# Dr. Hans Suess, UCSD Prof. Speaks at the International Union of Geodesy and Geophysics at Berkeley.

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BERKELEY, CALIFORNIA-- Samples of ocean water collected miles beneath the sea surface are under study at the University of California, San Diego, for clues on the nature and origin of the earth.

So says Dr. Hans Suess, Professor of Geochemistry, who spoke yesterday at a meeting of the International Union of Geodesy and Geophysics here.

The study arises from a curious resemblance that the planet earth carries to a little visitor from outer space that a man can hold in the palm of his hand.

Such a visitor is a stony meteorite. Just as stones do, stony meteorites contain traces of all chemical elements, including the radioactive ones.

The earth in its average composition may resemble an enormous stony meteorite. The radioactive elements generate heat, as well as the gas helium. The heat generated in the interior of the earth is given off through the ocean floor and can be measured with very sensitive instruments.

One theory holds that this heat is caused, as in a stony meteorite, by the radioactive decay of elements in the earth's mantle and crust.

If so, says Dr. Suess, the loss of heat might be accompanied, as it is in the stony meteorites by the escape of the gas helium formed as radioactive uranium and thorium decay.

The waters of the ocean deeps are warmed by heat flow through the ocean floor. These waters sink from the surface in the Antarctic to make a long and sluggish journey to the north. Radiocarbon measurements made by the UCSD laboratory show that it takes about a thousand years for water from the Antarctic to make its way north to near the Aleutians, where it rises to mid-depths.

The waters are just above freezing when they sink. And even though they spend centuries moving northward under temperature and tropical seas, they borrow none of their heat. They warm only slightly during their slow voyage. And the heat that they do receive, Dr. Suess says, comes from the ocean floor.

Do these cold waters of the depths absorb unusual amounts of helium as well as heat?

Apparently not, says Dr. Suess. He and Dr. H. Wanke of the famous Max Planck Institute of Mainz, Germany, have examined samples of deep water collected on expeditions of the University of California's Scripps Institution of Oceanography. They were looking for a calculated 25 per cent increase in helium content in the samples that had made the millenium-long journey to the North Pacific from the Indian Ocean Antarctic. What they found was only an apparent five per cent increase.

The question then rises, if the earth actually is similar in composition to a stony meteorite, where is the rest of the helium?

It may be trapped in the upper layers of the earth, Dr. Suess says.

If it is, the Mohole will tell the story. The Mohole is the name given the National Science Foundation's project to drill through the earth's crust, the thin upper covering of the globe, to the Mohorovicic discontinuity and the mantle which lies below it. Preliminary drilling has been done and a contract let for further work.

Dr. Suess believes it possible that when the hole is drilled samples may show unusual amounts of helium near the surface, tapering off the lower one goes.

"Nobody knows whether the earth was close to 2000 degrees Centigrade when it was formed or whether its interior was cold at first and then heated up," says Dr. Suess. "This study might help solve that problem."