

Shift in Crust Found

A "crack" in the earth's crust, nearly 200 miles wide, of unknown origin, has been discovered in the Pacific Ocean—By Ann Ewing

► A TREMENDOUS, possibly cataclysmic, shift in the earth's crust—equivalent to the distance separating Baltimore and New York—has been discovered in the Pacific Ocean.

The historic "crack" is not just the separation of a few feet in the earth's crust, the usual picture of an earthquake, but is nearly 200 miles wide. Whether it resulted from an "incredible displacement that took place in a short time" or was caused by small shifts occurring during millions of years is not known.

The discovery was reported to the American Geophysical Union meeting in Washington, D.C., by George Peter of the Institute for Oceanography, part of the Environmental Science Services Administration. He found the huge crack while studying information collected by the U.S. Coast and Geodetic Survey ship, *Pioneer*, last summer from the ocean area between the Hawaiian and Aleutian Islands.

Mr. Peter noted that the variations in the earth's magnetic field shown by the 1965 survey fitted neatly into a pattern that had been partly established by previous ocean soundings.

This was equivalent to finding "the key piece of a jig-saw puzzle when most of the pieces are missing," Dr. Harris B. Stewart Jr., director of the Institute for Oceanography, said. A completed puzzle would tell how, when and why the earth's crust moves around.

On continents, results of earth's shifting surface are often easily seen

not only by geologists but are evident even to the untrained eye. The secrets of deep ocean floors, however, can be revealed only by indirect methods, such as charting the magnetic field.

Ocean bottoms are huge sparsely charted areas covering more than 70% of the earth's surface.

The survey being made by *Pioneer* is aimed primarily at collecting basic ocean data for such practical applications as charting currents, information essential to the fishing industry, and weather prediction. The magnetic field is measured by a magnetometer trailed some 500 feet behind the ship.

Each single strip of the data so collected looks somewhat like an erratic electrocardiogram. However, each contains a "fingerprint" exclusive to the underlying rocks. When the magnetic field is mapped systematically over a large area, the information from each strip can be fitted together to make a contour map of the ocean bottom.

This can be done because some kinds of rocks are more magnetic than others. They retain this magnetism no matter how much they shift around when the earth's crust moves.

Mr. Peter spotted a pattern showing that a band of rocks some 50 miles wide having the same kind of magnetic fingerprint was once aligned in a diagonal that stretched at least 1,680 miles. This band of rocks has since moved at least 183 miles, possibly as far as 600.

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and Technology, Executive Office of the President.

Foreign: Feodor Lynen, biochemistry, Max Planck Institute, Munich, Germany.

Class III—Social Sciences. Gabriel A. Almond, political science, Stanford University; Paul A. Freund, Harvard University; William A. Lewis, economics, Princeton University; Arthur S. Link, history, Princeton University; Horace M. Miner, anthropology and sociology, University of Michigan.

Foreign: Raymond C. F. Aron, journalism and sociology, University of Paris, Paris, France; Hrothgar J. Habakkuk, economics and history, Oxford University, Oxford, England.

Class IV—Humanities, Walter J. Bate, history, Harvard University; Robert J. Braidwood, anthropology, Oriental Institute, University of Chicago; Carl G. Hempel, philosophy, Princeton University; George C. Miles, archaeology, Museum of American Numismatic Society; Friederich Solmsen, humanities and classics, University of Wisconsin.

Foreign: Spyridon Marinatos, archaeology, University of Athens, Athens, Greece.

The prestigious society was founded by Benjamin Franklin who proposed its establishment in 1743. At that time the word philosophical had broader connotations than it does now, meaning the systematic study of practically any subject.

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OCEANOGRAPHY

Rising Panama Isthmus Disrupted Ancient Clams

► CLAMS AND OYSTERS in the Caribbean Sea underwent a greater shock than those of the Pacific Ocean when the Panama isthmus rose from the sea, some three million years ago.

The gradual upheaving of the land bridge separating the Pacific and Atlantic Oceans disturbed and impoverished the ancient marine mollusks on the western part of the Atlantic Ocean, said Dr. Wendell P. Woodring, research associate with the Smithsonian Institution.

The mollusks that were spilled into the Pacific side of the isthmus were not disrupted as much because that ocean is a larger body of water and encompassed the land upheaval, he told members of the American Philosophical Society meeting.

For about 70 million years, during the Tertiary period, there was no land barrier, and a long continual pattern of ocean currents flowed between the two American continents. In the late Pliocene epoch, the land gradually rose out of the sea to form a bridge, across which land animals began to move.

Dr. Woodring based his observations on studies of about 1,000 genera of marine mollusks.

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GENERAL SCIENCE

Franklin's Followers

► ELECTION of 26 new members, 20 residents of the United States and 6 foreign residents, was announced by the American Philosophical Society at their annual meeting held in Philadelphia. The members were chosen for distinguished activities in their fields.

Dr. Henry Allen Moe was reelected president of the society which was established in 1727 for the promotion of useful knowledge.

The new members are:

Class I—Mathematical and Physical Sciences. Horace W. Babcock, astronomy, Mount Wilson and Palomar Observatories; Harrison S. Brown, geochemistry, California Institute of Technology; William Feller, mathematics

and statistics, Princeton University; Victor F. Weisskopf, physics, Massachusetts Institute of Technology.

Foreign: Pol. Swings, astrophysics, Astrophysics Institute, Liège, Cointe-Scelessin, Belgium; Sin-Itiro Tomonaga, physicist, Bunrika University, Tokyo, Japan.

Class II—Geological and Biological Sciences. Konrad E. Bloch, chemistry, Harvard University; James F. Bonner, molecular biology, California Institute of Technology; James F. Crow, genetics, University of Wisconsin; Colin M. MacLeod, microbiology and medicine, New York School of Medicine and Deputy Director, Office of Science