

## 72.—DISTRIBUTION OF AMERICAN FISH AND FISH-EGGS BY THE GERMAN FISHERY ASSOCIATION.

By MAX VON DEM BORNE.

CANADIAN OYSTERS.—In Circulars 2, 1883, and 3, 1884, it is stated that hopes were entertained of successfully transplanting Canadian oysters to the Western Baltic. The necessary condition was to take the oysters from latitudes whose temperature all the year round corresponded to that of the Western Baltic, and from waters whose saltness was as nearly as possible the same as that of the Baltic. We are now glad to state that, thanks to the exceedingly careful arrangements made by Messrs. Rumpff and Möbius, the experiment of transporting these oysters across the ocean has proved a great success. The first telegram from these gentlemen, dated November 7, 1884, reads as follows: "Oysters arrived in excellent condition; upwards of 13,000 live oysters planted in the Baltic, during the most favorable weather."

The telegram was followed by a short letter from Prof. Karl Möbius, in which he promises a full report for our next circular, and states the following: "Messrs. Rumpff and Möbius, on the morning of November 6, left Hadersleben [in Sleswick-Holstein] with the 17 barrels of oysters, and conveyed them to Aaröesund, on the Little Belt. There they were placed on board the revenue-cutter, on which there were several experienced fishermen, and after a short while suitable places for planting the oysters had been found. When the barrels were opened nearly all the oysters were firmly closed (and therefore alive), and only on the top were a few dead oysters found. The flavor of the oysters was as fresh and good as if they had left their Canadian banks only a few days ago. We have carefully marked the places where the oysters were planted, so that they can easily be found."

CALIFORNIA SALMON.—The American fish-culturist Marshall McDonald reports that it has been found impossible to acclimatize the California salmon in the rivers flowing into the Atlantic and in the tributaries of the Mississippi, but that in consequence of artificial fish-culture the Sacramento River yielded twice as many salmon as formerly, and that the annual product of these fisheries had been increased \$300,000. The cause of this seems to be that the water of the Western rivers is colder and that of the Eastern and Southern rivers warmer than that of the sea. In France the acclimatization of this fish seems to have been successful in the river Aude, near Narbonne, as the fish return to this river from the Mediterranean.

Mr. von Kalkreuth, of Obragorzig (province of Posen, Prussia), caught a California salmon weighing 5 pounds in the Kurzig Lake.

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While quite young this fish was exhibited in the aquarium of Mayor Schuster at the Berlin International Fishery Exposition.

At Szomolany, Hungary, many of the California salmon died in consequence of the spawn having been extracted. Count Palffy accordingly had the remaining fish placed in the river Waag, with the hope that they would go into the Black Sea and finally stock the Danube. In the autumn of 1882 the number of California salmon was 109, weighing in all 52 pounds.

Baroness von Wattmann, of Cieszanow, Galicia, reports that in her fish-cultural establishment the California salmon had in a year's time grown twice as large as the domestic salmon and trout.

**AMERICAN BROOK-TROUT** (*Salmo fontinalis*).—This fish is already so thoroughly acclimatized in Germany that 21,684 impregnated eggs could be sent from Cöslin (province of Pomerania, Prussia) and 12,630 from Boitzenburg (Mecklenburg), and that the president of the Fishery Association of Upper Hungary, Count Migazzy, had 17,000 eggs of this fish impregnated at his establishment at Arányos-Maróth. Recently, also, 18,776 eggs were imported from America. If the water does not become too warm during the summer, this fish thrives greatly. At Cley-singen the brook-trout of last year now average in weight one-third of a pound; at Scheibe and Zwätzen the fry of 1883 has grown wonderfully; and at Woschezutz and Wusterbarth the young fish of 1883 have attained a length of 17 centimeters [6.7 inches].

From Starnberg, Bavaria, it is reported that the brook-trout seems to make itself at home in the waters of Upper Bavaria, which are well stocked with these fish. At Georgenbach, near Starnberg, several fine specimens of this fish have been caught with hook and line. The Starnberg fish-cultural establishment contains fish of three years—1882, 1883, and 1884—and eggs have already been obtained from the oldest of these fish. The same observation was made here as at Huningue, that this fish does not endure very well the extraction of its eggs. Nevertheless it is a valuable acquisition to the German waters.

**RAINBOW-TROUT** (*Salmo irideus*).—This fish, coming from the rivers of the Pacific coast of the United States, was strongly recommended by Director Haack, of Huningue, and the German Fishery Association gave full attention to it. Owing to the kind efforts of the American fish-culturists, a great number of the eggs of this fish has again been imported into Germany. There is all the more reason to rejoice at this, because the transportation of these eggs is connected with considerable difficulty, as it spawns in spring, and as, therefore, the eggs must be transported during the hot season of the year. Mr. Blackford, of New York, from whom we received a quantity of rainbow-trout eggs in exchange for German trout eggs, reports that in the Eastern States the rainbow-trout has changed its habits and occasionally begun to spawn in winter, so that he would perhaps be able to send us eggs as early as December. However, the eggs sent by him, and also those sent by Professor Baird,

were not received till the beginning of spring. On three occasions eggs were sent from New York to Bremen in April and May, and our faithful assistant F. Busse, of Geestemünde, attended to the unpacking, distribution, and shipping of the eggs in the most careful manner. He has always most kindly taken care of the numerous consignments of fish-eggs which we have received from America, and deserves great credit for his exertions in the cause of fish-culture.

Director Haack, of Hünigues, regards the rainbow-trout as the most valuable fish that America has sent us. In April, 1884, it appeared that of the fish twenty-one months old, which had reached a weight of one-half to three-fourths pound, not one had been lost. The yield was 10,000 eggs and 1,500 fish. The two-and-one-half-year-old fish in August, 1884, weighed from three-fourths to one pound. In Count Palffy's establishment at Szomolany, Hungary, 443 rainbow-trout were placed in the water in 1882, and in 1883 the number remaining was 434.

Mayor Schuster, of Freiburg, writes that the fry obtained from the first eggs sent from America were very fine, and that the supply was sufficient to establish permanently the fish in Germany. At Starnberg the American brook-trout has developed better than the rainbow-trout. Mr. Eckardt, of Lübbinchen, from 526 eggs obtained 500 little fish, which did very well in a small pond. Mr. Zenk, of Seewiese, thinks that the rainbow-trout will prove especially adapted to culture in trout ponds.

AMERICAN LANDLOCKED SALMON.—Since 1883 this fish has grown very well near Oliva, Prussia. In the Würm Lake, near Starnberg, a fish of this kind measuring 24 centimeters [about 9½ inches] was recently caught, and a well-grown specimen was taken in the Tegern Lake. In a pond near Friedrichshuld, in Pomerania, such fish thrive very well.

AMERICAN WHITEFISH (*Coregonus albus*).—The *Bayerische Fischerei-Zeitung* (Bavarian Fishery Journal) says, on p. 231, that for the last three years attempts have been made by the German and Bavarian Fishery Associations to acclimatize whitefish in the Ammer, the Tegern, the Walchen, and other lakes in the south of Bavaria. There is good reason to hope for success, as Mr. Höpplinger, superintendent of Bavarian fisheries, a man of considerable experience in matters pertaining to fish-culture, about the beginning of July, 1884, caught such enormous quantities of the American whitefish in the Tegern Lake that he was obliged to submerge the net again in order to set the young fish free. Several well-grown specimens have since then been captured.

The receipts of fish-eggs from Prof. Spencer F. Baird were as follows:

|  | In 1882-'83. | In 1883-'84. |
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| <i>Salmo fontinalis</i> (Bachsaibling).....        | 45,000       | 18,770       |
| <i>Salmo trideus</i> (Regenbogenforelle).....      | 9,800        | 30,651       |
| <i>Trutta lacustris</i> (Seeforelle).....          |              | 25,000       |
| <i>Coregonus albus</i> (Amerikanische Maräne)..... | 500,000      | 990,000      |