

the indoor tanks for hatching: the larvæ would escape through the pond-valves and become distributed by the action of the tides. The majority of the females are now seen to be again egg-bearing, and, as they have this time been spawned in their proper season for these waters, it is expected that large numbers of larvæ will be secured for distribution about November. The old stock of lobsters have for the last year been confined in the wharf pond. Three of these have died and several others have lost one or more of their large claws through fighting. Owing to the heavy loss of eggs that takes place amongst the attached eggs while the adults are in close confinement in the ponds, the Board decided to try the experiment of liberating a number of these old stock lobsters. Eight of the largest females were liberated in what was considered to be the most suitable locality as soon as the eggs were spawned. All these carried complete bunches of eggs which, under the improved conditions of a natural environment, will in all probability remain attached to the adults until hatched, and should result in the production of a large number of healthy larvæ. Four large males were put out in the same locality at the same time.

*Crabs.*—The new shipment of forty-three crabs were placed in the No. 2 pond. At the approach of cold weather several of these died. The cause of death was not apparent. The dead ones were usually discovered almost buried in the thick soft mud at the deeper end of the pond, and it was thought that this mud was at the least a contributing cause. Several launch-loads of clean sand were brought up from the Heads and a layer of 6 in. of this was strewn over the bottom of the two smaller ponds. The majority of the crabs were transferred to these two ponds. A little improvement was noticed, but they remained very sluggish, and many more died. After consulting with the Minister of Marine and the Secretary of the Marine Department it was decided to liberate the majority of the remainder. In all sixteen died; nineteen were liberated in a favourable locality, which for obvious reasons need not be disclosed; eight have been retained in the pond. Although the whole of the previous shipment of crabs have died, a greater measure of success was obtained from them during the three years they were confined in the ponds. Some twenty million larvæ were liberated from them. The reason of the non-success of the last shipment is obscure. The crab, in its native habitat, migrates to the deeper water in the winter-time, and it is quite probable that the rapid fall in temperature so soon after arrival, and whilst in a weak state, was to a great extent the cause of the heavy mortality.

*Turbot.*—The stock of turbot remains the same as in May last. None have died during the year. The six large glass tanks have been brought into use for their accommodation, and a large wooden tank measuring 15 ft. by 5 ft. 6d. by 2 ft. deep has been fitted up. In the latter tank thirty of the largest have been placed. With few exceptions all have shown enormous growth during the year. In March of last year the length varied from 2 in. to 4 in. By the end of May the largest measured about 6 in. in length. Many of the largest have now attained a length of 13 in. and a breadth of 9 in. across. All are in perfect condition and of great thickness. The utmost care has been exercised throughout the year in order to prevent the access of harmful bacteria. Flat fishes in close confinement are extremely susceptible to disease. Our own previous experience with flounders and soles, and the experience of all the British stations, has proved that with ordinary care it has been necessary to renew the stock of breeding flat fishes each year, owing to an outbreak of a disease which causes the skin to become affected with ulcer-like sores. To replenish the stock of turbot each year is, however, impracticable, hence the extreme precautions that are being taken. The slow process of extracting from all the tanks by siphons, immediately after feeding, every particle of unconsumed food, sand, manure, &c., is repeated, and occupies practically the whole of each morning. Once a week the inside faces of the glass and the cement bottoms of the tanks are scrubbed without removing or unduly alarming the fishes. Ling and moki, the latter being taken by set-net close to the station, have been chiefly used for feeding purposes. A whole ling, cut into pieces about half an inch square, will now be consumed at one meal. Fish showing the slightest signs of staleness is never used as food. The turbot become very active towards feeding-time, and rise to the surface as soon as the tank is approached, but soon "sand" themselves over and remain quiet after the tanks are cleaned out and the fresh sand is thrown in. The largest ones are now being fed almost entirely on live fishes, chiefly cock-a-bullies (*Trypterygion* sp.). These are caught by means of hoop-nets. The turbot are extremely active in seizing these; even the large ones, as thick as one's finger, are swallowed whole, and so rapidly that one can scarcely discern the act. The small apparatus for heating the tank-water has proved most satisfactory and efficient. The supply-water has never been allowed to fall below 40° C. (39.4° F.). The prospect of being able to acclimatize this valuable fish is very assuring. It will probably be necessary and advisable, on account of want of space, to liberate a large proportion next summer and retain a small number for spawning purposes. They will by then have attained a length of about 18 in., and will by their size and adaptability to protective colouring be quite able to protect and to forage for themselves.

The appointment of Mr. Adams, the assistant curator, to the position of Inspector of Fisheries for Otago has deprived the station of a considerable portion of his time. This work is, however, one of the essential duties of a biological station, and the loss of time is more than compensated for by the facts and collection of statistics that is being placed on record in a volume set apart for that purpose. A record is kept of the quantity and prices of fish exposed for sale on the Dunedin wholesale market.

The Chairman, Mr. G. M. Thomson, M.P., is at present engaged in preparing a card catalogue of the library. The library now consists of some six hundred volumes and a vast number of leaflets, pamphlets, &c. A catalogue of authors, and of the subject-matter of the contents of these volumes, &c., will entail some weeks' labour on his part, but will greatly facilitate the reference to any desired subject.

Considerable time has been devoted, as usual, to the study of the life-history, food, &c., of local fishes. The eggs of several additional species have been secured, including those of the