre of the worship of the goddess Ishtar [Astarte]. She had a fierce and dangerous side to her nature, as had Aphrodite and Artemis. An avenue of lions led to the Ishtar Gate. The lion was symbolic of Ishtar. An avenue of lions can be seen today on the island of Delos, Greece.

The prophet Isaiah refers to Jerusalem as Ariel. *Ari* is Hebrew for a lion; *EI*, god, means the one above.

lipids:

-- a class of biochemical compounds which includes fats, oils, and waxes.

litter:

-- Leaf litter, or forest litter, is the detritus of fallen leaves and bark which accumulate in forests.

lophophore:

-- Complex ring of hollow tentacles used as a feeding organ. The tentacles are covered by cilia, which generate a current to bring food particles into the mouth. The structure is only found in the [brachiopods](http://www.ucmp.berkeley.edu/brachiopoda/brachiopoda.html) [phoronids](http://www.ucmp.berkeley.edu/brachiopoda/phoronida.html) [phoronids](http://www.ucmp.berkeley.edu/brachiopoda/phoronida.html) and [bryozoans](http://www.ucmp.berkeley.edu/bryozoa/bryozoa.html) [bryozoans](http://www.ucmp.berkeley.edu/bryozoa/bryozoa.html). [More info?](http://www.ucmp.berkeley.edu/glossary/gloss7/lophophore.html) <http://www.ucmp.berkeley.edu/glossary/gloss7/lophophore.html>

lorica:

-- A vase-shaped or cup-shaped outer covering. Found in many protists, including some flagellates, ciliates, [chrysophytes](http://www.ucmp.berkeley.edu/chromista/chrysophyta.html) [<http://www.ucmp.berkeley.edu/chromista/chrysophyta.html>](http://www.ucmp.berkeley.edu/chromista/chrysophyta.html), and [choanoflagellates](http://www.ucmp.berkeley.edu/protista/choanos.html) [<http://www.ucmp.berkeley.edu/protista/choanos.html>](http://www.ucmp.berkeley.edu/protista/choanos.html), as well as in some animal cells.

Lough Diarmada:

small, crater-like lake in County Monaghan, in Ireland.

Lucian of Samosata:

(c.120 AD -after 180 AD), Greek rhetorician and satirist, born in Samosata, Eastern Turkey, died in Athens. A brilliant and provocative writer, admirer of Epicurus; *A True Story - Romance*, here referred to by the author, contains a narrative of a trip to the Moon.

luciferase:

-- enzyme which activates luciferin to produce bioluminescence.

Lugh:

European god; hero of the battle of Moytura.

Lughnasa:

Festival of Lugh, 1 August.

luminosity

total quantity of energy radiated by a star in one unit of time. The luminosity of a star is a measure of its energy output; it can be known directly, as opposed to inferred, only if the star's distance can be measured. It depends upon the area of the star's surface (opaque radiating layer of gases) and upon the fourth power of its surface temperature.

lysosome:

-- Eukaryotic organelle which carries digestive enzymes. The lysosome fuses with a vacuolar membrane containing ingested particles, which are then acted upon by the enzymes.

macroscopic:

-- Objects or organisms that are large enough to be seen with the naked eye.

magh

Hebrew for a Persian priest. Cf. Latin *magnus*, great. The Sibyl became *maior videri*, bigger in appearance, as the god Apollo inspired her.

Magnetar:

A superpowerful magnetic field (of a neutron star) that emits radio pulses.

magnetite

a black to brownish metallic stone (iron oxide) with magnetic properties. The legendary lodestone is one of the magnetites. The magnetites are formed of octahedral crystals of mineral whose chemical structure contains the unit, XFe_2O_4 . X may be Fe, Mg, Ni, Zn, or Mn. The first is most common; the last two are only weakly magnetic.

magnoliid:

-- Any member of the basal assemblage of [flowering plants](http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html)
<<http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html>>.

main sequence stars

obey Eddington's Mass-Luminosity Law. They constitute the majority of stars whose distance, brightness, and temperature have been measured.

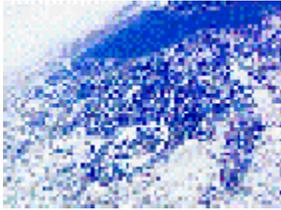
male:

- In organisms with separate sexes, the one which produces sperm.

Manannan:

Ancient god associated with the sea and the Isle of Man.

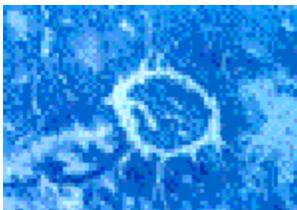
Manicouagan, Quebec, Canada



The Manicouagan impact structure is one of the largest impact craters currently known on the surface of Earth. This shuttle oblique view looking south shows the prominent 70-kilometer-diameter, ice-covered annular lake that fills a ring where impact-brecciated rock has been eroded by glaciation. The lake surrounds the more erosion-resistant melt sheet created by impact into metamorphic and igneous rock types. Shock-metamorphic effects are abundant in the target rocks of the crater floor. Although the original rim has been removed, the distribution of shock-metamorphic effects and morphological comparisons with other impact structures indicate an original rim diameter of approximately 100 kilometers. (*Space shuttle image STS51B-43-060.*)

Location: 51°23'N, 68°42'W **Original rim diameter:** ~100 kilometers **Age:** 214 ± 1 million years

The moderately eroded, central part of the structure (the plateau surrounded by the lake) is partly covered by impact melts and contains shattered rocks and several uplifted peaks about 5 kilometers north of the center. The quantity of data obtained on the melt sheet and the underlying target rocks make Manicouagan one of the most intensely studied large complex impact structure in the world, and it is an important source of ground-truth data for understanding the cratering process. The radiometrically determined age of the structure is close to (but not quite identical with) the biostratigraphically derived age of the Triassic-Jurassic boundary. (*Space shuttle image STS42-207-14.*)



mannoxylic:

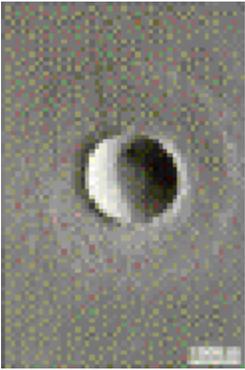
-- Wood in which there is a great deal of **parenchyma** tissue among the xylem is called mannoxylic. Cycads

[<http://www.ucmp.berkeley.edu/seedplants/cycadophyta/cycads.html>](http://www.ucmp.berkeley.edu/seedplants/cycadophyta/cycads.html)

and **pteridosperms** have mannoxylic wood. Contrast with pycnoxylic

[<http://www.ucmp.berkeley.edu/glossary/glossary_P.html>](http://www.ucmp.berkeley.edu/glossary/glossary_P.html).

Mars, Simple Impact Crater



This image, taken by the high-resolution camera onboard the Mars Global Surveyor, shows a yet-to-be named impact crater on the lava plains of the Elysium Planitia. The sharp rim and the aureole of ejecta indicate this conspicuous feature is relatively young. The illumination is from the right. (*Mars Global Surveyor image PIA02084.*)

Diameter: 2.3 kilometers

marsupial:

-- n. (adj.) A mammal whose young are born while still embryos, and must crawl into its mother's external pouch (called the **marsupium**) to finish development.

massive ion

ions are divided into fast and slow. Ions with greatest inertia to the field are said to be massive because they are harder to move; the easier they become mobile, the more lightness they are assigned. Elements of low atomic number are most mobile.

mastigoneme:

-- Small hair-like filaments found on the "hairy" flagellum of the Chromista

<http://www.ucmp.berkeley.edu/chromista/chromistamm.html>.

Mayan Cosmic Tree:

Archaeologists in 2005 revealed the final section of the earliest Maya mural ever found, saying that the find upends everything they thought they knew about the origins of Mayan art, writing and rule. Stories of creation, for instance, were well established more than 2,000 years ago, many centuries earlier than previously believed. The first part of the mural shows the establishment of order to the world. The world is propped up by a tree, with roots leading to the underworld and branches holding up the sky. Not mentioned by the archaeologists is that, according to Anthony Perratt, the tree appears to be bearing an apple(s), a snake-like appendage stretching out from the branches and "a partial depiction of the Chandrasekhar-Fermi instability figure" adjacent to or on the tree.

Mean Anomaly of The Sun:

The movement of the Earth around the Sun is an ellipse. However, if the movement of the Earth around the Sun were a circle, it would be easy to calculate its position. Since the Earth moves around the sun about one degree per day (in fact, it is $1/365.25$ of the circle), we say the Mean Anomaly of the Sun is the position of the Earth along this circular path. The True Anomaly of the Sun is the position along its real elliptical path.

mega(watts)

(gr. *megas*: big) the prefix mega indicates a multiplier of one million. Hence a megawatt is one million watts and a megametre is one million metres. Symbol *M* in front a unit multiplies it by 10^6 .

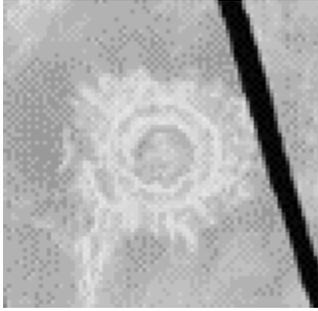
megaspore:

-- In plants which are **heterosporous**, the larger kind of spore is called a megaspore; it usually germinates into a female (egg-producing) **gametophyte**. Contrast with **microspore**

meiosis:

-- A two-stage type of cell division in sexually reproducing organisms. In meiosis, a diploid cell divides to produce four haploid cells, each with half the original chromosome content. For this reason, meiosis is often called a "reduction division". In organisms with a diploid life cycles, the products of meiosis are usually called **gametes**. In organisms with an alternation of generations, the products of meiosis are called spores.

Meitner, Venus (impact crater)



The large, well-preserved Meitner multi-ring impact basin is revealed through the dense opaque atmosphere of Venus by the imaging radar system of Magellan spacecraft. Meitner, the third-largest impact feature identified on Venus, shows a flat smooth (dark) interior, two rugged circular rings, and a rough (bright), irregular deposit of lobate ejecta. The crater was formed on smooth volcanic plains cut, prior to impact, by abundant parallel northeast-trending fractures. Radar image data were not acquired over the linear zone running through the eastern portion of this image mosaic. (*Magellan image F-MIDR 55S319.9;201.*)

Location: 55.6°S, 321.6° **Diameter:** 150 kilometers

membrane:

-- Semi-fluid structure which bounds all cells, and partitions the interior of eukaryotic cells. It consists primarily of two lipid layers, with proteins "dissolved" in the lipids.

memorial generations

the difference in years between a youngest listening child and the oldest storytellers of a society. *Quantavolution* theory assign this interval a value of 50 years.

meristem:

-- Group of undifferentiated cells from which new tissues are produced. Most plants have **apical meristems** which give rise to the primary tissues of plants, and some have **secondary meristems** which add wood or bark.

merophytes:

-- Group of cells which have all been produced from the same initial cell. Leaves and stems in particular are often built from specific patterns of merophytes.

mesoderm:

-- In animals with three tissue layers (i.e. all except [sponges](http://www.ucmp.berkeley.edu/porifera/porifera.html) [<http://www.ucmp.berkeley.edu/porifera/porifera.html>](http://www.ucmp.berkeley.edu/porifera/porifera.html) and [cnidarians](http://www.ucmp.berkeley.edu/cnidaria/cnidaria.html) [<http://www.ucmp.berkeley.edu/cnidaria/cnidaria.html>](http://www.ucmp.berkeley.edu/cnidaria/cnidaria.html)), the middle layer of tissue, between the **ectoderm** and the **endoderm**. In vertebrates, for instance, the mesoderm forms the skeleton, muscles, heart, spleen, and many other internal organs.

mesogloea:

-- Jellylike material between the outer ectoderm and the inner endoderm of cnidarians <<http://www.ucmp.berkeley.edu/cnidaria/cnidaria.html>>. May be very thin or may form a thick layer (as in many jellyfish).

mesokaryotic:

-- Nuclear condition unique to the dinoflagellates
<<http://www.ucmp.berkeley.edu/protista/dinoflagellata.html>> in which the
chromosomes remain permanently condensed.

Metals and planet names:

Note of the author: this changing designation is found in older authors concerning the names and signs of metals, insofar as these are considered to be outpourings of the heavenly bodies. So for instance Zeus is sometimes iron, Mars the metal electrum, mercury tin; sometimes Saturn, sometimes Venus, are gold; sometimes the sign for electrum resembles the sign of the constellation of the crab, which otherwise represents iron; also Phaethon, otherwise a by-name of Jupiter, represents electrum. (More about it in Jo. Matth. Gesneri "Praellectio de Electro Veterum" in *Commentt. Soc. Gotting.* T. III. p.74-79.)

metamorphosis:

-- n. A process of developmental change whereby a larva reaches adulthood only after a drastic change in morphology; occurs in most amphibians and insects, for some insects, this change may include another stage (pupa) before the adult stage; **metamorphose**- v.

Meteor Crater

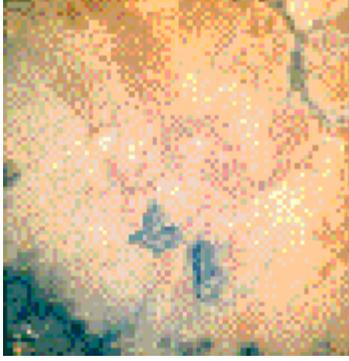
(Arizona - also known as **Barringer Crater**):



with a diameter of approximately 1.2 kilometers, was the first terrestrial impact crater to be recognized as such. Its impact origin was first suspected late in the nineteenth century, when abundant iron meteorite fragments were discovered in the immediate vicinity of the crater. This finding led the mining engineer Daniel Moreau Barringer to embark, between about 1905 and 1928, on a drilling project to find a suspected large iron meteorite body underneath the crater floor. At this time, however, researchers did not yet have a clear understanding of the immense energy that is liberated when an extraterrestrial body hits the surface of the Earth with cosmic velocity. It was only in the 1920s that the first quantitative studies revealed the explosive nature of meteorite impact. Under impact conditions, tremendous amounts of energy are released instantaneously, completely destroying the cosmic projectile and generating a crater that is many times larger than the original meteoroid. In the case of Meteor Crater, an iron meteorite body only about 30-50 meters in diameter was sufficient to create a crater 1.2 kilometers in diameter.

After the first studies on Meteor Crater, several other relatively small craters were also found to contain impactor fragments, and for many years these remnants were the only accepted evidence for impact origin. But because the projectile does not survive intact in large impact events, scientists have developed more sophisticated means of detecting the signatures of meteorite impact. (*Christian Koeberl and Virgil L. Sharpton*)

(Meteor Crater, Arizona, United States, 2)



This shuttle image encompasses an area of approximately 3,600 square kilometers within the semi-arid high plains east of Flagstaff, Arizona, and illustrates how conspicuous the 1.2-kilometer-diameter Meteor Crater is from space. The mid-morning Sun is illuminating the western rim of the crater, while the eastern rim is in shadow. The ejecta blanket is visible as a pale halo surrounding the crater and contrasts markedly with the darker sedimentary rocks of the high plains. The Little Colorado River is visible in the upper right. The arcuate line extending across the image just north of the crater is Interstate 40. Immediately to the left of the crater is Canyon Diablo. The dark, irregular features located southeast of the crater are basaltic flows that have been deposited onto the sedimentary rocks of the Colorado Plateau during the last few million years. (*Space shuttle image STS040-614-058.*)

meteorite

an extraterrestrial rock that has fallen to Earth. Most meteorites are pieces of asteroids and are of stony, stony-iron, or iron composition.

meteoroid

a small solid body moving through interplanetary space; after falling to Earth it is called a meteorite.

microphyll:

-- A kind of leaf, specifically one which has a single, unbranched vein in it. Microphylls are only found in the [lycophytes](http://www.ucmp.berkeley.edu/plants/lycophyta/lycophyta.html)
<<http://www.ucmp.berkeley.edu/plants/lycophyta/lycophyta.html>>.

microscopic:

-- Objects or organisms that are too small to be seen with the naked eye.

microspore:

-- In plants which are **heterosporous**, the smaller kind of spore is called a microspore; it usually germinates into a male (sperm-producing) **gametophyte**. Contrast with **megaspore**.

microtubules:

-- Type of filament in eukaryotic cells composed of units of the protein tubulin. Among other functions, it is the primary structural component of the eukaryotic flagellum.

microvilli:

-- Thin fingerlike protrusions from the surface of a cell, often used to increase absorptive capacity or to trap food particles. The "collar" of [choanoflagellates](http://www.ucmp.berkeley.edu/protista/choanos.html) is actually composed of closely spaced microvilli.

milli(tesla)

the prefix milli refers to the multiplier one-thousandth. One millitesla is thus one-thousandth of a tesla. Symbol *m* placed in front of a unit multiplies it 10^{-3} .

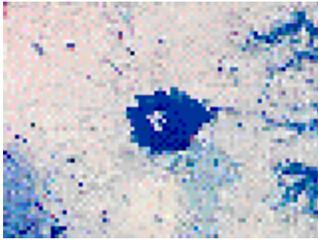
mimesis

Greek concept of mimesis, imitation in the attempt to control a force which was often invisible, but which had great power to destroy or to save. Attitudes towards the gods changed as Greek and Roman thinkers concentrated, like Socrates, on the political and moral problems of living together at peace in cities, or on solving problems in medicine and agriculture, laying the foundations of the physical sciences, as did Aristotle. The reason for this change may have been in part the gradual fading of electrical fields after a time of disturbance, and intellectual hubris may have played a part.

Minotaur

monster of Greek mythology, half man, half bull, born from the love-making of Minos' wife Pasiphae with a bull sent by Poseidon. Minos kept him in the labyrinth, built by Dedalus. He was killed by Theseus. Connotations with events in heaven are evident from the fact that the Minotaur's name was Asterios, and that Theseus seized him by his hair - comet-like.

Mistastin Lake, Newfoundland, Canada (impact crater)



This shuttle image shows a winter view of the Mistastin Crater, a heavily eroded complex structure. Eastward-moving glaciers have drastically reduced the surface expression of this structure, removing most of the impact melt sheet and breccias and exposing the crater floor. Glacial erosion has also imparted an eastward elongation to the crater that is particularly evident in the shape of the lake that occupies the central 10 kilometers of the structure. Horseshoe Island, in the center of the lake, is part of the central uplift and contains shocked Precambrian crystalline target rocks. Just beyond the margins of the lake are vestiges of the impact melt sheet that contains evidence of meteoritic contamination. Other evidence of impact includes shatter cones, planar deformation features in quartz and feldspar, and diaplectic glasses. (*Space shuttle image STS61A-34-093.*)

Location: 55°53'N, 63°18'W **Reconstructed rim diameter:** 28 kilometers

Age: 38 ± 4 million years

mitochondrion:

-- Complex organelle found in most eukaryotes; believed to be descended from free-living bacteria that established a symbiotic relationship with a primitive eukaryote. Mitochondria are the site of most of the energy production in most eukaryotes; they require oxygen to function. See: **double membrane.**

mitosis:

-- The process of nuclear division in eukaryotes. It is one step in cytokinesis, or cellular division. [MORE ?](#)
<<http://www.ucmp.berkeley.edu/allife/eukaryotalh.html>>.

mobility (of an atom)

the ratio of the average drift velocity (attained between collisions) to the electric field strength (which produces the drift velocity).

Mohorovi?i? (Moho) discontinuity

is the junction which separates the Earth's crust and mantle. Its depth is about 10 kilometres below the ocean basin. Discovered in 1909 by Andrija Mohorovi?i?, a Yugoslav geophysicist (Volosko, 1857 - Zagreb 1939).

monophyletic:

-- Term applied to a group of organisms which includes the most recent common ancestor of all of its members and all of the descendants of that most recent common ancestor. A monophyletic group is called a clade. [More? <http://www.ucmp.berkeley.edu/glossary/gloss1/phyly.html>](http://www.ucmp.berkeley.edu/glossary/gloss1/phyly.html)

monsoonal:

-- adj. Describes a climate pattern with a wind system that changes direction with the seasons; this pattern is dominant over the Arabian Sea and Southeast Asia.

morphology:

-- n. The form and structure of anything, usually applied to the shapes, parts, and arrangement of features in living and fossil organisms.

motile:

-- Able to move oneself about, capable of self-locomotion.

mouse

Greek *mus*, *sminthos*. Smintheus was one of the epithets of Apollo. Augurs watched birds, mice and snakes. 'Mystery' was mouse-watching. Smintheus may contain the Greek word *sema*, sign. 'Sign of the god's presence'?

In Greek rituals such as the Eleusinian mysteries, the ceremonies took place underground. The prophet Isaiah, LXVI:17, warns of the Lord's anger against those who eat the mouse. It may have been thought that by eating mice one would ingest the ability of the mouse to detect the divine presence.

mouth:

-- Front opening of the digestive tract, into which food is taken for digestion. In [flatworms](http://www.flatworms.com) <http://www.ucmp.berkeley.edu/platyhelminthes/platyhelminthes.html>, the mouth is the only opening into the digestive cavity, and is located on the "belly" of the worm.

MTOC:

-- (microtubule organizing center) MTOCs are bundles of protein tubes which may be found at the base of a [eukaryotic](http://www.ucmp.berkeley.edu/allife/eukaryotamm.html) [<http://www.ucmp.berkeley.edu/allife/eukaryotamm.html>](http://www.ucmp.berkeley.edu/allife/eukaryotamm.html) flagellum. In animals, they also function in creating the arrays of microtubules that pull the chromosomes apart during mitosis.

mucus:

-- Sticky secretion used variously for locomotion, lubrication, or protection from foreign particles.

multicellular:

-- Any organism which is composed of many cells is termed multicellular.

muscle:

-- Bundle of contractile cells which allow animals to move. Muscles must act against a [skeleton](#)
<http://www.ucmp.berkeley.edu/glossary/glossary_S.html> to effect movement.

mycorrhizae:

-- Symbiotic association between a [fungus](http://www.ucmp.berkeley.edu/fungi/fungi.html) [<http://www.ucmp.berkeley.edu/fungi/fungi.html>](http://www.ucmp.berkeley.edu/fungi/fungi.html) and the roots or rhizoids of a [plant](http://www.ucmp.berkeley.edu/plants/plantae.html) [<http://www.ucmp.berkeley.edu/plants/plantae.html>](http://www.ucmp.berkeley.edu/plants/plantae.html). [More info?](http://www.ucmp.berkeley.edu/fungi/fungilh.html) [<http://www.ucmp.berkeley.edu/fungi/fungilh.html>](http://www.ucmp.berkeley.edu/fungi/fungilh.html)

myotome:

-- Segment of the body formed by a region of muscle. The myotomes are an important feature for recognizing early [chordates](http://www.ucmp.berkeley.edu/chordata/chordata.html)
<<http://www.ucmp.berkeley.edu/chordata/chordata.html>>.

myth

It is probable that the late nineteenth and twentieth centuries would not have seen so many and varied attempts to explain myths, magic and ritual had it not been for a reluctance to admit or even consider, as does Quantavolution, the possibility of real events as the explanation of stories about extra-terrestrial interference with what people were happy to imagine was the smooth, machine-like running of the world and the heavens. Kirk, in his book *The Nature of Greek Myths*, Penguin 1974, gives an account of the various explanations of the stories and actions, myth and ritual, put forward during the last two centuries.

Myths have been seen as explanations of ordinary natural phenomena, with gods and monsters as personifications of natural forces. Thus in the 19th century Andrew Lang proposed that myths were explanatory, and a form of early science.

Malinowsky suggested that myths are practical devices for supporting social structures rather than attempts to discover theoretical truths.

Eliade holds that myths are an attempt to re-experience a remote past time of divine action and creation. Such a return is not mere nostalgia. It gives power and inspiration in the present; the past becomes alive and is felt to be present.

Other writers, notably Jane Harrison, A.B.Cook, and Sir James Frazer [in *The Golden Bough*], proposed that myth is to be associated with ritual, primitive and savage fertility rituals being particularly significant.

In contrast to attempts to explain myths as being associated with nature, writers such as Freud and Jung have tried to explain myths as psychic phenomena. Myth has been compared to subconscious images and to dreams. Jung especially stressed the human need for myth and dreams to keep the psyche on an even keel.

Followers of Levi-Strauss see myth as important in a society because of its ability to set up bridges between contradictory views and needs. [Contradictions occur in Greek myths and legends between divine law and human law, as in the *Antigone* of Sophocles.] They also see a similarity between the contradictory workings of nature and the human mind.

When looking at the theories, two facts emerge. Firstly, no one theory is a complete explanation of all myths. Secondly, hardly any of them embraces the possibility that they should be taken, in the case of the cosmic myths with battles in the sky, as colourful accounts of something that actually

happened.

Greek religion, from the point of view of the average Greek, seems to have changed from sacrifices and the recitation of stories and the performance of games and plays, e.g. *muthos* and *dromenon*, to mystery religions such as the Orphic and Eleusinian Mysteries. It became a matter of understanding and coping with life's major challenges, especially birth, sickness and death.

nanometer:

-- n. A unit of measure; one millionth (10^{-9}) of a meter.

Nautical Twilight:

This is defined to be the time period when the sun is between 6 and 12 degrees below the horizon at either sunrise or sunset. The horizon is not defined and the outline of objects might be visible without artificial light. Ordinary outdoor activities are not possible at this time without extra illumination.

Neanderthal:

A faster movement of modern man into and across Europe ousted the Neanderthals may have taken only five thousand years rather than a larger period of time.

Evidently, the Neanderthals succumbed much more rapidly to competition from immigrant peoples than previously assumed according to a Cambridge University study by Paul Mellars. The coup de grace could have been delivered by the sudden onset of exceedingly colder and drier climate.

Nebra Skydisk:

Sensational archaeological find of a bronze disk with astronomical markings in gold made in 1999 in the State of Saxony-Anhalt, in Germany. Its creation has been dated between 2100 BC and 1700 BC, its burial to 1600 BC. This would make it the oldest concrete sky representation worldwide. Its discovery was made especially controversial because it was unearthed by illegal diggers using a metal detector. It was found 20 km from the circular grave site of Gosek, which is dated to 5000 BC, and which shows astronomical concern and knowledge far more ancient. The copper used came from Austria, near Salzburg, the gold from Rumania. It represents prominently the constellation of the Pleiades, in conjunction with a waxing Moon and a gold disk, which seems to represent the Full Moon. The respective positions of the star cluster and the waxing Moon would have pointed in the Bronze Age, given an unchanged position on the Earth, to the date of March 10, that of the star cluster to Full Moon to October 17, and could have represented an agricultural calendar. According to astronomer Ralph Hansen from the Hamburg Planetarium, the disk was used to harmonize the lunar year with the solar year and to keep them apace. Besides the seven Pleiades, there are 25 other "stars" which seem placed at random.

In a later phase, two gold arcs (the gold being of a different composition than the original one) were added to opposite sides of the disk, each covering an arc of 82 degrees, which correlate exactly with the positions of sunrise and sunset on the winter and summer solstice at the latitude of the finding site, as designated by the illegal finders. Remarkably, seen from the top of the mountain where it was found, the Mittelberg, the sun sets exactly behind the Brocken Mountain on the summer solstice. The Brocken (famously the seat of the Witches' Sabbat in later lore) could therefore have been used as a means to position the disk for calendar purposes.

Still later, another arc was added, which has been interpreted as a sun-berge, such as are known from Egypt and Minoan Crete. There are incisions similar to those which mark oars in Greek as well as in Scandinavian representations of boats.

The motive of the starry skies is reminiscent of the description of the mantles of the kings of Atlantis in Plato. According to the Greek historian Diodorus, two of the Pleiades had mated with Poseidon and their offspring had populated Atlantis.

nematocyst:

-- Older name for a [cnidocyst](#).

http://www.ucmp.berkeley.edu/glossary/glossary_C.html

nerve cord:

-- Primary bundle of nerves in chordates, which connects the brain to the major muscles and organs of the body.

nerve:

-- A bundle of **neurons**, or nerve cells. More properly, it is a bundle of axons.

net

Greek *diktys*, Latin *rete*. The Great Net is called Anqet, The Clincher; Budge, *Book of the Dead*, p.515, Arkana. Augurs wore a net-like garment. Hutchinson, *Prehistoric Crete* p.337, notes the net-like treatment of the lion's mane on some Cretan shields, with possible eastern connections. Cf. the Roman *retiarius*, who had a net and a trident, matched with a swordsman in the gladiatorial games. There is a possible link with Perseus, the swordsman like Ares or Mars, and Medusa, the Powerful One, who may represent Aphrodite.

neuron:

-- A specialized cell that can react to stimuli and transmit impulses. A neuron consists of a **body** which contains the nucleus; **dendrites**, which are short branches off the body that receive incoming impulses; and a long **axon** which carries impulses away from the body and to the next neuron.

neurotoxin:

-- poison which interferes with nerve function, usually by affecting the flow of ions through the cell membrane.

neutrinos

see nuclear fusion

Neutron Stars:

Neutron stars are the remnants of massive stars that have exploded as supernovae. Containing more mass than the Sun, they are compressed to a diameter of only about 15 miles, making them as dense as atomic nuclei. Ordinary pulsars are neutron stars that emit "lighthouse beams" of radio waves along the poles of their magnetic fields. As the star spins, the beam of radio waves is flung around, and when it passes the direction of Earth, astronomers can detect it with radio telescopes.

Astronomers using radio telescopes from around the world have discovered a spinning neutron star with a superpowerful magnetic field, called a magnetar, doing things which no magnetar has been known to do before. The strange behavior has forced them to scrap previous theories about radio pulsars and promises to give new insights on the physics behind these extreme objects.

The new object - named XTE J1810-197 - was first discovered by NASA's Rossi X-ray Timing Explorer when it emitted a strong burst of X-rays in 2003. While the X-rays were fading in 2004, Jules Halpern of Columbia University and collaborators identified the magnetar as a radio-wave emitter using the National Science Foundation's Very Large Array (VLA) in New Mexico. Any radio emission is highly unusual for a magnetar.

New Quebec, Quebec, Canada (impact crater)



This aerial view looks west over the 250-meter-deep circular lake that fills the New Quebec Crater, a relatively large, well-preserved crater. The interior topography of the crater is covered by lake sediments that inhibit a determination of whether the structure has a small central uplift. The rocks involved in this impact event are ancient and strongly deformed gneisses of the Precambrian shield. The jumbled and outwardly tilted rocks comprising the rim extend as much as 160 meters above the surrounding countryside, based on its morphological similarity to Meteor Crater in Arizona. This was confirmed much later when diagnostic evidence of shock metamorphism was discovered in the minerals from gneiss samples collected from within the crater. Whereas the ejecta blanket has been removed by erosion, some isolated melt rocks have been found up to 2 kilometers from the crater rim. *(Image courtesy of George Burnside, Manotik, Ontario, Canada.)*

Location: 61°17'N, 73°40'W **Rim diameter:** 3.4 kilometers **Age:** 1.4 ± 0.1 million years

Newtonian formulation

states that the gravitational attraction between two celestial bodies depends upon the product of the two point masses transacting and upon the inverse of the square of the distance separating the masses. Expressed mathematically:

$$F_g \propto (M_a)(M_b)/(d_{ab})^2$$

In metre-kilogram-seconds units (mks) the gravitational constant of proportionality (G) relates the force in newtons to the masses in kilograms and the separation in metres. G has the value $6.667 \times 10^{-11} \text{ m}^3/\text{kg}\cdot\text{s}^2$ so,

$$F_2 (\text{N}) = GqM_a(\text{kg})qM_b(\text{kg})/d_{ab} (\text{m})^2$$

niche:

-- n. The portion of the environment which a species occupies, defined in terms of the conditions under which an organism can survive, and may be affected by the presence of other competing organisms.

nitrogen fixation:

-- The conversion of gaseous nitrogen into a form usable by plants.

Ususally by [bacteria](#)

<http://www.ucmp.berkeley.edu/bacteria/bacteria.html>.

node:

-- The region of a stem between two **internodes**, where there is branching of the vascular tissue into leaves or other appendages.

Nonnus:

(lived end of the 4th, or beginning of the 5th century AD), Greek epic poet, born in Panopolis (Egypt). His epic *Dyonisiaca* tells of the expedition of Dionysus to India and bears resemblance to Indian epics. He later converted to Christianity and wrote a poetic version of the *Gospel of John*.

North

In ancient European literature, the north is associated with phenomena that may be the originals of what has been photographed recently from space.

The phenomena described fall into two classes. The first is of those which were perceived and experienced as threats, the timing of whose arrival was calculated by seers who expected from past experience that a threatening object would reappear in the sky, probably the northern sky. Isaiah and Jeremiah are examples of such prophets. The second class is of phenomena which were more or less static and permanent, such as the *poros* or passage of Alkman, and the column or pillar of Plato's *Republic*.

The Hebrew *tsaphon*, north, is the same root as *tsapha*, to watch. There are references in the Old Testament to prophets watching the skies, ready to give warning of approaching disaster.

Egyptian *meht* means north. It is shown as a cross and a lotus flower. Egyptian *meh* is a tiara, like the Greek crown, *stephanos*, Set visible. The Greek *lotos* is suggestive of *el oth*, god above, and sign. We have seen that in the Sanskrit *padma*, lotus, we may have *pa*, light, and *demas*, body. *Demas* is used in Greek of a living body, and may have some connection with Latin *domus*, house, which in its turn is related to the root *thom*, to speak.

The Greeks used for the north the terms *arktos*, a bear, and Boreas. Boreas was used especially of the north wind, and is the Kassite god Buriash.

Esh, *ash*, is a Semitic root meaning fire. The names Boreas and Buriash lead one to suspect that whatever was seen in the northern sky was thought of as the fire of Bor.

One may speculate and suggest a link between Bor and the Latin *verto*, turn, alternative spelling *vorto*. The *poli*, heavens or poles, may have been thought of as a fire stick, with fire produced as Bor caused the axis of the heavens to turn. This is a variant of the widespread myths of the mill, with which a deity such as Saturn ground the salt that was generally believed to have reached the earth from the sky. *Vide* A.de Grazia, *The Lately Tortured Earth*, p.139f.

Apollo was said to have come from the land of the Hyperboreans, a people whose name includes the word *hyper*, meaning beyond, or above. A connection with fire and light begins to emerge when we remember that the first fruits of the Hyperboreans were sent by relay, packed in straw, to the

shrine of Apollo at Prasiae, and then taken by the Athenians to Delos, the island that was sacred to him as his birthplace.

Whatever it was that constituted the first fruits of the Hyperboreans, the people who lived beyond, or above, Boreas, there is an interesting coincidence in the fact that the key letters of Prasiae, *prs*, if reversed, give the consonants of the Hebrew *tsaraph*, burn.

The Greek poet Pindar writes: "But neither in ships nor on foot will you find the marvellous road to the *agon* of the Hyperboreans". [*Pythian* X:29] An *agon* is a contest, or a place, possibly in the sky, where contests may occur.

The Latin word *urbs*, city, may easily be an accident created by reading what is now the Slavonic word *sobor* the wrong way round. In modern Russian, *sobor* is a cathedral, or a synod. The Slavonic preposition 's' [written 'c' in Russian] means 'down from', or 'with'. *Sobor*, or *sbor*, could mean 'down from Bor'.

The Arabic *shemal*, north, resembles the Hebrew *sham*, there, which occurs in *shammayim*, the 'there-waters', i.e. heaven.

Latin *arbor*, tree, may be the fire, *ar*, of Bor, who is seen above, *el*, in the northern sky. His name may even be the *poros* referred to by Alkman. *Arbor* may have been Yggdrasil, the world tree.

In Greek myth, the father of Eros, love, was Poros, the passage to the sky. This suggests a link with Dionysus and Hermes. Hermes was the Greek equivalent of Thoth, and Dionysus was one of the deities who controlled the thunderbolt. The Greeks were aware of the connection between a deity of the thunderbolt and sexual passion.

It was said that one Boutes, son of Boreas, brought a band of Thracian men to what is now the island of Naxos. For their wives, he brought a band of Maenads from Thessaly.

Wherever there are references to Boreas, Hyperboreans, the ox or bull, it is worth asking whether the electrical god in some form or other is involved. In this instance, we may note that the name Boutes suggests, to a Greek, oxen [*bous* is an ox]. There are well known stories of links between the north, Delphi, Apollo, the Hyperboreans, and Delos. There is room for speculation that the Semitic word *shemal*, north, may indicate 'the god up there', or 'the sign of El', and that *shemal*, reversed, might be *El ames*, the sceptre of El. The story quoted by Ginsberg [*Legends of the Jewish people*] of the ox seen in the sky at the time of the Exodus is perhaps less

well known.

notochord:

-- Characteristic of [chordates](http://www.ucmp.berkeley.edu/chordata/chordata.html)
<<http://www.ucmp.berkeley.edu/chordata/chordata.html>>, the notochord is a stiff rod of tissue along the back of the body. In vertebrates, the backbone is deposited around the notochord and nerve cord.

nuclear fusion

is the supposed stellar process by which the nuclei of four hydrogen atoms collide with sufficient energy to coalesce forming a single helium nucleus having slightly less mass than the original hydrogen. The mass which is destroyed in fusion reappears as radiant energy which slowly flows away to the surface. In the fusion, two protons are changed into two neutrons, two anti-electrons, and two neutrinos. The neutrons remain in the fused helium nucleus, the anti-electrons annihilate with two electrons (liberating more radiant energy), and the neutrinos escape the star immediately, travelling at the speed of light. To remain luminous by conventional theory the star must fuse hydrogen continuously (Rudeaux and de Vaucouleurs).

On Earth, a type of nuclear fusion has been sustained for one hundred pico-seconds. No continuing fusion process has yet been produced. Controlled nuclear fusion, which could provide a practically inexhaustible source of energy, requires that the nuclei destined for fusion be able to collide, which can only happen under a temperature sufficiently elevated to counteract their strong electrostatic repulsion.

nuclear membrane:

-- The double membrane which surrounds the eukaryotic nucleus. It has many pores in its surface which regulate the flow of large compounds into and out of the nucleus.

nucleic acid:

-- class of biochemical compounds which includes DNA and RNA. They are among the largest molecules known. [MORE?](#)

[<http://www.ucmp.berkeley.edu/glossary/gloss3/dna.html>](http://www.ucmp.berkeley.edu/glossary/gloss3/dna.html)

nucleoid:

-- Region in prokaryotes where the DNA is concentrated. Unlike a nucleus, it is not bound by a membrane.

nucleosynthesis
see **nuclear fusion**

nucleotide:

-- unit from which nucleic acids are constructed by polymerization. It contains a sugar, a phosphate group, and an organic base. ATP is a nucleotide.

nucleotides

the monomeric unit which makes up the nucleic acid molecules. A nucleotide consists of a nitrogen base, plus a sugar, and a phosphate group.

particle: used in the *Quantavolution* theory of *Solaria Binaria* as a synonym for electrons, atoms and/or electron-deficient atoms (ions) which are in motion, such as in an electric discharge, or in a flowing gas or plasma. So viewed, cosmic rays and stellar/solar wind ions are particles.

nucleus:

-- Membrane-bound organelle which contains the DNA in the form of chromosomes. It is the site of DNA replication, and the site of RNA synthesis.

nutrient cycling:

-- All the processes by which nutrients are transferred from one organism to another. For instance, the carbon cycle includes uptake of carbon dioxide by plants, ingestion by animals, and respiration and decay of the animal.

nutrient:

-- Any element or simple compound necessary for the health and survival of an organism. This includes air and water, as well as food.

Obliquity:

Obliquity is the angle between a planets equatorial plane and its orbital plane.

olive oil

as well as valuable for food, light, medicine, and general cosmetics, could help a human to emulate the electrical radiance of a statue or god. Unlike ambrosia and nectar, it was available for mere mortals.

The olive tree, *elaia*, was sacred to Athene, who first planted it, either at Colonus (Sophocles *Oedipus at Colonus*, 701), or on the Acropolis. It is described as *chrusea*, Pindar *O1. XI:13*, golden, or *xanthe*, like Vergil's *flava oliva*, yellow, but most often as *glauke*. (Athene is *glaukopis*, bright-eyed).

Baths and oil are frequently mentioned in the *Odyssey*. Our first reference is to the *Odyssey*, III:464 ff. Telemachus is about to leave Pylos, where he has been asking for news of his father. A feast is prepared for his departure. Polykaste, Nestor's daughter, gives him a bath, anoints him with olive oil, and puts a tunic and cloak round him. He steps out of the bath looking like an immortal god.

The Latin for olive oil is *oleum*, and occurs in the phrase '*oleum addere camino*,' to put oil on the fire; Horace, *Satires* II:3:321. Greek has the phrase 'to put a fire out with pitch and olive oil'. *Oleum* is the word used in the *Vulgate* to imply spirit, joy, in *Old Testament*, *Isaiah* LXI:3, and *New Testament Hebrews* I:9.

omnivore:

-- Literally, an organism that will eat anything. Refers to animals who do not restrict their diet to just plants or other animals.

organ system:

-- Collection of organs which have related roles in an organism's functioning. The nervous system, vascular system, and muscle system are all organ systems.

organ:

-- Collection of tissues which performs a particular function or set of functions in an animal or plant's body. The heart, brain, and skin are three organs found in most animals. The leaf, stem, and root are three organs found in most plants. Organs are composed of **tissues**, and may be organized into larger **organ systems**.

organelle:

-- n. A membrane-bound structure in a eukaryotic cell that partitions the cell into regions which carry out different cellular functions, e.g., mitochondria, endoplasmic reticulum, lysosomes.

organic:

-- adj. Pertaining to compounds containing carbon. Also refers to living things or the materials made by living things. *inorganic*- ant.

osculum:

-- The main opening through which filtered water is discharged. Found in sponges <<http://www.ucmp.berkeley.edu/porifera/porifera.html>>.

Ouarkiz, Algeria (impact crater)

This structure is situated in sedimentary rocks in the rocky desert of northwest Algeria. It displays a well-defined ring that is partly open to the south. The impact origin is suggested from the occurrence of planar deformation features within rocks returned 30 years ago from the only geologic expedition ever to visit the structure. (*Space shuttle image STS41C-31-1032.*)

(Location: 29°00'N, 07°33'W **Rim diameter:** 4 kilometers **Age:** <70 million years)

outgroup:

-- In a cladistic analysis, any taxon used to help resolve the polarity of characters, and which is hypothesized to be less closely related to each of the taxa under consideration than any are to each other.

ovary:

-- In flowering plants
<<http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html>>, the part of the flower which encloses the **ovules**. When the ovary matures, it becomes the **fruit**

Ovid's image-tale of Phaethon:

Once it had degraded to a fable, the later poets handled the image-tale of Phaethon each in his own way, related it to this event or that, and embellished it in varying ways. Several of their descriptions, like the eponymous tragedy of Euripides, are unfortunately lost. Ovid, in his *Metamorphoses*, almost entirely imitated from the Greeks, depicts the event in the following way, apparently basing himself on Hesiod: After Jupiter had transformed Lykæon, who had maliciously offered him human flesh to eat, into a wolf in punishment, and had destroyed his house in a fire, he decided together with the assembled gods, to annihilate the vicious human race through a flood. Only Deucalion and Pyrrha escaped this flood and repopulated the earth anew, after having brought sacrifices to Jupiter. After a masterly description of this event, the poet delivers some transition images, to begin with, the creation of Python (the sea serpent), i.e. the stagnant waters, by Phoebus; then the metamorphosis of Daphne, daughter of Peneus, into an olive tree, the branches and leaves of which now crown the heads of the winners of the Pythic games; then the story of Io, daughter of Inachus, which Jupiter, in order to save her from the jealousy of Juno, transforms into a cow. Her son was Epaphus, whose temples are connected with those of Jupiter. Equal to Epaphus in spirit and years was Phaethon, sired by Sol. When, filled with pride one day Phaethon boasts about his divine origins, Epaphus mocks him as a simpleton who, filled with vanity, will believe anything that his mother tells him. Phaethon wails about the insult and, on the counsel of Klymene, runs to Sol, begging him for authorization to lead the chariot of the sun for one day. Things went well to begin with; but the horses soon felt the unexperienced hand of the charioteer, they left the habitual path and lifted themselves up first to the stars of the cold North, than dove too deeply into the direction of earth. The Triones and Bootes tried in vain to flee from the fire into the cool waters of the sea, and the otherwise cold-stiffened Dragon swelled up in new anger. Seized with dizziness when looking down from the great heights, and shaking with fear at the larger half of the way still to be covered, the weak charioteer sees the threatening constellation of Scorpio

and lets the reins fall out of his hands in terror. Wildly now the horses go back and forth in the heaven and put the sky and earth aflame. All food-giving plants burn up, all wells, springs and seas dry up; great, compact cities are turned into ashes together with their inhabitants, whole peoples are destroyed; mountains and forest flare up in fires; Athos is burning, as are the Taurus of Cilicia, Imolus and Deta; Ida, famous for its springs, is dry, also the Helikon, holy to the muses, and the as yet uncelebrated Hemus. With two separate sources of fire Etna is burning to immeasurable heights, the double summits of Parnassus are burning, the Eryx, the Cynthus and Othrys, the finally snow-freed Rhodopus, the Dimas, Dindyma and Mykale, and the holy Kithaeron. To no avail is the frost to the land of the Scythians; the Caucasus is ablaze, also Ossa and Pindus and, higher than both, Olympus; also the airy Alps and the cloud-high Apennine. Phaethon sees the whole earth in flames, breathes in hot air as if coming from a glowing furnace, and feels under him the chariot turning red hot. Enveloped in ashes and smoke clouds, he does not know where to go and lets himself be carried away by the horses, unconscious. That is when the people of Aethiopia are supposed to have turned black, as their blood was drawn to the surface of their bodies; then did Lybia turn into a desert of sand, as the heat bereaved it of all waters. The wide-bedded rivers no longer flow securely: the Tanais goes up in vapor clouds, also the old Peneus, and the Phokaian Erymanthus; the Xanthus also went up in vapor, as did the yellow Lykormus and the serpent-like Meander, the Melas of Mygdonia [Phrygia] and the Eurotas of Taenarum. The Euphrates in Babylone burned, the Orontes, and the rapid Thermodon, the Ganges, the Phasis and the Ister. Boiling with heat are Alpheus and Sperchius; the gold of the Tago flows in streams of fire, and singing swans are boiled in the middle of the Kaystrus; the Nile's mouths become seven dusty dry valleys. The same fate dries up the Hebrus and Strymon and the rivers of the Hesperides: the Rhenus, the Rhodanus, the Padus, the Tiber; the whole earth bursts and through the clefts, daylight finds its way to Tartarus and frightens the king of the Netherworld. The sea shrinks and what was until then an expanse of water, is now a field of dry sand; mountains arise, which before had been covered by the sea, and

the scattered Cyclades are multiplied. The fire is threatening the poles of heaven, and Atlas barely manages to carry the glowing sphere when, touched by the supplications of Earth, Jupiter with his lightning bolt separates the charioteer from his chariot and through enormous opposite fires stops the general conflagration. With burning hair, seeming like a falling star, Phaethon is precipitated from on high, through the air, and is received, far away from his home, by the waves of the great Eridanos. The Hesperidic Naiades bring the smoking corpse to a hill and set on it a stone memorial. His father covered his face in mourning, one whole day passed without the appearance of the sun, and the world was lit only by the fires. Klymene ran about the earth like one insane, mindlessly, and threw herself onto the marble tomb of her son. For four moons his sisters, the Heliades of the Eridanos, wept over him, until they took root as poplar trees, whose constantly running tears are changed in the river into amber. Kygnus, Phaethon's relative and friend, powerful ruler of the Ligurians, left his kingdom, came to the Eridanos and turned into a lamenting swan. Phoebus then refused to take up again the reins of the sun chariot but finally, moved by the prayers of all the gods and the threats of Zeus, resumes driving the chariot again. The King of the gods tried to repair the evil done on earth.

Granted that our poet added here and there many ornaments to the beautiful old image-tales, which of course he no longer quite understood - a historical truth still shines through the whole of his source material, in part thanks to the internal, logical coherence of the tale, in part through the fact that this material coincides with the traditions of other peoples. The obscuring of the sun lasting one full day coincides, according to the calculations of some, with the Egyptian eclipse which according to the Moses tradition occurred shortly before the exodus of the Jews out of Egypt. Epaphus, who according to Hyginus was a son of Jupiter and of Io, herself a daughter of Inachus, was the builder of Memphis and the ruler of Egypt; according to Herodotus, he was worshiped there as Apis. Literally translated, the name designates an enemy, an adversary, and in the case in point, possibly a satellite of Jupiter who, edged by a comet which we will refer to later on, entered into a hostile collision with Phaethon. In the holy

bulls Mnevis and Onuphis, as well as the holy cow of Momemphis, the Egyptians seem to have represented the three other secondary planets. Phaethon evaded towards the North, as suggested by the succession of the constellations mentioned, and exploded on its wild, erroneous course sometime in October, when the sun enters the constellation of Scorpio. The greatest amount of debris fell into the Baltic and the Eridanus, which is the amber river of the Teutonic North. Its break up now furnishes an explanation for the great desert expanses of sand in the North of Germany, which stretch over formerly fertile lands, as well as for the many mountain ridges, thrown up this way and that, which are found in the Alps and other mountains, and which often show no relationship with what lies underneath them. In areas where the burning debris fell in great number, even the rivers must have vaporized, or they changed their course, or disappeared into the clefts of the earth when those burst open. The Rhine, which at this occasion is mentioned in myth for the first time, and which had formerly consisted probably of a chain of large lake-valleys, seems to have become a flowing river only then, through the breaking open of the obstructing barriers containing it in its valley.

ovule:

-- In seed plants
<<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>>, the
structure which gives rise to the seed.

owl

The owl was sacred to Athene. Its staring eyes suggested a pair of heavenly bodies, and its cry could remind the hearer of the Egyptian and Hebrew sacred sound *iaaooei*.

Paleo-Tethys Ocean:

-- n. A large ocean that originated between eastern Gondwana, Siberia, Kazakhstan, and Baltica in the Ordovician and finally closed in the Jurassic; replaced by the Tethys Ocean as eastern Pangea was assembled.

paleoherb:

-- Any member of a group of basal flowering herbs
<<http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html>> which may
be the closest relatives of the monocots
<<http://www.ucmp.berkeley.edu/monocots/monocot.html>>. They include
the water lilies, Piperales, and Aristolochiales.

Paleozoic

a geological term denoting the time in Earth history between about 570 and 245 million years ago, in conventional dating.

Pangea:

-- n. A supercontinent that existed from the the end of the Permian to the Jurassic, assembled from large continents like Euramerica, Gondwana, and Siberia, as well as smaller landmasses like the Cathaysian and Cimmerian terranes; Greek for "all lands."

Pannotia:

-- n. A supercontinent that existed in the Late Precambrian and gave rise to the continents of Gondwana, Laurentia, Siberia, and Baltica in the Cambrian.

Panthalassic Ocean:

-- n. A vast ocean that existed from the Late Precambrian to the Jurassic, circling the globe and connecting to smaller oceans that developed throughout the Phanerozoic; also known as the **Panthalassa**.

Pantomime

Etruscan drama was introduced to Rome at a time of pestilence and national calamity. "*Ludiones ex Etruria acciti*" players were summoned from Etruria. (Livy VII:2:4) Is there a link between the Etruscan *thanasa*, actor, and *histro*, mime or actor, and the Greek *thanatos*, death?

The Albanian '*heshtur*', silent, may be the Latin '*histro*', and Etruscan drama was dancing and mime.

There is a parallel in early 18th century A.D. Russia. When Peter the Great invited foreign engineers to Russia, most of them German, they were called *Nemtsi*, mutes, because they could not speak Russian. The Russian for a German is still *Nemets*.

Why should the Romans have thought that the introduction of silent drama would allay the anger of the deity causing the trouble?

Departed spirits (Manes) in the underworld cannot speak, only squeak and gibber. When Odysseus descends to consult the ghosts of Teiresias and others, he has to slaughter animals and pour their blood into a trench. The ghosts do not speak until they have drunk the life-giving blood.

Cumae, near Naples, was a famous oracle and an entrance to the underworld, where Aeneas went to meet the ghost of his father (*Aeneid* VI). The Hebrew *qum* means arise; cf. *N.T. St. Mark V*, where Jesus raises Jairus' daughter. Thanasa-Thanasa was a name of Amen, the hidden god of Neter-khert, the Egyptian underworld.

Perhaps the Etruscan mimes specialised in the portrayal of ghosts, and their drama aimed at consulting and enlisting the aid of the dead in times of peril. We know from the *Old Testament* that the spirits of the dead were consulted (Saul and the witch of Endor, I *Samuel* XXVIII). Whatever the details, it was apotropaic, turning aside a threat, just like Greek dithyramb and tragic drama.

It is tempting to relate the Greek '*nerteros*' of the dwellers below, i.e. the dead and the gods of the underworld, to Njord, the Norse deity, and to Nortia, the Etruscan goddess of destiny. The interest the Etruscans had in the world of departed spirits is illustrated by their elaborate tombs, vaults, decorations, and paintings on the walls of underground rooms. Manthus was an Etruscan deity, Latin and Greek Rhadamanthus, one of the judges of the underworld. Etruscan '*rad*' means order, and is presumably the Latin '*ratio*', reason, orderly thought.

papilla(e):

-- Cellular outgrowths. These look like little bumps or fingers on the surface of cells.

paraphyletic:

-- Term applied to a group of organisms which includes the most recent common ancestor of all of its members, but not all of the descendants of that most recent common ancestor. [More?](#)
<<http://www.ucmp.berkeley.edu/glossary/gloss1/phyly.html>>

parapodia:

-- A sort of "false foot" formed by extension of the body cavity.
Polychaetes and some insect larvae have parapodia in addition to their legs, and these provide extra help in locomotion.

parasite:

-- n. An organism that lives on or within a host (another organism); it obtains nutrients from the host without benefiting or killing (although it may damage) the host; **parasitic**- adj.; **parasitism**- n. a type of symbiotic relationship in which one organism benefits and the other does not.

parenchyma:

-- A generalized cell or tissue in a plant. These cells may manufacture or store food, and can often divide or differentiate into other kinds of cells.

parsimony:

-- Refers to a rule used to choose among possible cladograms, which states that the cladogram implying the least number of changes in character states is the best.

particle

used in the *Quantavolution* theory of *Solaria Binaria* as a synonym for electrons, atoms and/or electron-deficient atoms (ions) which are in motion, such as in an electric discharge, or in a flowing gas or plasma. So viewed, cosmic rays and stellar/solar wind ions are particles.

Particulate Anomaly of 1921:

Covering a 1300 year period, the GISP2 ice core showed its heaviest particulate concentration, of largest particles as well, in the year 1920-1922. The year 1916 was especially heavy in particulate as well. Why this should occur in the Greenland ice core (therefore atmospherically) is an unsolved mystery. No known event could have brought this amount of coarse dust.

pathogenic:

-- Organism which causes a disease within another organism.

Paulus Orosius:

(c.385-420), *Historiae adversus paganos*.

peacock

The peacock was sacred to Juno. Its Latin name was pavo. Perhaps the pattern on its tail, resembling eyes, associated it with radiation. Its name resembles the Latin pavor, fear. The name of Juno's Greek counterpart, the goddess Hera, suggests fear. In Egyptian, her, hra, mean 'face; upon'. Herit means 'fear'. It is possible that Hera was originally thought of as the atmosphere surrounding the planet that the Romans called Jupiter.

It was known that the peacock sheds its feathers from time to time. This may explain the hoplitodromos at Athens, a race by hoplites, armed soldiers, wearing nothing but helmets.

peak ring

a central uplift characterized by a ring of peaks rather than a single peak. Peak rings are typical of larger terrestrial craters above about 50 kilometers in diameter.

pedipalps:

-- The second pair of appendages of cheliceromorphs
<<http://www.ucmp.berkeley.edu/arthropoda/chelicerata/cheliceramorphs.html>>. In many arachnids, such as spiders, the pedipalps are enlarged in the male and used for copulation.

pelagic:

-- Pelagic organisms swim through the ocean, and may rise to the surface, or sink to the bottom. They are not confined to live on the bottom as benthic organisms do.

peptidoglycan:

-- carbohydrate polymer cross-linked by proteins. It is found in the cell wall of Gram positive [bacteria](#)
<<http://www.ucmp.berkeley.edu/bacteria/bacteria.html>>, where it stains with the dye crystal-violet.

perennial:

-- A plant which continues to grow after it has reproduced, usually meaning that it lives for several years.

perianth:

-- The **sepals** and **petals** of a flower are together called the perianth; literally "around the anthers". [More info?](#)

<http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>

periastron

in the *Quantavolution* theory of *Solaria Binaria*, means the least separation of the principals in a binary. Similarly, its homologues are perigee (for a body orbiting the Earth) and perihelion (for a body orbiting the Sun).

The term *pericentron* is used to describe the closest approach between two bodies in orbit.

peridinin:

-- carotenoid pigment found in dinoflagellates.

periphyton:

-- Dense strands of algal growth that cover the water surface between the emergent aquatic plants. *Spirogyra*
<<http://www.ucmp.berkeley.edu/greenalgae/charophyta/zygnematales.html>> is commonly responsible for this growth.

peristome:

-- A set of cells or cell parts which surround the opening of a moss sporangium. In many mosses, they are sensitive to humidity, and will alter their shape to aid in spore dispersal.

Permo-Triassic Extinction:

The greatest of all Earth's mass extinctions (the "Great Dying") occurred about 250 million years ago (conventional dating) at the boundary of the Permian and Triassic, known as the "PT." About 95% of marine species and three-quarters of all families of the Pangean landmass perished. Rocks from the end of the Permian period can be seen today in places such as China, Italy and Pakistan. Chief suspects include sea-levels fluctuations, volcanic activity, and melting methane-ice in sea sediments. Much more pervasive would be space body impacts, an argument like that put forward to explain the demise of the dinosaurs at the much later date of 65 million years ago (conventional dating). The Wilkes Land Crater, situated under the East Antarctic Ice Sheet, is a serious contender for being a possible site for the impact. A geological structure, known as the Bedout High, in the seabed of what is now Australia, has also been suggested as the possible crater remains from the PT impactor. But the impact explanation for the Great Dying is an argument that has struggled to find favor. The prevailing theory is that several factors - including supervolcanism and extensive climate warming - combined over thousands of years to strangle the planet's biodiversity.

petal:

-- One of the outer appendages of a flower, located between the outer **sepals** and the **stamens**. Petals often display bright colors that serve to attract pollinators. [More info?](#)

<http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>

Phaethon:

at first a planet between Mars and Jupiter: Already in centuries past, astronomers have pointed out that in the empty space between Jupiter and Mars, some large planet should be orbiting the sun, and the moderns have indeed discovered there four smaller planets, by name Ceres, Pallas, Juno and Vesta, which they have explained as being the partial debris of a large planet which had been shattered there. The ancient Greek image-tale myths, which were recorded even before the invention of the alphabet, suggest the existence of a planet which, because of its brilliance, had received the earlier name of the sun, Phaethon, i.e. the bright one but which through collision with another body had been shattered. "O Solon, Solon," exclaims the wise priest of Sais in Plato's *Timaeus* "- you Greeks are still only children, and there is not one old man among you; for you are newborns of the mind and possess not even an original clue about the traditions of the ancient past, not an ounce of wizzened wisdom. The reasons of this are the many and varied annihilations which have hit mankind and will continue to be visited upon it. The greatest of those happened through outbreaks of fire and through floods; the other, lesser ones, through numberless other accidents. For your own tale of Phaethon who, being the son of Helios, once climbed on his father's chariot and who, unable to keep to the father's path, set afire the whole surface of earth and who, hit by lightning, was shattered to pieces is, however much it may look like a fable, quite true. For there occur changes in the orbit (*parallaxis*) of the heavenly bodies which circle the earth and heaven, as a consequence of which, at long intervals, there occur devastations on the earth through immense fires; then those who live

in mountains or on high, dry places are exterminated in much greater numbers than those who live by rivers and on the seashores. But the Nile, who is in all things so benevolent to us, wards away from us such misfortunes..."

These devastations of the earth and annihilations of mankind appear to

Plato like as many renewals and rejuvenations. In his descriptions of such destructions through fire and flood, the philosopher follows, according to Clement of Alexandria, the historian Akusilaos. Aristotle relates similar things and so does, after him, Apuleius: "Often have we heard that through great earthquakes the earth opened itself, and swallowed cities and peoples; we have heard that through breaking clouds whole lands were washed away; that even portions of continent were turned into islands by waters rushing on from elsewhere, and that other islands could be reached by foot all of a sudden, the sea having receded. What? Who does not remember that through winds and storms cities have been leveled? What? When raging fires came down from clouds, when the lands of the East were set afire, as some believe, by the fall of Phaethon, and the lands of the west suffered equal devastation through deluges and inundations? (...)"

pharyngeal slits:

-- Characteristic of [chordates](#)

<http://www.ucmp.berkeley.edu/chordata/chordata.html>, pharyngeal slits are openings through which water is taken into the pharynx, or throat. In primitive chordates the pharyngeal slits are used to strain water and filter out food particles; in fishes they are modified for respiration. Most terrestrial vertebrates have pharyngeal slits only in the embryonic stage.

pharynx:

-- Cavity in the digestive tract just past the mouth itself. May be muscularized for sucking or swallowing in various animals.

Pherekides:

Greek philosopher of the VI. century BC. Born on Syros. Teacher of Pythagoras. Only a few fragments of his work survive.

Philo of Byblos:

(Herennios Philon):

ca. 64 AD - 141 AD, Greek grammarian, lexicographer and historian, probably a Roman citizen. Only fragments of his extensive works are known to us, most of which through quotes by Eusebius of Caesarea, a Christian author of the 4th century AD.

phosphate:

-- an ion consisting of a phosphorus atom and four oxygen atoms. Among other things, it is used in the construction of nucleic acids.

photic zone:

-- Region of the ocean through which light penetrates; and the place where photosynthetic marine organisms live.

photosynthesis:

-- biochemical process in which light energy is absorbed by chlorophyll, and is used to fuel the building of sugar molecules.

phragmoplast:

-- The cell plate formed during cell division.

phycocyanin:

-- blue, water-soluble pigment found in the [cyanobacteria](http://www.ucmp.berkeley.edu/bacteria/cyanointro.html) <<http://www.ucmp.berkeley.edu/bacteria/cyanointro.html>> and the [red algae](http://www.ucmp.berkeley.edu/protista/rhodophyta.html) <<http://www.ucmp.berkeley.edu/protista/rhodophyta.html>>.

phycoerythrin:

-- red, water-soluble pigment found in the cyanobacteria and red algae.

phylogenetics:

-- Field of biology that deals with the relationships between organisms. It includes the discovery of these relationships, and the study of the causes behind this pattern.[More?](#)
<<http://www.ucmp.berkeley.edu/clad/clad4.html>>

phylogeny:

-- The evolutionary relationships among organisms; the patterns of lineage branching produced by the true evolutionary history of the organisms being considered.

phylum:

-- n. A category in the hierarchy of animal classification between class and kingdom; **phyla-** pl.

physical binary system

is defined, in the *Quantavolution* theory of *Solaria Binaria*, to consist of two bodies which are mutually dependent in respect to their orbital revolution about each other. In multiple star systems, which also exist, more than two bodies are in revolution about a common centre-of-motion, often designated as their *baricentre*.

phytomelanin:

-- a papery "sooty" black layer over the seed of plants in the [Asparagales](http://www.ucmp.berkeley.edu/monocots/liliflorae/asparagales.html) [<http://www.ucmp.berkeley.edu/monocots/liliflorae/asparagales.html>](http://www.ucmp.berkeley.edu/monocots/liliflorae/asparagales.html), which includes agaves, aloes, onions and hyacinths. It is an important character for defining the group.

phytoplankton:

-- Tiny, free-floating, photosynthetic organisms in aquatic systems. They include [diatoms](#)

<http://www.ucmp.berkeley.edu/chromista/bacillariophyta.html>, [desmids](#)

<http://www.ucmp.berkeley.edu/greenalgae/charophyta/desmiales.html>

, and [dinoflagellates](#)

<http://www.ucmp.berkeley.edu/protista/dinoflagellata.html>.

Pierre-Simon, Marquis de Laplace:

(Beaumont-en-Auge, 1749 - Paris, 1827), *Exposition du Système du Monde*, An IV [1796]. Pierre-Simon, Marquis de Laplace (Beaumont-en-Auge, 1749 - Paris, 1827), *Exposition du Système du Monde*, An IV [1796].

Pigeon Olfactory Navigation:

Discovery (reported 2006) that pigeons (and probably other birds) create by means of smell maps of their habitats and routes. This supplements, if it does not replace, the idea that they use slight differences in the Earth's magnetic field to navigate. The crucial experiment cut the olfactory nerve on one set of birds, the trigeminal (magnetic-related) nerve on a second set, and set them free from their common roost at 50km distance. The latter found home easily, the former hardly at all. A basic hypothesis of Q is Global Fracture, which would compel birds in migrating between their regular grounds to swerve sharply at one or more points (which they do). A sudden change in olfaction could turn the birds onto their new course. But, too, if the Earth's magnetic field lines moved with the underlying magma rocks, then the birds would also be re-instructed. The origin of the magnetism is, however, still moot.

pigment:

-- any colorful compound, used by living things to absorb or block sunlight, and in sexual displays. [More info?](#)

[<http://www.ucmp.berkeley.edu/glossary/gloss3/pigments.html>](http://www.ucmp.berkeley.edu/glossary/gloss3/pigments.html)

pillar

the columns of some Greek temples appear to be cut in marble in such a way as to suggest that wood was the original material. There may be a link between Yggdrasyl, the sacred oak tree of Zeus at Dodona and elsewhere, the columns of the Greek temple, the Lion Gate at Mycenae, and so on.

Nails, Greek '*helos*', were sometimes driven into wooden pillars. This was a Roman method of marking the date.

Pausanias III:20:9: "On the way from Sparta to Arkadia is the Horse's Grave, where Tyndareos made Helen's suitors swear to abide by her choice. Nearby are seven pillars in the ancient pattern, said to be statues of the planets. Further on is a sanctuary of Mysian Artemis."

There may be a link between the tree, the pillar, the *poros* and the *tekmor* of Alkman, and the pillar of Plato, *Republic X*. The Greek *kion*, pillar, can also, with a change of accent, mean 'going'.

Electrical displays, travelling through the sky, could be the explanation of the similarity.

Temple columns were thought of as supports for heaven. The Egyptian pylon, or gateway, is *seb* (Greek *hepta* = seven). The *pulvinaria* or capitals of the columns may suggest the cushions on which deities reposed.

pinnately compound:

-- Leaves which are divided up like a feather are said to be pinnately compound.

pistil:

-- The central set of organs in a flower; it is composed of one or more carpels. [More info?](http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html)
<<http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>>

pith:

-- To severely damage the brain of a frog, also any central region of **parenchyma** tissue within a plant stem.

pits:

-- Thin regions of the cell wall in xylem conducting cells. Their structure is an important characteristic for recognizing different kinds of wood.

placenta:

-- n. In mammals, a tissue formed within the uterus through which nutrients are passed from the mother to the embryo (and later the fetus) and its wastes are removed; **placental-** n. (adj.) A mammal whose young form a placenta as they develop in the mother's uterus.

planar deformation features

microscopic features in grains of (for example) quartz or feldspar consisting of very narrow planes of glassy material arranged in parallel sets that have distinct orientations with respect to the grain's crystal structure.

Planetary Names:

Traces of residual knowledge of Phaethon are to be found in the names of the neighboring planets. The image-tale of the end of Phaethon had long since become a fable no longer understood in its true meaning, when the name of Phaethon still lingered on as the name of a planet that had disappeared in earlier times. Witness, for instance, Aristotle and Apuleus where the planets are listed in the following succession, and under the following names:

1. Phaenon (the scintillating) or Saturn (Nemesis for the Egyptians);
2. Phaethon, also Jupiter (Osiris for the Egyptians);
3. Pyroeis (Fire-star) or Hercules (for the Egyptians), also Ares or Mars;
4. Stilbon (the radiant one), for some Hermes or Mercury, also (for the Egyptians), Apollo;
5. Phosphorus or Lucifer, for some: Venus, for others: Juno or Junonia;
6. Helios or Sol (for the Egyptians, the fourth planet);
7. Selene or Luna;

Yet in Hyginus, more in accordance with the old fables, the list is the following:

1. Jupiter or Phaethon (in Eratosthenes, Phaenon). According to Heraklides Pontikus Prometheus, when he fashioned men, had made Phaethon so beautiful that Jupiter, inflamed with desire, sent Mercury, to call him to himself and make him immortal. This is how he was lifted up among the stars.
2. Sol, for others, Saturn; as Eratosthenes says, this planet acquired the name Phaethon after the son of Sol who, hurled by Jupiter into the river Eridanus, had been placed into heaven by his father.
3. Mars (named Hercules by some) who follows the Venus star - according

to Eratosthenes for the following reason: when Vulcan had espoused Venus, his precautions prevented Mars to find access to her any longer, so that Mars could achieve nothing more than having his star appear to follow the star of Venus. But when Amor inflamed him violently, Hyginus designated his state by calling the star Pyroeis.

4. Venus, under the name of Lucifer, which some call Juno. In many stories it is told that the star is called Hesperus. It appears to be the largest of all. Some maintain that Hesperus is a son of Aurora and Cephalus and more beautiful than any other, for which reason he entered into competition with Venus for preference; Eratosthenes even says that Hesperus himself is called Venus for this reason, and that he appears by sunrise and sunset, and therefore carries the names of Lucifer and Hesperus.

5. Mercury, also under the name of Stilbon; he is small and bright and is supposed to be dedicated to the god Mercury because this god was the first to order the succession of the months and to have studied the paths of the stars. Euhemerus maintains that Venus, at first, had ordered the constellations and had explained them to Mercury.

According to Hyginus' list the name of Phaethon, long after the fall of its bearer, was still assigned to his two neighboring stars; just as later on in Hyginus, Hesperus was a son of Cephalus and Aurora, the first Phaethon, whom Venus followed with her love, was a son of these two. Under the name of Mercury, who is supposed to have ordered the months, we must here understand the Egyptian Thoth.

plankton:

-- n. Very small, free-floating organisms of the ocean or other aquatic systems, including phytoplankton, which produce their own nutrients through photosynthesis, or zooplankton, which get their nutrients from organisms.

plasma membrane:

-- Outer membrane of a cell, sometimes called the cell membrane. The term plasma membrane is used more frequently when discussing prokaryotes.

plasma

(gr.: fashioned product) a gas in which the electrons are separated from the electron-deficient atoms. The whole gas contains approximately equal numbers of electrons and ions. (It is conventionally estimated that 99% of the matter of the Universe occurs in the form of plasma.)

plasmid:

-- Circular loop of DNA in prokaryotes. Eukaryotic DNA is organized into chromosomes.

plasmodesmata:

-- Cytoplasmic connections between neighboring cells in plant tissues.

plasmogamy:

-- A process of fusion of the cytoplasm of two cells; the first step in **syngamy**.

plastid:

-- Any of several pigmented cytoplasmic organelles found in plant cells and other organisms, having various physiological functions, such as the synthesis and storage of food.

platyspermic:

-- Having seeds which are flattened and disc-like. Contrast with **radiospermic**.

Pleiades:

The multi-symbolic archetype of the Pleiades functions as a worldwide astronomical system going back at least to the Upper Paleolithic Era. According to some scholars (Allen 1899 / 1963) one of the earliest written mentions of the Pleiades is found in Chinese annals referring to an observation made in 2357 BC. They figure, in a prominent position, on the Nebra Skydisk, found in Germany (Saxen-Anhalt) in 1999 and tentatively dated to 1600 BC for its burial, and between 2100 BC and 1700 BC for its creation. The earliest known safe written reference is a mention by Hesiod (*Works and Days*: 384, 616).

The name is supposed to be derived from the Greek "pleio," meaning "to sail." In the Mediterranean, their rising would have been the sign of the opening of the sea to sailors (during the 5th century BC, at the geographical coordinates of Athens, the heliacal rising (vMR) of the Pleiades would have occurred between the 7th and the 19th of May, and their cosmical setting (vMS) around November 6th. On the Nebra Skydisk, the relation of the Pleiades with the waxing Moon would have pointed in the Bronze Age to the date of March 10., the relationship to the Full Moon (if such is indeed represented), to the date of October 17 and could represent a calendar for agriculture.

According to ancient Greek mythology, the Pleiades were the seven daughters of the Titan Atlas and of Pleione, an Oceanid nymph, Half-sisters of the Hyades and, perhaps, half-sisters of the Hesperides. The Pleiadian and Atlantean mating was also mentioned by Greek historian Diodorus (III. 60 1-5) who claimed two of the seven Pleiades, Celaino and Alcyone, had mated with Poseidon, King of Atlantis and their offspring had populated Atlantis. Another sister was the wife of Sisyphus.

In Egypt, they are connected with the central Osiris-Saturn legend. The great and beloved god Osiris is drowned by the evil god Seth, who then cuts his body to pieces and scatters the fragments. These fragments are the Pleiades, worshiped on the day of Saturn's death.

Saturn is also connected in Bible with the Pleiades. For one thing, their names are often confused, as in the King James version, where Khima is translated as "Pleiades" instead of "Saturn," as shown by Cardona (1978). In the ancient world, the Pleiades are connected with the Flood of Noah. According to Jewish folk-tales, the Third Deluge happened when the male waters from the sky met the female waters which issued forth from the ground (Frazer 1918, I, 143-4). The holes in the sky by which the upper waters escaped were made by God when he removed stars out of the constellation of the Pleiades (Ginzberg, 1909, I, 62).

In Sanskrit literature there are several mentions of a nova or brightening of a star in the cluster of Pleiades. There is also a story about a strange fire associated with this cluster. There are several different versions of this celestial event in Mahabharata alone, describing the inversion of seasons as war broke out between the demons and the gods. Fiery celestial bodies falling on Earth, earthquakes, rise of sea-level, drought of rivers, lakes and wells, destruction of heaven, severe famine are all attributed to the Pleiades ("...a demon was born in the Pleiades..."). These disasters are supposed to have taken place in the north-western part of India, where the Sarasvati joined the sea. The whole plain, now an arid area known as the Thar Desert, was once a fertile plain traversed by this great river. In those days of Mohenjo-Daro and Harappa, the area was one of the richest places in the world.

The Aztec legend of the Five Suns has survived in pictographs painted or carved on stone, in texts of Ancient Mexico and scattered oral traditions kept by the distant descendants of the Aztecs. The primary source for Aztec mythology is the Codex Chimalpopoca. The universe is not permanent or everlasting, but doomed to end, like all living things. Time is a cycle of births, destruction and rebirths, presided over by the Five Suns. The first sun is known as Four Waters, the second sun as Four Jaguars, the third as Four Rains, the fourth as Four Winds and the final fifth, in which we are presently living, as Four Movements, portending that we shall be destroyed by earthquakes. Five was for the Aztec a sacred number, based on the five directions. These directions were the four cardinal points plus the centre. The center was understood to be the star cluster of the Pleiades.

plenum

in the *Quantavolution* theory of *Solaria Binaria*, the contents of the sac of *Solaria Binaria* and later of the Solar System; excluding the distinctly stellar and planetary material in it.

plesiomorphy:

- A primitive character state for the taxa under consideration.

pleurae:

-- In trilobites and other arthropods, pleurae are elongated flat outgrowths from each body segment, that overlie and protect the appendages.

plicate:

-- Folded like a paper fan, as in the leaves of palms, cyclanthoids, and some orchids.

Plinian eruption

is the most violent volcanic eruption known. It is of almost incomprehensible violence such as the eruptions of Stronghyle - Santorini (believed to have occurred in 1500 BC), of Vesuvius (in AD 79) and of Krakatoa in 1883. Named after the latin writer and naturalist Pliny the Elder (Como, 23 A.D. - Stabies, 79 A.D.) Killed by the eruption of Vesuvius.

Pliny the Elder:

Gaius Plinius Secundus, (23 AD - 79 AD), Roman author, natural philosopher, historian; his *Naturalis Historia* in ca 160 volumes is an encyclopedia of the science of nature in his time; his lost historical work was a source for Tacitus, Suetonius and Plutarch. He had an important career in the Roman army and administration. While prefect of the Roman fleet at Misenum, he died by inhalation of poisoned gas while investigating the eruption of Mount Vesuvius which buried Pompei and Herculaneum.

Pluto:

It is time we admit that accepting Pluto as the ninth planet was a big mistake. The announcement from the Lowell Observatory in 1930 that a distant new planet had been found in accordance with the prediction by the observatory's founder was nothing but a brilliant exercise in public relations. Little heed was paid to critics who soon pointed out that the object was much smaller than Percival Lowell had claimed and that there was no way he could have made a meaningful prediction.

The number of planets has been reduced before Pluto was demoted from its status in 2006. The ancients recognized seven - and in some languages these are still equated with the days of the week. After the Copernican revolution the objects associated with Sunday and Monday were dropped and the Earth added, so the total became six. William Herschel's discovery of Uranus restored the count to seven. The addition of the four tiny bodies - Ceres, Pallas, Juno and Vesta - early in the 19th century raised it to 11. Most astronomy books were still counting 11 planets four decades later.

Although the discovery of Neptune provided a significant addition, the avalanche of more and more small bodies between Mars and Jupiter made it essential to deal with them in a different way. The Royal Astronomical Society recatalogued Ceres as Minor Planet No 1, and the then latest discovery of Thalia was No 23. The minor planets, which are also called asteroids or planetoids, have by 2006 been catalogued up to No 134,339.

So the compromise could be that we have in our solar system four "terrestrial" or "rocky mid-size" planets (Earth, Venus, Mars, Mercury), and four "Jovian" or "gas giant" planets (Jupiter, Saturn, Uranus, Neptune). In between we have some "cis-jovian" or "rocky dwarf" planets (certainly Ceres, probably Pallas and Vesta and perhaps four or five more). Then we have a larger bunch of "trans-neptunian" or "icy dwarf" planets. This is the realm of Pluto, its companions Orcus and Ixion, and a handful of other bodies including Xena.

polarity of characters:

-- The states of characters used in a cladistic analysis, either original or derived. Original characters are those acquired by an ancestor deeper in the phylogeny than the most recent common ancestor of the taxa under consideration. Derived characters are those acquired by the most recent common ancestor of the taxa under consideration.

pollen tube:

-- In [seed plants](http://www.ucmp.berkeley.edu/seedplants/seedplants.html)
<<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>>, the extension of the male gametophyte as it emerges from the pollen grain in search of the female gametophyte.

pollen:

-- The **microspore** of [seed plants](http://www.ucmp.berkeley.edu/seedplants/seedplants.html)
<<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>>.

pollination:

-- Process of transferring the pollen from its place of production to the place where the egg cell is produced. This may be accomplished by the use of wind, water, [insects](#)

<http://www.ucmp.berkeley.edu/arthropoda/uniramia/uniramia.html>, [birds](#)

<http://www.ucmp.berkeley.edu/diapsids/birds/birdintro.html>, [bats](#)

<http://www.ucmp.berkeley.edu/mammal/eutheria/chiroptera.html>, or

other means. Pollination is usually followed by **fertilization**, in which sperm are released from the pollen grain to unite with the egg cell.

pollinator:

-- Animal which carries pollen from one seed plant [<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>](http://www.ucmp.berkeley.edu/seedplants/seedplants.html) to another, unwittingly aiding the plant in its reproduction. Common pollinators include insects [<http://www.ucmp.berkeley.edu/arthropoda/uniramia/uniramiasy2.html>](http://www.ucmp.berkeley.edu/arthropoda/uniramia/uniramiasy2.html), especially bees, butterflies, and moths, birds [<http://www.ucmp.berkeley.edu/diapsids/birds/birdintro.html>](http://www.ucmp.berkeley.edu/diapsids/birds/birdintro.html), and bats [<http://www.ucmp.berkeley.edu/mammal/eutheria/chiroptera.html>](http://www.ucmp.berkeley.edu/mammal/eutheria/chiroptera.html).

pollinia:

-- A mass of fused pollen produced by many [orchids](http://www.ucmp.berkeley.edu/monocots/liliflorae/orchidales.html)
<<http://www.ucmp.berkeley.edu/monocots/liliflorae/orchidales.html>>.

polymer:

-- a large molecule constructed from many smaller identical units. These include proteins, nucleic acids, and starches.

polymorphs

organisms which during their life cycle undergo a transition (metamorphosis) between forms. In some species several forms co-exist within one colony at any moment. Also exists among crystals.

polyphyletic:

-- Term applied to a group of organisms which does not include the most recent common ancestor of those organisms; the ancestor does not possess the character shared by members of the group. [More?](http://www.ucmp.berkeley.edu/glossary/gloss1/phyly.html)
<<http://www.ucmp.berkeley.edu/glossary/gloss1/phyly.html>>

polyploids

are species of plants (and sometimes animals) whose chromosome number exceeds twice the basic set of chromosomes (the haploid number) found in the gamete cell (which) produces a new organism by fertilization with an appropriate gamete cell of the opposite gender. It is not uncommon to breed plants with double or four times the original number of chromosomes (euploids).

pore:

-- Any opening into or through a tissue or body structure.

Precambrian

a geological term denoting the time in Earth history prior to 570 million years ago, in conventional dating.

predator:

-- Organism which hunts and eats other organisms. This includes both carnivores, which eat animals, and herbivores, which eat plants.

primary (in Solaria Binaria)

the major body in a binary system, e.g. the Sun in the Solar System. The companion(s) orbit(s) the primary. In some systems neither object can be called primary.

primitive:

-- Describes a character state that is present in the common ancestor of a clade. A primitive character state is inferred to be the original condition of that character within the clade under consideration. For example, "presence of hair" is a primitive character state for all mammals, whereas the "hairlessness" of whales is a derived state for one subclade within the Mammalia.

principals (in Solaria Binaria)

the major components in a multiple or binary star system. Referring to *Solaria Binaria* they would be with time, the Sun and Super Uranus, then after Super Uranus' destruction in a climatic nova eruption, the Sun and Super Saturn. After the Deluge the principals become the Sun and Jupiter whose transactions today dominate motions in the surviving Solar System.

proboscis:

-- Elongated organ, usually associated with the mouth. The proboscis is an important feeding appendage in [echiurans](#)
<<http://www.ucmp.berkeley.edu/annelida/echiura.html>>.

producer:

-- Any organism which brings energy into an ecosystem from inorganic sources. Most [plants <http://www.ucmp.berkeley.edu/plants/plantae.html>](http://www.ucmp.berkeley.edu/plants/plantae.html) and many protists are producers.

prokaryotic:

-- Literally "before the nucleus", the term applies to all [bacteria](http://www.ucmp.berkeley.edu/bacteria/bacteria.html) [<http://www.ucmp.berkeley.edu/bacteria/bacteria.html>](http://www.ucmp.berkeley.edu/bacteria/bacteria.html) and [archaea](http://www.ucmp.berkeley.edu/archaea/archaea.html) [<http://www.ucmp.berkeley.edu/archaea/archaea.html>](http://www.ucmp.berkeley.edu/archaea/archaea.html). Prokaryotic cells have no internal membranes or cytoskeleton. Their DNA is circular, not linear.

protein:

-- class of biochemical compounds constructed from amino acids. Proteins may be structural, such as those that make up hair and cartilage, or they may be reactive, such as the enzymes.

proteinaceous:

-- describes any structure which is composed of protein.

protoplasm:

-- All the contents of a cell, including the nucleus. (see: cytoplasm)

protostele:

-- When a plant's vascular tissue develops in a solid central bundle, it is said to have a protostele. See also siphonostele and eustele.

proximal ejecta

all ejecta that are found up to 5 crater radii from the rim of the impact crater; 90% of all ejecta are found within this region. Note that the limit of proximal ejecta scales with the crater size. Ejecta found at greater distances are called distal ejecta.

pseudoelaters:

-- Moisture-sensitive cells produced in the sporangium of [hornworts](http://www.ucmp.berkeley.edu/plants/anthocerotophyta.html)
<<http://www.ucmp.berkeley.edu/plants/anthocerotophyta.html>>.

pseudoextinction:

-- The apparent disappearance of a taxon. In cases of pseudoextinction, this disappearance is not due to the death of all members, but the evolution of novel features in one or more lineages, so that the new clades are not recognized as belonging to the paraphyletic ancestral group, whose members have ceased to exist. The Dinosauria, if defined so as to exclude the birds, is an example of a group that has undergone pseudoextinction.

pseudopodia:

-- Fingerlike extensions from an amoeboid cell; literally "false feet".

pteridophyte:

-- Plant in which the **sporophyte** generation is the larger phase and in which the **gametophyte** lives an existence independent of its parent sporophyte. Pteridophytes are almost all vascular plants, and include the [lycophytes](#)

<http://www.ucmp.berkeley.edu/plants/lycophyta/lycophyta.html>, [trimerophytes](#)

<http://www.ucmp.berkeley.edu/plants/trimerophytrophyta/trimerophytes.html>, [sphenophytes](#)

<http://www.ucmp.berkeley.edu/plants/sphenophyta/sphenophyta.html>, and ferns.

pteridosperm:

-- An extinct group of seed plants
<<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>> which bore
fern-like leaves.

pulsars

stars, a significant part of whose observed energy output is not continuous but is emitted as distinct, short and regular flashes or pulses of electromagnetic radiation. Many pulsars also emit some radiation weakly and constantly, forming a background for the more intensive pulses.

punctuated equilibrium:

-- A model of evolution in which change occurs in relatively rapid bursts, followed by longer periods of stasis.

pupa:

-- In metamorphosing insects, a stage between the **larva** and adult during which the organism undergoes major developmental changes.

pycnoxylic:

-- Wood in which there is little or no **parenchyma** tissue among the xylem is called pycnoxylic. Conifers and [flowering plants](http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html) [<http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html>](http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html) have pycnoxylic wood. Contrast with [mannoxylic](http://www.ucmp.berkeley.edu/glossary/glossary_M.html) [<http://www.ucmp.berkeley.edu/glossary/glossary_M.html>](http://www.ucmp.berkeley.edu/glossary/glossary_M.html).

pygidium:

-- In trilobites, the posterior division of the body, formed by fusion of the **telson** with one or more posterior **pleurae**.

quadrature

the angular aspect by which two celestial bodies are observed from a third body to be ninety degrees apart in the sky. An example is the Sun and the quarter-phased Moon as seen from the Earth.

quasar

a celestial object which appears “star-like” but is not explainable in terms of the usual stellar properties. Their spectrum tends strongly towards the red. Many quasars have a visible “tail” -supposedly a jet of material expelled from the quasar. Often quasars emit anomalous amounts of radio waves.

Quintus Smyrnaeus:

or Quintus Galaber (or Calaber), latter part of the 4th century AD, some ascribe him to the 3th century AD, or even earlier. He wrote a following to the Iliad, known as *Posthomerica*. He was known to ancient byzantine writers, but the only known manuscript of his work was discovered in 1450 in Otranto, Puglia, by Cardinal Bessarion; *Posthomerica*, v.443.

Radar:

Evidences of buried basins have been found by radar in the Northern Lowlands of Mars. The indication here is of recent burial of large lakes and or impact basins. The source is Nature 05356.

radiation

in the *Quantavolution* theory of *Solaria Binaria*, the word is used to denote electromagnetic waves of any wavelength. It includes, in order of descending wavelength, radiowaves, microwaves, infra-red, visible light, ultra-violet, X-rays, and gamma-rays.

radicle:

-- The end of a plant embryo which gives rise to the first root.

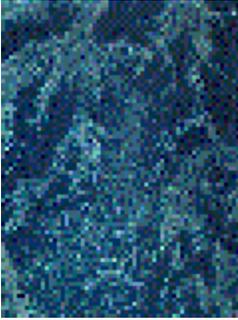
radiospermic:

-- Having seeds which are round or ovoid. Contrast with **platyspermic**.

rain shadow:

-- n. The dry region on the leeward side of a mountain range, where rainfall is noticeably less than on the windward side. For example, the White Mountains in east central California are in the rain shadow of the Sierra Nevada.

Ramgarh, India (impact crater)



This structure, which appears to the right edge of the image, is situated in a semi-arid region in eastern Rajasthan. A ring of hills of about 3 kilometers in diameter and a small central peak are conspicuous. Although evidence of shock metamorphism that would prove an impact origin has not yet been presented, the surface morphology suggests that this is a likely impact crater. (*Space shuttle image STS20-44-005.*)

Location: 25°20'N, 76°37'E **Rim diameter:** 5.5 kilometers

Age: unknown

rank:

-- In traditional taxonomy, taxa are ranked according to their level of inclusiveness. Thus a **genus** contains one or more **species**, a **family** includes one or more genera, and so on.

Raspil, Charles:

American mythologist, who found in a survey worldwide of emblems and symbols the common presence of what he named "trisms" and "spatters," varyingly crude depictions of catastrophic sky events of the Bronze Age.

raven

The *cornix*, crow, is mentioned by Horace as the prophet which, by its cries, foretells rain, "*cornix augur aquae*". Vergil also mentions it in the same context, *Georgic* I:388. In Norse it is *kraka*. The Greek *korax* is a crow or raven, and the word can mean something strange and unexpected.

Odin had two ravens, Hugin and Muninn. *Huga* is to meditate, *muninn* is to remember.

rbcL:

-- a gene which is located in the chloroplast of photosynthetic organisms. It codes for the large subunit of the protein rubisco, and its sequence has been useful in plant phylogenies.

relatedness:

-- Two clades are more closely related when they share a more recent common ancestor between them than they do with any other clade.

repeat sequences:

- The length of a nucleotide sequence that is repeated in a tandem cluster.

reproduction:

-- The manufacture of offspring as part of an organism's life cycle. This is not the same as **dispersal**. Reproduction may be sexual, involving the fusion of gametes, or asexual.

resurrection techniques

The techniques for resurrection fall into two main groups, that of collecting or summoning the electrical deity, and that of applying the electrical force. Sympathetic magic was used, and is the explanation of some of the actions.

The deity could be collected by charging a chest from the atmosphere. The chest or ark was constructed on the principle of the Leyden jar. Obviously the quickest and most dangerous charging would be at the time of an electrical storm. Egyptian art shows the god Osiris rising from a chest, holding an ankh in each hand, and a relief from Dendera shows technicians carrying a length of what appears to be striated cable, with pictures of snakes at the end to show that the god is present.

A more symbolic method was that of enclosing a statue of Osiris in a length of hollow tree trunk, and raising the trunk until it was upright. I stand, *sto*, is closely related to *zo*, I live.

The Egyptian practice of embalming must be included among techniques aimed at assisting the soul to continue to exist after death in a recognisable form.

In Egypt, Osiris was the god on top of the staircase. Pyramids were fire-collectors; the aim was that a pharaoh buried in a pyramid should receive the full force of the electrical god.

Burial in a tholos tomb or in a shaft grave at Mycenae would have the aim of bringing the dead person into contact with the deity in the earth, just as the burning of a corpse would have the aim of aiding the soul in its flight to the region of heavenly fire.

Eating the bull, drinking the blood of goats, and so on, were more a matter of obtaining superhuman strength than of obtaining immortality, but are worth mentioning because they are all part of the general effort to cross the *limen*, threshold, between our world and that of the spirits of the dead and of the gods.

Ghosts recovered the strength to speak by drinking blood. *Sanguis*, blood, is basically the same as *sanga* and *sankh*. Greek *haima*, blood, is the same as Hebrew *chaim*, life.

The dancing of the Arval brothers at Rome was associated with the renewal of life in the fields in the spring. It was presumably aimed at rousing the chthonic deities Cerus and Ceres, the deities of crops and vegetation, after their sleep-death of winter. The techniques for resurrection

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Much of the relevant material has been mentioned already, but in this chapter it may fit into a new pattern, and there are a few new details.

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The dance of the Salii, the leaping priests of the Romans, was accompanied by a hymn. It contains the words *Limen salii! Sta! Berber! Vile vale! Staile! Itrile!* Vide Mayani, *The Etruscans Begin to Speak*. The aim would be to persuade the *Manes* to appear and give advice and help. To do this the *Manes* would have to cross the *limen*, threshold. The Salii were showing the dead what they wanted them to do by leaping over an invisible threshold, stopping and looking backwards, returning and repeating the movements. The basic idea behind the verb *salio*, leap, is that of crossing. Hebrew *shal* is to transgress. It is noteworthy that representations of priestly dancers show them with the head turned, looking backwards.

The painting of a *tanasar* in the Tomb of the Augurs at Tarquinia shows him at work. In front of him is a bird, perhaps symbolising a soul. His left palm is on top of his head, his right hand is stretched out forwards.

The head was recognised as the electrical headquarters of the human body, as shown by the words *kephale*, *katec* and *caput*. The Etruscan *katec* is that which covers the *ka*, and the Latin *caput* is a well or source of *ka*, as was Pytho, as Delphi used to be called. The *tanasar* appears to be transferring electrical power from his head through his left hand so that he can direct it at the object with his right hand. The action is reminiscent of that of the Egyptian god Amen-Re as he holds out the *ankh*, symbol of life, to Psammetichus III. [From the temple of Osiris at Karnak]

Libations were a method of rousing the dead. Greek *spendo* and Hittite *spanza*, libation, both show that radiation 'down from the five' was directed onto the grave. The Egyptian hieroglyph *tebh* is a vase containing an *udjat*, an eye as a symbol of radiation. *Tebh* means an offering, and is evidence that radiation was what the king directed onto the ground in the relief from Malatya. It is possible that the significance of mirrors, of which the Etruscans have left us so many, may be that a mirror gives the holder not only a reflection of his or her face, but also a degree of control over the direction of the divine radiation.

The Egyptian *un hra* is a mirror. *Hra* means 'upon', or 'face'. *Un*, *Uni* are forms of the name of Juno.

Singing was one of the methods of raising the *ka*, by sympathetic magic. 'Sing' may be related to Latin *sancio* and to *sankh*.



reticulation:

-- Joining of separate lineages on a phylogenetic tree, generally through hybridization or through lateral gene transfer. Fairly common in certain land plant clades; reticulation is thought to be rare among metazoans.

reticulopodia:

-- Long thread-like pseudopodia that branch apart and rejoin, forming a fine network. They are characteristic of [forams](http://www.ucmp.berkeley.edu/foram/foramintro.html)
<<http://www.ucmp.berkeley.edu/foram/foramintro.html>>.

Rhabanus Maurus:

(ca 780 AD - 856 AD), Benedictine monk, theologian, archbishop of Mainz (Germany). Author of the encyclopaedia: *On the Nature of Things*; *De Lapidibus* and *De Planetis et Stellis*

rhizoid:

-- n. A cellular outgrowth of a plant that usually aids in anchoring to the surface and increasing surface area to acquire water or nutrients; found in mosses, liverworts, and hornworts.

rhizome:

-- n. A horizontal underground stem, such as found in many ferns, where only the leaves may stick up into the air; sphenophytes (horsetails and their relatives) spread via rhizomes, but also produce erect stems.

Rhone:

When the Greek poets sometimes give the Rhone, or even some river in Spain, where the Celts found amber or traded it, the name Eridanus, this does not mean in any way, as proposes Adelung, an ignorance of geography, only a permissible poetic freedom.

Ries, Germany (impact crater)

The Ries impact structure, southern Germany, does not show up well in space-based images. This panoramic oblique aerial view of the Ries Crater (from the southwest) shows the outline of the crater rim emphasized by clouds. The crater rim has a maximum elevation of about 200 meters above the crater floor. No central uplift is visible, but there is an irregular inner ring about 12 kilometers in diameter, which is composed of a few hills rising about 50 meters above the surrounding surfaces. Shortly after the impact event 15 million years ago, the crater was covered by sedimentary rocks, which were only removed by erosion about 1 or 2 million years ago, leading to the excellent preservation state of the structure. A number of drill cores have recovered samples from the crater's interior and good exposures of ejected breccias occur within and around the structure. The medieval city of Nördlingen, situated somewhat off-center in the southwestern part of the crater, has an excellent crater museum. It is also worth noting that the church of St. George, in the center of the city, is built mainly from blocks of suevite, and that the diameter of the old city within its medieval walls (about 1 kilometer) coincides with the estimated diameter of the bolide that formed the crater. The age of the Ries Crater is identical to the age of the 3.4-kilometer-diameter Steinheim Crater, which is about 40 kilometers southwest of the center of the Ries. The Ries Crater has also been identified as the source crater of the Central European tektites (moldavites). (Image courtesy of Rieskrater Museum, Nördlingen, Germany.)

Location: 48°53'N, 10°37'E **Diameter:** 24 kilometers **Age:** 15 ± 0.2 million years

Right Ascension of The Sun:

The Celestial Sphere is a sphere where we project objects in the sky. We project stars, the moon, and sun, on to this imaginary sphere. The Right Ascension of the Sun is the position of the sun on our celestial sphere.

riparian:

-- Having to do with the edges of streams or rivers.

RNA:

-- "ribonucleic acid". The nucleic acid which carries the DNA message into parts of the cell where it is interpreted and used. The 18S ribosomal RNA sequence has been used in many groups of organisms to reconstruct phylogeny.

Rodinia:

-- n. A supercontinent that existed during the Late Precambrian before the supercontinent Pannotia; the oldest supercontinent for which we have a good record; Russian for "homeland."

root:

-- Usually the below ground portion of a plant. Contrast with **shoot**.

rosette:

-- A series of **whorls** of leaves or leaf-like structure produced at the base of the stem, just above the ground.

Roter Kamm, Namibia (impact crater)



Located in the Namib Desert, the raised crater rim is clearly visible against darker background vegetation. The crater is almost completely filled by eolian deposits. Only few basement outcrops exist along the crater rim. Target rocks include primarily Precambrian crystalline rocks and modest amounts of younger sedimentary rocks. Outcrops of impact melt breccias are found exclusively on the crater rim. Broad, shifting sand dunes cover the crater floor. This slide shows an oblique view of the crater, from about 150 meters above ground, looking southeast. (*Aerial image by C. Koeberl.*)

Location: 27°46'S, 16°18'E **Rim diameter:** 2.5 kilometers **Age:** 3.7 ± 0.3 million years



Spaceborne Imaging Radar-C/X-band Synthetic Aperture Radar (SIR-C/X-SAR) radar image. Radar imaging can contribute significantly to the study of desert landforms, such as the Roter Kamm Crater, because radar waves can penetrate thin layers of dry sand to reveal details of geologic structure that are invisible to other sensors. Processing involved merging multiple radar images to generate the final colored image. Roter Kamm's rim appears as a radar-bright, circular feature located in the lower central portion of the image. Geophysical data indicate that the crater fill is several hundred meters thick. Conventional imagery could not detect the brightly colored surfaces immediately surrounding the crater, because they are covered by sand. The faint blue surfaces adjacent to the rim might indicate the presence of a layer of rocks ejected from the crater during the impact. The darkest areas are thick, windblown sand deposits that form dunes and sand sheets. The sand surface is smooth relative to the surrounding granite and limestone rock outcrops and appears dark in radar image. The green tones are related primarily to larger vegetation growing on sand soil, and the reddish tones are

associated with thinly mantled limestone outcrops. The bright white, irregular feature in the lower right corner is a small hill of exposed rock outcrop. (*P-45149* courtesy of NASA/JPL.)

rubisco:

-- protein which fixes carbon in photosynthetic organisms. It binds molecules of carbon dioxide to a five-carbon molecule. Rubisco is the most common protein on earth.

sac

in *Solaria Binaria*, the container of all that can be included in *Solaria Binaria*, and later on the Solar System; as distinguishable from the medium of space external to it.

Saint Augustine of Hippo:

(354 AD - 430 AD), Aurelius Augustinus, bishop and doctor of the Church, one of the most important figures in the development of Western Christianity; *The City of God*.

salinity:

-- A measure of the salt concentration of water. Higher salinity means more dissolved salts.

saprophyte:

-- Organism which feeds on dead and decaying organisms, allowing the nutrients to be recycled into the ecosystem. [Fungi](http://www.ucmp.berkeley.edu/fungi/fungi.html) [<http://www.ucmp.berkeley.edu/fungi/fungi.html>](http://www.ucmp.berkeley.edu/fungi/fungi.html) and [bacteria](http://www.ucmp.berkeley.edu/bacteria/bacteria.html) [<http://www.ucmp.berkeley.edu/bacteria/bacteria.html>](http://www.ucmp.berkeley.edu/bacteria/bacteria.html) are two groups with many important saprophytes.

saxitoxin:

-- neurotoxin found in a variety of dinoflagellates. If ingested, it may cause respiratory failure and cardiac arrest.

scavenger:

-- An organism that feeds upon dead and dying organisms.

Scylax of Caryanda:

(VI. century BC). In 515 BC, he explored the course of the Indus River. *The Periplus of Pseudo-Scylax* is a compilation written in the III. century AD.

Scymnus Chius:

or Scymnus of Chios (fl. ca. 185 BC) is the author of *Orbis Descriptio* a description of the world known as *Periegesis and of Orbis Descriptio*. An anonymous verse *Periegesis*, originally ascribed to Marcianus of Heraclea, and published in Augsburg in 1600, was long thought to be the lost work of Scymnus, but this was shown not to be the case by Meineke (1846), and the author is now usually known as Pseudo-Scymnus. *Note of the Translator.*

seaweed:

-- Any large photosynthetic protist
<<http://www.ucmp.berkeley.edu/allife/eukaryotasy.html>>,
including rhodophytes
<<http://www.ucmp.berkeley.edu/protista/rhodophyta.html>> and kelps
<<http://www.ucmp.berkeley.edu/chromista/phaeophyta.html>>. Seaweeds
are not true plants <<http://www.ucmp.berkeley.edu/plants/plantae.html>>,
but like plants they can make their own food. More info?
<<http://www.ucmp.berkeley.edu/glossary/gloss3/pigments.html>>

secondary growth:

-- Growth in a plant which does not occur at the tips of the stems or roots.
Secondary growth produces wood and bark in [seed plants](http://www.ucmp.berkeley.edu/seedplants/seedplants.html)
<<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>>.

sedentary:

-- Living in a fixed location, as with most plants, tunicates, sponges, etc.

Contrast with [motile](#)

http://www.ucmp.berkeley.edu/glossary/glossary_M.html.

seed:

-- A structure produced by [seed plants](http://www.ucmp.berkeley.edu/seedplants/seedplants.html) [<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>](http://www.ucmp.berkeley.edu/seedplants/seedplants.html) which encapsulates the embryo. The seed often provides nourishment during germination, but may lie dormant for many years first.

segmentation:

-- In many animals, the body is divided into repeated subunits called **segments**, such as those in centipedes, [insects](http://www.ucmp.berkeley.edu/insects/insects.html) [<http://www.ucmp.berkeley.edu/arthropoda/uniramia/uniramia.html>](http://www.ucmp.berkeley.edu/arthropoda/uniramia/uniramia.html), and [annelids](http://www.ucmp.berkeley.edu/annelida/annelida.html) [<http://www.ucmp.berkeley.edu/annelida/annelida.html>](http://www.ucmp.berkeley.edu/annelida/annelida.html). Segmentation is the state of having or developing a body plan in this way.

selection:

-- Process which favors one feature of organisms in a population over another feature found in the population. This occurs through differential reproduction-those with the favored feature produce more offspring than those with the other feature, such that they become a greater percentage of the population in the next generation.

Sennacherib

In the *Old Testament*, *II Kings* XIX:19:6ff., we read how Isaiah prophesied to king Hezekiah that the army sent against Jerusalem by Sennacherib under the command of Rabshakeh would be destroyed by the Lord.

In *II Kings* XIX:35 ff., we read that the angel of the Lord went out and smote the Assyrians; 185,000 were dead next morning. In XIX:7, the words of Isaiah are: "Behold, I will send a blast upon him ..." It is significant that in the following chapter, XX:9 ff., Isaiah prophesies that the shadow on Hezekiah's sundial will go back ten degrees. In verse 11 we read that the Lord brought the shadow ten degrees back.

Herodotus II:141, gives another version of Sennacherib's defeat. He learnt from Egyptian priests that Sennacherib's army had been destroyed in a single night. He saw a stone statue of Sethos set up in an Egyptian temple, holding a mouse. Herodotus was told that a plague of field mice gnawed away the bow strings, shield straps, etc, and the soldiers, their weapons useless, had to flee.

In the following chapter, 142, Herodotus mentions the Egyptian report that on four occasions since the time of the first king of Egypt, the sun had changed its position of rising and setting. It is interesting to compare this with the fact that in *II Kings* XIX & XX, Sennacherib's defeat is reported just before an account of a reversal of the apparent motion of the sun.

Is there any way of harmonising these two accounts of the cause of the destruction of Sennacherib's army? The object in the sky may have looked like a weasel, wolf or mouse, the size being inevitably a subjective matter in the description. Cicero, *De Divinatione* I:XLIV, says that in the Marsic War, shields, with the leather gnawed away (*derosos*), fell from the sky, a most sinister portent.

In the *Iliad*, Hector offers a reward to anyone who will make a night reconnaissance of the Greek ships. Dolon volunteers. He takes his bow (line 333), puts on the hide of a grey wolf, puts on his head a ferret-skin cap. '*Kunee*' is a leather cap. '*Ktideos*' is a marten or weasel or ferret. The weasel-skin cap and wolf's pelt worn by Dolon may be a clue to the circumstances surrounding the loss of the army of Sennacherib. Apollo Smintheus, an epithet of Apollo, may be from Sminthe, a town in the Troad, or from *sminthos*, a Cretan word meaning a mouse, or both may come from the Cretan word 'Mouse-killer' is a possible translation for Smintheus. Apollo Smintheus has a female equivalent in Mouse Artemis, mentioned by Pausanias. (See mouse).

In Act IV of Seneca's tragedy of *Thyestes*, the chorus express their fear that Chaos will come again, and that Nature will for the second time wipe out all the lands. The sun has turned aside from its usual path, and gone back to set in the east.

Such a passage can best be considered in conjunction with the previously quoted stories of Isaiah and the sundial of king Hezekiah, and the information given to Herodotus. The Greeks and Romans, and other early ancient writers who dealt with the problem, first described these happenings as historical facts. Psychological interpretations and rational explanations came later.

sepal:

-- The outermost structures of a flower. [More info?](#)

[<http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>](http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html)

septum:

-- Partition which divides up a larger region into smaller ones, such as in the central body cavity of some anthozoa.

Setanta:

Cuchulainn's boyhood name. notice similarity to Seth.

sexual reproduction:

-- A type of reproduction in which two parents give rise to offspring that have unique combinations of genes inherited through the gametes of the two parents. Sexual reproduction involves **meiosis** and **syngamy**.

shatter cone

striated conical fracture surfaces produced by meteorite impact into fine-grained brittle rocks, such as limestone.

shield

any of several extensive regions where ancient Precambrian crystalline rocks are exposed at the Earth's surface.

shock metamorphism

the production of irreversible chemical or physical changes in rocks by a shock wave generated by impact, or detonation of high-explosive or nuclear devices.

shoot:

-- Usually, the above ground portion of a plant, bearing the leaves.
Contrast with **root**.

Siberia:

-- n. A separate continental plate that existed from the Latest Precambrian to the Carboniferous, composed of a large part of central Russia, namely Siberia.

Sibylline Oracle:

Franz-Xavier Kugler, was a Jesuit astronomical historian whose empirical studies were crowned at the end of his life by a theory entitled "The Sibylline Battle of the Star and Phaethon Seen as Natural History," (Munster, 1927). After explaining the myth of Phaethon as a natural disaster affecting all the cultures of the world, Kugler chose to concentrate upon an analysis of the last lines of the fifth book of the sibylline oracles, called by other experts "the insane finale." and "entirely nonsensical." But to Kugler the lines are "an elegant dressing of real natural events according to a fully unified plan." The lines purport to describe the coming end of the world and were written in Greek in the century before Christ. Kugler describes the crisis as "the battle of the stars" which began when a body as bright as the sun and as large apparently as sun and moon, appeared in the eastern sky and long streams of flame crossed the sky between the bodies. The oracle reads "the morning star fought the battle riding on the back of Leo." This may have been the beginning of the frequent association of planet Venus with the Lion. This may have been when Venus as the Morning Star gained the reputation as the divinity of war and leader of the army of stars, whereas as the Evening Star was a goddess of love and motherhood. The Battle of the Stars ended when the attacker - the strange body - was defeated fell into the ocean, meanwhile setting the entire earth on fire.

siderophile elements

Literally, "iron-loving" elements, such as iridium, osmium, platinum, and palladium, which are relatively common in undifferentiated meteorites, and, in chemically segregated asteroids and planets, are found in the metal-rich interiors. These elements are extremely rare on Earth's surface.

silica:

-- amorphous silicon dioxide (glass). It is a structural component in many organisms, such as [diatoms](#)

[<http://www.ucmp.berkeley.edu/chromista/bacillariophyta.html>](http://www.ucmp.berkeley.edu/chromista/bacillariophyta.html)

and [horsetails](#)

[<http://www.ucmp.berkeley.edu/plants/sphenophyta/sphenophyta.html>](http://www.ucmp.berkeley.edu/plants/sphenophyta/sphenophyta.html).

siphon:

-- Opening in molluscs
<<http://www.ucmp.berkeley.edu/mollusca/mollusca.html>> or
in urochordates
<<http://www.ucmp.berkeley.edu/chordata/urochordata.html>> which draws
water into the body cavity. In many molluscs, the siphon may be used to
expel water forcibly, providing a means of propulsion.

siphonostele:

-- When a plant's vascular tissue develops as a central cylinder, it is said to have a siphonostele. See also protostele and eustele.

sister group:

- The two clades resulting from the splitting of a single lineage.

skeleton:

-- Support structure in animals, against which the force of muscles acts. Vertebrates have a skeleton of [bone](http://www.ucmp.berkeley.edu/vertebrates/vertmm.html) or cartilage; arthropods have one made of [chitin](http://www.ucmp.berkeley.edu/arthropoda/arthropodamm.html); while many other invertebrates use a **hydrostatic** skeleton, which is merely an incompressible fluid-filled region of their body.

snake

The snake can represent an electrical force in the sky - the tail of a comet, for example - and is also a symbol of the electrical deity, Gaia, in the earth. As in the case of Nechushtan, the brazen serpent set up by the Hebrews in the wilderness to cure those affected by snake bite, the snake is a symbol of both life and death.

Homer has the word *kelethmos*, magic, in *Odyssey* XI:334. Plato has the verb *keleo*, to charm snakes, *Republic* 358 B. It is probable that *ka* is present in the Greek *keleo*.

A statuette of the Cretan goddess holding snakes or bows has her wearing a flounced dress. She looks almost like a telescopic column or caryatid. The effect is like that of the *djed column* or tree in Egyptian art, as seen at Dendera and elsewhere.

The significance of the column is electrical. Temple columns led up to the sky, where deities were shown high up on the temple.

The column of light mentioned by Plato towards the end of the *Republic* is a road from earth to the stars, along which souls travel after death before reincarnation. In Norse myth the world tree has a snake at the bottom and an eagle at the top, each an electrical symbol.

Two daughters of the Athenian king Kekrops were given by Athene a chest, with orders to guard it but not to open it. They disobeyed and opened the chest. The stories, which vary slightly, agree on one thing: a snake was in the chest. When the girls saw it they went mad, jumped over the Acropolis wall and were killed.

There is evidence from elsewhere, e.g. from Egypt, that arks or chests contained snakes. Such a statement probably means that there was a dangerous electrical god who was caught and stored in a container based on the principle of the Leyden jar. Chests were frequently decorated with a picture of a snake, probably to have an apotropaic effect.

Snakes, as well as being shown in the hands of the Cretan goddess, were encouraged in Crete as guardians of the house. Snake tubes are found which encouraged snakes to emerge from the earth. Putting out food for a snake would win the favour of a creature representing a powerful and dangerous force. Not only could they catch mice; the procedure might also be thought to encourage an epiphany of the earth goddess.

Ariadne is the wife of Dionysus. The couple are portrayed under a vine. Her multiple personality is shown by the four goddess figurines in a temple at

Kannia near Gortyn. All have snakes in their crowns; one also has a dove on her cheek and snakes on her arms. Ariadne's skill with snakes recalls Moses and Aaron, Jannes and Jambres, *Exodus VII:10f*.

At the temple at Delphi, the motto *meden agan* means 'nothing to excess'. *Agan*, 'too much', is a reversal of the Sanskrit *naga*, snake. The serpent in the sky went too high; the prophet Isaiah, XIV, rejoiced that it was brought low. Agenor, king of Phoenicia and father of Kadmos [who turned into a snake], has a name composed of *agan*, the snake, and *or*, a Phoenician word meaning 'light', or 'skin'.

Solar Noon (And Solar Time):

Solar Time is based on the apparent motion of the Sun around the Earth. The apparent Sun's motion, and position in the sky, can vary due to a few things such as: the elliptical orbits of the Earth and the Sun, the inclination of the axis of the Earth's rotation, the perturbations of the moon and other planets, and, of course, your latitude and longitude of observation. Solar Noon is when the Sun is at the highest in the sky, and is defined when the hour angle is zero. Solar Noon is also the midpoint between sunrise and sunset.

Solinus, Gaius Julius:

(fl. 3rd century AD), Latin grammarian and compiler, author of *De mirabilibus mundi* ("Of the Wonders of the World").

Southwest Pacific Bare Zone:

A unique area the size of the Mediterranean Sea in the basalt of the ocean bottom far east of New Zealand shows a lack of sediment. Whereas twelve meters of sediment were expected, some 50 cm or less were found. It is thought that the conditions have prevailed there for more than 80 million years by the fourteen coauthors from five universities and research institutions. Several explanations have been offered: 1, the surface of waters (for all that time?) may have been poor in nutrients. 2, the deepest water here contains less carbonate and silica than other locations, so skeletons dissolve if they reach the bottom. 3. The Bare Zone is far from a land mass and therefore wind blown dust is little. 4, furthermore, there is in the region little if any hydrothermal activity to spew out minerals that would fall back to the bottom. 5. The area is out of the path of major currents carrying Antarctic icebergs that would have dropped earth detritus. None of these explanations is at all satisfactory. There is an absence of fracture. This might indicate an explosion possibly sweeping up the continental crust or sial throughout this vast region and millions of kilometers around, in part to a lesser degree. The region would conform to the theory of lunagenesis where the larger part of the vast electrical explosion that carried out the material for forming the Moon centered hereabouts. (See the adjoining map and the theory as presented in the Quantavolution Series of Alfred de Grazia.)

space-charge sheath

a region in which either electrons or electron-deficient atoms predominate and through which electric currents flow. The space-charge limits the current through the sheath. There, electric field strength is not zero.

space infra-charge

an electrical property of space itself, not determined by the presence of electrical charges or conductors residing in that space. The infra-charge is homologous with Paul Dirac's electron theory (1928) which postulated that the vacuum was a sea-of-electrons possessing negative energies. These electrons are not normally detectable but can be prompted into existence (that is, converted into detectable electrons) under certain conditions. The electrons of Dirac's sea affect the energy states of atoms in space. To quote Nobel laureate Leon Cooper: "Thus the vacuum, rather than being an inert void, responds to the presence of charges or masses and modifies their behaviour".

specialist:

-- Organism which has adopted a lifestyle specific to a particular set of conditions. Contrast with [generalist](#)

http://www.ucmp.berkeley.edu/glossary/glossary_G.html.

specific charge ratio

a method of comparing the electric charge inherent in a celestial body with some other physical property such as its volume or the number of atoms which it contains. The ratio would thus be expressed in coulombs per cubic metre, coulombs per kilogram, or possibly as excess electrons per kilogram molecular mass (kilomole).

spermatophyte:

-- A seed plant

<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>.

spicule:

-- Crystalline or mineral deposits found in sponges, sea cucumbers, or urochordates. They are structural components in many [sponges](http://www.ucmp.berkeley.edu/porifera/porskel.html) [<http://www.ucmp.berkeley.edu/porifera/porskel.html>](http://www.ucmp.berkeley.edu/porifera/porskel.html), and may serve a protective function in other organisms.

Spider, Western Australia, Australia (impact crater)



The deeply eroded Spider structure occurs within sedimentary rocks of the semi-arid Kimberley plateau, northwestern Australia. The web-like radiating pattern of ridges that inspired the structure's name is approximately

5 kilometers wide and is most probably the central uplift of an eroded large complex impact crater. (*Space shuttle image S08-42-2101.*)

Location: 16°43'S, 126°06'E **Original rim diameter:** ~13 kilometers **Age:** >570 million years

spiracle:

-- In insects and some other terrestrial arthropods, a small opening through which air is taken into the **tracheae**. Insects have several spiracles, arranged along the sides of the abdomen.

spiral

Spiral decoration is typical of Minoan art. It is also typical of Neolithic cultures in the Danube area, in Thessaly in the Chalcolithic period, in Thrace, and in the Bronze Age Cyclades and Crete. Hutchinson, in *Prehistoric Crete*, p.126, refers to 'torsion' as a decorative device on vases from the Danube area and from S.E.Anatolia. It is common in Cretan pottery. The Pelasgians, "divine" according to Homer, were among the inhabitants of Crete, and had linguistic connections with the Danube area.

The meander and spiral pattern were popular in both Egypt and Crete in the period when Amenemhet III built his palace or temple, sometimes referred to as a labyrinth, in the Fayum, and a Cretan king built a labyrinth at Knosos. The Egyptian palace has been described as a funerary temple, and both had enough rooms for them to be called stores, possibly for food.

Theseus' crane dance may have been associated with the 'Troy game', of which a maze was a feature. One could speculate that a maze or labyrinth might symbolise the winding course of a deity or monster in the sky, with an orbit coming closer to earth at each return.

spongin:

-- proteinaceous compound of which the spicules in Demospongiae <http://www.ucmp.berkeley.edu/porifera/demospongia.html> are composed.

spongocoel:

-- Central body cavity of sponges. [More Info?](http://www.ucmp.berkeley.edu/porifera/poriferamm.html)
<<http://www.ucmp.berkeley.edu/porifera/poriferamm.html>>

sporangiophore:

-- A stalk to which sporangia are attached.

sporangium:

-- A chamber inside of which spores are produced through [meiosis](http://www.ucmp.berkeley.edu/glossary/glossary_M.html)
<http://www.ucmp.berkeley.edu/glossary/glossary_M.html>.

spore:

-- n. A single cell that is dispersed as a reproductive unit, or that encapsulates a cell during unfavorable environmental conditions; in organisms with an alternation of generations; the products of meiosis are spores.

sporophyll:

-- Any leaf which bears sporangia is called a sporophyll.

sporophyte:

-- The diploid stage in the life cycle of an organism undergoing an alternation of generations. The sporophyte is multicellular and develops from a zygote. The mature sporophyte meiotically produces haploid spores that later generate the [gametophyte](http://www.ucmp.berkeley.edu/glossary/glossary_G.html) generation.

stamen:

-- Part of a flower, the tip of which produces pollen and is called the **anther**. [More info?](#)

[<http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>](http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html)

starch:

-- a complex polymer of glucose, used by plants and green algae to store surplus sugar for later use.

stasis:

- A period of little or no discernible change in a lineage.

stellar wind

the flow of material from a star to the Galaxy. In the electric star the stellar wind exists as one means of the star accumulating charge from the nearly "empty" space which surrounds it. By sending electron-deficient atoms to the Galaxy the star gains electrons relative to the material it contains. From the few stellar winds that have been measured, it seems as if the mass loss increases as the square root of the luminosity. In terms of the electric star model presented here, it is tempting to think that luminosity varies as the square of the star-to-galaxy current. There is some evidence that mass loss is enhanced when a close companion is present (Hutchings).

stem group:

-- All the taxa in a clade preceding a major cladogenesis event. They are often difficult to recognize because they may not possess synapomorphies found in the crown group.

Stephanus of Byzantium:

(fl. 6th century AD), author of *Ethnica*, a geographical dictionary, largely lost.

stigma:

-- The sticky tip of a **pistil**. Or, the dense region of pigments found in many photosynthetic protists which is sensitive to light, and thus functions somewhat like a miniature eye. [More info?](http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html)
<<http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>>

stipules:

-- Paired appendages found at the base of the leaves of many [flowering plants](http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html) <<http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html>>.

stishovite

a dense, high-pressure phase of quartz that has so far been identified in nature only in shock-metamorphosed quartz-bearing rocks from meteorite impact craters.

stomata:

-- Openings in the epidermis of a stem or leaf of a plant which permit gas exchange with the air. In general, all plants except liverworts have stomata in their sporophyte stage.

streptophytes:

-- The clade [<http://www.ucmp.berkeley.edu/glossary/glossary_C.html>](http://www.ucmp.berkeley.edu/glossary/glossary_C.html) consisting of the plants [<http://www.ucmp.berkeley.edu/plants/plantae.html>](http://www.ucmp.berkeley.edu/plants/plantae.html) plus their closest relatives, the charophytes [<http://www.ucmp.berkeley.edu/greenalgae/charophyta/charophyta.html>](http://www.ucmp.berkeley.edu/greenalgae/charophyta/charophyta.html).

String Theory:

In the late 1970s and early 1980s, physicists found themselves facing a crisis: the two most important ideas of 20th century physics, relativity and quantum theory, were known to be fundamentally incompatible. Quantum theory describes the universe as intrinsically discontinuous: energy, for example, can come in bits just so small, but no smaller. Relativity treats time and space and gravity as a smooth, unbroken continuum. Each theory has its purposes, and they usually don't overlap. But when dealing with very large masses or time periods that are infinitesimally small, like the core of a black hole or the first moments of the universe, neither works well.

The answer, argued theorists John Schwartz of Caltech and Michael Green of Cambridge University, was to think of the basic units of matter and energy not as particles but as minuscule, vibrating loops and snippets of stuff resembling string, which turn out to exist not just in our familiar four dimensions of space and time but in 10 or more dimensions. Bizarre as it seemed, this scheme appeared on first blush to explain why particles have the characteristics they do. As a side benefit, it also included a quantum version of gravity and thus of relativity. Just as important, nobody had a better idea. So lots of physicists, including Woit and Smolin, began working on it.

Since then, however, superstrings have proven a lot more complex than anyone expected. Complexity isn't necessarily the kiss of death in physics but the new, improved theory, posits a nearly infinite number of different possible universes, with no way of showing that ours is more likely than any of the others.

strobilus:

-- A tightly clustered group of **sporophylls** arranged on a central stalk; commonly termed a "cone" or "flower".

style:

-- The narrow stalk of the **pistil**, located above the ovary but below the **stigma**.

substrate:

-- "Supporting surface" on which an organism grows. The substrate may simply provide structural support, or may provide water and nutrients. A substrate may be inorganic, such as rock or soil, or it may be organic, such as wood.

suevite

a breccia composed of angular fragments of different rock types as well as glass inclusions. Glass can make up more than half of the volume of a suevite. The minerals in the rock fragments within suevites (also called suevitic breccias) commonly display shock-metamorphic effects. Suevite was named after a rock found at Ries crater in southern Germany.

sugar:

-- any of several small carbohydrates, such as glucose, which are "sweet" to the taste.

Sun Declination:

The Declination of the Sun is how many degrees North (positive) or South (negative) of the Equator the Sun is located when viewed from the center of the Earth. The range of the declination of the sun ranges from approximately $+23.5^\circ$ (North) in June to -23.5° (South) in December.

symbiosis:

-- n. A relationship between two organisms that live in intimate contact with each other; includes mutualism (both organisms benefit, they rely on each other for survival), parasitism (one organism benefits at its host's expense) and commensalism (one partner benefits and the other is neither benefitted nor harmed); **symbiotic**- adj.

synangium:

-- A cluster of sporangia which have become fused in development.

synapomorphy:

-- A character which is derived, and because it is shared by the taxa under consideration, is used to infer common ancestry.

synapsid:

-- n. A vertebrate distinguished by a skull with one pair of openings in the side behind the eyes, e.g., mammals and their close relatives.

Syncellus Georgius:

(VIII. century AD - died after 810 AD), Byzantine monk and historian. His "Extracts of chronology" (*Ekloge Chronographias*), covered world history from Adam and Eve to the reign of Diocletian.

syncytic:

-- see [Hexactinellida](#)

<<http://www.ucmp.berkeley.edu/porifera/hexactinellida.html>>

syngamy:

-- The process of union of two gametes; sometimes called fertilization. It encompasses both **plasmogamy** and **karyogamy**.

systematics:

-- Field of biology that deals with the diversity of life. Systematics is usually divided into the two areas of [phylogenetics](http://www.ucmp.berkeley.edu/glossary/glossary_P.html) [P.html](http://www.ucmp.berkeley.edu/glossary/glossary_P.html) and [taxonomy](http://www.ucmp.berkeley.edu/glossary/glossary_T.html) [T.html](http://www.ucmp.berkeley.edu/glossary/glossary_T.html).

target rocks

the surface rocks that an asteroid or comet impactor smashes into in a meteorite impact event.

Tatian:

(died ca. 185 AD), early Assyrian Christian writer and theologian. His *Oratio ad Graecos* tries to prove the worthlessness of paganism and displays a hatred of all things Greek.

Taurids:

Meteor shower emanating in appearance from the constellation of Taurus (which contains the Pleiades).

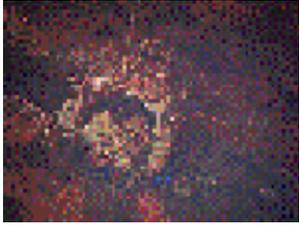
taxon:

-- n. Any named group of organisms, not necessarily a clade; a taxon may be designated by a Latin name or by a letter, number, or any other symbol; **taxa-** pl.

taxonomy:

- The science of naming and classifying organisms.

Teague (Shoemaker), Western Australia, Australia (impact crater)



This crater, in the desert of Western Australia, consists of a granitic uplifted core, about 10 kilometers diameter, surrounded by a dark crescent-shaped inner ring unit. An outer ring of Precambrian sediments has a diameter of about 20 kilometers. The appearance of this impact structure is complicated by salt deposits (light units) produced by shallow lakes that seasonally fill the depressions and evaporate. It has recently been renamed the Shoemaker impact structure, in honor of the late geologist Eugene M. Shoemaker, who was one of the founding fathers of impact research. (*Space shuttle image STS41D-42-039.*)

Location: 25°50'S, 120°55'E **Original rim diameter:** 28 kilometers **Age:** 1685 ± 5 million years

tektites

natural, silica-rich, homogeneous glasses produced by complete melting and dispersed as droplets during terrestrial impact events. They range in color from black or dark brown to gray or green and most are spherical in shape. Tektites have been found in four geographically extended deposits or "strewn fields" on Earth's surface: North America, Central Europe, Ivory Coast, and Australasia. In contrast to most impact glasses, which are found inside or within the immediate vicinity of impact structures, tektites are distal impact ejecta. Source craters are known for three of the four tektite strewn fields: The 11-kilometer-diameter Bosumtwi Crater (1.07 million years old) is linked to the Ivory Coast tektites, the 24-kilometer-diameter Ries Crater (15 million years old) is the source of the Central European tektites, and the 85-kilometer-diameter Chesapeake Bay impact structure (35 million years old) is the source crater of the North American tektites. In *quantavolution* theory, the tektites of Australasia are attributed to the Moon eruption from the Pacific Basin.

telson:

-- The last segment of the abdomen in many arthropods. May be flat and paddlelike, buttonlike, or long and spiny, as in the [horseshoe crabs](http://www.ucmp.berkeley.edu/arthropoda/chelicerata/xiphosura.html)
<<http://www.ucmp.berkeley.edu/arthropoda/chelicerata/xiphosura.html>>.

temperate:

-- Region in which the climate undergoes seasonal change in temperature and moisture. Temperate regions of the earth lie primarily between 30 and 60 degrees latitude in both hemispheres.

tentacles:

-- Appendages which are flexible, because they have no rigid skeleton. Cnidarians and molluscs are two kinds of organisms which may have tentacles.

tepal:

-- When the **sepals** and **petals** of a flower are indistinguishable, they are referred to as tepals. Tepals are common in many groups of [monocots](http://www.ucmp.berkeley.edu/monocots/monocot.html) [<http://www.ucmp.berkeley.edu/monocots/monocot.html>](http://www.ucmp.berkeley.edu/monocots/monocot.html). [More info?](http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html) [<http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html>](http://www.ucmp.berkeley.edu/anthophyta/anthophytamm.html)

tera(amperes)

the prefix tera indicates one million million times the quantity. Tera- is thus a synonym for a multiplier of one billion in Great Britain, and one trillion in the United States. It is, as a measure of current, one million million amperes. The symbol *T* in front of a unit multiplies it by 10^{12} .

terrestrial:

-- Living on land, as opposed to marine or aquatic.

test:

-- n. A hard shell produced by some unicellular protists; may be made of calcium carbonate, silica, or sand grains.

Tethys Ocean:

-- n. A small ocean that existed from the Triassic to the Jurassic; as Pangea was split into Gondwana and Laurasia in the Jurassic, an arm developed westward called the **Tethys Seaway** or **Tethys Sea**.

tetrapod:

-- n. A vertebrate that has (or whose close relatives have) four limbs with digits, not fins.

thalloid:

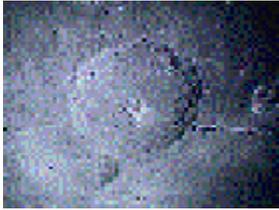
-- Plants which have no roots, stems, or leaves are called thalloid, such as liverworts and [hornworts](#)

<http://www.ucmp.berkeley.edu/plants/anthocerotophyta.html>.

theca:

-- General term for any stiff outer covering of a unicellular protist, and usually made up of interlocking plates. [dinoflagellates](http://www.ucmp.berkeley.edu/protista/dinoflagellata.html) <http://www.ucmp.berkeley.edu/protista/dinoflagellata.html> and [diatoms](http://www.ucmp.berkeley.edu/chromista/bacillariophyta.html) <http://www.ucmp.berkeley.edu/chromista/bacillariophyta.html> are examples of protists with thecae.

Theophilus, Lunar Central Highlands, Moon (impact crater)



Theophilus is a relatively young crater situated on the Kant plateau, an elevated area in the central highlands near Mare Nectaris. In this oblique view looking south, part of Nectaris is visible as the smooth, dark area near the horizon at the left edge. Theophilus has the ruggedly terraced walls and central peak protruding through a relatively shallow floor characteristic of fresh complex impact structures. Beyond the sharp structural rim are the relatively bright hummocky deposits of the ejecta blanket showing a subtle radial scour texture particularly evident in the lower right quadrant of the image. The scouring is produced as blocks ejected from the crater plough into the surface of the growing ejecta blanket and surrounding target rocks; this scouring testifies to the erosional capabilities of meteorite impact. Just to the right of the structure is an older impact structure that has been partially obliterated by the impact event that produced Theophilus. (*Apollo lunar image AS16-0692(M).*)

Location: 11.4°S, 26.4°E **Diameter:** 110 kilometers

thermonuclear fusion

occurs in a gas of sufficiently high temperature that its atoms in collision will fuse in significant numbers (see nuclear fusion). A thermonuclear process is purported to provide the power radiated by the stars.

Thessalian or Deucalion Flood:

After a long period of quiet, there occurred another extraordinary flood, which devastated a great part of Greece, namely Attica, Phokis, Boetia, Epirus and the Peloponese, and on account of its devastations in Thessaly is generally referred to as the Thessalian flood, or after King Deucalion, whose kingdom was particularly affected (according to Varro) it is called the Deucalian Flood. This King ruled in Lykorea on Parnassus. According to the imaged and sensual representations of poets and artists, Deukalion had been able to save himself from perdition on a ship, together with his wife Pyrrha; then, following a divine oracle, he had repopulated the land by throwing stones over his shoulders. (In order to make this mountainous area inhabitable for mankind again, he must necessarily have freed the fields and cultures from the stones and rock and avalanches of debris which must have rolled down onto them.) According to some, he was a son of Prometheus, a ruler of the Caucasus, and of Pandora, or of Klymene; according to others, a son of Haliphron and of the nymph Jophossa; or of Minos and Pasiphae; according to others yet, of Isterius and Crete, by which indications it quickly becomes apparent, as the scholiast had already pointed out to Apollonius Rhodius, that several Deucalions must be referred to, who all were lucky enough to escape the great flood. In today's Gallic welsh, or Celtic language, Deukal designates a mountaineer, a Scottish mountaineer, or any mountaineer; the Scots had, according to their own legends, moved in coming from the Germanic Northeast and from Scythia. As there existed everywhere high mountains, on Crete, on the Istrus (Thrace?) and on the rocky island of Karpathos, as well as in our Carpathian mountains and on the Ister, and as navigation was known at the very least since the time of Noah, there must have been everywhere cleverly thinking Deucalions who were able to save themselves from the general catastrophe by means of boats and by climbing on heights.

Apollodorus tells us that the whole human race had been destroyed, with the exception of a few, who saved themselves on the highest mountains; Varro too tells (same fragment) "that at the time of the great flood some

saved themselves with their possessions into the mountains and on altitudes from which later they easily vanquished those who coming from other mountains attacked them; it so happened that those higher up were called 'gods' and those lower were called 'inhabitants of the earth.'" Of those who had crept up from the plains, it was said in the image-language that they had, instead of feet, snakes. The island of Rhodes and Lesbos were at that time entirely devastated by the deluges and bereft of the majority of their population; the Arcadians are said to have fled to Samothrace. After the flood had eased, the plains of Hellas had become swamps, the air was unbreathable, and agriculture was impossible for a long time; as a consequence of which, war and plague overcame the survivors; the neighboring islands of Kos, Chios, Samos, Rhodes et al., were more easily dried up by the winds, they were repopulated rapidly, and thanks to their remarkable fertility, they were called "fortunate." (Yet in our time, several of these islands are said to suffer from drought and infertility.)

According to Lucian (writing about the Syrian goddess) the Syrians tell that the Scythian Deucalion had escaped the flood by coming to their land and there had erected, in honor of the great goddess Atargatis, the temple of Hierapolis; according to Pliny the flood had not reached the city of Joppe, built on high rocks by the Phoenicians, as a consequence of which the inhabitants endeavored to eternalize the memory of their salvation through the worship of Ceto or Derceto. This heraldic creature - an upright rising woman's head with a dove's wings, the neck of whom ends in a fish body - was also honored among the Celts under the name of Onuava ; as for the Umbrians, a very powerful Celtic clan inhabiting both sides of the Apennine, and whose home once extended to the Po River, they were considered to be the oldest people in Italy, and were called "Ombrier" by the Greeks because during the great flood they had been the only ones to withstand the downpours of rain (ombrous).

All the inhabitants of Phrygia and Lykaonia had perished in this flood, so that Jupiter entrusted to Prometheus and Minerva the task to make new figures of men in clay, and he called upon all the winds to give them souls.

The place where this occurred was given the name Ikonium, i.e. the "city of images."

The inhabitants of the great Phrygian city of Apamea, which was situated on a high mountain between the rivers Meander and Marsyas, and which carried the nickname of Kibotos or "arch" (i.e. "box"), seem to have escaped the flood. Several of their coins exhibit a box (arch), swimming on the waves, containing a man and a woman. On the box, a bird is sitting, and another bird approaches it, holding a twig in its feet. Close-by, the same human pair is standing with raised right arm on solid ground. On three of these coins, the box has the sign NS, while on others only the N is left over. The name No, i.e. Noah, in Phrygian, is not originally the name of a person, but a common name, which represents a "water-man" or a "ship-man," of whom there must have existed many. Moreover, we know from Herodotus that still in the times of Psammetich, the contemporary Phrygians were considered to be one of the oldest people, older even than the Egyptians, from which one is forced to conclude that they were not constituted solely of newly arrived Dardanians, but that they must have included ancient autochthonous tribes as well. The flood must have spread itself over all of Asia Minor, as Asia was one of the daughter of Okeanos (i.e. "a land risen from the sea") and the mother of Prometheus and Epimetheus; according to Diodorus Siculus the flood had also engulfed Egypt and other lands to the South despite the fact the Egyptians denied this strongly, as far as their own country was concerned; we must dispense with the indications given by other authors, namely Strabo and Pliny, because it is not always possible to distinguish if they are to be understood as effects of the devastations wreaked by the Deucalian flood, or by an earlier one.

Lacking secure information, we cannot decide whether the above flood was caused by a new irruption of the Black Sea into the Mediterranean, or by the Mediterranean breaking through into the Atlantic Ocean, or through some other event, to be considered in the next paragraph. More detailed information had probably been delivered by the most learned historian Hellanikus of Lesbos (born 496 BC) in his *Deukaliona* which is often quoted by Stephanus as *Salmus*. Hellanikus' work comprised many books,

according to Atheneus.

In Syncellus, our aquatic hero appears under the name Dukalion, and in Servius both as Deocalio and Deukalion. Lydiatus, in his remarks to the Parian marble-chronicle, calculates this flood to have happened in the year 1553-57 BC, the publisher Humphrid Prideaux, using the chronicle itself, sets it in the year 1529 BC. It must also be remarked that, according to the Parian chronicle, at the beginning of the rule of Deucalion - not unlike the fight of the gods preceding the Inachian flood - a quarrel arose between Mars and Neptune over the latter's son Hallirothius, for which the spot was called Arius Pagus ("Mars-field," or "war-field"). According to Pausanias, Deucalion died in Athens, where he is buried. Like Clement of Alexandria and Nonnus, Servius also admits only two floods, the first under King "Ogiges" of Thebes, the other under Deucalion.

thigh

The constellation of the Great Bear was named by the Egyptians 'The Thigh'. It was described as being in the northern heaven in the Great Lake. It was also named Mesekhti, and was described as having a bull's head. The *Book of the Dead* [Tr.Budge, Arkana p.409] refers to the water flood which is over the thigh of the goddess Nut at the staircase of the god Sebaku. The bull is described as enveloped in turquoise [Budge, op.cit. p.333].

thing

The Greek *chrema*, thing, may be a flow of *ka*. Creation may have been thought of as a flow of *ka*, as the unseen god became visible. Greek *rheo* = flow. The phenomenon would have been helpful to Plato in his formulation of a theory to account for the power and influence from an invisible realm.

thorax:

-- In insects, the second body region, between the head and thorax. It is the region where the legs and wings are attached.

thread (of Ariadne)

There is a Jewish tradition that when the sons of Aaron were killed by the ark, thin threads of flame went from the ark to their nostrils.

The Greek *lin-* is flax, and thread. Could its derivation be EI, and *in-*, presence of EI?

The Egyptian *ankh* could be held and pointed at a person's nose in order to give him life. There may be a link here between the Egyptians and the Hebrews. The ankh, as an electrical symbol, was a device that could kill as well as give life.

What was the nature of the thread of Ariadne which was so useful to Theseus? One difficulty in the usual account is that the labyrinth was probably a dancing floor in the open air, and Theseus would have had no trouble in seeing where he was, and anyway there is the story of the crown of light.

Can the story conceal an electrical attack on the Minotaur, the fabulous creature said to have been the offspring of Pasiphae and the bull? The Minotaur was surely a priest, perhaps even a member of the royal family, disguised by a mask, horns and tail.

The Kordax, a Cretan dance in which the performers used a rope to link themselves, may reflect the thread of Ariadne used by Theseus in the Cretan labyrinth.

thunderbolt

Pliny distinguishes three kinds of bolt: those that are *sicca*, dry, and do not burn but *dissipant*; those that do not burn but blacken, *infuscant*, and the clear bolt, *clarum fulmen*, of remarkable nature, by which jars are emptied with the lids untouched and no other trace left. Gold and silver are liquified inside, but the bags themselves are in no way singed, and not even the wax labels are melted.

This appears to be the same phenomenon that has occasionally been reported in recent times, and sometimes described, misleadingly, as spontaneous combustion.

The Greeks knew of two different kinds of thunderbolt, and Zeus is shown with each type.

The ordinary one is shown in the hand of Zeus, with spikes projecting from either end. The design is similar to the pattern of iron filings on a piece of card when a bar magnet is put underneath. This makes it probable that it was copied from experiments with magnets and pieces of iron on Samothrace, a Greek island where mysteries were celebrated, which were described by the Roman poet Lucretius in his work on the nature of the universe, *De Rerum Natura*, VI:1044ff.:

"It also happens that iron sometimes moves away from this stone, and is accustomed to flee and to follow it by turns. I saw iron at Samothrace jumping, and fragments of iron moving inside the bronze basin, when the Magnesian stone had been put underneath. The iron always seemed to wish to escape from the stone."

The first kind of bolt was used by Zeus for short range work from a thundercloud hovering over an impious person whose wicked actions called out for punishment. It was also thought that it was sent as a general demonstration of power and as a reminder to mortals that they ought to behave properly.

Bolts were frequently seen in marshy districts. The Greek word *kypeiros* is of Semitic origin and is the name of a marsh plant. It is possible that the Egyptian *khu*, soul, is present in the word.

Anything suggestive of brilliant flashes of light was likely to be associated with lightning. Ovid speaks of the boar "*fulmineo ore*", with mouth [i.e. tusks] like a thunderbolt. [*Fasti* II:192.]

It is possible that the Roman *toga* symbolised the clouds concealing the electrical deity who controls the lightning. The *Di Involuti* advised Jupiter

on when to hurl the thunderbolt. Their name suggests that they were wrapped in cloud.

The Egyptian *ames*, sceptre, is represented in a hieroglyph as almond shaped. This is the second type of thunderbolt.

Greek *amygdale*, almond, may be a compound of *ames*, Gad [a name of Baal], and Al, or El, 'the sceptre of Baal, the god above'. Zeus can be seen holding a thunderbolt shaped like an almond, possibly a plasmoid. This would be the high -powered long range weapon. There may be a link between this kind of bolt and the planet Venus.

tissue:

-- A group of cells with a specific function in the body of an organism. Lung tissue, vascular tissues, and muscle tissue are all kinds of tissues found in some animals. Tissues are usually composed of nearly identical cells, and are often organized into larger units called **organs**.

tracheae:

-- Internal tubes through which air is taken for respiration. Vertebrates with lungs have a single trachea carrying air to the lungs, while insects and some other land-living arthropods have a complex network of tracheae carrying air from the **spiracles** to all parts of the body.

tracheophyte:

-- Any member of the clade of plants possessing **vascular tissue**; a vascular plant.

transactive matrix

a quasi ordered plenum of electrons moving chaotically, which forms a medium through which ions can flow, thereby transmitting an electric current. The solar wind electrons form such a matrix; their existence allows the Sun to jettison ions towards the edge of the solar cavity where electrons are readily available.

transduction:

-- [Viral <http://www.ucmp.berkeley.edu/allife/virus.html>](http://www.ucmp.berkeley.edu/allife/virus.html) transfer of DNA to new host.

transmutation

in the *Quantavolution* theory of *Solaria Binaria*, to transmute means to change the form of, such as from kinetic to potential energy, or to modify the structure of, a molecule, crystal, or atom.

tree:

-- Any tall plant, including many conifers and [flowering plants](http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html) [<http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html>](http://www.ucmp.berkeley.edu/anthophyta/anthophyta.html), as well as extinct lycophytes and sphenophytes.

trichocyst:

-- Organelle in [ciliates](http://www.ucmp.berkeley.edu/protista/ciliata.html)
<<http://www.ucmp.berkeley.edu/protista/ciliata.html>> and [dinoflagellates](http://www.ucmp.berkeley.edu/protista/dinoflagellata.html)
<<http://www.ucmp.berkeley.edu/protista/dinoflagellata.html>> which releases long filamentous proteins when the cell is disturbed. Used as a defense against would-be predators.

tripod

As well as being a suitable support for a cauldron imitating an object in the sky, a tripod could imitate the apparatus used for obtaining a display from an ark. Two terminals would be needed, plus some kind of adjustable rod, making a total of three pieces of apparatus. It may even be relevant to note that a basic feature of electronic circuits in the twentieth century A.D. has been the trio of anode, cathode and grid, and, in the case of the transistor, base, collector and emitter.

Triskele:

Three-legged swastika, symbol of the Isle of Man.

tropical:

-- Region in which the climate undergoes little seasonal change in either temperature or rainfall. Tropical regions of the earth lie primarily between 30 degrees north and south of the equator.

troposphere

is the lowest layer of the Earth's atmosphere. It is characterized by the complete mixing of the atoms and molecules of the atmospheric gases by significant vertical winds. The temperature and pressure declines with height in this layer. It's thickness increases from 6km at the poles to 17km at the Equator.

True Polar Wander:

Theory that, should a dislocation, by internal (e.g. volcanic) or external (e.g. impacting) force, of weight occur at a region removed from the Equator, Earth would gradually draw away from its axis of spin, and might tilt to relocate its weight along a new equator which could be, of course, very close to its old equator. Modern conventional theory considers that the moving plates of the globe are sufficient to explain whatever aberrations of the poles may be observed. Q theory explains any polar wander as a probable effect of a close encounter with a large exoterrestrial body or by an impact.

tube feet:

-- Extensions of the water-vascular system of [echinoderms](http://www.ucmp.berkeley.edu/echinodermata/echinodermata.html)
<<http://www.ucmp.berkeley.edu/echinodermata/echinodermata.html>>, protruding from the body and often ending in suckers. May be used for locomotion and/or for maintaining a tight grip on prey or on the bottom.

tuber:

-- An underground stem which has been modified for storage of nutrients, such as a potato.

tubercle:

-- Any small rounded protrusion. In pycnogonids and some cheliceramorph arthropods, the central eyes are carried on a tubercle.

tundra:

-- n. A vast, mostly flat, treeless Arctic region of Europe, Asia, and North America in which the subsoil is permanently frozen. The dominant vegetation is low-growing lichens, mosses, and stunted shrubs.

turgor pressure:

-- Force exerted outward on a cell wall by the water contained in the cell. This force gives the plant rigidity, and may help to keep it erect. [More info?](http://www.ucmp.berkeley.edu/plants/plantaemm.html)
<<http://www.ucmp.berkeley.edu/plants/plantaemm.html>>

Twilight:

The time before sunrise and after sunset when it is still light outside, but the sun is not in the sky.

Typhon:

Pliny reports that the Aethiopians and Egyptians called a certain kind of knotted or twisted comet, which they considered to be a harbinger of cyclones, after an ancient, cruel king of their land, Typhon; so also did they call a cyclone itself, which uprooted trees and lifted up the water from rivers and from the sea. The occurrence of some extraordinary cyclones of this type has been sensualised by the Greek poets in image-tales about the monstrous giant Typhon, Typhaon, Typhoeus or Typhos, and been adorned by them in many ways. In order to avenge herself on the gods for what they did to the Titans and the Giants, say Hesiod and Apollodorus, Earth bore Typhon from Tartarus. He resided in Cilicia, where it is said that volcanoes once raged. He was the greatest monster ever born from Earth. Down to his hips he had a human form; his head rose towards heaven above the highest mountains, and it touched the stars; his arms stretched from sunrise to sunset; in place of fingers, hundred dragons came out of his hands and around his hips frightful serpents wound themselves in loops, which raised themselves above his head and uttered a terrible hissing. His whole body was covered with feathers, his head was covered with coarse hair, and his chin with a frightening beard. Out of his eyes fire struck, like lightning. According to the scholiast of Aeschylus' *Prometheus* (v. 331) he had a hundred heads from all wild animals. We will pass over the otherwise well known descriptions and instead occupy ourselves with the one of Nonnus, which gives us closer information about the time of the great natural events and brings before our eyes the great transformations more comprehensively.

Typhon, the hostile brother and murderer of Osiris, is not unlike the Indian Shiva. The form of the word seems to be Greek, yet Jablonski derives it from the Egyptian Theu, *wind*, and *ph-hou*, evil, harmful; Others derive it from Tihfo, *serpent*; or from *Tyfi*, *Tofe*, the fifth Egyptian month, in which the Egyptians had to bear the hardships of inundations. In the Malayan language, which has many words in common with Egyptian, *Tufan*, *Tupan* designates a storm.

In the first and second books of his epic poem already mentioned, the poet Nonnus describes the attempt made by the giant Typhoeus to topple Jupiter and to make himself the master of the whole of Heaven. As Jupiter, having hidden his heavenly weapons in a rock cave, was whiling the night with Pluto, later to become the mother of Tantalus, Cilician Typhoeus stole them, following the counsel of his mother, Earth, and used them to wage war against Jupiter and against heaven. Out of his many throats he hollered with the cries of all wild animals, and the dragons shooting out of them licked the lion's mane of his neck and twisted themselves around his bulls-horns; but the army of his hands he rose high up, surrounding with flames the foundations of heaven; then he seized the Little Bear with one hand, and with the other, reaching for the Pole, he dragged down the Big Bear by its hair; with another hand he crushed Boötes and with yet another, he dragged Lucifer onto the scene. In vain cracked the aetherean whip of Helios, for he even took fast Aurora, held up the bull, and the half accomplished season languished timelessly on her horses; through the nightly serpent hair of his innumerable heads, light mixed with darkness; but by day he shone like the Moon, rising together with the sun. But the giant did not rest; in a renewed attack, he turned from the North- to the South Pole, and with one long arm seizing Auriga, he battered the back of Capricorn, the bringer of hailstones, and pulling the two Fish from the air into the sea, he battered the Ram, a constellation in the middle of the sky, which makes the spring day equal to the night. After that, climbing to the welkin, the army of his outstretched hands obscured the light of cloudless aether; in the same time, he shook his army of twitching serpents of which one, early in the day, crossed through the circle attached to the heavenly axis, and jumped onto the back of the heavenly Dragon, whistling mockingly at warlike Mars. But we must pass up here the massive disturbances and disruptions which the monster caused in the heavens, in order to turn our attention to the devastations which he brought to earth.

The devastations of Typhoeus on Earth.

Already Typhoeus readies himself for the fight against Jupiter, breaks off and hurls afar the mountain summits of Korykos, he squeezes in one hand

the Cilician rivers Tarsos and Kydnos, and chasing the inhabitants of the sea with sharp arrows, he forces them to climb onto rocks and he whips the waves up to the aether; around his hips the sea is now circling, its empty bed he fills with his own body, and his feet are barely wet. He tears off pieces of land to fashion islands, and rolls them into the sea. So the monster goes about, already congratulating himself over the dominion of heaven, so close at hand, while Jupiter, in the shape a bull, still rambles about with Io; yet when Jupiter, reasonably enough, returns to his former shape, and takes notice of his loss, Cadmus, son of Agenor, who had gone away on a search for the ravished Europa, manages to win back Jupiter's weapons through a ruse, with the help of Mercury. Now Jupiter in the heavenly Bull (Taurus) readies himself for a showdown with the monster. On hissing feet of serpents the monster walks over the earth, spews rivers out of his serpent heads, and uproots the mountains of Cilicia to fling them against the heavenly Bull; walking, he crushes the well-armed animals, the bears, the lions, the dragons, he swallows up all the birds of the air, and first of all the eagle, Zeus' bird; he crushes the ox at the plow, lays to waste the whole cultivated earth, uproots trees and forests, and rolls them far away in front of him; land and rocks he throws into the air, and those make up, by falling back into the sea, the bases for new islands. The shepherds scatter; wailing of Pan, Minerva, of Daphne, of the nightingale and of the swallows over the widespread devastation; Procne, as a swallow, wishes to be one of the Heliades, and shed tears of amber into the waters of all-understanding Eridanus, to bewail her misery.

His fight against Jupiter and the comet.

Then night broke in over the earth, and Helios drove the much tossed about chariot through the still intact Atlantic gates. All the gods fled helplessly to the Nile, except Jupiter who remained in the constellation of the Bull. Shooting stars flamed by, impossible to count, as if chased by a storm, and lightning carved up the heavens all around; a comet spread its bristly light. The heavenly rafters flamed up red, burning, and a colored rainbow spread over the sky. Only the goddess of victory (Iris, the rainbow) returns to assist Jupiter in the shape of Latona, showing him the

way and arming her father. Reclining on his couch, the monster had covered the whole earth and cyclones roared out of his mouth; and by morning he got up in the shape of a human being, embraced the world in his thousand snake arms, and out of his innumerable serpent heads poured the howling of wolves, the roaring of lions, the grunting of boars, the hissing of dragons, the growling of fierce bears and the barking of dogs, in an endless cacophony. Now the giant threatens Jupiter and all the gods with annihilation, and to all of nature, promises chaotic destruction; his missiles are hills, cliffs are his breastplates, rocks are his swords, and rivers absorb for him the blows of the failing lightning. Yet Jupiter hurls the thundering bolts and with clouds protects his own breast against the giant's missiles; but with his army of hands, the giant throws cliffs upon cliffs which by falling back build up mountains, he uproots boulders and piles them up on high, stacks mountain upon mountain until they reach above the clouds; whole forests he throws in the direction of heaven, yet they all fall back, hit by Jupiter's sparks, without damaging anything on earth; he slings rivers up into the heaven with his many arms yet they do not succeed in drowning the lightning of Zeus. Long lasted the terrible battle, for both fighters seemed to be equal in strength. But finally one discharge of Zeus burned up his many hands, another his many shoulder blades; Jupiter's heavenly weapons bashed the skulls of the spotted dragons, the hair of Typhoeus was turned to dust by the coiled comet and this hairy torch being thrown their way, the heads lit up in reflexion; having burned the giant's hair, he seals up the hissing locks with heavenly sparks to bring him to silence; as the dragons die, the poison foaming from their cheeks dries up, and the faces of the giant vanish in sooty smoke; his many snowy brows dissolve in white drops, and now he gets whipped cruelly by all four winds at once; When finally the giant, mortally hit by lightning, falls down on earth, victorious Jupiter mocks him as a descendant of Japetus and an avenger of the Titans in a bitter, gloating speech, and he rolls over his body the rock-islands of Cilicia, as an eternal prison. From the members of Typhoeus cyclones arise, which lash the waves, and by its writhing frightening earthquakes are triggered. Thus speaks Nonnus about the matter.

Servius comments about Vergil's *Aeneid* that the Stoics counted 32 comets, which according to Plinius originated from the five planets and which he divided, following Abienus, into six categories. Typhon belonged to the sixth, having appeared once over Egypt and once over the northern countries, and had been seen simultaneously by the Ethiopians and the Persians, who had suffered all kind of evil and famine under it. Its color was not of a fiery, but of a bloody red, its hair lit up only dully, and its sphere was of a mediocre size and swollen aspect.

The moving force which triggered the enormous mountain of water which, lifting itself up from the sea, wandered all over the globe, is obviously the Jupiter comet, and one might be surprised that our poet attributes to it only a secondary role, if one did not know that the first Christians, whom Nonnus later joined, trusted Mosaic teachings, which denied all influence to the stars, and negated any changes brought on by them on earth, which they saw ordered solely by divine will. Halley himself has explained the Deluge by the encounter of the earth with a comet, which Lambert denied only because the Almighty in his wisdom had organized the comets orbits so neatly that never should a collision between them be possible. Yet a bodily collision and the mere play of attractive forces are quite different matters.

According to Strabo the event with Typhon was supposed to have occurred in the Land of the Arimians, i.e. Lydia and Mysia, by the river Meander, a region which, from high antiquity down to his own time had often been devastated by earthquakes and by outbreaks of fire. This event had affected parts of Syria as well, as a consequence of which, Strabo assures us, the river Orontes formerly carried the name of Typhon. Typhon himself, insofar as he is based on something real, Strabo explains wondrously enough as a great snake who, in order to avoid the lightning bolts of Jupiter, had buried deep caves for himself in the earth, out of which the sources of the river called by its name had sprung forth; but Diodorus considered him a gigantic ruler of Phrygia who had been vanquished there with his companions by Jupiter and had been killed.

Out of Cilicia, Typhoeus had taken his course over the mountains of Thrace, heading for Sicily, and already at the times of Theopompus there raged on the Adriatic Sea great twisting storms, much crossed by lightning, named Typhones.

All dangerous storms, plagues, earthquakes and outbreaks of fire, according to the legends of the ancient Greeks, were activated by Typhoeus, trapped under Mount Aetna; but according to the more penetrating and insightful tales of the Iranian Zend Avesta, these evils were caused by the debris of the comet which had been buried deep down into in the innards of the earth by Jupiter.

As children of Typhon and of the Echidna (Otter) the ancients counted: the Hydra, which Hercules killed in the swamps of Lerna; Skylla, whose upper body was of a woman, the lower part of a dog; the Chimaera, a devastating monster in Lykia, an apparition which resembled her father, and whose upper parts were those of a lion, the middle of a goat, the lower of a serpent; Gorgo, as well as others, part real, part imagined monster-shapes, the origin of which one was unable to express otherwise then by the means of the image-language of the times. Solinus explains the Chimaera as a volcano in Lydia which, Vesuvius and Aetna alike, sent forth clouds of smoke with nightly roaring, and had thus given rise to the aforementioned legend.

Some information about outbreaks of fire and earthquakes in early times in Sicily, Southern Italy and the neighboring islands, which, Strabo insists are related to the fable of Typhon, may be found in the work of the same author.

If in the earliest stages of the shaping of the earth, typhonic wandering mountains of water may have been as frequent as had been the volcanoes, formerly spread all over the earth, the innumerable leftovers from the sea bottoms, which can be found in enormous quantities on the top of the highest mountains, can find in them an adequate explanation.

ultrastructure:

-- The detailed structure of a specimen, such as a **cell, tissue, or organ**, that can be observed only by electron microscopy. Also called fine structure.

undulipodium:

-- Another term for a eukaryotic flagellum.

uniramious:

-- Among arthropods
<<http://www.ucmp.berkeley.edu/arthropoda/arthropoda.html>>, uniramous refers to appendages that have only one branch. Insects, centipedes and millipedes, and their relatives are uniramous arthropods; land-living chelicerates such as scorpions, spiders, and mites are also uniramous but probably descended from ancestors with biramous appendages. Contrast with **biramous**.

unseen bodies

components in a binary system which remain undetected by direct observation but are implied by some anomalous behavior of those bodies which are detected.

upwelling:

-- The raising of benthic nutrients to the surface waters. This occurs in regions where the flow of water brings currents of differing temperatures together, and increases productivity of the ecosystem.

Ur-legends:

The holistic residue of pre-history according to Radloff. If we now set ourselves to examining the edifice of the oldest traditions, known under the vocable of *Ur-legends* (i.e. myths), we by and large do not find in them any set of propositions about any single subject of knowledge, but in the contrary, they give us a "whole picture," i.e. they offer us the holistic set of knowledge of the peoples of those times, concerning God, nature, the origin of things, the history of the people itself and of their ancestors, and this, whether the people in question be constituted by one single element (or else stemming from a congregation of many elements into some large single unit), as was the case for instance of the old-Indian, or the Hebrew tribes, which presented a self contained unity; or whether it be constituted by migrants from many other peoples, congregating from all the points of the compass, as was the case of the Greeks; this "whole picture" appears all too often as a tissue of contradictory information, into which only later art and science attempted to bring the necessary consistency. Only when the peoples reach a later cultural stage, when prose writing separates itself from poetry, does this chaotic knowledge divide itself into separate fields, such as history, poetry, natural sciences, etc, each one of which, from that point on, develops on its own.

vacuole:

-- Membrane-bound fluid-filled space within a cell. In most plant cells, there is a single large vacuole filling most of the cell's volume. Some bacterial cells contain gas vacuoles.

Values Map:

The accompanying map, called the Inghardt map pictures the strong correlation of values in different cultures (see inserted map). The interpenetration of these cultures, largely religious, largely religiously differentiated, is often deep.

Varro, Marcus Terentius:

(116 BC - 27 BC), Roman scholar and writer, known as "the most learned of Romans." Author of some 400 pieces, of which only two survive complete, seventy others are known from fragments; *Of the Race of the Roman People*.

vascular:

-- Refers to a network of tubes which distribute nutrients and remove wastes from the tissues of the body. Large multicellular animals must rely on a vascular system to keep their cells nourished and alive.

vegetative growth:

-- Growth of a plant by division of cells, without sexual reproduction.

venation:

-- The arrangement and pattern of veins in a leaf.

vertebra:

-- A component of the **vertebral column**, or backbone, found in [vertebrates <http://www.ucmp.berkeley.edu/vertebrates/vertmm.html>](http://www.ucmp.berkeley.edu/vertebrates/vertmm.html).

vicariance:

-- Speciation which occurs as a result of the separation and subsequent isolation of portions of an original population.

visual binary system

a binary system where the component stars are resolvable into separate optical images, that is, the star images are distinguishable.

Vredefort, South Africa (impact crater)



The Vredefort structure is located near the center of the Witwatersrand Basin, about 100 kilometers from Johannesburg. It is expressed as a central core, about 40 kilometers in diameter, composed of old crystalline rocks. A deformed collar of uplifted and overturned younger sediments and lavas surrounds the core. Younger, flat-lying sediments resulting in the arcuate shape observed in this image bury much of the structure. The diameter of the collar rocks is approximately 80 kilometers, but reconstructions based on the distribution of shock metamorphic effects suggest an original crater diameter of up to 300 kilometers, encompassing the whole extent of the Witwatersrand Basin. It is very likely that the preservation of the gold deposits of the Witwatersrand Basin, the largest on Earth, is due to the structural constraints provided by the Vredefort impact structure. Formed about 2 billion years ago, it is the oldest and largest recognized impact structure on Earth. (*Space shuttle image STS51I-33-56AA.*)

Location: 27°00'S, 27°30'E **Reconstructed diameter:** ~300 kilometers
Age: 2023 ± 4 million years

Warp-spasm:

An epileptic fit of Cuchulainn which transformed his shape into something hideous.

west

Arabic *garbh*. Reversed, the consonants become bhr̥g, or vrg [bh = v]. Slavonic *vrag* is an enemy. In augury, the west and northwest were the directions from which there was danger.

whistling atmospheric or whistler

an electromagnetic wave in the humanly audible frequency range (300 to 30 000 hertz). Its origin is in lightning discharges, and it is propagated along the magnetic field lines (see Hines). Whistlers are today audible only using an amplifier but in the environment of Solaria Binaria they should have been directly audible.

whorl:

-- An arrangement of appendages, such as branches or leaves, such that all are equally spaced around the stem at the same point, much like the spokes of a wheel or the ribs of an umbrella.

Wikipedia:

Founded in 2000, Wikipedia is now a huge reference source, with something approaching a million articles in the English version alone. Other languages have distinct editions. It is true that many of its entries are confusing and badly structured; some of them are badly wrong, and sometimes the errors are deliberate. But an investigation by the magazine *Nature* in 2005 showed the accuracy of science in Wikipedia is good: the number of errors in a typical Wikipedia science article is not substantially more than in the *Encyclopedia Britannica*, often considered the gold-standard, entry-level reference work.

Can Wikipedia move up a gear and match the quality of rival reference works? Imagine the results if it did: a comprehensive, accurate and up-to-date reference work that can be accessed free from Manhattan to rural Mongolia. To achieve this, Wikipedia's administrators will have to tackle everything from future funding problems - the site is maintained by public donations - to doubts about whether enough new contributors can be found to increase the quality of the mushrooming number of entries. That latter point is critical, and here scientists can make a difference.

A selection of articles in the Q realm indicates that conventional scientists and their adherents dominate largely Wikipedia. Possibly the appearance of the Q Encyclopedia will act as a supplement to Wikipedia and reduce controversy, for the effort to present a single solution according to the conventional paradigm of science will not be necessary.

wild bull

In Crete, the word was *bolynthos*. Greek *lyssa* is madness, *bous* is an ox.

Wilkes Land Crater:

A circular ridge about 500km in diameter was discovered to circle around a mascon of Wilkes Land, an upwelling of high density mantle material 1.6km beneath the East Antarctic Ice Sheet. It was adjudged, not without disputation, an effect of a massive meteoroid impact. The dense plug of rock is circular and the hole it fills would have been 50km across, 4-5 times larger than the Chicxulub crater held to account for the extinction of the dinosaurs and many other species, 65 million years ago (C-dating). The Permian-Triassic extinction of 250 million years ago (C-dating), which extinct 3/4 of all living species might have been produced by the explosion. And the same event might have sent shock waves that brought forth the enormous area of basalt eruptions called now the Siberian Traps. The feature was found by NASA satellites that are mapping subtle fluctuations in the Earth's gravity. A geological structure, known as the Bedout High, in the seabed of what is now Australia, has also been suggested as the possible crater remains from the PT impactor.

wizard

Greek *goetes*. This might be *ka* and *at*, Etruscan and Albanian for father, implying authority and source. Russian *otets*, pronounced [approximately] *atyets*, is a father. Cf. the Egyptian *ut* in *utchat*, or *udjat*.

Wolf Creek, Western Australia, Australia (impact crater)



Wolf Creek is a relatively well-preserved crater that is partly buried under windblown sand. The crater is situated in the flat desert plains of north central Australia. Its crater rim rises ~25 meters above the surrounding plains, and the crater floor is ~50 meters below the rim. Oxidized remnants of iron meteoritic material, as well as some impact glass, have been found at Wolf Creek. This photograph is a south-looking, oblique aerial view of the crater. (*Aerial image courtesy of V. L. Sharpton.*)

Location: 19°10'S, 127°47'E **Rim diameter:** 0.85 kilometers **Age:** ~300,000 years

wood:

-- A **secondary** tissue found in [seed plants](http://www.ucmp.berkeley.edu/seedplants/seedplants.html)
<<http://www.ucmp.berkeley.edu/seedplants/seedplants.html>> which
consists largely of xylem tissue.

writing

Etruscan *zichne* means tracks of Set. German *zeichnen* means to mark or draw. There is evidence that writing was associated with marks made on stone by lightning. Greek *grapho* is likely to be *ka* and *rhaps*, rod. In Hindi, *nagari* is a set of scripts of Indian languages, including the divine script *Devanagari*. *Deva* means 'divine'. *Naga*, in Sanskrit, is a serpent, also a member of a race of semi-divine creatures, half human, half snake. (The Greeks were familiar with these ideas; cf. Kadmos and Harmonia at Thebes, and the legendary first king of Attica, Kekrops.)

Exodus XX:24 refers to God recording his name. In *Deuteronomy* IX:10 Moses says that he received two tables of stone written with the finger of God.

Crostwhaite has suggested that electricity is frequently involved where ancient languages have the sounds of *ka*, *qa*, or *cha*. There are examples of words with such sounds in the context of writing. In Hebrew there are *chartom*, a scribe or cutter of hieroglyphs; *charash*, *charath*, to cut or engrave; *chaqaq*, to ordain, to engrave, and as a participle, a sceptre; *kathabh*, to write; *qa'afa*, tattoo, mark on the skin. In Egyptian there is *chaker*, a design. Thoth was the god of writing.

Etruscan words include, besides *zichne*, write, engrave; *zichina*, cut, bite; *cana*, to carve. In Hebrew there *sakin*, in Arabic *sikina*, knife. (Cf. Latin *scintilla*, spark, and Gaelic *skean*, dagger.) It may be only coincidence that the Latin *caelum* means both a chisel and the sky. The Greek *grapho* and Latin *scribo* may have a link with *sacer*. Greek *stizein* means 'to brand', Greek '*hizein*' means 'to sit.'

Yuty, Northern Hemisphere, Mars (impact crater)



In addition to its dominant central peak and pronounced wall terracing, this young complex crater displays a striking multilobate ejecta blanket that is common on Mars. (On Mars, craters greater than approximately 10 kilometers in diameter exhibit complex forms.) The favored model for the lobate ejecta pattern is through fluidized flow: Excavation and heating of ice in the target material causes a ground-hugging surge deposit, rather than aerial ejection along ballistic trajectories. The visibility of the preexisting crater just outside Yuty's rim indicates that these ejecta deposits are relatively thin. (*Viking Orbiter image 003A07.*)

Location: 22°12'N, 34°W **Diameter:** 19 kilometers

Zeus

The infant Zeus was sheltered in Crete. His father Kronos, hearing that his son would displace him, ate all his offspring as soon as they were born. His wife Rhea deceived him by giving him a stone, wrapped in swaddling clothes, which Kronos swallowed. Rhea had the real infant taken to Crete and hidden in a cave.

The electrical significance of Zeus, the lord of the thunderbolt, is well known; that of caves is almost equally important, if less appreciated and less dramatic. We have in the cave stories an attempt to explain the fact that electrical phenomena appear to arise not only from the sky but also from the earth, or from under the earth. Lightning at night was believed by the Romans to be caused by Summanus, a god who may be Pluto, god of the underworld. The name Summanus suggests the Manes or Di Manes, the Good Ones, spirits of the departed. The name would be suitable not only for a form of Zeus, but also for Poseidon, Velchanos, or Dionysus, all of whom were associated with lightning, and with subterranean thunder.

There are various accounts of the birth and upbringing of Zeus. According to one version he was brought up on the island of Naxos, where he had the name of Zeus Melosios. Another is that he was actually born in Crete.

According to Antoninus Liberalis, Rhea gave birth to Zeus in a Cretan cave, and every year the blood from his birth was seen as a fiery glow coming from the cave. Bees were present, and four men in bronze armour took some of the honey. When they saw Zeus's swaddling clothes, their armour cracked, and Zeus aimed a thunderbolt at them. Fate and Themis intervened and restrained Zeus. The four men became birds.

The presence of the bees calls to mind the Egyptian habit of associating phenomena with those living creatures that seem to possess the relevant characteristics, in this case the hissing and buzzing caused by electricity, such as the sounds heard by mountaineers before an electrical storm high up on a peak, especially on a rock ridge. There may also be a connection between honey and the stories from the north and from Palestine and Persia of the descent of a sweet substance from the sky, manna or honey rain.

The Cretans worshipped Zeus under the name of Velchanos. This name resembles the name of the Roman god of fire, Vulcan. But when one thinks

of the importance of the cave in the stories of the infant Zeus, there is a temptation to see in the name Velchanos the root *pel*, rock or cave. Grimm's law helps one to see here the German *Felsen*, crag. It is probable also that the name Velchanos has the Egyptian *ka* as a component. The name Velchanos would be most appropriate for the electrical deity of caves in rock peaks.

The Cretans were unusual in worshipping a Zeus who not only was born in Crete, as opposed to being reared in Crete, but who also died there, at Iuktas. That the chief of the gods, who, according to Homer, live for ever, should have died, calls for comment.

The association with rocks and caves indicates that the Cretans were aware of the piezoelectric effects in split rocks and caves, and lightning strikes on rocky peaks, at times of violent storms and earthquakes, together with earthquake light. The latter, which is the subject of recent research by Japanese and American scientists, would be detected by a hoopoe, or by a quail, whose Greek name, *ortux*, means 'the one who finds the light'. Ortygia was a name of the island of Delos, the birthplace of a god closely associated with light, Apollo. Its name implies 'where the light happens' or 'quail land'. Piezoelectric effects would gradually fade away through electrical leakage as things settled down after periods of major disturbance such as affected the ancient world generally. The Zeus who lived in the sky continued to brandish the lightning bolt, either in the forked form that we see close to earth, or in the almond shape of the plasmoid for long range interplanetary exchanges [Greek *amygdale*, almond, is the 'sceptre of the god above']. The Zeus Velchanos, the Zeus of the caves and split rocks, gradually faded away.

Perhaps the ritual uprooting of the sacred tree in a dance symbolises the failure of the *poros*, the column of holy fire from sky to earth.

Several places in Crete claimed to be the home of the infant Zeus Velchanos. Hesiod suggests Goat's Mountain. This is probably Dikte, where there is a cave, Psychro. The Idaean cave on Psiloriti, the Kamares cave near Phaestos, and Arkalochori, near Lyktos, are among the candidates. The name Psychro suggests a flow of electrical life.

Piezoelectric effects in rocks as a result of earthquakes led to the study of the earth goddess Ga, Da, or Ge. The Egyptian *neter*, divine, represented

by what may be an axe, has the same consonants as the Greek *antron*, cave.

Antron probably means a cave formed by a split in the rock. The Lydian word *pel*, cave, is related to the Greek *spelaion*. *Pelekus* is the Greek for a sacrificial axe, and it was in the days of Peleg that the earth was divided [Genesis X:25]. Furthermore, the German *spellen* means to split.

The name Kamares may have *ka* and *ar* as components. Arkalochori has several possibilities. The Greek *lochos* is a hiding place; *or* is a Semitic word meaning light, or skin, and resembles *ar*, the electrical fire god.

The cave at Arkalochori contained miniature double axes in gold and silver, and other weapons.

In the Psychro cave a fragment of a jar was found, decorated with a leaping goat. Goats were thought to be more than usually sensitive to electrical fields, or rather to the presence of a deity. They were responsible, through their strange movements and sounds, for the discovery by the goatherd Koretas of the conditions at Delphi [Pytho] that were favourable for the 'inspiration' of a Sibyl or 'unveiler'. The Latin *caper*, goat, may be 'ka container'; compare the German *Kaefer*, beetle, and the Egyptian scarab.

Ornamental shields have been found in the Idaean cave, with decoration pointing to Oriental influence. They reflect the presence of Curetes, youths who clashed their spears on their shields to drown the cries of the infant Zeus.

zooplankton:

-- Tiny, free-floating organisms in aquatic systems. Unlike [phytoplankton](http://www.ucmp.berkeley.edu/glossary/glossary_P.html) [<http://www.ucmp.berkeley.edu/glossary/glossary_P.html>](http://www.ucmp.berkeley.edu/glossary/glossary_P.html), zooplankton cannot produce their own food, and so are consumers.

zooxanthellae:

-- Symbiotic dinoflagellates
<<http://www.ucmp.berkeley.edu/protista/dinoflaglh.html>> in the genus *Symbiodinium* that live in the tissues of a number of marine invertebrates and protists, notably in many foraminiferans, cnidarians, and some mollusks.

zygote:

-- The product of gamete fusion. In organisms with a haploid life cycle, the zygote immediately undergoes **meiosis**, but in organisms with a multicellular diploid stage, the zygote is merely the first stage in the diploid portion of the life cycle.