

Much Research Is Needed to Reveal Prehistoric Life of Pacific Peoples

By E. H. BRYAN JR.

The Hawaiian Academy of Science has enjoyed an outstanding year under the presidency of Dr. Harry L. Arnold Jr. Prospects are good for a continuation of strong leadership in the scientific life of the islands, with Dr. William B. Storey as president.

The programs during the past year have been uniformly good. More titles of papers were submitted than could be presented at the five evening meetings which have been held. The membership has grown greatly, 72 new members having been elected at the last session, including a number of science teachers in the schools of Hawaii. The membership is now 415.

ONE OF THE outstanding accomplishments of the year has been formal affiliation with the American Association for the Advancement of Science. This brings various benefits to the Academy, including the opportunity to receive research grants.

One of the most popular papers presented at the recent session was an invitational address given by Dr. Alexander Spoehr, director of Bishop Museum, entitled Oceanic prehistory.

What is known today of the prehistoric activities of Pacific peoples, Dr. Spoehr said, is based largely on studies of the language, culture, and physical anthropology of modern peoples.

To learn of the past it will be necessary to excavate the house sites and shelter caves where they lived long ago, and where fragmentary remains of their artifacts are to be found. Successful archaeological work, he said, demands a sound strategy in the planning of field research. It also demands a careful review of previous ideas as to the distribution of Oceanic peoples and their cultures.

IN ORDER TO obtain a time sequence, it is necessary to relate these cultural changes to a framework of dates. This now can be done by the analysis of certain organic remains, such as shell, and charcoal from camp fires, by what is known as the Carbon 14 method. The amount of radio active material remaining in the substance

Four such dates are now known for sites on Pacific islands, two of them as a result of Dr. Spoehr's own excavations in the Marianas. The first to be measured was a date for charcoal found by Dr. Kenneth P. Emory and his university archeology class, in the lowest stratum of a shelter cave on Oahu. It showed that



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this camp fire was made about 1005 A. D. One date of 845 A. D. was associated with a latter site on Tinian island another, 1527 B. C. from an oyster shell associated with early potsherd on Saipan island. The fourth date, 1002 A. D., is from an excavation on Fiji, made by Prof. E. W. Gifford.

These four dates are quite inadequate upon which to base any definite conclusions. However, they help to show a general trend. They suggest that by 1500 to 2000 B. C. a developed form of water transport had been invented in the Malaysian-Southeast Asian region, and that a movement of Malayo-Polynesian peoples into Micronesia had commenced.

They also suggest that the time span between then (1577 B. C.) and the early establishment of peoples in Hawaii (as shown by Dr. Emory's date of 1005 A. D.) is a critical 2500 year period, the events of which form a focus of interest for students of Oceanic prehistory.

DR. SPOEHR does not find any distinct break in culture across the North Pacific to Polynesia. Peoples in western Micronesia are more like Malaysians; those in eastern Micronesia, like Polynesians. He suggests that Micronesia be coupled with Polynesia as lying within the area encompassed by the great eastward movement of Malayo-Polynesian peoples.

Dr. Spoehr exhibited a series of kodachrome slides, showing the field methods of the archeologist and some of the results, as illustrated by his work on Saipan and Tinian in 1949 to 1950 for the Chicago Natural History Mu-

seum in cooperation with the Pacific Science Board. The Marianas were studied because they mark the eastward extension of pottery and rice culture.

A very scholarly and stimulating paper was presented by Grote Reber on cosmic static, the name given to long electromagnetic waves of natural origin which come from the sky. They have a great range of wave-length, requiring considerable radio apparatus for their study.

ONLY RECENTLY has an intensive study been made of these waves, which were discovered in 1931 by K. G. Jansky as a by-product of some investigations of phenomena in the earth's atmosphere. Their recent study in England and Australia is known as radio astronomy.

The earth's atmosphere acts as a shield to ward off most celestial radiations and particles. Through this shield there are only two types of "windows" for our senses into outer space. The first of these is vision; our eyes can see waves of certain length. The second is radio astronomy or observations on cosmic static, the waves of which are several million times longer than light waves, but following all the laws of optics.

These longer wave radiations arrive from various directions, but in general most abundantly from the plane of our milky way or galaxy. But they do not seem to come from the bright stars. In fact, there does not seem to be any evidence for physical existence of the "radio stars" from which they seem to come.

THE EXACT origin of this energy is one of the great problems of modern astrophysics. Yet these radio stars are abundant in our galaxy and have been located also in the nebula of Andromeda and other island universes, showing that they are distributed in other parts of the known universe. They are likened to "dynamos in the sky," capable of converting mechanical into electromagnetic energy.

Using a technique called Lloyds mirror experiment, Mr Reber is attempting to learn more about these radiations from his own observatory on the summit of Haleakala, Maui.

The sea, extending to the horizon 140 miles away, is his mirror. Hawaii, he says, is a fine place from which to make this kind of study, for the low latitude make it possible to observe all of the milky way from one station.