

Landlocked salmon, 1878.

Date.		Number.
Apr. 5, 1878	John's River	1,000
	Linville River	4,400
	Mayo River	3,000
	Dan River	3,000
	Ponds near Charlotte	500
	Ponds near Greensborough	2,000
	Ponds near Morganton	600
	Ponds near Salisbury	1,000
	Total	15,500

Carp, 1879 to 1883, inclusive.

Year.	Distribution.	Number.
1879-'82 ..	Distributed to 1,226 persons*	24,520
1883	Distributed to 900 persons	14,690
	Total	39,210

* Living in ninety-one of the ninety-six counties of the State.

RALEIGH, N. C., *July 28, 1884.*

129.—A FOREIGNER'S OPINION OF AMERICAN FISH-CULTURE.

By Sir LYON PLAYFAIR.

[From the Angler's Note-Book, No. VI, 1884, pp. 91, 92.)

In regard to the special subject of carp, much progress has been made in the United States by the introduction of the two German varieties. It is curious that they should have done so before the mother country, for the remains of old fish-ponds are spread over England, and are almost always near the old monasteries. Tens of thousands of old carp-ponds once existed in England, but as the carp were no longer cultivated they reverted to their wild state and became valueless. In China and Germany the culture of carp is still an important industry. The United States in introducing the culture wisely selected the German species. In 1882 the carp bred in the commission ponds at Washington were distributed in lots of twenty to ten thousand applicants in every State and Territory. The average distance to which they were sent was 900 miles, and the total mileage of shipments was 9,000,000 miles; while the actual distance traversed by the transportation railway cars was 34,000 miles. Already German carp have been introduced into thirty thousand separate waters.

But I do not wish to limit my letter to carp by any means. Aquaculture has become an important affair of the State among our trans-

atlantic brethren. The separate States prosecute it, and in 1882 spent £24,000 in its promotion. The Imperial Government spent nearly £30,000 on the same object. The scale on which this is done may be indicated by the fact that the Government at Washington provided the fishery commission with two steamers, commanded by officers of the navy, and specially designed for scientific research and for fish propagation. The Albatross, of 1,300 tons, is a model of what a ship should be for the first purpose; the Fish Hawk, of 850 tons, is not good in heavy seas, but is well fitted for the latter purpose. There are seven-teen hatching stations, of which the head is at Wood's Holl, in Massachusetts. Having paid a short visit to Professor Baird there this year, I am tempted to enlarge upon it; but I will only say that there is an excellent house for the staff, containing thirty beds, laboratories for research, and hatching ponds for 2,000,000 young cod. Much of the work is done by volunteer agency. The various universities send their naturalists, and the Smithsonian Institution devotes money for special researches and publications.

There is an essential difference between the mode of proceeding of the Government of the United States and that of our own country in relation to fisheries. We have had commissions without end, on some of which I have served. Vast bodies of contradictory evidence have been obtained from fishermen, who, I agree with Huxley, know less about fish than the community. Our commissions have led to little useful result. The American commissioners act in a different way. They put questions directly to nature and not to fishermen. They pursue scientific methods, and not those of "rule of thumb." They make scientific investigations into the habits, food, geographical distribution of fishes, and into the temperature of the seas and rivers in which they live or spawn. Practical aims and experiments are always kept in view. As an experiment, they tried to introduce shad on the Pacific coast and succeeded; they tried to introduce California salmon to the Atlantic slope and failed. As an instance of a practical aim, they have restocked the Sacramento and its tributaries so effectually, that the annual increase each year, for the last few years, has been 5,000,000 pounds.

The object of my letter is to show that, while the private propagator may cultivate young fish by thousands, aquaculture can only be undertaken by a government, for its statistical results must be counted up by hundreds of millions. In the United States, all the departments of the government cordially co-operate in fish-culture; the railways assist, and provincial bodies are active. In Scotland we have a fishery commission, willing and able to make experiments, but the Admiralty cannot find a vessel to make dredging experiments, and the Treasury cannot find £1,000 to carry out important researches only half complete. Biological stations in England and Scotland are being formed slowly on account of deficient public support.

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