

some losses will generally occur. Mr. Blackford, previously to this, had written as follows:

"JANUARY 13, 1886.

"I am in receipt of your esteemed favor of the 31st ultimo, and am also in receipt, per steamer *Britannic*, of the live soles. I cannot express my joy and gratitude in view of the interest your institution has taken in this exchange. I see in it the promise of the successful carrying out of what I have long desired, that is, the importation of a sufficient number of these fish to enable us to determine whether they can be acclimated and reared in our waters."

Of one of the late consignments, Prof. Spencer F. Baird, head of the U. S. Fish Commission, wrote thus to me:

"WOOD'S HOLL, MASS., *July 16, 1886.*

"I am happy to report the success of the latest shipment of soles made to Mr. Blackford, per *Britannic*, for the service of the U. S. Fish Commission. Twenty of the twenty-five shipped are alive and in good condition, and feeding voraciously in our tanks."

Of a still later consignment of twenty-four fish, of which six died, possibly from the excessive closeness and warmth of the weather before the *Britannic* reached Queenstown, Mr. Blackford wrote as follows:

"NEW YORK, *August 26, 1886.*

"I received through the hands of Mr. Bartholomew seventeen live English soles, which I at once forwarded to the U. S. Fish Commission's headquarters at Wood's Holl, sending a special messenger along with them, and he has just returned, reporting their safe arrival at that point, where they were placed with the previous lots. We are keeping these fish in large salt-water ponds to see if it is possible to breed them there."

LIVERPOOL, ENGLAND, *September 16, 1886.*

## 2.—THE CANADIAN AND AMERICAN FISHERIES OF THE GREAT LAKES.

By JOHN H. BISSELL.

One of the ways in which the Canadian treatment of the general subject of fisheries is valuable is the exact and useful knowledge which they obtain of the whole subject. This accurate knowledge of the fisheries is serviceable in many ways. For instance, it enables the legislature to know its importance as a subject of legislation; it tallies from year to year the success or failure of the preservative measures; it points out distinctly the value of artificial propagation and the points at which natural sources of resupply need re-enforcement by artificial and scientific methods. The Canadian reports show the total value of the fishery product of the Dominion, and also minutely the relative value of each item or variety of fish, as well as that for each province.

There is before me the Report on the Fisheries of Canada for the year 1883. On the first page is the statement that the product of 1883 was \$134,100.64 more than for 1882 for the Dominion; the total valuation for 1883 being \$16,958,192. Of course the greater part of this enormous production is of salt-water fisheries, while the principal interest of dwellers along the Great Lakes is respecting the Canadian fresh-water fisheries—those of the province of Ontario. Before going into that, however, it will be interesting to look at the reports of 1884 and 1885, and compare the total production for those years with the total of 1882 and 1883. The figures are given as follows:

1882 .....	\$16,824,092 34
1883 .....	16,958,192 98
1884 .....	17,852,721 00
1885 .....	17,722,973 18

There was a general increase for 1885 in all provinces except that of Nova Scotia, where there was a decrease of “nearly half a million in the item of mackerel alone.”

Turning now to the province of Ontario we find the total value given for 1883 to be \$1,027,032.88, an increase over 1882 of \$201,575.86. The principal items in the order of their values are:

Salmon trout .....	\$354,692 72
Whitefish .....	264,581 60
Herring and ciscos .....	97,070 00
Pickereel .....	82,096 38

The expenditure for “fishery service” for the entire Dominion for the year 1883 was no less than \$114,673.76, and in 1884 was \$116,531.66, of which the amounts for the province of Ontario were as follows:

Purpose.	1883.	1884.
Fishery officers, salaries and expenses .....	\$13,602 00	\$15,192 73
Fish-breeding .....	10,144 95	8,011 17
Total .....	23,746 95	23,203 90

The total expenditure for fish-breeding in the Dominion for 1883 was \$25,776.87, and the amount for fishery officers was \$62,341.43. The total value of the fish product of Ontario for 1884 was \$1,133,724.26.

The number of men employed in this province as fishery officers in 1884 was 82, for a coast line no longer than that of the State of Michigan. This number of men, designated as “fishery officers,” does not include the men employed in fish-breeding, but only those employed as inspectors, overseers, and wardens to enforce the fishery laws.

We desire to call particular attention to the figures for the year 1885, because that is the only year in which the Michigan fishery product has been accurately reported, and consequently the only season’s fishing for which any reasonable comparison can be made between this State and the province of Ontario.

The total fish product of the province of Ontario for 1885 in value was \$1,342,691.77, or a little over 4 $\frac{2}{3}$  cents per pound on the average.

	Pounds.
Whitefish .....	3,938,500
Trout.....	5,431,654
Herring .....	11,941,200
Muskallonge.....	565,400
Bass.....	636,397
Pickarel.....	1,757,494
Sturgeon.....	1,459,035
Pike.....	468,430
Other kinds, coarse fish and eels.....	2,578,908
<b>Total.....</b>	<b>28,777,018</b>

This statement includes 913,100 pounds of fish consumed at home by the fishermen and their families or by others, so as not to appear in the totals of the amount marketed.

During 1885 the expenditure for "fishery service" for the Dominion was \$153,215.56; for fishery officers, \$77,821.67; and for fish-breeding, \$43,879.82.

For the province of Ontario, in 1885, there was expended—

For fishery officers, salaries and expenses .....	\$17,135 98
For fish-breeding.....	8,690 15
<b>Total.....</b>	<b>25,826 13</b>

It should be noticed that the figure \$8,690.15 for fish-breeding does not include the salary of the superintendent or office expenses. Further, it is for the maintenance of two fish-breeding establishments; one at Newcastle, for trout and salmon, and one at Sandwich for whitefish and pickarel. The State of Michigan maintains four establishments or hatcheries, the estimated cost of which was \$9,476. On the basis of these figures the output of young fish is about 20,000,000 in excess of the Canadian hatchery product, while the excess of expenditure is only about \$800. It should also be noticed that the expenditure in Michigan for all purposes connected with the fisheries was, for 1885, but \$12,000 (not including permanent improvements), against the Canadian expense for the same year, for fish-breeding and care of the fisheries, \$25,826.13, as given above.

The force of this comparison will be more fully appreciated from the figures given below, which show the product of Michigan fisheries to be about equal to those of Ontario in weight; and if the values are computed at the same rate as the Canadian, the total value will be about the same.

In the seventh Michigan report (1886) the catch of 1885, as there estimated, is 26,381,875 pounds. Adding to the amount allowed by the Canadian report for home consumption, not reported, 913,100 pounds, we have, as the total to be estimated, 27,294,975 pounds.

This, at the rate allowed in the Michigan report (3 cents per pound), is equal to \$818,849.25. But if taken, as the Canadian product is, not by a general average, but at their figures for each species, the result will be as follows:

*Michigan product, 1885.*

Kind.	Pounds.	Price.	Value.
		<i>Cents.</i>	
Whitefish .....	9,985,015	7½	\$718,821 08
Trout .....	5,469,812	7½	410,235 90
Herring .....	5,249,384	2½	126,510 15
Pickarel, bass, and sturgeon .....	1,530,161	5	76,508 05
Other kinds .....	5,060,603	3	151,818 09
Total .....	27,294,975	5½	1,483,893 27

*Product of Michigan and Ontario, 1885.*

	Pounds.	Value.
Michigan .....	27,294,975	\$1,483,893 27
Ontario .....	28,777,018	1,342,691 77
Difference .....	1,482,043	141,201 50

The excess of the Ontario product over that of Michigan is thus seen to be 1,482,043 pounds, while the value of the Michigan product is \$141,201.50 above that of Ontario. This result is accounted for by the larger production of whitefish in Michigan waters, as shown by the following comparison:

	Pounds.	Value.
Michigan .....	9,985,015	\$718,821 08
Ontario .....	3,938,500	282,950 00
	6,046,515	435,871 08

Or if the Michigan product is figured at what is probably the exact Ontario average price, as their fish run, that is, 4½ cents per pound, it is \$1,271,945.83. But, in view of the larger production of whitefish in the Michigan catch, it does not appear that the above comparison is at all unfair.

Taking the products of the two States as about equal in quantity and value, there is a very noticeable difference in the amounts expended by each in the care and conservation of this industry, as shown above. The coast line of each State is of the same length, about 2,000 miles.

DETROIT, MICH., March, 1887.

## 3.—NOTES ON THE SEAL AND WHALE FISHERY OF 1886.

By THOMAS, SOUTHWELL, F. Z. S.

[From the Zoologist, London, England, May, 1887.]

We must go back many years in the history of the seal and whale fishery before we shall find so disastrous a season in all respects as the past has been; certainly it is unparalleled in the history of the Dundee fishery. A season of great severity has resulted in poor catches, still poorer prices for produce, and in the loss of one ship at Newfoundland and four in Davis Strait. It is not likely, with the present prospects, that any of these will be replaced, and it is even doubtful whether all the vessels which returned from last season's fishing will repeat the venture in 1887. In addition to this there are rumors of a partial desertion of the northern fishing grounds for the purpose of exploring the polar seas of the Southern Hemisphere.

The first disaster occurred on March 27, when the Dundee steamer, *Resolute* was crushed in the ice in Notre Dame Bay, off Newfoundland, the crew having barely time to save themselves by jumping on the ice, where they suffered intensely from cold and exposure, having to travel 70 miles over ice before they reached a place of safety, while three of their number, at first believed to have been lost, were subsequently picked up by the sealer *Hector*, and landed safely at Saint John's. The *Resolute* at the time of her loss had 20,000 seals on board. Another Dundee vessel, the *Aurora*, had a narrow escape. Four days after leaving Saint John's she discovered the main pack of seals, and had every prospect of securing a full cargo, but a gale of great violence coming on, which continued for several days, she was driven before its force a distance of about 100 miles, ultimately to be stopped by an iceberg off Cape Bonavista, where she remained in a position of great danger from the falling ice. Soon after, a second iceberg floating down upon her crushed one of her boats, and injured the ship so much that she began to leak; all this time the weather was of great severity, and the snow and mist were blinding. Ultimately the ice eased, to the intense relief of her crew, and with the loss of one of her men the *Aurora* returned to Saint John's to refit. On her second trip she secured 640 old seals.

The total result, so far as the 21 British vessels which took part in the Newfoundland fishery were concerned, was one lost, two clean, and among the remaining 18 vessels a take of 195,396 seals, against 211,587 for 19 British vessels last year. Of these the *Ranger* took 35,894, the *Falcon* 24,768, the *Wolf* 19,521, the *Leopard* 15,954, and the *Greenland* 15,000. Of the remaining 13 vessels the total catch was 84,259, or an average of 6,481; the average of the whole 18 being 10,855 seals, the produce of which was worth about £18 10s. (\$90) per ton.