

50.—INSTRUCTIONS FOR TAKING WHITE-FISH EGGS.**By SEYMOUR BOWER.**

Employés engaged in collecting white-fish eggs for United States Fish Hatchery at Alpena, Mich., are desired to observe the following instructions :

Care should be taken to use live, ripe fish only. The spawners are ripe when they discharge their eggs freely, in a liquid stream, when pressed along the belly towards the vent. The males are ripe when they yield the male principle or milt promptly by stripping with the thumb and fingers just forward of the vent. The ripe females can quite easily be distinguished from those that are not ripe, simply by touching the belly, the former being very soft and the latter more or less hard. In cases of doubt, however, it is well to take up the fish and try to start the eggs by crowding ; if ripe, the eggs will flow freely with a moderate pressure ; if unripe, they come away, if at all, in bunches. Fish from which the eggs are running when taken from the net are in perfect spawning condition (if alive) and may be manipulated at once.

White-fish from trap-nets usually live twenty to thirty minutes after lifting, sometimes much longer, according to the weather ; but the males are too far gone for use whenever the milt is clotted or too thick to mix freely with the eggs. Whenever there is a scarcity of male fish good milters may be laid aside a few moments and then used a second time. Milt mixed with blood should not be used.

To hold a fish securely, place its head between the left arm and side, and grasp it firmly with the left hand just forward of the tail ; this leaves the right hand and arm free to press out the eggs and milt. Hold the vent of the female close to the bottom of the pan, so that the eggs will not be injured in dropping ; then, with the whole hand adapting itself to the natural curve of the belly, press or crowd slowly forward towards the vent, repeating the movement until the eggs are all discharged, or cease to flow freely. Then add the milt from two or more males as soon as possible, and mix thoroughly, but carefully, with a feather or the tail of a fish. Another spawner may now be stripped into the same pan, and milted as before, if there is one near at hand so that it can be done without delay ; then set the pan aside and continue to take eggs as before, in another pan, and so on. Allow each pan of milted eggs to stand not less than two nor more than five minutes ; then add water until the pan is about two-thirds full. In very cold weather, however, it is sometimes necessary to add the water to the eggs immediately after milting, to prevent freezing. About fifteen minutes after the first water has been

added, pour it off, rinse the eggs through one or two waters, and transfer them to a pail filled with water. Fill the pails not more than half, or at the most two-thirds full of eggs, and dip or pour off the water and refill with fresh as often as once in half an hour, until the eggs are transferred to the shipping crates or floating boxes, or are delivered at the hatchery.

Eggs must remain in pails or vessels, with frequent changes of water, at least four hours before being placed in the shipping crates; but where floating boxes are provided, they may be transferred thereto at once, on arrival at shore.

When ready to fill the crates, wet the flannel trays thoroughly in cold water; dip up the eggs with a perforated dipper, allowing them to drain, and with a feather spread them uniformly on the trays, three or four layers deep; then drain still further by tilting the tray and inserting a knife blade between the flannel and frame to allow the drainage to escape. It is important that the eggs should be moist, *but not dripping*.

Place the filled crates in a cool place, out of the sun. The temperature should not be above 50°, nor must the eggs be allowed to freeze. In all cases forward to the hatchery as soon as possible. Make every effort to handle every spawning fish; and once obtained, the eggs must not be lost through carelessness or negligence. Employés remain at their stations until ordered elsewhere or to discontinue, and accompany the boat to which they are assigned on every trip to the nets.

ALPENA, MICH., *November 1, 1883.*

**51.—EXCHANGE OF LAND-LOCKED SALMON EGGS FROM MAINE
FOR LOCH LEVEN TROUT OVA FROM SCOTLAND.**

By Sir JAMES G. MAITLAND.

[From a letter to Prof. S. F. Baird.]

I am happy to say the 5,000 land-locked salmon ova you so kindly forwarded me through Mr. F. Mather arrived in first-class condition on the morning of March 19. The eggs are not quite so large as salmon ova from this (the Forth) district, but are larger than those of salmon from the Tweed this spring. The effect of the epidemic with which that river has for the last several years been affected having been (by killing out the old fish) materially to reduce the size of the ova.

I would like to send you some of our Scotch Loch Leven trout ova which I have successfully introduced into New Zealand. If you will kindly let me know how the cases should be addressed, I will forward them from here the week beginning Monday, November 24. Our best ova in this country always hatches out in December, while the ova from younger fish is frequently not spawned till February.

STIRLING, SCOTLAND, *March 21, 1884.*