

Wood specimen found

February 10, 1960

A piece of partially petrified wood dated as being at least 30,000 years old has been dredged from the floor of the Pacific Ocean, by scientists of the University of California's Scripps Institution of Oceanography. It lay half-buried off the coast of Mexico in water a quarter of a mile deep.

The top half of the wood, which was exposed to the sea water, had become fossilized by the intrusion of calcium phosphate. The bottom half, which rested in the clay sediments of the sea floor, is in a state of nearly perfect preservation, virtually untouched by time.

Chemical studies of the specimen have been conducted by Edward D. Goldberg, Associate Professor of Chemistry. The log was dredged by Robert H. Parker, Junior Research Ecologist on a Scripps expedition to the Gulf of Tehuantepec.

The log is about a yard long and a foot thick. Several smaller sticks, leaves, pine cones, and fish bones were taken in the same dredge haul.

Identified only as a Dicotyledon, like most trees of the temperate zones and those that forest the upper slopes of the nearby mountains of Mexico, the specimen is the first find of a phosphate fossil wood from the sea floor. Normally, petrified wood is mineralized with silicon dioxide commonly called opal.

Tests at the Scripps Institution in the Radiocarbon Laboratory of Hans E. Suess have shown that the log is older than the method can measure, that is, 30,000 years.

Very special oceanographic conditions in the area suggest why the top half of the wood has become mineralized. The warm surface waters of the Gulf are extremely rich in plant and animal life. When these living things die and sink toward the sea floor, the dissolved oxygen gas available in the sea water is largely consumed in the combustion. The water near the bottom thus becomes deficient in oxygen and rich in phosphate, released by the burning of organic matter.

The phosphate and the calcium, which formed the mineral matter in the wood, came from the overlying sea water. That portion of the wood buried in the sediment and not easily accessible to sea water intrusion, remained unmineralized.

The mineralizing material is a calcium phosphate called apatite which is often found in abundance in coastal marine deposits on eastern continental shores. Such areas are associated with upwelled water, which gives rise to high plant productivity.

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