GEOCHEMISTRY

# Clues to Life's Origin

**Compounds discovered in Precambrian shales in Michigan, consisting of biological chemicals, may represent life forms of a billion years ago—By Ann Ewing**

➤ CHEMICAL CLUES to the origin of life have been found in billion-year-old rocks from Michigan.

The compounds are very similar to those found in meteorites, Dr. Warren G. Meinschein of Esso Research and Engineering Company, Linden, N. J., told SCIENCE SERVICE. However, he noted that this was his personal opinion, and did not involve his co-workers or other scientists reporting the discovery of billion-year-old life forms.

Discovery of biological chemicals in ancient, Precambrian shale was reported in Science, 145:262, 1964.

Drs. E. S. Barghoorn and J. W. Schopf of Harvard University, with Dr. Meinschein, made one report. Nobel Prize winner Dr. Melvin Calvin with Drs. Geoffrey Eglinton, P. M. Scott, Ted Belsky and A. L. Burlingame, all of the University of California, Berkeley, made the other report.

Since 1961 a controversy has been raging concerning whether or not the lifelike forms reported found in meteorites really represent evidence for life elsewhere in space. These forms were found by Dr. Meinschein and his co-workers in the Orgueil meteorite that fell on France in 1864.

Dr. Meinschein told SCIENCE SERVICE that there was a "growing amount" of evidence that the meteorite forms actually represent life.

Fossils of plants that lived on earth more than two billion years ago have been found. There is even limited evidence for older fossil forms.

However, chemical evidence for life had not previously been proved for more than about 600 million years.

Drs. Barghoorn, Schopf and Meinschein found porphyrins—related to chlorophyll and hemoglobin, microfossils and optically active hydrocarbons in shale from the Nonesuch formation at White Pine Mine, Mich., where copper is mined extensively.

Dr. Calvin and his co-workers identified the hydrocarbons as pristane and phytane which are structurally related to chlorophyll.

The scientists are now working on rocks one and a half billion years old, looking for evidence of still more ancient life forms.

The discovery not only traces chemical evidence farther into the past but shows that organic molecules can retain their identity for more than a billion years.

It will give clues to the origin of hydrocarbons formed during the Precambrian period. Oil and coal formed more recently are known to result from decay of organic material.

The discovery should also eventually shed light on the origin of life.

The molecules the scientists have found in the ancient rocks are either identical or very close relatives to those present in young sediments, which are known to consist of former living things.

There is hope that the biological compounds just discovered can be used as a geological "clock."

• Science News Letter, 86:67 August 1, 1964

ECOLOGY

# Life After Bomb

➤ WHAT KIND OF LIFE can exist on earth after the bomb?

This is the main question University of Washington, Seattle, and associated scientists will be answering in one of the most heavily bombed areas on earth, the Eniwetok and Bikini atolls of the Marshall Islands.

It has been six years since the last nuclear test device shook these tiny atolls, searing the coral with the temperature of stars and casting a deadly cloud over the peaceful waters of the Pacific.

Do fish still swim in the lagoons? Has vegetation grown back? Have the craters filled in? Is the entire area blighted with the invisible death of radiation?

Dr. Lauren R. Donaldson, director of the University of Washington's radiation biology laboratory, who will head the multi-faceted expedition to the Pacific H-bomb test sites, said the study's aim was to determine what has happened to radioactivity in the environment or ecological setting of the atolls.

The study, the most intensive and lengthy to date, is expected to provide the most extensive data on the aftermath of the bomb yet obtained by man.

"There has been time for the wounds to heal," said Dr. Donaldson. The laboratory's primary interest in this "healing" is to discover how the radiation has been absorbed by the South Sea environment.

The 17-man team of scientific personnel is spending the month of August studying the atolls under the auspices of the Atomic Energy Commission.

"Maybe the people can go back after we're through," Dr. Donaldson said optimistically.

The natives were evacuated before the tests began and have never been permitted to return to their homes in the atolls because of fear for their lives and safety.

• Science News Letter, 86:67 August 1, 1964

Martin Co.

*FOR DAVY JONES—This isotopic genrator has been designed to provide about seven watts of continuous electrical power for two years or more. It is now in use by the U. S. Navy as an undersea navigational aid 15,000 feet below surface in the Atlantic, 750 miles off the coast of Jacksonville, Fla. It is shown here being prepared for shipment at Martin Company's nuclear division, Baltimore.*

GEOLOGY

## Island Raised 30 Feet By Alaskan Earthquake

➤ A GROUP OF GEOLOGISTS has found an uninhabited Alaskan island that was lifted more than 30 feet into the air as a result of the earthquake that destroyed much of Anchorage last March.

The geologists, who are participating in a survey sponsored by the U.S. Government to investigate the extent of damage caused by the great quake, reported that most of the southern part of Montague Island rose more than 20 feet. The rise was 33 feet at one spot.

The island was so badly torn in places that spruce trees 42 inches in diameter were toppled.

Scientists believe this is the second greatest uplift ever recorded that can be blamed on a single earthquake. During the Yakutat Bay quake in 1899, Bancas Point in Disenchantment Bay, Alaska, rose more than 47 feet.

Montague Island is 100 miles south of the point where last March's Good Friday earthquake started. Along both sides of the island, gigantic blocks of rock were vaulted high above the ground for miles.

A strip of sea floor 1,350 feet wide was left exposed around the island. Scientists reported finding seaweed that usually grows underwater attached to the exposed sea floor rocks.

• Science News Letter, 86:67 August 1, 1964