The entire production of young fish, both salmon and other freshwater fish, is therefore only about 1,750,000 per annum. If we compare our results with those obtained in Canada and the United States, we find the following:

Country.	Number of hatcheries.	Number of young fish per hatchery.	Total number of young fish per annum.
Norway	58	30,600	1,777,000
Canada	11	1,956,400	21,520,000
United States	9	2,222,200	20,000,000

This table will show at a glance where our mistake lies. We have too many and too imperfect hatcheries; and if, moreover, as is often the case, they are managed by inexperienced persons, who receive no salary, and who can barely spare the time to superintend the hatcheries, these discouraging results will surprise no one.

If the 58 hatcheries which are in operation were reduced to 10, and if these were located in favorable places and properly superintended by experienced men specially appointed for the purpose, the results would be much better, without necessitating a much greater expense. It is of course understood that the superintendents of these hatcheries should receive a suitable salary.

153.—SALMONIDÆ IN AUSTRALIA.*

By G. M. DANNEVIG.

[From his report on the London Fisheries Exhibition.]

In examining the list of the different kinds of fishes which are generally brought to market in Tasmania, and which form the principal food-fishes of the population, we find the name "*Salmo trutta*," and in the column of observations opposite this name we read: "Imported from Europe; now found everywhere."

The facts are as follows: The salmonoids, which are numerous and common throughout the northern hemisphere, were altogether wanting in Australian waters. As early as 1841 their importation from Europe was thought of, which, however, owing to the slow mode of transportation, seemed an undertaking fraught with insurmountable difficulties. In 1852 the first attempt was made, when the ship Columbus (bound to Tasmania) took out from London 50,000 eggs of salmon and salmon trout. The attempt proved an entire failure. The high temperature to which the eggs were exposed caused all of them to die in a comparatively short time. The next attempt was made in 1860. Impregnated roe was sent out in January by the ship Curling, with a quantity of ice,

*"*Salmonider i Australien.*" Translated from the Danish by HERMAN JACOBSON.

by means of which it was hoped to insure low temperature in the apparatus; but when, after 59 days, the ice had melted, and the temperature rose rapidly in consequence, all the eggs perished in a few days. The third attempt was made in 1862, when in March the ship Beautiful Star left London with 50,000 salmon eggs, placed in a hanging apparatus, and, as the last time, kept on ice. The ice lasted till May 17, when the eggs died rapidly, 74 days after they had been shipped and 80 days after they had been taken from the fish. Although this attempt must likewise be considered a failure, it proved the important fact that salmon eggs, even under unfavorable circumstances, could be kept alive for 80 days; and as in London the possibility had been shown of hatching salmon eggs which had been laid in ice for 150 days, it was believed that the problem of introducing salmon into the Australian rivers would be satisfactorily solved in the near future.

This belief was well grounded. On January 24, 1864, the ship Norfolk sailed from London for Melbourne, carrying 90,000 salmon eggs and 1,500 salmon-trout eggs, and an ice-house holding a considerable quantity of ice. The ship reached its destination on April 15; and after a small portion of the eggs had been landed at Melbourne, the rest were conveyed to Hobart Town, Tasmania, by steamer. Upon their arrival at Hobart Town they were placed in the hatching apparatus on the River Plenty on the 21st of April, 90 days after they had left London. On May 4 the first salmon trout was hatched, and on the following day the first salmon. On June 15 the number of young fish was estimated at 3,000 salmon and 300 salmon trout, which, after having reached a suitable size, were gradually placed in open waters.

Encouraged by this success, the Tasmania Government determined to make a new attempt; and the ship Lincolnshire, which sailed from Plymouth on February 8, 1866, took out 103,000 salmon eggs and 15,000 salmon-trout eggs. The ship arrived in Tasmania on May 4, and on the following day the eggs, of which 45 per cent were still alive, were placed in the apparatus, and in due time 6,500 young fish were hatched. The work has been continued by taking roe from fish which had reached maturity in Tasmania, and at the present time the salmon trout especially is considered well acclimated in the rivers of New Zealand, Tasmania, and Victoria. A large number of young fish and eggs have been sent also to West Australia, but it is not known what has been the result.

From 1864 to 1881, 263,500 eggs and young fish have been placed in Australian waters. Salmon and salmon trout are now caught frequently, and it is stated that thus far the largest salmon caught in these waters weighed 28 pounds.

From statistics relative to the different rivers where young salmonoids have been placed we find the following results: The fish increased rapidly in 5 rivers; the fish increased in 44 rivers; the fish supposed to

increase in 2 rivers; increase varying in 8 rivers; the fish decreased in 17 rivers; no fish observed in 10 rivers; no statistics in 24 rivers.

Several varieties of carp, perch, and other freshwater fish have also been introduced into the Australian rivers and lakes during the same period, and, on the whole, with satisfactory results. Especially the common tench (*Tinca vulgaris*) and the common perch (*Perca fluviatilis*) have in a comparatively short time increased very much, and may now be considered as entirely acclimatized in Australia.

154.—NEW ENGLAND FISHERIES IN AUGUST, 1885.

By W. A. WILCOX.

August shows a decided improvement in receipts, prices, and demand for the leading varieties of salt-water fish. Codfish have been fairly abundant on the Grand Banks and also on George's Bank. During August few cod were found on Brown's Bank, and most of the vessels changed for George's. The receipts of the month at Gloucester aggregate only about one-half as much as the corresponding month last year. The home fleets have landed an average amount, the falling short being mostly Canadian vessels, as low prices and the duty keep out the customary large receipts brought by foreign vessels. With a large falling off in the aggregate receipts, the market has at all times been fully supplied and prices have generally been low.

The schooner Byron was the first vessel since the termination of the Washington treaty to pay a duty on a cargo brought from the fishing banks. She arrived at Gloucester on August 20, with 300,000 pounds of codfish caught on the Grand Banks. This was the only cargo of fish from the banks that paid a duty during the month.

The shore fleet, ground-fishing off the eastern coast, reported less than the average catch, as fish were scarce. Off the Massachusetts coast a light catch is expected this season, as a large number of the vessels usually engaged have changed to the mackerel or swordfish fishery. As compared with former years receipts have been up to the average.

Mackerel receive more attention at this season than all other fish, the catch, movements of the fleet, receipts, and fluctuations of the market being closely watched. During the past month, with the exception of a few sail in the Gulf of Saint Lawrence, the vessels have worked along the New England coast from Boston Bay to the Bay of Fundy. Mackerel were found abundant, the fleet landing 106,316 sea-packed barrels* during the month, this being only 10,520 barrels less than the entire amount of sea-packed barrels landed at all ports during 1885 up to August 1.

*Sea-packed barrels are so called from the mackerel having been cured and packed at sea. At that time all sizes and qualities are packed together. On reaching port they are repacked, sorted, and inspected by a commissioned State inspector.