

were eliminated; but, despite the assertion as to value of the reports, no one is prepared to pay for them. If, as a matter of policy, it is desired that this information should be made available free of cost, then the cost is here revealed; but I must protest against the whole cost being made a charge against the Marine Department's accounts. It is said that the morning and evening forecasts and daily weather report are of value to shipping, and it is in this connection only that the Marine Department has any concern whatever in the matter. The shipping companies, however, do not pay for these reports, and it is doubtful if they would do so were the reports discontinued unless paid for. Furthermore, I am competently advised that these reports in no way govern departure of vessels from port—that shipmasters decide for themselves on their own observations whether or not they will proceed to sea.

In discussing the matter in this way I do not wish to deprecate the work of the staff. I believe they are doing excellent work, and it must be equally discouraging to them to find that it produces so little financial return.

The Science Committee of the New Zealand Institute has been good enough to offer the services of a professional and scientific sub-committee to investigate the whole system of meteorological and hydrological record, with a view to establishing a better distribution of recording-stations and co-ordination of resultant data into a comprehensive record of greater and more practical value. The offer has been gladly accepted, and it is hoped that the sub-committee will be enabled to undertake its work at an early date.

I have, &c.,

G. C. GODFREY,

Secretary.

The Hon. the Minister of Marine, Wellington.

MARINE FISH-HATCHERY AND BIOLOGICAL STATION, PORTOBELLO.

SIR,—

Dunedin, 16th April, 1924.

On behalf of the Board of the Portobello Marine Fish-hatchery, I beg to forward herewith the report of the work carried on throughout the year ending 31st March, 1924.

In past years a considerable portion of our report has dealt with the turbot, lobsters, and European crabs introduced by the Board and later by the Government, in an endeavour to naturalize these species of valuable food fishes in New Zealand waters. The last shipment was made in 1913. The intervening war years, 1914–19, and the resultant conditions since, have made it practically impossible to resume importations of these species. The present position is as follows:—

Turbot.—A hundred and seventy fish, varying from 12 in. to 18 in., were liberated some sixty miles to the south of Otago Heads in 1916 and 1917. The remaining fourteen were kept in the hatchery tanks, and their number remained intact until this past year, when three died. The cause of death was in each case a cancerous growth close to the backbone on the under-side. As the remaining eleven fish appear to be quite clean and healthy, though they have not grown appreciably for over two years, it seems probable that their age is the deciding factor. They must be now at least fourteen years of age, and, though this is not a great age for fish living under natural conditions, it has to be borne in mind that these tank-fish have lived in confinement since they were $1\frac{1}{2}$ in. long. The marvel is that they have remained so healthy and immune from disease or accident. It has always been noted that when the temperature of the water they live in becomes low the fish become sluggish and cease to feed. The temperature of the water in the tanks has therefore never been allowed to fall below 4° C. in the coldest weather, this being effected by passing it through pipes heated in a small coke heater. This last summer the fish have suffered from the heat, the temperature of the water averaging 16° C., and sometimes reaching as high as 20° C. The temperature of the ocean surface water outside the Heads ranges from a little over 5° C. in winter to 9° C. in summer, while at depths of from 20 to 50 fathoms it is probably more uniformly between 7° and 9° C. We have not the apparatus or the opportunities of recording these deeper-ocean temperatures.

Occasional reports are still received of turbot being brought in to various ports by fishermen, but no authentic information of the occurrence has yet been obtained, nor have actual specimens been received. That the fish is in New Zealand waters is highly probable, and it may be met with some day, just as has happened in the case of both the quinnat and Atlantic salmon. Meanwhile the Board would suggest to the Government the advisability of renewing the introduction of this fish as soon as the conditions become more favourable. If once naturalized in these southern waters and available as a food fish its value would be very great. The average *wholesale* price of these fish in Britain in 1921 (the last year for which we have figures) was 1s. 2d. per pound.

Lobsters.—In the last annual report Mr. W. Adams, the curator of the station, stated that the stock of these crustaceans was reduced to three males and two females. Two males have since died, probably from old age, as the animals are at least twenty years old. The females both carried large batches of eggs, which hatched out during the year, and were estimated to produce 10,000 larvæ.

This stock should also be renewed as soon as convenient. No practical response has been made to the offer of a bonus for the introduction of these animals, an offer which has been before the shipping people for the past two years. Meanwhile, as a very large number of lobsters have been liberated from time to time, variously estimated from one to two million larvæ, besides a few adult animals, the chances are all in favour of their being met with in our seas. These crustacea almost