

"In the case of Mahurangi and Kawau, the beds are at present grossly overcrowded and will have to be thinned out, as there is very little chance of the main portion of the oysters there ever becoming marketable if the successive waves of spat are allowed to fix one on top of the other. Therefore, in respect of the Hauraki Gulf cultivation work, I suggested a fundamental change in policy to be carried out in the forthcoming season. This has been approved and is: That in place of trying to improve the stock on individual beds by bringing the high-water oyster down to a lower level, thus lessening our breeding-stock but improving our picking-stock, we should try to stock up the natural beds by means of the transfer of oysters caught where fixation conditions are good. In the past where oysters have been transferred to act as brood stock two great mistakes have been made—(1) The rocks on which the brood oysters were attached were placed too low down, so that the oysters tended to increase in size themselves instead of acting as spawners, and (2) insufficient numbers of brood oysters were transferred to any one place—that is to say, if, for example, fifty capstones were transferred, instead of being placed all together, they were scattered over a fairly wide area, thus reducing the concentration of spawn available for any particular position, and also reducing the sexual stimulation at spawning time, due to the presence of ova or sperms in the water surrounding oysters which were on the point of spawning. This latter factor is very important where the spawning season is delayed and the oysters tend to hold up their sexual elements. These two mistakes taken together must have done much to nullify any experiment. The approved proposals were that this season we should pick all the marketable oysters in Mahurangi and Kawau, then, as a phase of the cultivation work, clean off and bag up the small stunted oysters which remain, and bed them down in selected localities at Coromandel. We are also to transfer all the available capstones from Mahurangi and Kawau, to Rat Island, Coromandel, to be placed among the boulders near high water to act as brood stock."

Mr. Young further reports that the beds are, on the whole, understocked and have to be picked with care, with the exception of Kaipara, Mahurangi, and Kawau. On these areas fixation has been so heavy that they require hard picking to keep them in order. This is difficult as the oysters are not of such good quality as those from the other beds, and it makes their disposal in quantity very difficult.

#### *Cultivation Experiments.*

In connection with the experiments in "tray cultivation" (see Appendix II to Report on Fisheries for year ended 31st March, 1929), the trays at Kaipara and Coromandel have been kept under as close observation as possible by the local Inspector and by the Marine Biologist. In both cases the oysters on the trays had increased in size and improved in condition compared with the stock from which they came. Those oysters which were ready for market were removed and sold during the picking season. These amounted in the Kaipara experiment to 28 gallons from an original planting of 36 gallons. Of oysters which died on the trays there were 12 gallons from the low trays, 8 from the middle trays, and 3 gallons from the trays at highest level. From the Coromandel experiment 122 gallons were marketed from an original stock of 96 gallons of poor oysters transferred to the trays the previous year. These tray oysters were specially reported on by the dealers to whom they were sold. They reported that the condition ranged from fair to good and that the size of the shell and of the "fish" was good. They also stated, however, that these oysters did not keep so well as the usual rock-oysters. The tray oysters had been habituated to a longer period of submergence than the natural rock-oysters are subject to, the object having been to increase the time during which they could feed. This experiment will have reached a conclusive stage at the end of the current year when it will be possible to present a comprehensive report giving working details and costs.

The oysters produced from natural "spat" fixed upon stakes have been transferred from Mahurangi and Kawau to Coromandel where increased growth has been the result.

The special concrete slabs set up in 1929 and 1930 for the observation of the natural fixation and growth of rock-oysters, as mentioned in previous reports, have been the subject of periodic observations. Most of them are carrying an interesting population of oysters and associated organisms, the former ranging from 3 in. in length down to the minute dimensions of the last fixed "spat." This experiment will also be at a stage in the coming year when a report may be made.

Mr. Young has made preliminary experiments upon artificial fertilization of oysters, the artificial stimulation of spawning, and on opening oysters by the use of acid solution. Observations of temperature of the surface-water in the rock-oyster regions have been recorded by local Inspectors and collated at headquarters.

#### **DREDGE OYSTERS.**

Eight steamers from Bluff were employed in dredging oysters from the Foveaux Strait beds, and provided a supply of oysters quite adequate to meet a diminished demand at a reduced price of 10s. 6d. per sack f.o.b. Bluff. The oysters were of excellent quality. Six of the oyster-dredgers worked throughout the season from February to October inclusive; one made no landings in July, and one worked on the oyster-grounds only for portions of February, April, May, and June, and, having been equipped with a "well," was also engaged in an experiment in transporting live oysters by sea.

The vessels leave and return to port each day, but the maximum number of trips made in any one month was nineteen and the minimum (for the regular dredgers, not the transport vessel) was six. The idle days were partly occasioned by bad weather, but more often by the stocks of oysters in hand being adequate to meet market demands. The fleet made altogether 605 trips throughout the season. The total landings for the season amounted to 37,484 three-bushel sacks.