

difficulty of obtaining a required fish and fixing it immediately, added to those of preparation, which Sir Charles Tomes has described as "almost insuperable," made the undertaking of my research arduous and discouraging. When I found that I could obtain specimens from the fish-hatchery, make use of the library, and the kindness of the staff, a great deal of my difficulties were at an end. For two years I have been able to carry on an uninterrupted study of the development and histology of New Zealand fishes and to place on record in the New Zealand and British dental journals the results of my investigations. In the course of my work I have been able to recognize developmental phenomena which, traced through their evolution to the mammalia, appear to have a definite bearing on the potentialities of the tooth-germs of man.

"From material obtained from the fish-hatchery I have been able to render accounts of the teeth of fish of the families Gadidae, Labridae, Sparidae, Ophididae, Paraperidae, Carangidae, and others.

"To scientific workers on similar lines the fish-hatchery must prove of incalculable value in the supply of the required material."

(2.) Dr. W. B. Benham, F.R.S., Professor of Biology, University of Otago. Dogfishes, starfishes, *Boltonia*, polychaetes, &c.

(3.) Dr. Chilton, Professor of Biology, Canterbury University College. Local Crustacea.

(4.) Mr. Harold J. Finlay, M.Sc., University of Otago. Local mollusca.

Mr. Finlay, at the request of the Board, has undertaken to prepare a catalogue of the mollusca of Otago Harbour and the adjacent sea. As he suffers from physical disability, Mr. Young has arranged to do all the necessary collecting for him, and this is being done not only on shore, but on all occasions when the dredges, trawls, or seine nets are being used.

(5.) Mr. Young is also collecting for his own study the Tunicates and Actinaria of the local waters.

The following inquiries from abroad are being dealt with as opportunity offers:—

(1.) The College of Natural Science of Philadelphia, U.S.A., has given a tentative order for 400 to 500 specimens, comprising all the New Zealand fishes available. Mr. Young has the arrangements for the execution of this order well in hand, and a start has been made on the collection and preservation of the specimens in alcohol. This will take some time.

(2.) The University of West Australia has sent an order in for dogfish (*Mustelus* and *Squalus*), elephant-fish (*Callorhynchus*), and blind-eels (*Eptatretus cirratus*). Some difficulty may be found in supplying the latter, of which twelve are required, as fishermen have a great objection to handle them.

(3.) The Australian Museum, through their ichthyologist, Mr. McCulloch, has asked for a specimen of the blue shark (*Carcharias brachyurus*.)

Inquiries have also come from the University of Cape Town.

Otoliths of various fishes are collected from time to time.

The measurement of the rate of growth of various species of fishes in captivity was interrupted last year by the thoughtless and stupid act of some visitor who turned off the water-supply tap of the observation-tank, which resulted in the loss of all the fish through lack of aeration. The observations are now being resumed.

Early in the year Mr. Young made a trip to the Chatham Islands for the dual purpose of increasing his knowledge of the life and habits of the blue cod (*Paraperis colias* L.), and of inspecting and reporting on the fishing industry in the islands. A paper on the latter subject is now in the Press; while a second, on the marine fauna of the islands, is in course of preparation.

In the early part of 1922 your Department, acting on the suggestion of the Board, issued a circular offering a bonus of £5 per pair of European lobsters (*Homarus vulgaris*) and edible crabs (*Cancer pagurus*) landed alive at any port in New Zealand. This circular, sent out to all Customs officers and shipping-ports which are visited by overseas steamers, has been handed to masters and engineers of such vessels. Up to the present there has apparently been only one response to the circular from a correspondent, who is seeking further information on the subject.

The library at the hatchery, which is largely the property of the chairman of the Board, is constantly being supplemented from abroad. The following were the principal additions during the year, most of them representing publications which are forwarded regularly: "Transactions of the New Zealand Institute"; "Journal of the British Marine Biological Association"; Reports of the Scottish Fishery Board; Report of the Canadian Arctic Expedition, 1913-18 (full set); Bulletins of the United States Fish Commissioner; all publications of the Smithsonian Institution (Washington), dealing with marine biological questions; Bulletin of the Ceylon Fisheries; Report of the Fishery Board of South Africa; "Transactions of the Royal Society of South Australia"; "Transactions of the Royal Society of Tasmania"; Crustacea of Norway (received from Professor Sars); Papers from Dr. Chilton, Dr. L. A. Borradaile, and Miss Marguerite Murray, M.Sc.

Mr. Young has recently commenced a cross-index of the various journals of scientific societies which are on the library shelves. This important work facilitates the use of the library to any one engaged in biological research work.

The Board desires to impress upon the Government the necessity of obtaining a complete catalogue of the fishes of New Zealand; it is one of the most urgent scientific needs of the day. The Board is endeavouring at the present time to make arrangements with the Director of the Dunedin School of Art to utilize the station for the benefit of the students, with the object ultimately of obtaining illustrations of the local fish fauna for incorporation in the work.

I have, &c.,

GEO. M. THOMSON,
Chairman, Marine Fish-hatchery Board.

The Secretary, Department of Marine, Wellington.