

It was therefore quite apparent that it was no use to keep the few remaining turbot in the hatchery-tanks, and as they were beginning to die it was considered advisable to liberate them. Accordingly on the 14th October last the remaining fish—now reduced to nine—were liberated by Mr. Adams near the same locality as the two preceding lots—viz., off Pellet's Point, to the south of the Nuggets. The Board is indebted to Mr. A. J. Allen (agent) and the proprietors of the s.s. "Oreti" for the assistance given on this as on previous occasions of the liberation of these fish. As stated in last report of the Board, there is great probability of these fish appearing in New Zealand waters, even though none have so far been met with.

*Lobsters* (*Homarus vulgaris*).—Only two females have been left of the original stock, and these hatched out small batches of eggs (estimated at about five thousand altogether) during January. As no males are left no further supply of fertilized eggs can be expected.

Therefore the attempts to introduce European turbot, lobsters, and crabs (*Cancer pagurus*) are now concluded for the time being. It is to be hoped that when conditions are more favourable the Government will renew its efforts to naturalize these species in New Zealand waters. The turbot is finer than any of the local flat fishes, fine as these are, and commands a high price in the markets of Europe. The lobster is considered by most connoisseurs to be finer than the native crayfish (*Palinurus lalandii*), though opinions differ on this matter. It does, however, command a high price both in Europe and America, and would be a desirable addition to the food-supply of this country. The edible crab has no rival in the New Zealand seas, as none of the local indigenous species are large enough to have a commercial value.

The launch "Karoro" has been employed outside Otago Heads every week during the season when weather conditions permitted, and the staff have experimentally worked the available ground with line fishing and trawling from Puketeraki to Sandfly Bay, four miles south of Cape Saunders. The launch can only work her 70 ft. trawl to a little over 20 fathoms; her 7½ horse-power oil-engine will not haul in deeper water. But dredging with a small dredge has been carried out to the 70-fathom line with interesting results.

The attempts to locate the shoals of Clupeids (pilchards and sprats) have not been very successful so far. Mr. Adams reports that at Waikawa sprats were reported to be in vast shoals off the coast throughout the greater part of the summer months. They have also been reported at times as plentiful at the Nuggets and at Moeraki, but they have not been met with in any quantity off Otago Heads. That they have not been much in evidence there is best shown by the fact that from the numerous fish taken and whose stomach contents have been noted sprats were very rarely taken. At various times a few have been taken in the small-mesh net at the cod end of the trawl. Small shoals have been seen among the rocks off Cape Saunders, driven there by the barracouta, but too near the cliffs to be secured by surface trawling or hand-nets. The sprat-nets ordered from Britain arrived too late to be reported in the year's work. Mr. Adams is very confident that, "providing there are no barracouta near the surface, there should be no difficulty in catching large numbers of sprats or pilchards."

"The weather during the winter months was very unsettled, and flat fish were more scarce than for some years past. These fish during the spawning season were only being caught in small numbers on the grounds four miles north-east and east of Otago Heads. The grounds closer inshore were foul with loose weed throughout the greater part of the winter, and were in consequence almost bare of flounders and soles. Towards the latter part of July flat fish commenced to work closer inshore. Early in August, however, heavy weather again drove them into the deeper water, and from then on they were hard to locate, being constantly on the move. The first ripe soles were caught on the 25th July, all being males. It was not until the 11th August that any ripe females were caught. A week later the majority of soles taken in the trawl were spent, a small number only retained a few eggs. All were in poor condition. Brill were exceptionally scarce, none being caught during the spawning season.

"Although the weather conditions during the winter were somewhat stormy, it was not until the 12th June that it became necessary to start the heater in order to keep up the temperature of the supply water for the observation-tanks. The water in the outside ponds did not drop below 4° C., and the tank supply was on no occasion below 6.5° C.

"The duties of Inspector of Fisheries for the Otago District have taken up a good deal of Mr. Broadley's time in collecting fishing-license fees, and visiting the local fish-market. The outlying fishing-ports, both north and south, were twice inspected by him. During the latter part of February and throughout the whole of March Mr. Broadley has been engaged on behalf of the Department in salmon-fishing at the mouth of the Clutha River."

Mr. Maxwell W. Young, Biologist of the station, has had a busy year. The second lot of fish for the College of Natural Science, Philadelphia, has been prepared, consisting of 103 specimens, and this has been sent off. The total number forwarded has therefore been 147 specimens.

A considerable amount of material of zoological interest has been sent to Professor Benham. This includes fishes, tunicates (especially a good stock of prepared specimens of *Boltenia pachydermata*, for use of biological students in Otago University), polychaetes, Crustacea, and Mollusca. Sea-water from outside the Heads has been supplied to Professor Benson for his important researches (in conjunction with Professor Hercus) into the relations of iodine and goitre.

Dr. Raynor Bell, Professor of Dental Surgery, has been supplied with the fixed and preserved jaws of several species of fish, in connection with his researches into the development of teeth.

The Crustacea from the dredgings and trawls have mostly been sent to Professor Chilton, of Canterbury College; the Brachiopoda to Dr. J. Allan Thomson, of the Dominion Museum, Wellington; and the Mollusca to Mr. H. J. Finlay. In addition, red cod and whale-feed were supplied to Professor J. Malcolm, Professor of Physiology in the University of Otago, who has been working up the relative food-values of various species of food fishes. Mr. Scarfe, of Wellington, has been supplied with marine algæ.