30.—EELS IN TANKS AND PONDS.*

The fry of eels can easily be made to grow in closed tanks, but it is best to put in some older eels, *e. g.*, some measuring from 8 to 15 inches in length. An eel-tank should be carefully constructed and should be thoroughly tight. Wooden tanks are best, having a lid with a net-work of steel wire, so that the fish cannot escape. At the top they should have a ledge about a couple of feet broad, with fine sand, and outside of that a tight wall of boards about a yard high.

The quantity of water in such a tank should be about 6 pints to 1 pound of large, live fish, but for fish that are a year old about ten times as much water is needed. The tanks would best be placed in summer in fresh running water, or in a lake, so that the waves may have some influence on the inclosed space. In winter it is best to have the tank in a weak current.

At the bottom of tanks for small eels stones (about the size of a fist) are placed; and over it a coarse cloth is fastened, so the young fish can hide under it. For larger eels there should be at the bottom flat stones, roots of trees, &c., so they can hide. Eels can be fed in these tanks all the year round, but in September a layer of clean sand should be put on the bottom, so that the eels can hide in it in winter.

Eels may be fed on all kinds of animal food, even if it is almost decayed, such as dead animals, entrails, refuse of fish, &c. In the tanks it is best, however, to use fresh food, and to take care that no decaying matter accumulates. From the beginning of October till the middle of April the eels do not take any food, because they are in a state of torpor. But as soon as the eels again begin to take food, they should be fed every other, or at least every third, day at sundown, because the eels generally rest during the day. For young eels the food should be chopped, or it should go through a sausage machine, and be mixed with flour so as to form a dough, then cut in small pieces or rolled out in worm-like strings. Worms, snails, &c., also form good food for eels. Larger eels may be given small shells, such as *Leuciscus rutilus*, &c. When well supplied with food eels will increase in weight from 1½ to 2 pounds in the course of a summer.

Ponds are best adapted to young eels. They will grow well in them; and there are instances that about 3,500 young eels, weighing in all 2½ pounds, which were placed in peat-bogs near Abbeville, France, after five years yielded eels to the weight of 6,000 pounds. Any stagnant water, such as peat-bogs, marl-pits, puddles, &c., may be used as eel ponds, on account of the many insects, larvæ, and different aquatic animals found in them. The only condition is, that these ponds should not freeze to the bottom in winter, or dry out in summer.

* '*Aal i Beholdere og i Damme.*" From the *Norsk Fiskeritidende*, Vol. V, No. 1, Bergen, January, 1886. Translated from the Danish by HERMAN JACOBSON.

Along the banks there should be pits for hidingplaces, and for the same purpose there should be near the banks roots of trees, stones, &c. The steeper the banks of the ponds the less chance will there be for the eels to escape. All channels, either of influx or outflow, should be stopped up, so that the eels cannot escape. Care should be taken that the ponds are never exposed to the danger of inundation.

In this kind of pond eels measuring 2½ to 3 inches in length may be placed, or better yet, eels measuring 8 to 15 inches. These latter are better able to seek their own food, to resist the changes of the weather, and to escape from their enemies. When eels are placed in these ponds in April or May, from 200 to 300 of the smaller size should be counted to an acre of pond area. If the eels are 6 inches long, 50 to 100 should be put into the pond, and of the largest size 25 to 50 per acre.

Many of the young eels placed in a pond are of course lost; some escape, others die, and some are devoured by other fish, frogs, and other aquatic animals; so that one may count on 25 to 30 per cent of the smallest eels (from 2½ to 3 inches) reaching a marketable size; 40 to 50 per cent of the larger (6 inches); and 70 to 80 per cent of the largest. Two thousand young eels weigh about one pound.

In these ponds there should be placed the year after the large eels have been put in, or two years after small eels, a number of shell-fish, say 10 to 15 to every 100 eels. When these begin to propagate, the eggs and the young are an excellent food for the eels.

In spring the eels begin to get hungry, and it will be found an advantage to put into the ponds artificial food, such as manure, or a carcass in a basket, so that larvæ and worms may develop. There may also be a ditch or pit at the bottom of the pond, at one end of which there is placed a wooden box (6 to 10 feet long, 1½ to 2 feet broad and deep) in which the food may be placed. If there is enough food in the ponds, the eels will increase in weight 2 pounds apiece in one year. If eels are placed in good growing ponds for carp, the yield of these ponds may be increased very considerably.

31.—ON THE INTRAOVARIAN GESTATION OF THE REDFISH (SEBASTES MARINUS).

By JOHN A. RYDER.

It has been known for a long time that certain species of *Sebastes* were viviparous. During July last female specimens of *S. marinus* taken by the steamer Albatross off the Banks were found with the ovaries in a gravid condition, but with the embryos in an advanced state of development. These were so far developed as to show all of the features of the end of the lophocercal stage when the median fin folds already contain actinotrichia. Estimating the number roughly, fully one thousand embryos were contained in each ovarian sack.