The aquarium has been kept fully supplied, the glass observation-tanks being used to their full capacity to display fish, varying in size from pilchards to large skate, along with a good assortment of other sea-life. Visitors have availed themselves freely of the opportunity of inspecting the aquarium, many spending hours watching the fish.

### European Lobsters.

We have lost a few of the adult stock through the usual causes, such as attack by the others when casting and through fighting. The remaining stock is in excellent condition and the females are still producing eggs. Attempts were made to rear the young both by keeping them in large ponds and by placing fifty of them singly in jars inside the hatchery. Neither attempt was successful, and the conclusion arrived at is that this failure was due to sudden variations of temperature. The young in jars were fed daily and each day were transferred to clean jars, a tedious amount of work being involved. During January we had very hot weather with sudden cold changes, variations of 4° being noted in a very short time. In the shallow outside ponds the young lobsters survived until the stage when they go to the bottom of the water, but then died. In the hatchery the rapid heating of the water was the deciding factor against them. It is evident that without funds we cannot create a suitable environment to match the natural one of the young lobster, which spends this portion of its life in the deeper seas. The work on the lobsters has placed the ponds in good order with new valves and screens, and all the ponds have been cleaned.

### European Turbot.

Very interesting reports have been received from Invercargill that Bluff fishermen have taken numbers of good-sized turbot near Bluff when netting in the surf. The fishermen consider these to be English turbot. We are now awaiting specimens promised. English turbot frequent shallow bays and estuaries, but no records have been published on New Zealand brill or turbot being taken in any other than deep water, hence it is very probable that these are the progeny of those we introduced and released in Tautuku Bay.

### Biological Notes.

This year has been exceptionally fine, and the warm weather has resulted in extra warmth of the harbour-water. In December the records show that 18° C. was common, and 20·2° C. was recorded on one occasion. During the winter months in July the temperature was down to 5·5° C., and in June, after a snowstorm, dropped suddenly 2° lower. Both extremes proved fatal to some of the fish in captivity. Out of five dozen mullet which had been in the ponds for two years only four survived the winter. Red cod and wrasse also died, while during the hot weather of the summer months red cod died from the heat. The winter months caused the blanket-weed in the harbour to die off, and great masses of this floated about and so clogged the nets as to cause a considerable handicap to fishermen, and fish moved out from the harbour to cleaner areas. By December the weed had disappeared, but dogfish of fair size were then numerous, and when caught in the nets tore them considerably.

Greenbone, both *Coridodax pullus* and *Odax vittatus*, were exceptionally plentiful near the Station this year. *C. pullus*, the larger greenbone, is usually present, but *O. vittatus* is not a frequent visitor, yet this year both were equally plentiful. Along with them occurred great numbers of leather-jackets (*Pseudomonacanthus scaber*), a fish which has not been seen in the Otago Harbour for many years.

Smooth-hound (*Mustelus antarcticus*) appeared in large numbers and caused considerable damage to our set net. They were found to be feeding solely on crabs. A female caught at the end of December placed in one of the ponds gave birth to seven young. Some of these placed in the observation tank swam around freely and within two days fed freely on pieces of fish. They are still alive and are fully four times their original size. Numbers of young dogfish of about the same size were caught in the harbour, and apparently the gravid females arrive in December to give birth to their young.

Skate (*Raja nasuta*) caught off Portobello Hatchery Point produced eggs, and from these we have hatched young skate. The period from the laying of the egg in its case to the emergence of the young was exactly twelve months. Two of the egg cases were opened about the six-month stage and the young skate, with the yolksac attached, was placed in a glass jar under running water. Very unexpectedly they thrived quite well under these peculiar circumstances, gradually absorbing the yolksac and started to feed within a week after the yolksac finally disappeared. They were apparently as healthy as the naturally hatched fish.

Pilchard (*Clupea neopilchardus*) and sprat (*Amblygaster antipodus*) were in abundance throughout the year in the vicinity of the Station and are still in evidence. Variations in size point to a succession of shoals covering a wide hatching-period entering the harbour at different months of the year. A number were secured and carefully transferred to the observation tanks in November—these are still alive and have grown to three times the size they were when secured. They were first placed in the tank which is specially devoted to sea anemones, but recently had to be transferred elsewhere because they bit off the tentacles of the anemones.

Smelt (*Retropinna retropinna*).—The cucumber-smelt has occurred in vast numbers. In December they were taken in hand-nets off Port Chalmers wharves and used as whitebait. They are still plentiful, occurring in the whitebait stage and up to large specimens 6½ in. in length. Usually this is referred to as a fresh-water fish going down to the sea to spawn, but we have it here purely a salt-water fish in all stages. It is interesting to note that while pilchards, sprat, and small mullet survive in the observation tanks, smelt die in a few hours, no matter how carefully they are handled. This is quite the reverse of the fresh-water minnow, or inanga, which will survive in a pickle-jar.