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NEW ZEALAND OCEANOGRAPHY SINCE 1952

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Until 1954, oceanographic research has been carried out by the Oceanographic Observatory which was formed in 1949 as a branch of Geophysics Division, D.S.I.R. under the late W.M. Jones. The work done was primarily concerned with hydrography and wave dynamics, but in 1954 T.M. Skerman was appointed as biologist on H.M.N.Z.S. *Lachlan* to replace Lieut. B.M. Bary, R.N.Z.N. of Defence Scientific Corps, thus allowing *Lachlan* to continue effectively as a part-time research vessel. The cooperation in this matter of the New Zealand Naval Board and of the various commanding officers of *Lachlan* has been very helpful to New Zealand oceanography in its early stages.

The New Zealand Oceanographic Committee, formed in 1950, has continued to operate as an advisory body of the Council of Scientific and Industrial Research. Representatives of the Navy, D.S.I.R., Marine Department, the four University Colleges, Portobello Marine Biological Station, Auckland and Dominion Museums, and the Meteorological Office serve on this committee, one of whose functions is to coordinate, correlate, and assist oceanographic work and to sponsor publication of results.

In July, 1954, the present New Zealand Oceanographic Institute incorporating the Observatory, was formed in Wellington under J.W. Brodie. The professional staff has since been expanded to a total of ten, including three physicists, four biologists, two geologists, and one bacteriologist. In 1956, the increase in staff necessitated a move to new premises in Thorndon Quay; provision is being made for a permanent building on the waterfront at Evans Bay. A research vessel, H.M.N.Z.F.A. *Tui* was refitted and commissioned in 1956 by the Navy for the joint use of the New Zealand Oceanographic Institute and the Naval Research Laboratory. This ship, which has cabin and laboratory accommodations for six scientists is fully equipped with oceanographic winches, as well as radar, echo sounding, and other modern navigational aids. Two major series of cruises were carried out in the winter of 1956 and the summer of 1956-57. These have encircled the whole of New Zealand with a pattern of hydrographic and

plankton stations which will serve as a base for further, more intensive studies. Among the preliminary results, the subtropical convergence was found not to agree with previous ideas. In the winter cruise it lay obliquely between a point to the north of Chatham Island and another well to the south of Stewart Island.

Individual research projects are as follows:

Dr. R. W. Burling has conducted research into the relationship between the velocity and duration of winds and the waves generated by them. He is also working on the analysis of drift card returns and on southern ocean hydrology.

D.M. Garner is investigating the general physical structure and movement of the Tasman Sea and Pacific Ocean adjacent to New Zealand and will be in charge of the IGY cruise of *Tui* in the South Pacific.

A.E. Gilmour has developed a gravimetric method of determining salinity and is at present studying tidal movements.

T.M. Skerman has made an intensive study of biological marine fouling, and is at present establishing a laboratory for microbiological investigations. In this connection, a brief expedition to Milford Sound was held at the beginning of 1957 to study the microbiology of bottom sediments. Several scientists who were visiting New Zealand for the Dunedin A.N.Z.A.A.S. 1957 meeting took part in this investigation, including Dr. Claude E. ZoBell of Scripps Institution, California, and Messrs. E. J. Fergusson Wood, I.R. Kaplan, and B.V.D. Skerman of Cronulla, N.S.W. The results are to be published in symposium form.

R.M. Cassie is developing an apparatus for simultaneous sampling of plankton and recording of temperature, salinity, and other physical variables. It is hoped that this will become a useful tool for the detailed study of local plankton ecology. Some advance has also been made in the use of free diving apparatus as a research tool.

Dr. D.E. Hurley is specializing in the study of benthic fauna and has recently completed a survey

of the Hawke Bay area partly with the assistance of the Marine Department's vessel *Ikaterere*. E.W. Dawson, who is at present doing postgraduate research at Cambridge University, will also be engaged in a similar class of investigation. Dr. Vivienne Cassie has recently commenced a survey of the seasonal succession of planktonic algae in Cook Strait and Hauraki Gulf.

Lieut. Commander B.M. Bary, who has been attached to the Institute for three years, has recently accepted a post at the Oceanographic Laboratory, Edinburgh. He has developed a prototype high-speed plankton sampler which can be used both vertically and horizontally.

Dr. H.M. Pantin is carrying out geological studies of sediments and has commenced a particular investigation of the Hawke Bay region in collaboration with Dr. Hurley. Unfortunately a mishap to *Tui* during 1957 has delayed the completion of this work. The mapping of the general topography of the sea floor around New Zealand and its interpretation in relation to the geological structure of the adjacent land is being undertaken by J.W. Brodie.

Although no special provision has been made for IGY, certain investigations are being carried out as part of the global programme, including sea level and density determination, long period wave measurements, and deep oceanic currents. In this connection, one major cruise is being undertaken in the Pacific Ocean to the north of New Zealand.

Special work in collaboration with T.A. Rafter of the Dominion Physical Laboratory involves the taking of large samples of oceanic water at various depths for C^{14} dating. Results are of interest in connection with the fallout from nuclear explosions as well as shedding an entirely new light on previous conceptions on the rate of mass transport and turnover in the oceans.

The Fisheries Branch of the Marine Department maintains a small biological staff based in Wellington and a research vessel *Ikaterere* which operates from Auckland but has been employed

as far afield as Dunedin on investigations of commercial fisheries. Long-term research has been concentrated in the North Island, where ecological studies of the snapper and toheroa have been made by R.M. Cassie (up to 1954) and Miss M. K. McKenzie. A staff of three biologists based on Auckland, Wellington and Dunedin is concerned with ad hoc problems of more direct administrative concern.

While the University Colleges and Museums have not as yet reached the stage of having separate oceanographic departments, individual workers and groups have added to our knowledge, particularly of the biological side of oceanography. In Auckland, Dr. A.W.B. Powell's work on systematics and ecology of mollusca is being continued. Prof. V.J. Chapman has an enthusiastic group of students and postgraduate workers on marine algae and intertidal ecology.

In Wellington, the Victoria University College, Zoology Department, under Prof. L.R. Richardson, has for some time maintained a strong marine base. A research team on various vessels is engaged in investigating the deep-water fauna of Cook Strait. W.H. Dawbin has (up to 1956) amassed a considerable amount of data on the ecology and migrations of whales. Dr. R. K. Dell and J. Moreland are engaged in systematics and ecology of mollusca and fish, respectively.

At Canterbury University College, G.A. Knox has specialized in the systematics of the Polychaetes and general intertidal ecology. He was also leader of the 1954 expedition to Chatham Islands on the M.V. *Alert*. Dredge and hydrological stations were worked on the Chatham Rise by a team of workers from University Colleges, Museums and Government Departments.

At Otago University, Miss B. I. Brewin has continued her work in marine biology, particularly the systematics of the Ascidians. The Portobello Marine Biological Station, established in 1951 under Dr. Elizabeth Batham, has provided residential facilities for many marine workers. Dr. Batham specializes in the physiology of marine invertebrates.