

Preliminary Note on the Oceanographic Program of the Hawaii Marine Laboratory

DR. HARALD U. SVERDRUP, director of the Scripps Institution of Oceanography of the University of California, was invited to come to the University of Hawaii for the period November 14 to 22 to advise upon a program of oceanographic investigation to be undertaken at the new Hawaii Marine Laboratory. Plans for the erection of the laboratory building are now completed and the physical plant should be ready for use during the latter part of 1948. Details on the laboratory and its attendant docks, marine railway, outdoor tidal ponds, and aquarium tanks together with the operating policies will appear later. The entire physical plant and the endowment for its operation have been donated to the University of Hawaii by Edwin W. Pauley and four associates, Harold Pauley, Allen Chase, Poncet Davis, and Samuel B. Mosher, co-owners of the small island, Moku-O-Loe, in Kaneohe Bay, Oahu, on which the laboratory will be situated. The University of California will cooperate with the University of Hawaii in many of the activities of the laboratory, which will be equipped for biological as well as oceanographic research.

Plans outlined for oceanographic research at the laboratory emphasize those aspects of oceanography peculiar to this sub-tropical region of the central Pacific. Broadly speaking, the oceanographic program may be called a study of the ecology of the near-shore and off-shore waters around the islands of Hawaii, and the study is readily divided into three phases: (1) Ecology of the near-shore waters, i.e., primarily the waters inside the reefs; (2) ecology of the transition region beyond the reef; (3) ecology of the oceanic waters.

These subdivisions are established for the following reasons: The very near-shore waters

have their endemic faunal and floral populations but these waters are also the nursery grounds for much of the food of pelagic fishes. Within many of the near-shore areas there is a rapid exchange of water with the outside, and it appears possible that a considerable amount of the organic matter present off the reef area is produced on and inside the reef. The region directly beyond the reef is another ecological subdivision, distinct in character from the oceanic water at greater distances from the shore. How far the near-shore effects reach is unknown. Similarly, it is not known if the off-shore waters are uniform or if variable conditions related to external influences such as variable winds or upwelling are commonly encountered.

Kaneohe Bay is well suited for an intensive study of near-shore waters. The bay inside the reef has an area of about 15 square miles, and is connected with the outside waters by several channels. This study will involve (1) a program of sounding for the purpose of constructing a chart of the bottom topography, (2) the collection of bottom samples for the preparation of a chart showing the character of the bottom with particular reference to its biological significance, (3) the recording of tidal observations in order to reduce observed depths to a common level and possibly to give some indication of the transport of water across the reef, (4) a study of the exchange of water between the bay and the open sea, (5) a study of the temperature distribution for the purpose of relating possible variations to the pattern of circulation and to the effect of radiation, (6) a study of transparency by regular observations, (7) a chemical investigation of salinity, oxygen, phosphates, nitrates, and, intermittently, calcium, alkalinity, pH , and other characteristics, all of

which will be related to the pattern of circulation and used in connection with a study of the productivity of the region. The biological work accompanying this physical and chemical investigation will involve, initially, a great deal of systematic work which will be accompanied by studies of the production of organic matter and the relation of the organisms to their physical, chemical, and biological environment.

The transition zone will be examined by extending part of the work outlined for Kaneohe Bay to the waters just beyond the bay. Additional investigation of this area will include bathythermograph observations.

To provide a basis for planning off-shore oceanographic work, the Scripps Institution will examine and discuss the results of numerous

bathythermograph observations which have been made around the Hawaiian Islands. The seasonal and geographical variations in the character of the mixed top layer will be given special consideration. The currents around the islands will be analyzed as far as possible. Such a study may disclose certain critical localities which should receive special attention, and the oceanic work may then be planned to take such features into account.

It is believed that for some time the oceanic work will be strictly exploratory. Routine observations, including temperature, salinity, minor constituents, transparency, and biological features, will be made of the character of the surface layer and of the waters at or directly below the thermocline.

News Notes

DURING HIS VISIT to Honolulu to advise the University of Hawaii on establishing the Hawaii Marine Laboratory, Dr. Harald U. Sverdrup, director of the Scripps Institution of Oceanography, spoke on "Wind, Sea, and Swell" at a public meeting, sponsored by the University and the Hawaii Chapter of the Society of the Sigma Xi. He also conducted a symposium for interested scientists on the subject "Ocean Currents."

ABOARD THE auxiliary schooner "Albatross," the Swedish Deep-Sea Oceanographic Expedition visited Honolulu from November 28 to December 12, 1947. The Expedition, under the leadership of Dr. Hans Pettersson, possesses equipment and personnel for making physical, chemical, geological, and some biological observations during its world tour. It is following, in part, the course of the "Challenger" Expedition of 1873-76, and, in the Pacific, has already made

stops at the Galapagos Islands, Tahiti, and Hawaii. From Honolulu the Expedition will go to Kusaie and Ponape, and from there southward to the Netherlands East Indies. While in Honolulu the scientists and the crew of the "Albatross" were entertained by local scientists and by Scandinavian members of the community.

DR. THOMAS A. JAGGAR's monumental work, *The Origin and Development of Craters*, has been released as Memoir 21 of the Geological Society of America. This book records, as the author states, his "experience in measuring physical processes at Hawaiian craters and in mapping changes at the craters themselves," and uses this experience as "a reasonable theme whereon to base a new approach to field volcanology."

JAGGAR, THOMAS A. *The Origin and Development of Craters*. Geological Society of America, Memoir 21. xvii + 508 p., 87 pl., 14 fig. Waverly Press, Inc., Baltimore, 1947.