Letter on Oyster Culture.

By

By Lord Montagu of Beaulieu.*

I HAVE tried breeding oysters in two enclosed ponds for over ten years. I began my experiments in 1878. These ponds are situated on the banks of the Beaulieu River, about three miles from the estuary. They were excavated from the mud-bank, and banked off from the river; the bottom was well chalked, and afterwards well coated with gravel. They are about half an acre each, and are divided by an embankment. There are three sluices communicating with the river from the ponds, and two between the two ponds. The situation of the ponds is very sheltered, being in the west bank of the river, with a wood on the west side, and the woods on the east side of the river also sheltering them. The water of the river at the spot is brackish to a certain extent, and decidedly so when there is much rain. At spring tides it is nearly as salt as the sea, but there is always a considerable mixture of fresh in the river. I have only once succeeded in obtaining any large fall of spat, and that was in the first year the ponds were made, 1878. That year there was a very early fall of spat, middle of June, and the tiles were fairly smothered with it. Since then there has been occasionally a little fall of spat, but nothing at all satisfactory.

I have used all kinds of collectors—tiles, brushwood, hurdles, shells. When spat is really *mature* it will adhere to *anything*. The tiles I have always coated with a mixture of lime and sand, so that it should not get too hard and adhere too strongly to the tiles, as if so it is impossible to remove the young oysters without breaking their shell, when they die. The labour of removing is great, and the expense also, and it is imperative to put these young oysters into boxes or ambulances, and to remove them to ponds on the sea foreshore. The best, cheapest, and most effective collectors are small shells, and oyster culch, especially if they can be put on fine wire netting, a little above the bottom of the pond. I have tried to collect spat on artificial tile collectors in the river, but have not

* Lord Montagu has kindly allowed me to publish this letter, which was written in answer to some questions of mine as to his experiences in oyster culture.—ED.

been successful in getting much, the amount being quite insignificant to the labour and expense of putting them down.

There are plenty of shells and natural stuff for oysters to settle on in the river if ever a fall of spat matures. That some do mature every year I have no doubt, but the quantity is very small.

I do not know that new natural spat in the river is stronger than that collected in the ponds. The shallowness of the water in the ponds causes the water to be warmer in summer, and this stimulates a greater growth in the young oysters in the ponds, but exposes them to greater risk from cold or snow water in the winter.

That oysters sicken and give a fall of spat every year I do not doubt, but it has always been a difficulty to ascertain if that spat is mature.* There has been a fall of spat every year in the ponds more or less, but it has most years come to nothing. After floating about for a week it will disappear altogether. I should like to know the cause of this, and here is where some scientific research is greatly needed. The problem is, why does this spat disappear? I have not been able to account for it from any natural causes. I have had large bottles of spat and watched it through powerful magnifying glasses and under a microscope, and have never been able to see any other living organism preying upon it. The spat has been very lively and moving about, apparently full of life, and, as far as I could see, having no marked difference from spat which has matured and adhered properly to collectors. Why does it not do so?† I have tried every kind of oyster in the ponds, putting about 10,000 in each pond. French oysters from Arcachon, French oysters from Auray, Solent oysters, river oysters, Falmouth oysters. The former breed much the most prolifically; and my belief is that this is owing to their being matured in a warmer climate. If, therefore, there happens to be a fine week when they emit their spat, the chances of realising a good result are greater with them than other oysters. I have usually placed the oysters I intended to breed from in *shallow* ponds by the sea-shore; this has the effect of bringing them on, and causing them to mature their spat. I believe that climate and warm weather has more to do with success than anything else, and the maturity of the spat when it is emitted from the oyster depends greatly on this also.

It is also most essential that the surface for oysters to spat upon

* The fall of spat has varied greatly in date: sometimes in June, often not till the end of July. I have hardly ever known a late spat come to maturity.

† I have generally put the mother oysters into the ponds about the end of May or beginning of June. The oysters I have selected have been generally about three years old. It is a question perhaps whether the spat from older oysters do not mature better. Those I have had from France have been between three and four years old.

should be clean, and not covered with slime, weed, &c. I have, therefore, latterly adopted the plan of waiting for a spat of oysters, and then throwing shells broadcast into the ponds. I believe this is a good plan. To show how capricious the oysters are, this last season I bred a few oysters in one pond, and there were none in the other close by, yet both were treated alike. I allow the tide to flow in and out through the sluices while the breeding is going on. Some hold this to be a bad plan, as it allows spat to escape. Some may perhaps, but the continual flow and reflow of fresh water into the ponds is most important. I believe it is true that spat rises to the surface in the day and falls to the bottom at night. I have tried this by experiments in large bottles, and there is no doubt that it did fall to the bottom in the dark, and rose to the surface with great activity on being brought out in the light.

There is no doubt that an oyster *must* have innumerable enemies. When it is an established fact that one oyster will emit a million little eggs or spat, it is clear that if it were not for wholesale destruction the stock of oysters would be always abundant, but it is not so. After maturing on a piece of stone, rock, tile, shell, or any other natural collectors in its youth the oysters are devoured wholesale by crabs, &c.; but what destroys them almost at their birth? This is the most important question. The principal cause of our having no spat deposited in this river is the violence of the tide. Unless the oyster spat* attaches itself to something during the lay tide and at neap tides the chances are it is all swept out of this river into the Solent; it may deposit itself in places there, but I hold this to be the greatest obstacle to spat getting attached to anything in the river. The same reason, I think, applies to spat in the Solent, that part of the Solent between St. Helens and Osborne Bay being quite the best bed for oyster-dredging. It is between these two points that east and west going tides meet, and where there is no great current, and it is on this ground that the Solent oyster-dredgers work.

I believe that one of the reasons of a yearly fall of spat in the Essex rivers is much due to the same cause, and undoubtedly the *Whitstable*† beds are in an equally favorable position. The bay or inland sea of Arcachon is for the same reason most favorable for securing a fall of spat, the tide simply passing up and down the bay, and never running the spat into the sea. The Dutch beds at Bergen-op-Zoom are similarly situated. But I think there are other causes why our oyster beds at home are becoming yearly less

* I believe that if an oyster spat is really fit, it will fix itself to some object in a very few hours of its being emitted from the parent oyster.

† Most of the Whitstable natives have for years past been supplied from Arcachon, and laid in the Whitstable grounds.

prolific. This, I believe, is over-dredging, and never having any reserved beds of oysters for breeding puposes. This, however, is a larger question into which I cannot now enter, and it is beyond your inquiry. I should add that there is a natural or native bed of oysters in the river here; it is too small, and should be extended, and more ground opened for laying oysters. This is only a question of £ s. d., but if one has not the money one cannot spend it. I should say that the South of England Oyster Company's breeding ponds at Hayling Island, and Emsworth, in Langston Harbour, near Portsmouth, are well worth a visit, and, I believe, particularly well situated for oyster breeding. They have had varied success, but never can pay a dividend on their capital expended, which has been very large.

I can only say in conclusion that I shall be very glad to see you, and any one whom you may like to accompany you, at any time here; and if my ponds can be of any use for making experiments, I shall be most happy to place them at the service of the Association on any terms that might be agreed upon. I am deeply interested in the whole matter, and should be very glad if the result of the investigations of the Association may solve some of the problems which have up to now defied private efforts.

Yours truly,
MONTAGU.