In regard to the growth of the common flounder (*Rhombosolea plebeia*) it is noted that when first placed in the tanks the fish do not feed, and it takes them two or three weeks to become familiar with the surroundings. Only eight fish have been measured for any length of time. No. 1, 5½ in. long, increased to 8⅞ in. in nine months, or an average growth of ⅜ in. per month; but in the first four months it grew ½ in. per month and then slowed down. No. 2, 6 in. long, increased to 10¼ in. in eighteen months, or slightly over ¼ in. per month, the growth being fairly uniform throughout. No. 3, 6½ in. to 9⅞ in. in seven months, uniformly more than ½ in. per month. No. 4, 6½ in. to 11¼ in. in fourteen months, or ⅜ in. per month; in this also the rate was about ½ in. per month in the first six months, and only ¼ in. for the rest of the period. No. 5, 7 in. to 12¼ in. in twenty-three months, or barely ¼ in. per month. For the first four months the rate was ½ in. per month, then it gradually slowed down, and during the last year the fish has only increased 1 in. in length. No. 6, 7¼ in. to 9⅞ in. in six months, or slightly over ⅜ in. per month. No. 7, 7¼ in. to 12½ in. in twenty-three months. Of this increase 4¼ in. was gained in the first eight months, or over ½ in. per month; then the growth nearly stopped, and the length has only increased 1 in. in fifteen months, or rather slower than No. 5. No. 8, 7¾ in. to 12⅜ in. in eleven months, or considerably over ⅜ in. per month, the growth being most rapid for the first six months.

The number of fish dealt with is too small to found any definite conclusions upon, but the facts are worth recording for future reference.

I cannot find that the season of the year has made any difference in the rate of growth. As the water in the tanks, even in the coldest months of the year, is never allowed to fall below 44° F., the fish feed all the year round, and they get as much to eat as they want. In the open sea, however, as the temperature seldom or never falls below 48° F., they probably are only dependent on the food-supply for the rate of growth.

Of other fishes kept in the tanks for any length only two have been measured. A specimen of the girdled parrot-fish, or wrasse (*Pseudolabrus cinctus*), is of a slate-blue colour, and is a particularly shy fish in the concrete tank, where its hue makes it conspicuous. It was 9⅞ in. in length when placed in the tank, and has increased to 11¼ in. in nineteen months, or less than ⅛ in. per month. This slow rate of growth has been uniform.

A specimen of the banded parrot-fish (*P. pittensis*), of exactly the same size, has been under observation for the same period, and has grown at the same rate. This fish, which is of a general light-green colour, crossed by bands of a darker hue, is not so shy as the preceding species, probably because its colour approximates more closely to that of the commonest of the green algæ, and this makes it much less conspicuous.

Surface Nettings.

From the establishment of the hatchery a large quantity of material has been gathered from the surface of the sea, both inside and outside of Otago Heads, by means of surface nets. Some of this has in the past been sent to Professor G. S. Brady, of Newcastle, and to Professor G. Otto Sars, of Christiana, both of whom have done valuable work in identifying and describing New Zealand crustacea.

Since October, 1918, the collection of surface-net material has been undertaken regularly every week. The gathering is made off the wharf, and thus consists only of the small swimming life of the water which flows past the station daily.

I recognize that this work is only the beginning of a research on the floating life of the waters of Otago Harbour and the adjacent seas. If all the material collected were worked out it would enable us to ascertain to some extent what are the common forms of life on which our fishes feed. The contents of the surface nets vary largely from month to month, at times consisting almost entirely of Copepoda, and in the summer being mixed with a large proportion of crab zooaeas and larval fish. In the European seas some of the most valuable food fishes, such as the herring and mackerel, feed at times almost exclusively on Copepoda; so do the young of such flat fishes as the plaice. The same is probably true of the fish in our southern seas. When rearing larval lobsters Anderton fed them with Copepoda obtained by surface netting. The examination of the stomach-contents of our food fishes, which is still regularly continued at the hatchery, deals only with the larger material found. The identification of Copepoda and other small organisms requires microscopic examination, and that cannot be undertaken until scientific assistance is fully available. Meanwhile the Board is accumulating material from week to week, in the hope that ere long it may be worked out.

No attempt has been made to collect smaller organisms, such as the diatoms which form such a vast proportion of the food of the Copepoda themselves. Their enormous importance may be inferred from the estimate made by Professor Moore (quoted by Professor Herdman in a recent paper on "Distribution of Diatoms and Copepoda in the Irish Sea") that the amount of carbon used up by Diatoms and converted from the inorganic to the organic form probably amounts to "something of the order of 20,000 to 30,000 tons per cubic mile of sea-water (= 57·5 or 86·25 grains per cubic yard, or 4 to 6 grammes per cubic metre) in the Irish Sea; and this probably means a production each season of about 2 tons of dry organic matter, corresponding to at least 10 tons of moist vegetation per acre" (of sea-surface).

Of future research to be undertaken a most important branch is the working out of the life-histories of our food fishes. At present about 120 species of fishes are known from the waters of Otago Harbour and the immediately adjacent waters. Of these about thirty-six appear more or less commonly on the market, but the life-histories of only five or six are known even to a small extent.

In conclusion we would suggest that steps should be taken, now that the war is over, and as soon as shipping becomes normally available, to procure a further supply of lobsters and edible crabs. It would also be advisable to consider whether any further shipments of turbot should be attempted. These are matters for future action, meanwhile we suggest that they should be kept in view.

I am, &c.,

GEO. M. THOMSON,
Chairman, Marine Fish Hatchery Board.

The Secretary, Marine Department, Wellington.