

Of the other material collected, Professor Benham has identified all annelids, holothurians, echinoderms, and several other invertebrates. Sea-anemones were identified by Mr. Stuckey, late Chief Inspector of Schools for Otago, and crabs by Mr. C. W. Bennett, of the University of Western Australia, Perth.

*Dredging.*—The station launch is fitted with a dredge suitable for the collection of scientific specimens, but not for working the bottom in the manner required for economic dredging. With this apparatus it is possible to work down to a depth of 70 fathoms. A chart has been prepared by Mr. Adams which shows with approximate accuracy the ocean contour outside of Otago Heads. During the past twelve months a good deal of dredging has been carried on within this area—that is, to a distance from about twelve miles to the north-east of the Heads to a line abreast of Cape Saunders, and extending in some cases to the 70-fathom line.

*Occurrence of Oysters.*—One object of this dredging was to locate, as far as possible, the occurrence of mud-oysters (*Ostrea angasi* Sowerby) within the area. There are two distinct and apparently separate occurrences. In working the dredge from 10 to 70 fathoms oysters were only met with in about 50 fathoms, and from that down to the 70-fathom line they were fairly commonly met with, the average size of the shells being about 3 in. in diameter. Between 10 and 50 fathoms very few oysters have been met with, nor have the empty shells been picked up in that area by the trawl-net, which, of course, only skims along the surface of the sea-bottom. With an ordinary deep-sea oyster-dredge Mr. Adams considers that very considerable hauls of oysters could be secured, but whether it would be an economic proposition to lift them from a depth of 50–70 fathoms is open to question.

Singularly enough, just inside the inlet of Wickliffe Bay and at the southern end of the Bay are several good beds of oysters, which are about the same size as those dredged from 60 fathoms, but the shells are neither so thin nor so brittle as those taken in the deep water.

The southern rock-oyster (*Ostrea latei* Suter), which was formerly very abundant in Otago Harbour, is still found in immense quantities on unfrequented rocky shores along the Otago coast, but especially round Stewart Island and in the West Coast sounds and fiords. The mature shell is comparatively thin and free from the massive corrugations which characterize the northern rock-oyster (*O. glomerata* Gould), and is rather less in diameter, but the animal is just about as large and is quite as delicate as its northern congener. It is only the occurrence of the large Stewart Island oyster, and its relatively easy collection, which have obscured the excellent qualities of the smaller species. The life-history of this oyster was roughly worked out at this station a few years ago. The animal comes to maturity within three years of the deposition of the spat, and the ponds at this station are now lined with numbers of them between tide-marks.

*Pipis.*—Attention is drawn to the occurrence of great quantities of pipis (*Amphidesma forsteriana* Finlay) both within and outside Otago Harbour. They occur in abundance on the sandbanks off the Kaik, which are partially bare at low water. When working the trawl at the Heads and outside within the 10-fathom line the empty shells are picked up by the net in great quantity; but when the dredge is used, even at the shallow depth in the sand at which it works, the live animals are frequently brought up. A large oyster-dredge would lift great numbers, but the animals bury themselves rapidly when disturbed.

No use at present is made of this valuable food-supply, and very little is done with either cockles or mussels, which are equally abundant in the estuaries and round the coast. There is a constant outcry about the cost of living, but natural sources of good food are lying at our doors unutilized.

The work of outlining and noting the occurrence of oyster-beds and of pipis was carried out by Mr. Adams, assisted by Mr. Broadley.

*Algæ.*—Mr. R. M. Laing, of Christchurch, has long been in touch with the station, and has recently received material from it for the continued study of algæ. In a brief report to the Chairman of the Board he stresses the importance of the Portobello Station as admirably situated for the study of seasonal changes in the seaweed crops, both in harbour algological formations and in those of the open coast. Though the seaweeds are of low food value, and are never likely to be made use of as food in this country, as contrasted with Japan, where some seventy or eighty kinds are employed in various ways, yet they are of importance medically as a source of iodine compounds for the prevention of goitre, and as a makeweight in diabetes. He also stresses the occurrence on our coasts of immense quantities of seaweeds belonging to the genera *Gigartina*, *Gracilaria*, and other genera, which supply an excellent and readily extracted jelly. He adds that the Portobello Station would be a suitable centre for the investigation of this source of food-supply, and might well help in the beginning of an industry.

*Food of Fishes.*—The examination of the stomach contents of fishes, so well carried out in the earlier years of the station's activities by its first curator, the late Mr. T. Anderton, has been continued and extended by Mr. Graham. The total number of species examined by him was forty-five. The notes and records, which are added in an appendix, are in addition to those already recorded in the bulletin of the station published in 1921.

*Seine netting* was carried out whenever possible by Messrs. Adams and Broadley on the banks at Lower Portobello and the Upper Harbour. The set-net was also put down at frequent intervals during the summer months in the deep-water channels of the harbour, and off the coast from Hayward's Point to Purakanui Inlet. Owing to the migration of many species of fish from the shallow waters of the harbour to the much warmer water outside, the set-net is not utilized from May to November.

*Weather and its Effect on Fish.*—Mr. Adams reports as follows:—

"The early part of the winter of 1930 was extremely mild, but towards the latter part of June exceptionally stormy weather set in and continued right through July. As a result of the sudden change the temperature of the pond water quickly dropped to 3·2 C. The lowest temperature of the ponds recorded during June of the previous year was 6·4° C. A few moki and blue cod that had not