From: Kronos Vol. V No. 4 (Summer 1980)

THE OCEAN

IMMANUEL VELIKOVSKY

> *Editor's Note*: The material presented here constitutes one of the chapters in a forthcoming book by Velikovsky titled *The Test of Time*.

SEDIMENTS

Poseidon, lord of the Ocean, was the first to come to my defense.

A basic assumption of geology for the past century has been that, though the sea may encroach on land by covering coastal areas with shallow water, the continents and the oceans are primeval; what is now ocean was always ocean and the continents were always land masses, independent of whether they do or do not move slowly, as a certain theory (continental drift) proposes.

In *Worlds in Collision*, the permanency of land and sea was denied. In the presence of external forces, with attendant pulling and shearing, land submerged into the depths of the sea, and sea bottom rose to become land. Prior to certain catastrophes, earlier than those described in *Worlds in Collision*, the highest mountain ridges of the Himalayas must have been under sea, as the fossil content of their rock formations testifies.

Stupendous meteorite showers occurred in the past, and the red clay on the bottom of the sea must have iron and nickel content of meteoric origin. Speaking of the cataclysm that closed the period known as the Middle Bronze II (Middle Kingdom in Egypt), I wrote in *Worlds in Collision* (p. 48):

"One of the first visible signs of this encounter was the reddening of the earth's surface by a fine dust of rusty pigment. In sea, lake and river this pigment gave a bloody coloring to the water. Because of these particles of ferruginous or other soluble pigment, the world turned red."

In paroxysms of nature, especially during the catastrophe of the fifteenth century before the present era, ash fell on land and sea.

"Following the red dust, a 'small dust,' like 'ashes of the furnace,' fell 'in all the land of Egypt' (*Exodus* 9:8), and then a shower of meteorites flew toward the earth. Our planet entered deeper into the tail of the comet. The dust was a forerunner of the gravel" (*Worlds in Collision*, p. 51).

The ash must be still found on the bottom of the ocean, its final repository.

The Earth was "in a vise" -- in the grip of external forces, which altered the terrestrial rotation; the sphere was twisted, and the Atlantic ridge and African rift are only two of the visible signs of the strain to which the Earth was subjected.

"The earth groaned: for weeks now all its strata had been disarranged, its orbit distorted, its world quarters displaced, its oceans thrown upon its continents, its seas turned into deserts, its mountains upheaved, its islands submerged, its rivers running upstream a world flowing with lava, shattered by meteorites, with yawning chasms, burning naphtha, vomiting volcanoes, shaking ground, a world enshrouded in an atmosphere filled with smoke and vapor.

"Twisting of strata and building of mountains, earthquakes and rumbling of volcanoes joined in an infernal din" (*Worlds in Collision*, p. 97).

In *Earth in Upheaval*, I discussed the problem in two chapters, "Poles Displaced" and "Axis Shifted". In "The Bottom of the Atlantic" and "The Floor of the Seas" I discussed sedimentary rock: it was not deposited evenly through the geological ages but erratically, most rapidly following natural disturbances on land. Further, the sedimentary layers were displaced in global catastrophes. Thus, it follows that the relative thicknesses of the sedimentary layers are not true indices for measuring the age of the oceans.

With such heretical ideas, my work flew in the face of accepted notions in oceanography and marine geology.

The book, *Worlds in Collision*, though already three years in the hands of Macmillan, was not yet off the press when Maurice Ewing, the Columbia University marine geologist, published an account of an expedition to the Atlantic Ocean and the mid-Atlantic ridge. This ridge runs north-south the entire length of the ocean. More than one surprise was in store for the expedition.

Whereas its members expected to find a uniform layer of sediment, the bottom of the ocean revealed no such uniformity, and I quoted from the record of the finds (*Earth in Upheaval*, p. 101: M. Ewing, "New Discoveries on the Mid-Atlantic Ridge," *National Geographic Magazine*, Vol. XCVI, No. 5 [November 1949]):

"Always it had been thought the sediment must be extremely thick, since it had been accumulating for countless ages.... But on the level basins that flank the Mid-Atlantic Ridge our signals reflected from the bottom mud and from the bedrock came back too close together to measure the time between them.... They show the sediment in the basins is less than 100 feet thick.

The absence of thick sediment on the level floor presents 'another of many scientific riddles our expedition propounded'." The bottom of the Atlantic Ocean on both sides of the Ridge must have been formed only in recent times.

But even more unexpected was the find of beach sand at a great depth and far away from any land. "One [of the 'new scientific puzzles'] was the discovery of prehistoric beach sand . . . brought up in one case from a depth of two and in the other nearly three and one half miles, far from any place where beaches exist today." One of these sand deposits was found twelve hundred miles from land.

Ewing recognized the uncomfortable dilemma: "Either the land must have sunk two to three miles, or the sea once must have been two to three miles lower than now. Either conclusion is startling. If the sea was once two miles lower, where could all the extra water have gone?" I

shall return to the problem of the fallen ocean level, which I consider to have been the result of rapid evaporation due to catastrophic heating.

Five months after the publication of *Worlds in Collision*, another marine expedition -- led by Professor Hans Pettersson, director of the Goteborg Oceanographic Institute (Albatross Expedition of 1947) -- made a preliminary report of the findings of its fifteen month exploratory voyage. Writing in *Scientific American* (August 1950: "Exploring the Ocean Floor"), Professor Pettersson spoke of evidence of "great catastrophes that have altered the face of the earth".

"Climatic catastrophes, which piled thousands of feet of ice on the higher latitudes of the continents, also covered the oceans with icebergs and ice fields at lower latitudes and chilled the surface waters even down to the Equator. Volcanic catastrophes cast rains of ash over the sea." Also, "tectonic catastrophes raised or lowered the ocean bottom hundreds and even thousands of feet, spreading huge 'tidal' waves which destroyed plant and animal life on the coastal plains". Pettersson also found, in addition to the ash, a "lava bed of geologically recent origin covered only by a thin veneer of sediment".

In the red clay on the bottom of the ocean Pettersson found "a surprisingly high content of nickel" (Pettersson, "Chronology of the Deep Ocean Bed," *Tellus* I, 1949). Nickel is not present in sea water and therefore could not have been deposited by water. "Nickel is a very rare element in most terrestrial rocks and continental sediments, and it is almost absent from the ocean waters. On the other hand, it is one of the main components of meteorites." But the quantity of nickel in the clays in the bottom of the ocean was prodigious. Pettersson assumed very copious falls of meteorites in the geological past. He wrote in his account of the expedition, *Westward Ho with the Albatross* (1953), p. 150:

"Assuming the average nickel content of meteoric dust to be two percent, an approximate value for the rate of accretion of cosmic dust to the whole Earth can be worked out from these data. The result is very high -- about 10,000 tons per day, or over a thousand times higher than the value computed from counting the shooting stars and estimating their mass."

In other words, at some time or times there was such a fall of meteoric dust that, apportioned throughout the entire assumed age of the ocean, it would increase a thousandfold the daily accumulation of meteoric dust since the birth of the ocean based upon the estimated present potential rate of accretion; but since the shower of meteorites was most likely an event of short duration, measured in days or weeks only, the "thousandfold" must be changed to some astronomical figure -- a figure also dependent upon ascertaining the correct age of the ocean.

In a subsequent publication ("Manganese and Nickel on the Ocean Floor" in *Geochimica et Cosmochimica Acta*, 1959, Vol. 17), Pettersson wrote: "Of all the elements found in deep-sea deposits few have a more puzzling distribution than the two ferrides, manganese and nickel." Not only their high concentration, much higher than in continental rocks, but especially their vertical distribution appear "most enigmatic". Pettersson concluded that "the former being largely due to sub-oceanic volcanic action, the latter [was] due to contributions from the cosmos". It must have occurred by "an unusually heavy incidence from the cosmos".

In a still more recent paper, Professor Pettersson discussed "The Accretion of Cosmic Matter to the Earth" (*Endeavor*, July 1960): "We found surprisingly large numbers of typical cosmic spherules in deep-sea sediments." These magnetic particles (in diameter between 0.03 to 0.25

mm.) were not only found in very great numbers in the red clay of the oceanic bed, in the equatorial region of the Pacific, but also all over the world. In the Pacific, "their number varied from about one hundred up to several thousands per kilogram of sediment". "In general the number of spherules is greatest in the more recent sediments."

Pettersson observed ash on the bottom of the ocean, and such ash had already been observed by the famous expedition of the last century, that of H. M. S. *Challenger* (see Sir C. Wyville Thompson, *Voyage of the Challenger*) between the year 1873 and 1876. However, Pettersson failed to observe that the layer of ash is not just distributed here and there on the bottom of the oceans and therefore possibly attributable to volcanic eruptions, but is spread quite uniformly -- and the account of an expedition led by J. Lamar Worzel, of Columbia University's Lamont Geological Observatory, brought out this fact. The expedition of the vessel Vema, made in 1958, covered 500,000 square miles of the southwestern Pacific and found white ash between about 750 miles north and 850 miles south of the equator.

Writing in the *Proceedings of the National Academy of Sciences* in its March 15, 1959 issue (vol. 45, pp. 349-355), Worzel made the surmise:

"Since the layer is fairly near the surface and is not discolored and contains nothing but the glassy ash material it must have been laid down fairly quickly." It must have been deposited in a single act, over a short period, "perhaps within a year or so".

"The white ash immediately suggests a volcanic origin and the proximity of the Andes suggests the source. However, the great extent of the ash and its shallow cores would imply such a great amount of recent activity for a short time that it may be difficult to ascribe it to the Andes." ". . . It may be necessary to attribute the layer to a world-wide volcanism or perhaps to the fiery end of bodies of cosmic origin."

Maurice Ewing, as director of the Lamont Geological Observatory, joined Worzel in describing and evaluating the layer of ash; and on the basis of the random detection of similar ash in other parts of the oceanic world, he wrote (pp. 355-361):

"A single ash layer of 5 to 30 cm. thickness over such a wide area must record a notable event in the history of the area. It could hardly be without some recorded consequence of global extent.

"A re-examination of the file of Vema echograms is now in progress. It shows that sub-bottom echoes, similar to those found in the eastern Pacific, have also been recorded in the South Atlantic and Indian Oceans, [as well as] the Gulf of Mexico.

"The remarkable uniformity of thickness of the Worzel ash layer within the large area which has been cored is additional evidence suggesting that the layer may well have great extent.

". . . The total volume of ash must be so great and the mechanism of dispersal so effective that the possibility of world-wide coverage must be considered.

". . . Such an event could hardly fail to produce a variety of significant effects global in scale .... conceivably a cometary collision."

In the *New York Herald Tribune* of March 31, 1959 Dr. Worzel was quoted as saying that this ash may represent "the remains of a fantastic collision of heavenly bodies from outer space".

A collision of the Earth with a huge comet was postulated or, at least, preferred to a huge and simultaneous eruption of a multitude of volcanoes, because of the evenness of the layer of white ash. Its position, very close to the surface, almost touching the water layer, makes it appear that the time elapsed since the deposit is very short, geologically speaking.*

> [* See also E. Anders and D. N. Limber, "Origin of the Worzel Deep-sea Ash" in *Nature* 184 (1959), pp. 44-45.]

But only five or six years earlier, the consensus of scientific opinion -- and it was expressed in no indefinite terms by my critics insisted that there never was any collision of the Earth with a comet; furthermore, if such a collision were to occur, there would be no noticeable results. After all, the Earth passed through the tail of Halley's comet in 1910 and there was no major phenomenon to register, not even flashes of shooting stars (e.g., I. Asimov).

In order to cover the expanse of the oceans with Worzel ash -- this is its given name -- some more significant collision must have taken place than that which occurred during the approach of Halley's comet in 1910. A phenomenon observed in the bottom of the oceans bespeaks a collision in which the Earth would have hardly proceeded undisturbed on its path.

RIFTS

In *Worlds in Collision*, it is claimed that the terrestrial sphere underwent great stresses -- with resulting rifts and mountain formations -- during the global catastrophism that occurred 3400 and 2700 years ago.

Professor T. Y. H. Ma of the National Taiwan University in Formosa published an article in the journal *Oceanographia Sinica* (Vol. II, No. 1, September, 1955), in which he claimed a sudden shift in the oceanic bottom several times in the geological past. He found that changes in the sedimentary strata on the sea bottom must be attributed to "changes in latitude due to the sudden total displacements of the solid earth shell and the intermittent readjustments". The last disturbance of the ocean bottom "ended only 2,600 years ago", judging from the cores taken at the bottom of the Atlantic, while samples taken in the Pacific allow the displacement to be estimated at about "2,800 years ago". These figures closely resemble the date of the last cosmic catastrophe fixed in *Worlds in Collision* as 27 centuries ago.

In 1960 Bruce C. Heezen of the Lamont Geological Observatory made known the results of an expedition that, in the previous months, had traversed all the longitudes and, going up and down the latitudes, had discovered a huge and strange formation twice encompassing the globe.

The structure has the form of a large and high ridge, split along its length by a deep canyon.

In a preliminary report published in *Scientific American* of October 1960, Heezen described it thus:

"It is a submarine mountain ridge that runs for 40,000 miles across the bottom of all the oceans and covers an area equal to that of all the continents. The existence of the mid-ocean

ridge is a recent discovery of oceanography, and the mapping of it still far from complete. But the stretches that have been charted show a most curious aspect. Down most of its length the ridge is split by a deep canyon, or rift, in which many earthquakes originate. The ridge is apparently the locus of a crack in the crust that runs nearly twice around the earth. The discovery at this late date of the mid-ocean ridge and rift has raised fundamental questions about basic geological processes and the history of the Earth and has even had reverberations in cosmology."

The Earth was, for some agonizing moments of its past, in a vise; and its coupling action wrenched the Earth and welled up the ridge and split it with a deep rift. The mid-Atlantic ridge known from before is but a segment of the entire serpentine formation. The area of the ridge is so great that it was estimated to equal the area of the five continents.

In *Earth in Upheaval* (1955), I wrote of the shearing action to which the Earth's crust was subjected when caught in force fields of extraneous origin. In *Worlds in Collision* (1950), I described the same occurrence as reflected in the sundials and water clocks of antiquity that certify to a changed length of the day on solstices, and thus to changed latitudes and a changed inclination of the terrestrial axis to the plane of the ecliptic (Chapter 7). The fact that the Moon does not circle the Earth on its equatorial plane and that this plane is inclined by over 23 degrees to the plane of the ecliptic -- whereas the plane of the lunar orbit almost coincides with the plane of the ecliptic -- made H. Jeffreys (*The Earth*, 2nd ed., 1929) speculate that the Earth was once, or several times, in a vise that turned its axis in a new direction; and I quoted him in the chapter "Axis Shifted" of *Earth in Upheaval*.

THE OCEAN LEVEL

The stress which resulted in the formation of the immense undersea rifts must have been accompanied by widespread volcanic activity, irruptions of the sea, and changes in the level of the land and in the bottom of the sea. The level of the ocean must have also changed suddenly as a consequence of such upheaval; and in *Worlds in Collision* (Chapter 4), I cited various sources in support of the fact that the sea bottom was heated and rivers and parts of the ocean evaporated ca. 1500 before the present era.

Professor Cecilia Payne-Gaposchkin, astronomer of Harvard University, wrote: "There is no evidence of a wholesale disturbance of the ocean level near 1500 B. C.", or 3500 years ago (*The Reporter*, March 14, 1950). However, Professor Reginald Daly, geologist of the same university, had claimed since the 1920's that "a recent worldwide sinking of ocean level" of twenty feet occurred "about 3500 years ago" (Daly, *Our Mobile Earth*, 1926, pp. 177-179).

Subsequent to the publication of *Worlds in Collision* and this first of a series of articles by Gaposchkin on the book, Professor Philip H. Kuenen of Leyden University made the following statement: "In thirty-odd years following Daly's first paper many further instances have been recorded by a number of investigators the world over, so that this recent shift is now well established." As to the time of this sudden drop of the ocean level, Kuenen wrote: " . . . the time can be fixed at roughly 3000 to 3500 years ago" (*Marine Geology*, 1950, p. 538).

In a paper that Dr. Rhodes Fairbridge of Columbia University read before the International Oceanographic Congress on September 7, 1959, he brought evidence from many parts of the world that 6000 years ago the oceans rose forty-five feet; he even expressed the belief that the Great Flood described in *Genesis* is an echo of that oceanic rise.

Dr. Fairbridge found in many places along the eastern coast of the United States, from Maine to North Carolina, drowned forests which had lived 2830 years ago, with a possible error of 200 years. This points to the 8th century before the present era. In *Worlds in Collision*, Part 2, are described global catastrophes of the eighth and beginning of the seventh centuries (-- 776 to -- 687) which, while being worldwide, were less violent when compared with the one that occurred in the middle of the second millennium, ca. 3500 years ago, or earlier ones. Such submerged forests are found all around England and Wales and are described in *Earth in Upheaval* (1955), pp. 185ff.

Volcanic activity on the bottom of the oceans and seas must have been stupendous; likewise island building. On the latter we have the testimony of earlier centuries passed on in the writings of classical authors. For example, the origin of many islands as well as changes in the coastline of the Mediterranean are recorded in Pliny's *Natural History*. But, in *Worlds in Collision* I did not cite this and many other ancient chronicles, having presented only a fraction of the historical material I had before me; and again, the material I had before me and left unused is but a fraction of what is to be found in the ancient literature of the world. In *Earth in Upheaval*, however, I was careful not to include any historical or literary material at all, the work being built on the records of modern geology and paleontology.

CONCLUSION

The oceans as we know them are not tens of millions or hundreds of millions years old, as the accepted view assumes. In a sequel to *Worlds in Collision*, dealing with the catastrophic events preceding the second millennium before the present era, I shall discuss the origin of the oceans and shall try to show that their expanse grew greatly after the event known as the Universal Deluge, when cosmic water descended on Earth following the disruption of Saturn.

If this unsupported statement sounds unbelievable, the reader may rest assured that I shall underpin this thesis with as much essential documentation as I did my thesis of the youthful Venus, a newcomer to the planetary family. The provenance of the water will also explain the origin of chlorine in sea water -- a problem that plagues marine geologists. For, while the land could provide sodium through erosion by rain, terrestrial rocks do not contain the requisite quantity of chlorine and are quite poor in that element. Some chlorine could have been added from volcanic eruptions but not as much as is needed to form the salt content of oceans and seas. The source of the greater part of the chlorine in oceans is of cosmic origin, and a few more words on this subject are contained in the pages of my book dealing with Saturn.

To the claims in my published work, the ocean responded with invariable support: the sediment on the bottom was not formed uniformly; the nickel content of the red clay in the sediment is of meteoric origin -- cosmic dust that rained furiously on the Earth; the Worzel ash also came from cosmic sources; the Heezen ridge and rift are signs of the external torque applied to the Earth, probably more than once; the violent displacement of marine sediment layers, the changing level of the sea, coastal beach at great depths -- all speak of catastrophic events temporally so close to us that our minds refuse comprehension.

ADDITIONAL SUGGESTED READING

- Peter Briggs, **Mysteries of our World** (N. Y., 1970).
- Peter Briggs, **200,000,000 Years Beneath the Sea** (N. Y., 1971).

- William R. Corliss, **Unknown Earth: A Handbook of Geological Enigmas** (Glen Arm, MD, 1980).
- H. Johnson and B. L. Smith, eds., **The Megatectonics of Continents and Oceans** (New Brunswick, N. J., 1970).
- David A. Ross, et al., "Black Sea: Recent Sedimentary History," **Science**, 170 (9 Oct. 1970), pp. 163-165.
- **The Ocean**, a **Scientific American** book (San Francisco, 1969).
