

1892.

NEW ZEALAND.

OYSTER-CULTURE AND OYSTER-FARMING.

(BY H. M. BREWER, F.L.S.)

Laid on the Table by the Hon. Mr. Seddon, with Leave of the House.

IN commencing this paper I may say that it does not pretend to be an entirely original composition, but is compiled from the best-known authorities on the subject, supplemented by the writer's own observations and experiments, and with the hope that it may lead to the extension and increase of an industry which has been wonderfully successful in other countries.

In the course of conversation I have found that even those intimately connected with the fishing industry know very little about the earlier stage of oyster-life, and little or nothing as to the means of artificial propagation and protection. I shall therefore commence with a description of the life of an oyster from its incubation.

Oysters do not leave their ova, like many other marine creatures, but incubate them in the folds of their mantle and among the laminae of their lungs. There the ova remain surrounded by mucous matter, which is necessary to their development, and within which they pass through the embryo state. The mass of ova, or "spat," as it is familiarly called, undergoes various changes in its colour, meanwhile losing its fluidity. This state, it is said, indicates the near termination of the development, and the sending-forth of the embryo to an independent existence; for by this time the young oyster can live without the protection of the maternal organs. An eminent French pisciculturist says that the animated matter escaping from the adults in breeding-ponds is like a thick mist. Being dispersed by the winds, the "spat" is so scattered by the waves that only an imperceptible portion remains near the parent stock; all the rest is dissipated over the sea-space. And if these myriads of animalculæ, tossed by the waves, do not meet with solid bodies to which they can attach themselves, their destruction is certain, for if they do not fall victims to the larger animals which prey upon them, they are unfortunate in not fixing upon a proper place for their development. Thus we see that the spawn of the oyster is well matured before it leaves the protection of the parental shell; and by the aid of a powerful microscope the young animal can be seen with its shell perfect, and with its holding-on apparatus, which is a kind of swimming-pad, ready to clutch the first "coign of vantage" that the current may carry it against. The saving of the spawn cannot be effected unless it falls on proper ground—*i.e.*, ground with a shelly bottom is best for the infant animal. If it falls amongst mud or sand it is sure to perish. That the young oyster must obtain a holding-place is the first and primary condition of its existence. On being exuded from the parental shell the spawn at once rises to the surface, where its vitality is easily affected, and it is often killed in certain places by snow-water or ice. A genial warmth and sunshine is considered highly favourable to its proper development during the few days it floats about on the surface. Except in artificial breeding-places it is thought that not more than one oyster out of each million arrives at maturity. In the matter of climatic influence, therefore, New Zealand, and more especially the North Island, is eminently suitable to a favourable result.

As is well known, there is a period every year during which the oyster is not fished; and the reason why our English oyster-beds have not been ruined or exhausted by overfishing arises, among other causes, from there being a definite close time assigned to the breeding of the mollusc. They begin to sicken there about the end of April, so that it is well that their grand rest commences in May. The shedding of the spawn continues during the whole of the hot months. Although during that period there may be found supplies of healthy oysters, yet, as a general rule, it is better that there should be a total cessation of the trade during the summer months, because, were the beds disturbed by a search for the healthy oysters, the spawn would be scattered and destroyed. Bertram, in his "Harvest of the Sea," says, "It is quite certain that a strict close season for oysters is necessary and advantageous, for we seldom find this mollusc, as we do the herrings and other fish, full of eggs, so that most of the operations connected with its reproduction go on in the months during which there is no dredging. As I have indicated, immense quantities of the spawn of oysters are annually devoured by other molluscs, and by fish and crustaceans of various sizes. On occasion of visiting the beds I have seen the dredge covered with this spawn; and no pen could number the thousands and millions of oysters thus prevented from ripening into life."

The secret of there being only a holding-on place required for the spat of the oyster to insure an immensely-increased supply having been penetrated by the French people (and no doubt they are in some degree indebted to our own oyster-beds on the Colne and at Whitstable for their idea), the plan of systematic oyster-culture was easy enough, as will be immediately shown. A few initiatory experiments, in fact, speedily settled that oysters could be grown in any quantity.