in freight, the expense of bringing out a fresh stock of fish or crustacea will be very great. When such work can be attempted it is very desirable that an importation of young turbot, of lobsters, and of European edible crabs should be made. There is no record of any result so far from past efforts to introduce these species, but the conditions under which all three experiments have been carried out point, as far as they go, and as far as we can judge, to ultimate success. In some cases of successful naturalization of animals in New Zealand—*e.g.*, quinnat salmon—success has only followed repeated and sustained efforts. In the case of European turbot at the Portobello Hatchery only one attempt has been made—in 1913—to introduce this species. Over 90 per cent. of the original fish landed were liberated in the sea when they were well grown and sexually mature, and when they would be comparatively free from the risk of destruction by their enemies. If they kept together at all the chances are that they have produced and set free many millions of ova.

Larvæ of the European lobster (*Homarus vulgaris*) have been set free every season for the last thirteen years, while several mature lobsters were liberated in Otago Harbour some years ago. Between one and two millions fry have thus been distributed, and it is difficult to believe that there are not very numerous examples of these crustacea in our waters.

Similarly, vast numbers of the larvæ of the European edible crab (*Cancer pagurus*), estimated at about thirty-five millions, have been liberated, while the small remaining stock of adults was also set free. The same probabilities exist as in the case of the lobsters.

In introducing in the future more foreign fish and crustacea it is desirable that effort should be concentrated upon the three species which have already been experimented with until some measure of success has been assured.

The following statements are taken from the annual report made to the Board by Mr. W. Adams, curator of the hatchery:—

"The stock of turbot in the tanks now stands at fourteen. All the fish appear to be in the best of condition, although they have not increased in length (maximum 23 in.) during the past year. One fish died early in the year. The cause of death was an ulcer which had formed on the under-side. The fish are examined frequently, and all care is taken to prevent fungoid disease. There are no signs of development of the ovaries, and I do not think that there is any likelihood of the fish spawning while confined in the tanks."

Two comments may be made on this statement. It is now considered to be the case, judging from the records of several hatcheries and biological stations, including Portobello, that many species of fish are unable to extrude their ova except at considerable depths in the sea. Pressure of water seems to be necessary, and in aquarium ponds and tanks the ova are retained owing to the lack of this pressure. The second point is that fish in confinement reach a certain size and then cease to grow. This has been observed both in connection with the turbot and with native flounders which have been measured for some years past. It may be interesting here to record that Atlantic salmon (*Salmo salar*) retained many years ago for breeding purposes in the Clinton Hatchery grew to about 10 lb. weight and then ceased to increase in size.

"The stock of lobsters has decreased from seventeen at the time of my last annual report to twelve. Three died from injuries received shortly after casting, and two from other causes. Seven females, which were carrying full bunches of eggs, hatched out their broods in December. I estimate the number of larvæ produced to be 105,000. The whole stock have now cast their shells, and several of the females are again carrying eggs.

"As much time as possible is spent in line fishing and trawling on the grounds off Otago Heads and Cape Saunders. On the outside of the cod-end of the trawl-net a small-mesh net is fitted. This enables us to secure a much larger variety of small fish and of crustacea than we could obtain by using only the regulation-size mesh. The stomachs of all fish taken are examined and the contents noted. All rare specimens are preserved.

"Records of the growth of the common flounder, sole, tarakihi, and wrasse are still being continuously taken.

"Surface tow-nettings are taken from the wharf at regular intervals. There is now a large accumulation of this material waiting to be worked out.

"An interesting experiment now being tried at the station is the rearing and cultivation of the southern rock-oyster (*Ostrea tatei*). One of the outside ponds is being utilized for this purpose. Slabs of reinforced concrete, perpendicularly attached to racks, have been placed right across the pond. Just before the spawning season a number of oysters were placed in the pond. The most difficult part of the experiment has been the keeping of the slabs free from marine growth. Slime or weed would stifle the young oysters, or would prevent the spat from becoming attached. With the exception of picking off the weed nothing could be done in the way of cleaning the slabs while the oysters were spawning. I would suggest that during the coming season a number of slabs be placed in a horizontal position so that at least the under-side would be free from marine growth."

The effect of the sunlight on the water of the shallow ponds is to encourage an excessive growth of algæ, especially of filamentous forms, and the spores of these attach themselves to suitable surfaces in vast numbers. Probably the most effective method of protecting the surface of the concrete plates during the spawning season of the oysters will be to cover a portion of the pond for two or three months with a fairly close roof, and this will be tried during the coming season. The southern rock-oyster is quite distinct from the Auckland species (*Ostrea glomerata*) in external characters. The animal itself is about the same size, and of the finest quality, but with a smaller shell. The species used to be very common in Otago Harbour, but owing to constant picking is now somewhat uncommon. It has established itself somewhat freely in some of the hatchery-ponds. It has been suggested that the Auckland rock-oyster should be tried at the Portobello Hatchery, but the natural range of the species is from the Hauraki Gulf northwards, and it certainly would not thrive in the colder southern waters.