

STATE OF MICHIGAN.

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SECOND REPORT

OF THE

STATE COMMISSIONERS

AND

*J. Catalog*

SUPERINTENDENT,

ON

STATE FISHERIES,

FOR 1875-6,

ENDING DECEMBER 20, 1876.

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BY AUTHORITY.

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SECOND REPORT  
OF THE SUPERINTENDENT OF THE  
MICHIGAN STATE FISHERIES.

To His Excellency, JOHN J. BAGLEY,

*Governor of the State of Michigan:*

Reminded by the Fish Statute of Michigan, I have the honor to herewith submit my Second Report on the artificial fisheries of the State,—a task scarcely less agreeable than honorable, because of the fortunate measure of success which has attended the arduous and diversified labors of the Fish Commission.

It is now but a little over three years since the piscicultural work of the State was taken in hand, and during that brief period Michigan has advanced, if not to the very front, she, to-day, in the magnitude and success of her fish-cultural enterprises, is the inferior to no one of the twenty-two fish States. While due credit should be given to those who have so earnestly and successfully toiled in this department of public labor, yet not to them and to their services alone is all the credit due. Nature, in her gracious supply of lake, lakelet, river, and rivulet, and in that great cordon of lakes, fringing all the State's eastern, northern, and western boundaries, the grandest bodies of fresh water to be found on the globe, must be confessed the great factor, working with and compassing for us our modestly claimed goal of operations. Michigan—no reference whatever being had to the accomplished work of her publicly installed water farmers, has the largest and finest water farm on the continent. This is conceded; and it were no less a pity than a shame, if she did not go in on both her brain and brawn, as well as with her liberal appropriations, determined "to wear the belt."

Of the great value of this, till recently neglected farm, figures are inadequate to give a just estimate, since it is not food wealth, nor mine nor quarry, not market nor commercial gains, nor bills of export that alone enrich a people,—these, doubtless, are convenient to have, and carry with them their indispensable uses and mighty influences,—but the cultivated pond, lake, rivulet, and river lend to citizenship an added value and attraction. These invite immigration, impart stimulus to labor, encourage the beautiful in art, and albeit imperceptibly, yet not less surely, mould the manners and habits of a community. The full fish pond, the neighboring lake, shimmering with its finny tribes; the sinuous meadow stream, and the hillside gurgling brook, well peopled with the

“speckled beauties,” these are a polite note of invitation to the scrub-race, the cock pit, the dog pit, and the prize fight, to “step down and out.” And though it be admitted that these are but the corollaries that attend the cultivation of the water farm, yet, in their intrinsic importance, they press hard on the main objects and purpose for which this new industry of the people has been inaugurated.

And now, before entering upon the dry facts, and the arithmetic of our Report, a few general observations on two or three points of undoubted intimate bearing with the main subject, will not, I think, be adjudged out of order. And, first,

#### THE VALUE OF OUR NATIVE FISH AND GAME.

Has any one duly considered, or sought to obtain even an approximate estimate of the dollars and cents value,—saying nothing of the luxury afforded,—which the native fishes and wild game netted the pioneers of the State? But for the great aid derived from these sources, through all the early settlement of the State, we believe many an acre, now subjected to the shining plough mold, and yielding its annual product of golden grain, would to-day be resounding with the well-applied blows of the forest axeman, and the now good round census of the State, very likely, would show a shrinkage of ten, twenty, possibly thirty per cent. Now, if valuable to the early settlers in such preëminent degree, why not of value to us and to our successors in perpetuity?

Verily, any food crop, whether of the land or water, that is self-producing, self-sustaining, challenges not alone the solicitude of the wise legislator, but should draw to it the undivided affection and care of all the people, since such food crops come in competition with no trade, or traffic, or industry, but are simple Nature's largess to all her children. To their full enjoyment no prescriptive claims bar, no “high privilege” intervenes, nor is there any monopoly; all alike are sharers, and all alike may thank the bounteous Giver. Thus it is seen these sources of food are a net gain of many thousands, if not millions, to the revenues of the people. Our native fishes,—the Trout, the Grayling, the Bass, the Whitefish,—our wild poultry,—the deer and other wild game of our forests, what have these cost us? And how immensely have they contributed to the aggregate wealth of the people, and to the general attractiveness of the State? Indeed, many thousands of dollars, and that, too, in the face of the great waste and slaughter of the past, are even now annually drawn to the State by non-residents who, in their castings about for a good vacation, and for good sporting amusement and recreation, still honor Michigan as the fur, fin, and feather Arcadia for the exercise of the rod and the gun. Is it not, then, the province of a wise, forecasting people, to see to it that these benefits and these attractions are not diminished, but rather, if possible, increased, and their permanent safety, instead of being jeopardized, hedged about, if need be, by inexorable penal law; for their loss, if but partial even, like the loss of our forestry, would be irreparable, betokening quite unmistakably the dawning of an era of pusillanimity and decay.

#### BUT WHERE ARE THE CROPS?

Now and then we meet a person who looks a little sick, acts a little sick, and doubtless is a little sick, because, forsooth, he has not yet hunted down the opportunity of lugging home a back-load of the fish upon which the Commission has been at work. Pray, kind friends, wait a little. Give time for the

calf to become the ox, and the mare's foal Job's thunder-clad steed. The bird, although her eggs be golden, will lay but one a day, and killing her will be very apt to stop even that supply! It must be remembered that much of the Commission's work is scarcely twelve months old, and Nature will have her way in the play of those great laws controlling growth and development. We cannot, not even to please our lean and hungry objector, change them, nor can we impart to them a quickening vigor. But be assured harvest shall not more surely follow seed time with your cultivated fields than shall harvest succeed seed time with your cultivated and protected waters, since proofs of the most indubitable sort, gathered from a myriad sources, attest the fertility of the wisely and diligently cultivated water farm.

But why are not the great finny crops forthcoming? Why? Obvious as the sun, is the answer. Years of severe and anxious labor, barnyards upon barnyards of manure, millions upon millions, and wisely, too, have been devoted to your lands, whilst not yet has the great sovereign State of Michigan been taxed *two cents per capita* for all the farming of all her waters! no, not yet two cents per inhabitant. And when I say two cents, don't understand me as meaning two cents per year, but I mean, without evasion or qualification, that the tax is below two cents *per capita*, covering all the Commission's expenses and expenditures during the entire period of its operations. And a cash valuation inventory of the Commission's stock on hand, of buildings, ponds, furniture, fixtures, etc., etc., would reduce the aforesaid crushing tax “a right smart bit.” Why, as a simple educational measure, saying nothing of the sure food harvests to come, the fish-cultural movement has been worth to the people of the State ten fold its cost. When Michigan first engaged in this enterprise, May 12, 1873, the ignorance on the general subject was perfectly appalling; it was “darkness visible.” It seemed as if natural history and natural science bore no relation to the water, they stopped at the water's edge, and never sent their explorers or ventured their researches into that great domain, whose area is three-fourths of all the earth's superficies. Now under barely a three years' tuition, men and women, boys and girls, too, are found all over the State who know just about as much of the fish art, and of fish science, as the Commissioners or the Superintendent, and now and then one is found who has got in ahead of them! Such is the beautiful blossom of our work. Wait a little, please, for the ripening and the ripened fruit.

#### NOT QUITE 100 PERCENTAGE OF SUCCESS.

Here and there, too, we have encountered a wry physiognomy, and witnessed a hitch and a shrug of the muscles at the base of the neck, because everything has not been an absolute—an hundred per cent—success. Well, does the land farmer each season get his forty bushels of wheat, or his hundred bushels of corn, or his three tons of hay per acre? Does he not sometimes capsize his load of wheat en route to his garner? Does not the unruly kine sometimes trample his meadows? And does not sometimes the killing frost visit his unripened corn-field? As with our *dry* brother, so even is it with the *wet*. Varying fortune attends all the fish husbandman's footsteps. He lives, also, in an atmosphere of vicissitudes. Natural physical laws are about him in his business, shaping or balking each earnestly sought-for result. The car axle that bears his rich living freightage to the lake or river, will sometimes break. Ice will sometimes form over the surface of his field,—three, five, yes, seven feet thick,—precluding the possibility of safe fish deposits. Snow storms and drifts will

come and keep him in the thick woods, when he would find it more comfortable as well as profitable to be emptying the contents of his cans into the lake or river. While "outward bound" his thermometer, in the short space of seven hours, has fallen from 60° to 32°, without the means or opportunity to build fires for the comfort and safety of his sensitive and tender charge.

Now, what is our lake and river farmer to do about it, when accident and insuperable force so confront him? What can he do, more than did the honest Dutchman, who, when he broke his leg, thanked the good Lord that it was not his neck! Few mortals, if any, can create circumstances, and the fish-culturist's work, like all other human work, must take its chances. Be it known, however, no man of any sphere or calling is to be considered quite dead so long as he has vitality enough left to bound again to his feet. And this much of vital force we have not found lacking in any of the Michigan fish corps of workers.

Now, with fish-culturists, the world over, one grand success is accounted a valid offset for a dozen partial failures. In this view we ask our querulous and uncomfortable complainant to carefully read the two Michigan Reports and see for himself on which side of the ledger is the great balance sheet. We know it is recorded of fishermen that they wrought miracles; but alas! the fish-culturists of Michigan, however much desiring it, have failed to trace their lineage with the Seamen of Gallilee, and therefore lay no claim, nor thought, nor purpose, to work in any but the *ordinary* fields of human labor. But of the fish art or science we commit no breach of modesty when we assume for it a rank and an importance second to none. Look at it. It is scarcely a decade since the whole field of artificial fish culture in this country was a wilderness and a waste. Now see where and what it is. We challenge the civilization of all the centuries to show where any art, or science, or industry, within the same limit of time, has made such valiant strides, and attained a more pronounced success than has the art, the science, the industry of artificial fish propagation. Nor yet is the field fully explored. New questions, both of theory and practice, are continually pushing themselves to the front, and, as they rise to view, the great naturalists, and the alert muscular scientists of both hemispheres, grapple with these, the unsolved problems that still cast their penumbra over the great science, in the assured confidence that ere long "an open sea" shall salute them the fitting triumph and reward of their search and sacrifices.

#### SOME INFORMATION SUPPLIED, BUT MORE WANTED.

Although some information has reached us touching the success of the various fish plantings, yet the information is by no means as full as was hoped for, and as is desired.

Of the Shad plantings no very reliable returns have been sent in; nor, indeed, is it yet hardly time to expect news from them, as they are ever slow in reporting themselves, in New York and other States little or no trace of them being discovered till the third or fourth year after their deposit.

#### THE SALMON DEPOSITED.

Of the Salmon planted, we have some reliable information. Each year they have been seen by various parties, and in various stages of development. Last July two were caught with a seine in the St. Joseph River in the vicinity of Berrien Springs, and, on careful examination, were found to have all the markings and characteristics of the Atlantic Salmon, weighing about two pounds

each. These are believed to be the advance guard of the three thousand planted, on the 28th of May, 1873, in Brandywine Creek, a tributary of the St. Joseph, emptying into it about one mile above the city of Niles.

On the 1st of October, 1876, Messrs. Davis Brothers, of Toledo, Ohio, caught in a pound net, at Cedar Point, Maumee Bay, Lake Erie, a Salmon thirteen inches and a half long. Of this Salmon, Mr. Emory D. Potter, of Toledo, Ohio, a fish-culturist, and an expert in the lore of ichthyology, and who communicated the catch to me, says: "This is supposed to be one of the Salmon fry hatched and placed in the River Raisin by the Michigan Fish Commission in the spring of 1874. Color and flavor perfect. I ate him for breakfast." The letter of Mr. Potter was accompanied with a very good drawing of the fish, plainly showing, in form and outline, that it must have been a genuine specimen of the tribe of King Salmo.

#### WHITE FISH PLANTED.

Concerning the White Fish deposited, we have some rather interesting scraps of information.

Mr. C. C. Call, of Stockbridge, Ingham county, who deposited 10,000 in Lowe Lake, writes me under date of November 28, '76, as follows: "On the evening of the 29th of September last, while out fishing, I saw large numbers of them swimming about near the surface of the water; think they were about three inches long. Am well pleased, finding it a perfect success, and hope sufficient means may be appropriated to enable you to continue in this most noble enterprise." To show Mr. Call's great confidence that the fish seen and described by him were the genuine *Corregonus Albus*, he expresses in the same letter his desire to buy, paying any fair price, twenty thousand, as additional stock for the lake. Now, a fish three inches long seems like a very small fish; but if it is the White Fish deposited on the 24th day of February last (and of this there is scarcely a reasonable doubt), it has in the short period of seven months increased its weight and size a thousand fold.

Mr. Henry Pruyn, of Cass county, who lives on the borders of Barron Lake, and who keeps boats and is frequently on the lake, and was the depositor of the twenty thousand fry put in this lake on the eleventh of March last, informs me he has frequently seen the fish in the lake, and describes them as being from two to three inches long, and says he knows they are not the shiners or minnows of the lake.

Other parties in a more vague and general manner have reported them as having been seen in schools in the lakes where they were planted. And others still have reported them as found of different sizes, and probably, too, of different ages, in the bellies of the hooked or speared pickerel, that unrelenting and insatiable hyena of the rivers and the lakes. This report of Mr. Pickerel as to the presence of the fish in the various lakes, is probably as full and as reliable as any we have; but every time he makes his report it is deservedly at the cost of his life.

I caused notice to be published last fall in all the Detroit papers, which notice was quite largely copied by the press of the State, requesting all persons to forward such information as they had or could obtain in relation to any of the fish upon which the Commission have been to work. But experience has taught us that a presidential year is not a very good year for gathering in fish data and statistics. An "off year" would be likely to be more prolific of good fish "returns."

## FISH AT THE STATE HATCHERY PONDS.

Of the varieties of fish under our immediate charge at the Pokagon State Hatchery, all have done fairly well. There have been but few deaths with any of the several species kept there. With all, their tenacity of life seems wonderful. They have been fed reasonably well, but not regularly, fish meat not being always readily obtainable. In general health and growth the Grayling stands, perhaps, number one. The Speckled Trout are barely second in the list. A healthier, handsomer collection of Brook Trout, have, I think, never been seen in any pond. The California Salmon, while apparently less healthy than their cousins, the Atlantic Salmon, have shown a larger percentage of growth. Many of the California Salmon are from twelve to fifteen inches long. One, in the early part of last October, about the average size, being found dead in the pond, was opened, and in the ovaries were found over 300 eggs of nearly full size. I requested the overseer to be on the alert, and, if possible, secure some spawn from the living Salmon. But the work to secure our stock of White Fish and Lake Trout spawn was so protracted and tedious as to preclude the possibility of doing much else. The land-locked Salmon of the hatch of 1876 are not developing as we were led to believe they would, their growth being unexpectedly gradual. They however have been placed at a disadvantage, being confined in a somewhat limited preserve, and with a limited supply of fresh water, while their salt water congeners, the *Salmo Quinnet*, of the hatch of the same season, have occupied the large spring ponds, with an abundance of water, and consequently have waxed much more fat and sizable than have the members of the Schoodic family.

In one thing ourselves, as well as visitors to the Hatchery, have been disappointed. The maximum of growth with all the varieties of Salmon has fallen below our hopes and expectations. None have made any very respectable approach to the size they are reputed to attain at their several ages when left to their native haunts and waters. But it is quite possible we have the key that gives the true solution of this unexpected result.

The water, when spread over so many and so large ponds as we have at the hatchery, must, of course, be poorly oxygenated, as no water is supplied to any of the ponds except what comes from the springs, and hence the temperature of the water during a considerable portion of the year ranges from 60° to 70° or upwards, a condition of water hardly compatible with a rapid and vigorous growth of the members of the Salmonidæ class.

But probably the more salient cause of their lack of growth is found in their being compelled to occupy such "cabined, cribbed, and confined" quarters, their lack and need of range. The Salmon, it must be remembered, is an anadromous fish. His chosen home is in the ocean's surf and depths, and in the sources of the rivers, often hundreds of leagues away. Indeed, his trials of speed with the barge, the ship, or the steamboat, is hardly an unequal race. And the sport that gives him the greatest joy and health is to leap the dams, the cascades, and the waterfalls that chance to lie in the path of his river voyage to his birth home, and the homes of his ancestry. Range is better for them than food or medicine, and the solitary, prison, treadmill life they are enforced to undergo in the State Hatchery ponds is, in my judgment, cause enough for their refusal to ally themselves with any of the tribes of Anak.

And, indeed, on the general question, as respects size or growth, it is a notable fact that fish of the same progeny—same spawning—eggs placed upon the same screen, manipulated, hatched under identical treatment and influences,

develop very unequally. At the age of three or six months, many are found to be two or three, or even four times the size of others in the same hatch, and all apparently equally perfect in their organisms, and, so far as fish exists, equally healthy. This disparity of growth or size obtains throughout all the subsequent years. Nor do we know of any genus or species of fish that is exempt from this law—if, indeed, it be a law—of development. The fact is true with all those varieties we have hatched, and so have we within the scope of our observation.

## REPORT OF WORK OF 1874-5.

And now having disposed of those preliminary questions and observations, which stand, as we think, very nearly related to what are esteemed the essential facts, figures, and statistics of every fish Report, we are prepared to outline the work of the Commission from the point where it was left by the First Report.

The First Report, it will be remembered, brought us down to the first day of December, 1874. At that date there were upon the trays of the Pokagon State Hatchery the alevins, or fry, of 750,000 California Salmon eggs, although of this number one crate of eggs, containing 150,000, were received at the Hatchery on the 15th of October previous, in very bad condition, probably reducing the actual number of fry to about 600,000. This large lot of California Salmon was the magnificent gift of Hon. Spencer F. Baird, U. S. Fish Commissioner, the Michigan Fish Commission being only required to pay the somewhat large freight bills, their size being enhanced by the no inconsiderable quantity of ice used on their long journey from the McCloud River, in California, to Niles. The U. S. Commission, in consideration of awarding to the Michigan Commission so large a number of ova, reserved the right to distribute a few small lots outside of Michigan, as will appear in the sequel.

There were also on the trays at the Pokagon Hatchery, on the 1st of December, 1874, 200,000 White Fish ova, obtained from the fishery of John P. Clark, near Wyandotte. These were procured by the Superintendent on the 10th of November, and conveyed by him, over the Michigan Central Railroad, in a tin can, about half full of water, he changing and supplying fresh water about once every hour in their transit from Mr. Clark's fishery to the Hatchery, the length of time they were in the can being about sixteen hours. They arrived at their final destination in very good condition. At the time of obtaining the eggs there were not more than two or three spawners to every one of fish caught. In procuring the 200,000 ova, ten spawners were stripped of some twenty milters, the number of milters at that date being largely in excess of the female fish.

At the date of the closing of the First Report, there were laid down in the private hatchery of N. W. Clark & Son, at Northville, Wayne county, 2,000,000 White Fish ova, the said Clark & Son having taken the contract of procuring the number of ova, and hatching them, at an agreed on price with the Commission of two thousand dollars, or at a dollar per thousand.

The foregoing is the inventory of our fish ova stock at the closing of the Report of 1873-4. And that we may preserve, as far as possible, the chronological order of our work, we will return to the California Salmon of the hatch of 1874.

## CALIFORNIA SALMON—1874.

This lot, the eggs estimated at 750,000, but reduced by bad arrival of a portion of the eggs, and from natural and inevitable loss to probably about 600,000 at the time the work of depositing commenced, was deposited as follows:

## 18,000 IN THE RIVERS OF TEXAS.

December 7th, '74.—Delivered at the State Hatchery to the United States Commission, for deposit in the rivers of Texas, nine large cans, believed to contain fully 2,000 fry to a can. The fry, at time of shipment, were in perfect condition, and declared by Mr. Fred Mather, who was the depositor, the finest lot of Salmon fry he ever saw. The plant was reported to me as being entirely successful.

## 10,000 IN WHITE RIVER, INDIANA.

Dec. 16th, '74.—Delivered to U. S. Commission eight large cans, aggregating at least 16,000 fish. The fry, at time of shipment, in splendid order, and a satisfactory plant reported.

## 20,000 IN FOX RIVER, ILLINOIS.

Dec. 18th, '74.—Eight large Government cans, aggregate number of fish supposed to be about 20,000, delivered to the U. S. Commission, and deposited in the Fox River, at Elgin. Fry, when shipped, in excellent order, and the plant reported a good one.

## 10,000 IN WILLIAMS' AND EMMONS' CREEKS.

Dec. 18th, '74.—There were deposited in Williams' Creek 5,000, and in Emmons' Creek 5,000; both streams tributaries of the Dowagiac. Every fish reported alive at time of deposit.

## 50,000 IN THE HERSEY RIVER.

Dec. 18th, '74.—Deposited in the Hersey, at and near Reed City, at four different points, from one to two miles apart, at about midnight, twenty-five cans—50,000 fish. Temperature of water at time of plant, 38°. There was no loss in this deposit; fry examined carefully by the depositors, and found in excellent condition.

## 10,000 IN OULLOMS' CREEK.

Dec. 22d, '74.—Deposited in Cullom's Creek, a tributary of the Dowagiac, six cans, containing 10,000 Salmon. The creek, at point of deposit, is six or eight feet wide, sandy and gravelly shores; creek formed from springs, and strong current. Plant made in good order.

## 50,000 IN THE AU SAUBLE RIVER.

Dec. 23d, '74.—There were deposited, at about nine o'clock P. M., in the Au Sauble River, at a point which is known as the Railroad Crossing, in Crawford county, twenty-five cans—50,000 fish. This plant, as reported to me, was made in perfect order, no fry being found dead.

## 7,000 IN METCALF'S LAKE, CALHOUN COUNTY.

Dec. 23d, '74.—Deposited in Metcalf's Lake four cans, believed to contain about seven thousand fish. The lake is made from cold springs; water clear and deep, with gravelly bed and shores. All the pickerel and pike had, prior

the deposit, been seized from the lake. The plant was reported to me as a good one.

## 15,000 IN TANNER'S CREEK, INDIANA.

Dec. 24th, '74.—There were delivered at the Hatchery, to the U. S. Commission, eight cans—15,000 fry—planted in Tanner's Creek, a tributary of the Ohio River, at Guilford, Indiana. Fish reported standing the journey well, and plant made in good order.

## 40,000 IN SPRING BROOK CREEK.

Dec. 24th, '74.—Deposited in Spring Brook Creek, a beautiful tributary of the Kalamazoo River, at a point known as Gov. Throop's Farm, some four or five miles from the village of Kalamazoo, twenty cans, believed to contain about forty thousand fry. The deposit was made about noon in perfect order, with Ben Potter, S. S. and T. S. Cobb, Dr. Metcalf, and others assisting. None of the fry were found dead at time of deposit. The creek, at the place of deposit, is some ten or twelve feet wide, current very rapid, water clear, with gravelly and rocky bottom, and no predaceous fish in the creek, deemed in every respect a desirable starting place for the youthful Californians.

## 15,000 IN SANGIPAHU RIVER, LOUISIANA.

Dec. 29th, '74.—Delivered to the U. S. Commission, eight large Government cans, aggregating at least fifteen thousand Salmon, deposited in the Sangipahu River, at a point in the river about fifty miles above New Orleans. The depositors in charge, Dr. J. H. Brooks and Geo. H. Jerome, Jr., reported only thirteen deaths *in transitu*, and deposit made in excellent order.

## 60,000 IN CARP RIVER.

Dec. 30th, '74.—There were deposited, at about 11 o'clock P. M., in the Carp River, which empties a short distance from the city of Marquette into Lake Superior, thirty cans, supposed to contain about sixty thousand Salmon fry. The weather during this shipment was very favorable, and in consequence no loss of any account attended the deposit. The Salmon were shipped to Chicago, thence by the Great Northwestern Railroad to Negaunee, a free passage being very kindly extended by the road to the depositors and to the cans of Salmon.

## 3,000 IN BURKE'S CREEK.

January 14th, 1875.—There were deposited in Burke's Creek, Cass county, a fine stream, and a tributary of the Dowagiac, three thousand.

## 6,000 IN CRYSTAL SPRINGS CREEK.

Jan. 15th, '75.—There were placed in Crystal Springs Creek, a tributary of the Dowagiac, and a beautiful stream, six thousand; every fish alive at time of plant.

## 4,000 IN MENDENHALL CREEK.

Jan. 15th, '75.—Planted in above named creek, a strong, fine stream, made entirely from springs, and a tributary of the Dowagiac, four thousand.

## 7,000 IN POKAGON CREEK.

Jan. 16th, '75.—Deposited in Pokagon Creek, a large and swift-running stream, tributary of the Dowagiac, and about one-fourth its size at its junction with the Dowagiac, and having gravelly and rocky shores and bed, seven thousand; plant reported a good one.

## 33,000 IN SHIAWASSEE RIVER.

Jan. 16th, '75.—Planted in the Shiawassee River, at three different points in the vicinity of Owosso, fifteen cans, believed to contain from thirty-five to forty thousand fry. The fish reported in good condition, all being found alive and active when deposited.

## 3,000 IN GOGUAC LAKE, CALHOUN COUNTY.

Jan. 16th, '75.—Planted in Goguac Lake, near Battle Creek, two cans, believed to contain about fifteen hundred each; fry deposited in good order.

## 500 IN PRIVATE PONDS OF J. C. HYDE, ST. JOSEPH.

Feb. 27th, '75.—There were placed in the private ponds of James C. Hyde five hundred. At the time they were emptied into the ponds every fish was found alive. This plant was made for experimental purposes.

## 10,000 IN THE RIVER RAISIN.

March 22d, '75.—Deposited in the River Raisin, near its mouth at the city of Monroe, six cans—ten thousand fry. The Salmon were a very healthy and superior lot, being between four and five months old. None were lost in the transportation.

## 10,000 IN LAKE ORION, OAKLAND COUNTY.

March 30th, '75.—Seven cans, aggregating ten thousand or more, were deposited, at about midnight, in good order, in Lake Orion. The fry being nearly five months old were very vigorous—every way a very superior lot. They were planted some two or three hundred yards from the shore, in clear, deep water, and although it was the last of March the ice at the point of deposit was found to be three feet thick, necessitating a severe labor on the part of the Superintendent and his assistants of over two hours, before holes and clearings could be made in the ice suitable for a safe deposit, an ocular and tangible proof of the almost unprecedented severity of the winter and spring of 1875.

## 1,000 IN STATE HATCHERY PONDS.

April 1st, '75.—Probably a thousand or more of this hatch were retained and placed in one of the Hatchery spring ponds, where they still are, very active and healthy. The overseer reports the deaths from all causes as scarcely exceeding a dozen.

## 100 IN BAPTIST SEMINARY POND, KALAMAZOO.

July 3d, '75.—At the request of the President and officers of the Baptist Seminary in Kalamazoo, and as an experiment, I removed from the State ponds, of this hatch, one hundred, and placed them in the beautiful pond situated at the base of their very attractive grounds. All were found alive and in good condition at the time of setting them loose in these, their classic haunts. They averaged from three to four inches in length.

The foregoing is a succinct exhibit of the hatch and of the deposits of the California Salmon of 1874-5. The hatch, with the deposits, taken as an uniform labor or work, are believed to be considerably above the average awards of good fortune in this line of pisciculture.

And in this connection it is proper to state that, of the several lots of Salmon deposited outside of the State of Michigan, all the expenses attending their shipment, transportation, and deposit were borne by the United States Fish Commission.

## ATLANTIC SALMON OF 1875.

A large number of Atlantic Salmon ova, or Maine Salmon as they are often designated, were, in the winter of 1875, laid upon the trays of the hatching establishment of the Hon. C. G. Atkins, at Bucksport, in the State of Maine. This hatching establishment was largely patronized by the funds of the United States Commission; and Prof. Baird, the U. S. Commissioner, with that liberal regard, not to say partiality, with which he has ever been pleased to manifest towards the humble efforts made by the State of Michigan in the direction of fish-culture, apportioned to the Michigan Commission five hundred thousand. In pursuance of this apportionment, there arrived by express from Bucksport, through the express office in the city of Niles, March 6th, 1875, four large boxes, weighing about 300 lbs. each. The total of eggs in the four boxes were reported, 320,000; express charges, \$44.00. The boxes, on arrival, were immediately placed in a sleigh and carefully taken to the Pokagon Hatchery. On being there opened, many eggs were found to be in a badly decayed and decaying condition, and a large proportion of the balance were shrivelled—indenting—representing the appearance of a dried or partially dried currant. Yet, notwithstanding this unpromising outlook, the eggs were quickly unpacked, and carefully placed upon the trays, and the faucets set to work.

In a short time thereafter many of the embryos, while possessing sufficient vitality to burst the prison walls of their confinement, had scarcely sufficient vital animation left to draw from their food sacs their "predestinated" rations, and so they died, died by companies, by brigades, by battalions, with their knapsacks full about them! With no learned Allopath or Homeopath at hand, nor nostrum obtainable, of approved sanction or power, to modify or arrest the terrible mortality. Mr. Michael, the trusted overseer, and his associate pickers, in their eager, earnest hope that some might escape this Sodom of destruction, were made sick from the stench of the sickly and dying organisms of the Bucksport importation, and not unfrequently were obliged to escape to the open air, and so temporarily gather freshness and strength with which to renew their menial tasks. The fortunate few that survived were turned loose upon the broad waters of the beautiful Dowagiac, which flow past by the Hatchery, and whether any of these so allowed their freedom have ever returned, or ever will return, to visit the burial-place of their comrades, no piscator, venator, poet, or prophet has credibly sung or prophesied.

Of the various shipments from the Bucksport Hatchery of that year, many met with substantially a similar fate, whilst a few lots, in a degree, escaped. But none, we are informed, met with an average measure of success.

Mr. Atkins, than whom there is no more faithful or competent fish-culturist in all the fish States, wrote me under date April 27th, 1875, in which letter he says: "I do not think the great mortality due to any mismanagement since they came into your hands. There was an original defect in nearly all our eggs, which rendered it impossible to expose them long to air without a serious derangement of the outer shell, and which may have affected the embryo itself internally." In the same letter, he adds: "In nearly or quite every lot of eggs sent from here this year, there has been a very serious loss, amounting to a quarter, a half, and sometimes more than that." Other letters from Mr. Atkins contain substantially the same testimony in reference to the eggs, fully corroborating the great difficulty, if not impossibility, of securing a desirable outcome from any and all attempts to hatch the eggs of that year. It would seem no fault or sin of commission or omission attaches to any. It was simply

one of those unaccounted-for phenomena attending fish ova life and development not yet brought within the determinate lens of piscicultural science.

#### SALMON, OR LAKE TROUT, OF 1875.

The first deposits of Salmon Trout in the inland waters of the State were made in the spring of 1875. The Commissioners, adjudging it advisable to make the experiment of their culture at as early a period as possible, purchased from the hatchery of N. W. Clark & Son 150,000 fry, paying therefor the price of two dollars per thousand. And that the success or non-success of the experiment might be the better ascertained, they advised the planting of the number in but one or two of the lakes of the State. Accordingly the fry were disposed of as follows:

#### 125,000 IN WHITTEMORE LAKE, WASHTENAW COUNTY.

March 20th, 1875.—Deposited in Whittemore Lake,	25,000.
April 2d, “ “ “ “ “	50,000.
“ 3d, “ “ “ “ “	50,000.

Making the total of deposits in said lake one hundred and twenty-five thousand.

#### 22,500 IN MINER LAKE, ALLEGAN COUNTY.

On the 31st of March, same year, there were deposited in Miner Lake 22,500. This deposit was made unluckily at a time when the spring freshet was at full tide, bridges gone, and wagon roads almost impassable; and yet the fry were put through in fair condition, and deposited, after a four hours' wagon road journey, at about the hour of midnight.

#### 2,500 IN GUN LAKE, BARRY COUNTY

April 1st, 1875.—One large can, containing some 2,500, were deposited in Gun Lake. Mr. H. F. Badger, of Kalamazoo, the depositor, reported to me a loss of only five or six.

As respects the results of the foregoing several deposits, we have received no intelligence. But of the eventual successful cultivation of the Salmon Trout in the better class of our inland lakes, we know of no good reason to doubt. But whether any considerable harvest is to come from this plant of 150,000 fry is somewhat problematical, as the season of their plant was unfavorable, and the fry themselves hardly up to the average standard.

#### WHITE FISH OF THE HATCH OF 1875

As referred to in another part of this Report, the Commission had entered into an agreement with N. W. Clark & Son to hatch 2,000,000, at the stipulated price of one dollar per thousand. There were also hatched of this year at the Pokagon fishery, in addition to the large lot of California Salmon hatched there, one hundred and fifty thousand or upwards.

It was the wish and purpose of the Commission to order a large proportion of the White Fish fry deposited in the inland lakes. But the unusual, if not unprecedented, severity of the winter precluded the practicability, if not the possibility, of carrying into effect any such purpose. At or about the time the fry were ready to be distributed, very many of the inland lakes were found heavily ice-bound, and still other lakes rendered inaccessible from the extraordinary freshets nearly all over the State, arising from the melting of the accumulated snow falls of the terrible winter. Hence, the only alternative left seemed to be Michigan's great boundary lakes and river. The Commission, therefore, order-

ed, at a meeting on the 25th of February, 1875, held at the Governor's Room, at the Capitol, in Lansing, that the bulk of our supply be planted in the Detroit River and in the great lakes.

The following is the exhibit of the deposits as made:

#### 100,000 IN LAKE MICHIGAN.

February 27th, 1875.—Deposited, of the Pokagon hatch, 100,000 in Lake Michigan, at the mouth of the St. Joseph River. The fry were found all alive and plant made in good order.

#### 50,000 IN THE ST. JOSEPH RIVER.

March 3d, 1875.—Planted, from the same hatch as above, in the St. Joseph River, at Berrien Springs, 50,000. Deposit reported entirely successful.

#### 100,000 IN ELIZABETH LAKE, OAKLAND COUNTY.

March 11th, 1875.—Deposited, from the Northville hatch, in Elizabeth Lake, one hundred thousand. Fry reported in good condition, and plant made in good order. It was deemed best to make one large deposit, to be of an experimental character, in some good inland lake, so whatever results might come of it, they would become more marked and apparent. Elizabeth Lake was selected for such experiment.

#### 316,000 IN LAKE MICHIGAN.

March 11th, 1875.—There were deposited at South Haven, at the mouth of the Black River, in deep water, and at two different points in the river, 316,000. The fry were in superior condition, none being discovered dead.

#### 316,000 IN THE DETROIT RIVER.

March 13th, 1875.—Planted in the Detroit River, opposite the city of Detroit, and out about in the middle of the river, three hundred and sixteen thousand. This plant reported made in good order, and the fry lively and in fine condition.

#### 316,000 IN LAKE MICHIGAN.

March 16th, 1875.—There were deposited at Ludington, at the mouth of the Pere Marquette River, in deep water, three hundred and sixteen thousand. The water in the cans somewhat roily, and, hence, the fry not so readily observed, but thought not to be in so good condition as the previous lots. This deposit was made with considerable difficulty, at about midnight, but at last in good order.

#### 316,000 IN SAGINAW BAY.

March 18th, 1875.—There were deposited in Saginaw Bay, about three miles from Bay City, in clear, deep water, three hundred and sixteen thousand. The water in the cans was still roily. In the emptying of the cans there were discovered in some of them fish egg shells, sediment, and filth, and in some of the cans quite a good many dead fry, having the appearance of being deceased for some time. The plant was made in first-class order.

#### 316,000 IN LAKE ERIE.

March 19th, 1875.—Planted in Lake Erie, at the city of Monroe, at the mouth of the River Raisin, three hundred and sixteen thousand. The deposit was made in deep water and rapid current, the river being swollen by freshets, and the water of the river quite roily. Plant reported made in good order.



316,000 IN GRAND TRAVERSE BAY.

March 25th, 1875.—There were planted in Grand Traverse Bay, at Grand Traverse City, near the mouth of the Boardman River, the river being free from ice, and at point of deposit deep and clear, three hundred and sixteen thousand fry with a loss of from three to five per cent. The Express Company's charges and deposit made in satisfactory order.

12,500 IN GOGUAC LAKE, CALHOUN COUNTY.

March 31st, 1875.—There were placed in Goguae Lake twelve thousand five hundred; deposit reported made in good order. This lake is a large and beautiful body of water, and fish deposited therein are carefully looked after by the wide-awake and efficient Sportsman's Club of Battle Creek, having among its members many of the first and best citizens of the place.

6,500 IN COPANACON LAKE, CALHOUN COUNTY.

March 31st, 1875.—There were deposited in this lake, which is also known as Graham Lake, six thousand five hundred. Deposit reported a good one.

6,500 IN HART'S LAKE, CALHOUN COUNTY.

March 31st, 1875.—There were deposited in this lake six thousand and five hundred. The party depositing reported the fry in good condition, and plan made in excellent order.

40,000 IN GUN LAKE, BARRY COUNTY.

April 1st, 1875.—There were planted in Gun Lake, one of the largest of the inland lakes, forty thousand. H. F. Badger and J. B. Trowbridge, of Kalamazoo, the depositors, reported the fry in excellent condition, and the deposit first-class one.

The foregoing named deposits cover the entire White Fish hatch for the year 1875.

Pursuing the chronologic thread of our work, the next hatch was the

800,000 CALIFORNIA SALMON OF 1875-6.

On the 2d of October, 1875, there were shipped, by the American Express Company, from the United States Salmon Hatchery, on the McCloud River, California, eight hundred thousand Salmon eggs, the munificent gift of Prof. Spencer F. Baird, U. S. Commissioner, to the Fish Commission of Michigan. They arrived at the depot of the Michigan Central Railroad at Niles, on the 8th of October,—9:15 o'clock A. M.

The eggs were found to be packed in ten large crates, the aggregate weight of the crates being about three thousand pounds. In the center of each crate was an ice-chamber, and on the arrival of the crates at Niles, the ice-chamber of each crate was found to contain ice. The crates, on their arrival, were immediately put aboard the wagons at the depot, two good lumber wagons, well filled with hay and straw, being there in expectation of their arrival, so unnecessary handling was obviated, and valuable time saved in their shipment to the Hatchery. They arrived at the fishery a little before noon. The labor of unpacking, cleaning the eggs, and laying them upon the trays, was at once commenced by a competent force in full readiness for the work. In a few hours all were upon the trays and in the troughs, and the pure, sparkling water of Crystal Springs flowing through and over the trays, bespoke to a demonstration the very superior quality of almost the entire lot of eggs. Three of the crates on opening gave evidence of rough handling *in transitu*, the eggs having been thrown from the musquito netting among the moss used in packing, and against

the sides of the boxes, and yet apparently without any very serious detriment to the eggs.

The percentage of loss of eggs in the different crates varied considerably; some crates had a loss of not more than one or two per cent, while others opened with a loss of from three to five per cent. The Express Company's charges were \$518.55, which was paid from the Fish Fund of the State. Prof. Baird, in consideration of this very liberal supply to Michigan, reserved, as he did with the former lot, the privilege of retaining some portion of the fry for stocking the lakes and rivers of other States. Some of the eggs commenced hatching in a very few days, and in a few weeks all were hatched. This large lot of salmon fry, when found ready for distribution, was disposed of as follows, and being more convenient for reference, I have tabulated the deposits:

DATE OF DEPOSIT.	LAKE OR RIVER.	COUNTY.	No. of FISH.
December 8, 1875.	Indian Creek, tributary to Dowagiac.	Cass	15,000
" 8, 1875.	William's Creek, " " "	Cass	8,000
" 8, 1875.	Peavine Creek, " " "	Cass	15,000
" 9, 1875.	Pokagon Creek, " " "	Cass	10,000
" 16, 1875.	Long Lake	Barry	2,000
" 16, 1875.	Gull Lake	Kalamazoo	4,000
" 16, 1875.	Putty Lake	Kalamazoo	2,000
" 16, 1875.	Indian Lake	Kalamazoo	2,000
" 16, 1875.	Twin Lake	Kalamazoo	4,000
" 16, 1875.	Lyon's Lake	Kalamazoo	2,000
" 16, 1875.	Wood's Lake	Kalamazoo	4,000
" 16, 1875.	McMartin's Lake	Kalamazoo	4,000
" 16, 1875.	Lewis' Lake	Kalamazoo	2,000
" 16, 1875.	Portage Lake	Kalamazoo	4,000
" 16, 1875.	Metcalf Lake	Calhoun	2,000
" 16, 1875.	Goguae Lake	Calhoun	4,000
" 16, 1875.	Brace Lake	Calhoun	4,000
" 20, 1875.	Paw Paw River, near Paw Paw	Van Buren	16,000
" 21, 1875.	Flint River, near Flint	Genesee	10,000
" 21, 1875.	Rifle River, near Bay City	Bay	8,000
" 22, 1875.	Detroit River, near Trenton	Wayne	10,000
" 22, 1875.	Detroit River, near Presque Isle	Wayne	10,000
" 22, 1875.	Rouge, near Dearborn	Wayne	10,000
" 22, 1875.	Tittabawassee River, near Midland	Midland	10,000
" 22, 1875.	Chippewa River, near Midland	Midland	10,000
" 23, 1875.	Goose River	Lenawee	5,000
" 23, 1875.	Goose Lake	Lenawee	5,000
" 23, 1875.	River Raisin, near Brooklyn	Jackson	10,000
" 23, 1875.	Orchard Lake	Oakland	8,000
" 23, 1875.	Hontoon Lake	Oakland	10,000
" 23, 1875.	Clinton River, at Utica	Macomb	12,000
" 25, 1875.	Maple River	Clinton	6,000
" 25, 1875.	Round Lake	Clinton	6,000
" 25, 1875.	St. Clair River, at Port Huron	St. Clair	14,000
" 25, 1875.	Black River, near Port Huron	St. Clair	12,000
" 28, 1875.	Thorn Apple Lake	Barry	6,000
" 28, 1875.	Carter Lake	Barry	6,000
" 28, 1875.	Coldwater Lake	Branch	4,000
" 28, 1875.	Lake of the Woods	Branch	4,000
" 28, 1875.	Morrison Lake	Branch	8,000
" 28, 1875.	Thorn Apple River	Eaton	6,000
" 28, 1875.	River Raisin, and lakes tributary	Lenawee	10,000
" 28, 1875.	Huron River, near Base Lake	Washtenaw	8,000
" 30, 1875.	Barron Lake	Cass	8,000

DATE OF DEPOSIT.	LAKE OR RIVER.	COUNTY.	No. of FISH.
January 1, 1876	Muncy Lake	Cass	1,000
" 3, 1876	Diamond Lake	Cass	8,000
" 3, 1876	St. Joseph River, at Three Rivers	St. Joseph	8,000
" 3, 1876	Portage Creek	St. Joseph	2,000
" 3, 1876	Rocky Creek	St. Joseph	2,000
" 3, 1876	Sturgeon Lake	St. Joseph	4,000
" 6, 1876	Reed Lake	Kent	4,000
" 6, 1876	Church Lake	Kent	4,000
" 6, 1876	Pickereel Lake	Kent	2,000
" 6, 1876	Lamberton Lake	Kent	2,000
" 6, 1876	Soft Water Lake	Kent	2,000
" 6, 1876	Hamblin Lake	Calhoun	1,000
" 7, 1876	Clam Lake	Wexford	10,000
" 7, 1876	Boardman River, at Kalkaska	Kalkaska	8,000
" 7, 1876	Rapid River, tributary Torch Lake	Kalkaska	12,000
" 8, 1876	Pine Lake	Charlevoix	6,000
" 8, 1876	Bear Lake	Charlevoix	4,000
" 13, 1876	Big Star Lake	Lake	14,000
" 14, 1876	Walloon Lake	Charlevoix	16,000
" 15, 1876	Au Sauble River, at Crawford	Crawford	30,000
" 15, 1876	Otsego Lake	Otsego	20,000
" 17, 1876	Lake Michigan	Berrien	2,000
" 19, 1876	Lake Michigan	Marquette	24,000
" 19, 1876	Three Lakes, connected with Mich'mme	Marquette	8,000

All the foregoing deposits were reported to me. And without an exception, I remember, the Salmon fry were found, at the time of actual deposit, in good condition, many of the deposits being without the loss of a single fish, and others with but a trifling and unimportant loss. The winter was highly favorable for work upon the inland lakes, the weather being generally mild, and with very little snow or ice to operate as hindrances to sharp and successful fish planting.

To the foregoing table of deposits must be added one more. On the 11th of December, 1875, Prof. J. W. Milner, Deputy U. S. Commissioner, had received at the Pokagon Hatchery, thirty-three thousand Salmon fry of the above named hatch, intending to convey them to the State of Illinois. He missed the afternoon train at Niles, and consequently was obliged to hold the fish at Niles till the next morning train. The fish were provided with good quarters at the depot, and were being very carefully cared for, when, at about 3 A. M. it was noticed that the fry showed signs of suffering to a degree that endangered their safety, caused, as was believed, from overcrowding the cans,—the Government was too heavily loaded! So, to save the fish, Mr. Milner ordered them immediately put in the St. Joseph River at Niles. At the time they were loose in the river, the fry were reported to have been in fair condition.

Now, it will be observed in the above recital of California Salmon deposits that many of them have been made in the inland lakes. The question has been put to me, both orally and in letters received, scores of times, if I thought the Salmon would live and thrive in these lakes. All, of course, will not live. But I do certainly think that a very considerable portion of them will live and grow, and many of them become adult Salmon.

The question has many favorable aspects. The time of their deposit is favorable. They are kept in their hatching homes not only till the umbilical vesicle is entirely absorbed, but are kept and fed two, three, four, and even a

weeks, or longer, after the absorption of the food sac, so, at the time of their deposit, they are, ordinarily, very active, as well as sharp feeders. It will be noticed that this brings their deposit to about midwinter, a time when predatory fish are, in a measure, dormant, and indisposed to any very considerable amount of exercise for the gratification of their hunger, or their deviltry. Then again, every mother's one of them has implanted in him an instinct—a sentiment, as it were—that warns of danger. They very evidently do not believe that the millennium has come when they can lie down with the pickerel and the perch in safety! When two, and three, and four inches long, their movements are discovered to be of the most agile character, and when inclining to rest, which is seldom, they seem in a meditative sort of mood, as if contemplating the great fact that there are Ishmaelites in the waters under the earth as well as upon the upheaved dry land, and so, if ever indulging in sleep at all, it is the deep sleep with one eye wide open; and, hence, the value that attaches to number one over any and all other digits is, in no degree or form, exceptional with them. Again, the California Salmon has shown his capacity to live, and to perpetuate his race in waters of a much higher temperature than many other species of the Salmonidæ family. All these things are favorable. But then there comes in the question of food and range, to which allusion has been made in another part of this Report. Obviously, the larger and the deeper the lake, the better; the greater the chances for food, the better. Of this there cannot be so much as the suspicion of a doubt. Limited range, limited food, passing all dispute, will dwarf your Parr, your Smolt, your Grilse, and your adult Salmon. Instead of those great fellows that ambulate at will the unfenced pastures and meadows of the ocean, and perform journeys, as they are said to do, of three thousand miles, large enough, strong enough to tow into port an ordinary brig, you will have your Grilse or Salmon that an average muscular boy of a dozen summers will be able to land without wetting his pants above the knee. So I advise none of my Michigan friends to change the fashion of their dinner platters; those you already have will probably be found amply large for the accommodation of the catch of your Salmon-stocked lakes.

#### LAND-LOCKED SALMON.

On the 26th of March, 1876, there arrived at Niles, by express, from the establishment of Charles G. Atkins, of Bucksport, Maine, eighteen thousand Schoodic, or, as they are more commonly known, land-locked Salmon eggs. Prof. Baird donated them to the Michigan Commission. They arrived in full fair condition, and were at once taken to the State Hatchery and placed upon the trays. In a few days some commenced hatching, and in three or four weeks all were hatched. The fry, after the absorption of the food sac, were fed and cared for substantially the same as the Atlantic and California Salmon.

It was thought best not to subdivide this small number too much, that they should be planted in lots large enough for plain observation and marked results, and in waters over which a supervisory control could be exercised. They were accordingly deposited as follows:

#### 4,000 IN PARKER LAKE.

On the 18th of May last, Eli R. Miller, President of the Fish Board, deposited in Parker Lake, situate in Richland township, Kalamazoo county, four thousand. This Lake, or pond, is the basin of an immense spring, covering one and

one-half acres. Extreme depth of water, fifteen feet. Mr. Miller, prior to the deposit, caused the lake to be thoroughly seined of the bass, pickerel, and other predatory fish.

## 1,000 IN LONG LAKE.

Same day as above, Mr. Miller deposited one thousand in Long Lake, Kalamazoo county. This lake is also free from predaceous fish, and is largely fed by cold springs. The fry for both lakes were reported to me as arriving in good condition, and were deposited in good order. The fry in Parker Lake have been seen by various parties during the summer and early fall, being apparently healthy and thriving.

## 5,000 IN LOG LAKE.

May 19th, 1876, there were deposited by Arthur A. Bleazby, of Kalamazoo county, in Log Lake, Kalamazoo county, five thousand. This lake is about two miles from Kalamazoo, contains some thirty acres, is nearly round, good bottom, marsh or swamp about it, is fed by cold springs, and has no fish in it except five thousand Schoodics. The fry were seen in August last, and reported looking well, and growing finely.

## 3,000 IN HAMBLIN LAKE.

June 1st, 1876.—Three thousand were put into Hamblin Lake, Calhoun county; a good lake and nearly free from predaceous fish. Fry reported received and deposited in good order. Concerning the above lot, Mr. A. Hamblin, of Battle Creek, a believer in fish-culture, and who backs up his belief by a proper preparation of his water farm, wrote me, November 29th, as follows: "I often observe, when at my lake, some of the little fish, and they seem to be growing finely. I hope, one of these days, to be able to send you a sample of them."

## 3,000 IN GOGUAC LAKE.

June 1st, 1876.—There were planted, under the auspices of the Sportsman's Club of Battle Creek, in Gogouac Lake, Calhoun county, three thousand.

## 1,000 IN REESE POND.

Same date as foregoing, and by the same party, there were deposited one thousand in Reese Pond, Calhoun county. In this pond there are no predaceous fish, or fish of any kind, but minnows. Both of above lots were reported received and deposited in good order.

## 3,000 IN PONDS OF H. A. REED.

June 1st, 1876.—Mr. H. A. Reed placed in his private fish ponds at Marshall, Michigan, fed by large and cold springs, three thousand, to be kept and fed in his ponds till Church Lake, or some other good lake in the vicinity of Marshall, could be seined of its finny cannibals, and so put into good condition to receive them.

## 300 IN STATE HATCHERY PONDS.

The few retained at the Hatchery we were compelled to put into a small preserve, or tank, with quite a limited supply of water, the large ponds being occupied by other fish. They, under the circumstances, have thriven and do respectably well.

## THE WHITE FISH HATCH OF 1875-6.

We come, now, to the great work of the year: a work, we believe, not pa-

ed by any fish State, if, indeed, it has its parallel in any age or country. We refer, of course, to the extraordinary hatch and distribution of nearly ten millions of White Fish, one million being equivalent to the hatch of many millions of some other varieties of fish. Now, with this modest (?) approach to the subject, we hope, in the recital of the great work undertaken, and the unexampled success achieved, that our enthusiasm thereat will not crop out into anything that savors of extravagance; genuine success and desert needing no ostentatious beadle or prop. The grand result must be ascribed, quite exclusively, to the good stars shining down, good tools, and good workers at the end of the work. To a just comprehension of the work, a preliminary paragraph or two is requisite.

Prior to the erection of the Detroit works, the hatching of White Fish had been mainly accomplished by the use of pure spring water, kept pure by flannel screens, and rendered cold as possible by exposure to the air, and by the introduction of ice into the supply tanks. But the belief was entertained by the members of the Fish Board, as well as by other parties, that ordinary river water, and especially the water of the Detroit River, as it has been, from time immemorial, an extensive natural spawning ground, would be found suitable for the hatching of the ova artificially.

And here, perhaps, as well as any where, it may be stated that the sequel has proven, to a demonstration, the correctness of the theory, the only drawback in the desired for success, being the roiled condition of the water ordinarily following heavy winds and rain storms. But all ill results from such roily conditions have thus far been overcome by frequent and thorough feathering of the eggs, and by showering them, this process being both expeditious and effective. We think no particular injury results, necessarily, to the eggs by the simple deposit of the sediment; but it entails a no small amount of extra care and labor; for, were the eggs to remain for any considerable length of time, coated over with this clayey, closely adhering sediment, thereby excluding the oxygen of the water from contact with the foetus egg, it is altogether probable that the health, if not the vitality, of the embryo would become seriously affected. So, at such times, the overseer and his corps of pickers have to address themselves with renewed energy to renovate not alone the screens and boxes, but also the trays and their treasure of ova.

The times when the Detroit River is in this roiled condition are not very frequent, occurring, possibly, during last season's operations, a dozen or more times, at varying largely in degree of roiliness, and also in continuance, sometimes lasting but for a day or two, and then again not clearing up for several days. And here, it is proper to observe, that no number of woolen or other screens, and all effort to strain or clarify the water, has produced no appreciable effect. The sediment is of such a minute form as to be inseparable from the spawning water by any hitherto discovered artificial means or appliances.

So the Board, in view of the strong probability of success, at its meeting in the city of Detroit, all the members being present, on the 3d of August, 1876, passed the following order: "On motion, it is ordered to hatch in Detroit, with the water of the city water works, the ensuing season, five millions of White Fish, provided a grant of the water can be had, and a suitable lot obtained for this purpose. And that the Superintendent, on procuring such grant of water, and also a lot, proceed to erect suitable buildings and works for the hatch as aforesaid."

The Board, at this meeting, as the proposed hatch was regarded a sort of

venture, experimental in its character, advised the Superintendent to construct a hatchery as cheaply as possible, and to introduce as simple and as inexpensive hatching apparatus and fixtures as could be done consistent with efficiency.

Well, permission to use the water of the Detroit Water Works was granted and a lot on Atwater street, near the city water works, was obtained at a rental of fifty dollars per year. The Superintendent, that he might carry into effect the wish of the Board as to cheapness of Building, etc., and being well acquainted with what is known as the "Holton Hatching Box," and well knowing its use would economize space, and so obviate the need of a large building and also being satisfied that the box possessed intrinsic merits over and above the simple consideration of economical construction of hatchery, visited Mr. Seth Green, of Rochester, N. Y., and obtained of him the unlimited use of the Holton Hatching Box, for the State of Michigan for one year, with the privilege of three or five years, at the stipulated price of one hundred dollars per annum. On the 9th of September, written proposals, accompanied with specifications, were submitted to several of the leading building firms of Detroit, inviting bids for the erection of the hatchery building, to be fully completed by the 24th day of September. J. W. Ingersoll was the lowest bidder, his bid being \$409.00. The building is one story, 20x50 feet, shingle roof, planed and matched floor, sheeted on the inside walls with planed and tightly matched boards, and the space filled with well packed saw-dust. The contractor did a good job, and performed it very nearly on time. The plumbing and the laying of 454 feet of four inch stone tiling drain was done by Mr. John Reilly, at a cost of \$233.66, a work well and satisfactorily performed.

The building being completed on the 25th day of September, Mr. Oren M. Chase, a pupil of the veteran Superintendent of the New York State Fisheries, commenced the building of the boxes, troughs, screens, with the necessary apparatus and fixtures, and had them all in complete working order by the last of October. On the first day of November everything was in perfect readiness for the procuring of the White Fish spawn from the different fisheries on the Detroit River.

The subjoined table shows the date of taking, the number of female fish stripped, and fishery where taken:

DATE.	Grosse Isle, Horace Gray's Fishery.	Fighting Island, Fishery of John P. Clark.	Bois Blanc, Fishery of.	Fishery at Ecorse of George Clark.
November 2	31	---	---	---
" 3	21	---	---	---
" 4	19	---	---	---
" 5	17	---	---	---
" 6	16	15	---	---
" 7	18	14	---	---
" 8	8	7	---	---
" 9	14	---	---	12
" 10	23	---	39	---
" 11	45	---	28	18
" 12	45	---	---	15
Total	257	36	67	45

The parties who took the great bulk of the spawn were Monroe A. Green, O. E. Chase, and Frank Ramsdell. Those who assisted, and took more or less spawn, were Louis Gray, Guy Warwick Jerome, Joseph Brown, and John Anglum. Now, it will be seen from the above table that the total female fish stripped were four hundred and five. The number of male fish, or milsters, was considerably larger than the number of females. The entire ova yield was something over ten millions,—a very superior lot, almost perfect impregnation being secured by what is termed the dry method. The eggs were obtained almost exclusively at night, and on impregnation were placed in our large fish depositing cans, and early each morning taken on board a steamboat to Detroit, and as soon as practicable after their arrival placed in the hatching trays and boxes. From two hundred and fifty to three hundred thousand eggs were put into each can, and the water changed every hour or two. The spawners averaged very large, many weighing from five to eight pounds.

Now, from this time on to the actual hatching of the eggs, the record of one day is substantially the record of every other day for a period of five months or upwards: picking out dead or decaying eggs, feathering them, showering them, keeping them clean and free of all sediment as possible, watching all the phases, and pre-providing against the possible friction and accidents incident to their slow and tedious incubation; this is the routine of a day, and the record of a day is the virtual record of all the wearisome working months.

At the request of the Superintendent, the overseer in charge kept an accurate each day's register of the temperature of the water, and its condition as respects roiliness and clearness; and as I deem this registry of great importance in elucidating certain theories and facts in fish-culture, and so should, in some form, be preserved, and to the end that it may the more securely be preserved, I have thought it best to embody it in this Report. Should the general reader find it dull reading, as he doubtless will, he has a *carte blanche* to skip it. The first spawn laid down was November 3d, and, of course, the record commences at that date:

DATE.	Temperature of Water at 7 A. M.	Temperature of Water at 6 P. M.	CONDITION OF WATER.
November 3	42°	42°	Water roily.
" 4	42°	42°	Water roily.
" 5	42°	42°	Water very roily.
" 6	42°	42°	Water very roily.
" 7	42°	42°	Water very roily.
" 8	42°	42°	Water more clear.
" 9	42°	43°	Water still more clear.
" 10	42°	43°	Water still clearing up.
" 11	43°	41°	Water very roily.
" 12	42°	43°	Water very roily.
" 13	43°	44°	Water more clear.
" 14	42°	42°	Water more clear.
" 15	41°	42°	Water still more clear.
" 16	41°	42°	Water quite clear.
" 17	39°	40°	Water quite clear.
" 18	39°	40°	Water very roily.
" 19	39°	40°	Water very roily.
" 20	39°	40°	Very roily.
" 21	39°	39°	Clear.
" 22	37°	38°	Clear.

## REGISTER OF TEMPERATURE.—CONTINUED.

DATE.	Temperature of Water at 7 A. M.	Temperature of Water at 6 P. M.	CONDITION OF WATER.
November 23	37°	38°	Rolly.
" 24	37°	38°	Little more clear.
" 25	37°	38°	Quite clear.
" 26	37°	38°	Very roily.
" 27	38°	38°	Very roily.
" 28	38°	38°	Very roily.
" 29	39°	39°	Very roily.
" 30	36°	36°	A little more clear.
December 1	35°	35°	More clear.
" 2	35°	35°	Quite clear.
" 3	35°	35°	Clear.
" 4	35°	35°	Clear.
" 5	35°	35°	Clear.
" 6	35°	35°	Very roily in afternoon.
" 7	35°	35°	Somewhat clearer.
" 8	34°	35°	Quite clear.
" 9	36°	37°	Quite clear.
" 10	36°	35°	Clear.
" 11	35°	34°	Clear.
" 12	35°	35°	Clear.
" 13	34°	34°	Rolly.
" 14	34°	34°	A little more clear.
" 15	34°	34°	Quite clear.
" 16	34°	34°	Quite clear.
" 17	34°	34°	Quite clear.
" 18	34°	34°	Rolly.
" 19	34°	34°	Quite clear.
" 20	34°	34°	Clear.
" 21	34°	34°	Clear.
" 22	34°	34°	Clear.
" 23	34°	34°	Clear.
" 24	34°	34°	Clear.
" 25	34°	34°	Clear.
" 26	34°	34°	Rolly.
" 27	34°	33°	A little more clear.
" 28	32°	32°	Clearing up.
" 29	34°	34°	Quite clear.
" 30	34°	34°	Quite clear.
" 31	33°	33°	Clear.
1876.			
January 1	35°	36°	Quite clear.
" 2	38°	38°	Very muddy.
" 3	38°	38°	Cannot see more than two inches in water.
" 4	37°	37°	Very thick with mud.
" 5	36°	37°	Very thick with mud.
" 6	37°	37°	A little more clear.
" 7	35°	36°	Clearing up quite fast.
" 8	35°	35°	Quite clear.
" 9	37°	37°	Quite clear.
" 10	36°	34°	Terrible,—thick with grass and mud.
" 11	34°	34°	Clearing up some.
" 12	33°	33°	More clear.
" 13	33°	33°	More clear.
" 14	34°	34°	Quite clear.
" 15	34°	34°	Quite clear.
" 16	34°	34°	Clear.
" 17	34°	34°	Clear.
" 18	34°	34°	Clear.
" 19	34°	34°	Clear.

## REGISTER OF TEMPERATURE.—CONTINUED.

DATE.	Temperature of Water at 7 A. M.	Temperature of Water at 6 P. M.	CONDITION OF WATER.
January 20	34°	34°	Clear.
" 21	34°	34°	Clear.
" 22	34°	34°	Clear.
" 23	34°	34°	Clear.
" 24	34°	34°	Clear.
" 25	34°	34°	Clear.
" 26	34°	34°	Clear.
" 27	34°	34°	Clear.
" 28	34°	34°	Clear.
" 29	34°	34°	Clear.
" 30	34°	34°	Clear.
" 31	34°	34°	Clear.
February 1	34°	34°	Clear.
" 2	34°	34°	Clear.
" 3	34°	34°	Clear.
" 4	34°	34°	Clear.
" 5	34°	34°	Clear.
" 6	34°	34°	Clear.
" 7	34°	34°	Clear.
" 8	34°	34°	Clear.
" 9	34°	34°	Very roily.
" 10	34°	34°	Clearing up.
" 11	34°	34°	Very roily.
" 12	34°	34°	Clearing up some.
" 13	34°	34°	More clear.
" 14	34°	34°	More roily.
" 15	34°	34°	Clearing up.
" 16	34°	34°	Quite clear.
" 17	34°	34°	Some roily to-day.
" 18	34°	34°	Some roily to-day.
" 19	34°	34°	Some roily to-day.
" 20	34°	34°	Some roily to-day.
" 21	34°	34°	Very roily.
" 22	34°	34°	Very roily.
" 23	34°	34°	A little more clear.
" 24	34°	34°	Quite clear.
" 25	34°	34°	Some roily.
" 26	34°	34°	Some roily.
" 27	34°	34°	Clearing up.
" 28	34°	34°	Clearing up.
" 29	34°	34°	Quite clear.
March 1	34°	34°	Clear.
" 2	34°	34°	Clear.
" 3	34°	35°	Clear.
" 4	34°	34°	Clear.
" 5	34°	34°	Clear.
" 6	34°	34°	Clear.
" 7	34°	34°	Clear.
" 8	34°	34°	Quite clear.
" 9	34°	34°	Quite clear.
" 10	34°	34°	Quite clear.
" 11	34°	34°	Quite clear.
" 12	34°	34°	Some roily.
" 13	34°	34°	Some roily.
" 14	34°	34°	Some roily.
" 15	34°	34°	Quite clear.
" 16	34°	34°	Very roily.
" 17	34°	34°	Some roily.
" 18	34°	34°	Some roily.

REGISTER OF TEMPERATURE.—CONTINUED.

DATE.	Temperature of Water at 7 A. M.	Temperature of Water at 6 P. M.	CONDITION OF WATER.
March 19	34°	34°	Little more clear.
" 20	34°	34°	Quite clear.
" 21	34°	34°	Quite clear.
" 22	34°	34°	Roily.
" 23	34°	34°	Quite clear.
" 24	34°	34°	Quite clear.
" 25	34°	34°	Clear.
" 26	34°	34°	Clear.
" 27	34°	34°	Clear.
" 28	34°	34°	Clear.
" 29	34°	34°	Clear.
" 30	34°	34°	Clear.
" 31	34°	34°	Clear.
April 1	33°	33°	Clear.
" 2	33°	33°	Clear.
" 3	33°	33°	Clear.
" 4	33°	33°	Clear.
" 5	33°	33°	Clear.
" 6	33°	33°	Clear.
" 7	34°	34°	Clear.
" 8	34°	35°	A little roily.
" 9	36°	37°	A little roily.
" 10	38°	39°	Quite clear.
" 11	39°	40°	Roily.
" 12	40°	42°	Some roily.
" 13	42°	42°	Some roily.
" 14	42°	42°	Some roily.
" 15	42°	42°	Some roily.
" 16	42°	42°	Some roily.

The first eggs hatched were on the 1st of March, the last on the 11th of April,—the extreme difference in the hatching being about forty-two days. The age at which the fry were shipped for deposit ranged from 8 to 15 days and our first shipment from the Hatchery was on the 8th of March, and continuing on almost each day till the 17th day of April.

WHITE FISH DEPOSITS OF HATCH OF 1875-6.

The subjoined table shows the county, lake, township in which wholly or mainly located, date of deposit, name and address of depositor, and the number of fish deposited:

COUNTY, AND NAME OF LAKE.	Township in which Wholly or Mainly Located.	Date of Deposit.	NAME AND ADDRESS OF DEPOSITOR.	No. of Fish Deposited.
Allegan.				
Big Lake	Martin	April 6, 1876.	J. N. Neeley, Monteith.	25,000
McDermott	Martin	April 6, 1876.	J. N. Neeley, Monteith.	15,000
Barry.				
Basset	Yankee Springs	April 6, 1876.	J. C. Bray, Middleville.	10,000
Duncan or Killner	Thornapple	April 6, 1876.	J. C. Bray, Middleville.	10,000
Ellis	Assyria	April 6, 1876.	D. W. Ellis, Assyria.	10,000

WHITE FISH DEPOSITS.—CONTINUED.

COUNTY, AND NAME OF LAKE.	Township in which Wholly or Mainly Located.	Date of Deposit.	NAME AND ADDRESS OF DEPOSITOR.	No. of Fish Deposited.
Ilston	Maple Grove	April 6, 1876.	D. W. Ellis, Assyria.	5,000
Ine	Johnstown	March 23, 1876.	W. S. Clark, Augusta.	20,000
Jarwood	Thornapple	April 6, 1876.	J. C. Bray, Middleville.	10,000
Jall	Johnstown	March 26, 1876.	S. F. Otis, Milo.	15,000
Warner	Prairieville	April 6, 1876.	Lester Warner, Plainwell.	10,000
Benzie.				
Ann	Almira	April 1, 1876.	A. P. Wheelock, Almira.	20,000
Branch.				
Camp	Algansee	March 21, 1876.	J. F. Camp, Quincy.	10,000
Gilead	Gilead	March 21, 1876.	Judson Sweeting, Gilead.	20,000
Lake of the Woods	Ovid	March 21, 1876.	A. G. Rose, Coldwater.	25,000
Marble	Quincy	March 21, 1876.	A. D. Young and J. Willis, Quincy.	20,000
Maker	Butler	April 6, 1876.	J. E. White, Litchfield.	25,000
Cathoun.				
Ackleys	Convis	March 23, 1876.	S. J. Huniker, Bellevue.	15,000
Beadle	Emmet	March 23, 1876.	Ed. Sandford, Battle Creek.	10,000
Bedar	Fredonia	March 25, 1876.	John Houston, Marshall.	10,000
Dowagiac	Battle Creek	Feb. 28, 1876.	H. H. Hubbard, Battle Creek.	20,000
LeRoy	LeRoy	Feb. 28, 1876.	H. H. Hubbard, Battle Creek.	10,000
Graham	Bedford	March 23, 1876.	A. C. Hamblin, Battle Creek.	10,000
Hamblin	Bedford	March 23, 1876.	A. C. Hamblin, Battle Creek.	10,000
Hart	Battle Creek	Feb. 28, 1876.	H. H. Hubbard, Battle Creek.	10,000
St. Mary	Pennfield	Feb. 28, 1876.	H. H. Hubbard, Battle Creek.	10,000
Town Line	Pennfield	March 23, 1876.	H. Willis, Battle Creek.	10,000
Turtle	Burlington	March 18, 1876.	S. S. Wemple, Union City.	10,000
Wabason	Bedford	Feb. 28, 1876.	H. H. Hubbard, Battle Creek.	20,000
Warner	Tekonsha	March 18, 1876.	B. Ellis, Burlington.	10,000
Cass.				
Dowagiac	Wayne	March 25, 1876.	H. H. Taylor, Dowagiac.	10,000
Union	Wayne	March 21, 1876.	Geo. Meacham, Union.	15,000
Howard	Howard	March 11, 1876.	Henry Pruyn, Niles.	20,000
Union	Howard	March 21, 1876.	Geo. Meacham, Union.	10,000
Dowagiac	Silver Creek	March 25, 1876.	Menzo Harris, Dowagiac.	25,000
Union	Wayne	March 25, 1876.	James A. Lee, Dowagiac.	10,000
Union	Wayne	March 21, 1876.	Geo. Meacham, Union.	10,000
Union	Wayne	March 21, 1876.	Geo. Meacham, Union.	20,000
Union	Wayne	March 25, 1876.	James A. Lee, Dowagiac.	10,000
Union	Wayne	March 21, 1876.	Geo. Meacham, Union.	10,000
Charlevoix.				
Walloon	Towns'ps 33 & 34	April 1, 1876.	D. Darwin Hughes, Jr., Grand Rapids.	30,000
Cheboygan.				
Petoskey		Feb. 22, 1876.	Geo. W. Hutchins, Petoskey.	40,000
Clare.				
Surrey	Surrey	March 16, 1876.	H. S. Warner, Lake Station.	50,000
Clinton.				
Lansing	Bath	March 30, 1876.	S. S. Olds, Lansing.	10,000
Lansing	Bath	March 30, 1876.	S. S. Olds, Lansing.	10,000
Eaton.				
Onondaga	Hamlin	April 6, 1876.	J. G. Kettler, Onondaga.	10,000
Walton and Lee	Walton and Lee	March 28, 1876.	A. K. Warren, Olivet.	20,000

## WHITE FISH DEPOSITS.—CONTINUED.

COUNTY, AND NAME OF LAKE.	Township in which Wholly or Mainly Located.	Date of Deposit.	NAME AND ADDRESS OF DEPOSITOR.	No. of Fish Deposited.
<i>Emmet.</i>				
Crooked		Feb. 22, 1876	G. W. Hutchins, Petoskey	20,000
"		April 1, 1876	G. W. Hutchins, Petoskey	40,000
Round		Feb. 22, 1876	G. W. Hutchins, Petoskey	20,000
"		April 1, 1876	G. W. Hutchins, Petoskey	20,000
Twin Lakes	Wood	Feb. 22, 1876	G. W. Hutchins, Petoskey	20,000
<i>Genesee.</i>				
Buell		March 16, 1876	Wm. Johnson, Pine Run	10,000
Cook's	Linden	Feb. 26, 1876	F. N. Clark, Northville	10,000
Crooked	Fenton	March 8, 1876	T. S. Bishop, Fentonville	10,000
Day	Linden	Feb. 26, 1876	F. N. Clark, Northville	25,000
Devil's	Mt. Morris	March 16, 1876	J. C. Phillipson, Flint	10,000
Lobdell	Argentine and Deerfield	March 8, 1876	J. G. Bishop, Argentine	25,000
Murray	Argentine	March 8, 1876	L. G. Bishop, Argentine	10,000
Round	Linden	Feb. 26, 1876	F. N. Clark, Northville	25,000
Silver	Linden	Feb. 26, 1876	F. N. Clark, Northville	40,000
<i>Gd. Traverse.</i>				
Fife	Fife Lake	Feb. 22, 1876	James Montleth, Fife Lake	25,000
Silver	Traverse	April 1, 1876	T. H. Clyde, Traverse City	20,000
<i>Hillsdale.</i>				
Bear	Cambria	March 18, 1876	Edward Minkly, Bankers	10,000
Long	Reading	March 18, 1876	S. H. Kellogg, Reading	20,000
Lower Sand Lake		March 21, 1876	Wm. M. Crane, Jonesville	10,000
Round	Reading	March 18, 1876	D. W. & H. C. Mickle, Reading	10,000
Sure	Reading	March 18, 1876	Archer Bowen, Reading	10,000
<i>Ingham.</i>				
Frye		April 6, 1876	James Frye, Onondaga	10,000
Lowe	Stockbridge	Feb. 24, 1876	C. C. Call, Stockbridge	10,000
Mud		March 23, 1876	J. McKinzie, Stockbridge	10,000
Round	Stockbridge	Feb. 24, 1876	Wm. C. Nichols, Stockbridge	7,500
<i>Ionia.</i>				
Long	Orleans	April 5, 1876	A. Palmer, Orleans	10,000
<i>Isabella.</i>				
Coldwater	Township 15	March 16, 1876	H. H. Graves, Mt. Pleasant	20,000
<i>Jackson.</i>				
Bibbins		April 6, 1876	V. B. Kennedy, Hanover	5,000
Browns	Summit	March 23, 1876	M. Van Grierson, Jackson	10,000
Clark	Columbia	March 18, 1876	N. G. King, Brooklyn	20,000
Grass		March 11, 1876	C. Feckenschler, Grass Lake	10,000
Horse-Shoe		April 6, 1876	O. D. Finch, Stoney Point	10,000
Pleasant		March 23, 1876	Wm. H. Marsh, Henrietta	20,000
Rileys		March 11, 1876	C. Feckenschler, Grass Lake	10,000
Sandstone	Spring Arbor	March 18, 1876	George and John Cogswell, Spring Arbor	15,000
Spring	Napoleon	April 7, 1876	P. A. Cady, Napoleon	10,000
Spring Arbor		April 7, 1876	H. W. Shaw, Jackson	10,000
Stone	Napoleon	March 18, 1876	W. C. Weeks, Napoleon	10,000
Tims		March 11, 1876	C. Feckenschler, Grass Lake	10,000
Twin Lake No. 1		April 7, 1876	W. N. Choate, Jackson	10,000
Twin Lake No. 2		April 7, 1876	W. N. Choate, Jackson	10,000
Williams	Hanover	April 6, 1876	W. T. Williams, Horton	10,000
Wolf	Napoleon	March 18, 1876	J. R. Taylor, Napoleon	10,000

## WHITE FISH DEPOSITS.—CONTINUED.

COUNTY, AND NAME OF LAKE.	Township in which Wholly or Mainly Located.	Date of Deposit.	NAME AND ADDRESS OF DEPOSITOR.	No. of Fish Deposited.
<i>Kalamazoo.</i>				
Offish	Ross	March 23, 1876	A. L. Kirby, Augusta	10,000
arks	Kalamazoo	March 25, 1876	J. L. Clark, Kalamazoo	5,000
an	Kalamazoo	March 25, 1876	Hiram Lewis, Kalamazoo	5,000
Comstock Mill				
Lakes	Comstock	March 23, 1876	C. H. Dunbar, Comstock	10,000
agle	Oshtemo	March 23, 1876	J. N. Lefever, Climax	12,000
agle	Charleston	April 7, 1876	Daniel Lawler, Augusta	10,000
ardneck		March 25, 1876	D. Waterbury, Kalamazoo	20,000
ail	Richland	March 27, 1876	Eli R. Miller, Richland	40,000
amilton	Ross	March 23, 1876	W. S. Clark, Augusta	5,000
ellan	Pavillon	March 25, 1876	B. S. Williams, Kalamazoo	25,000
er	Comstock	March 25, 1876	L. Kief, Kalamazoo	5,000
efever	Climax	March 23, 1876	J. N. Lefever, Climax	5,000
ong	Richland	March 27, 1876	Eli R. Miller, Richland	15,000
arker	Richland	March 23, 1876	A. S. Parker, Richland	10,000
ortage Lakes	Charleston	March 30, 1876	H. F. Bishop, Climax	15,000
retty	Oshtemo	March 11, 1876	A. J. Rix, Oshtemo	10,000
ansons	Schoolcraft	March 25, 1876	J. W. Nesmith, Vicksburgh	10,000
any	Ross	March 23, 1876	Wm. Baker, Augusta	10,000
Twin Lakes	Alamo	March 23, 1876	John Baker, Kalamazoo	15,000
Veleys		April 7, 1876	W. H. Hart, Alamo	10,000
Wolf	Alamo	April 7, 1876	C. W. Barber, Alamo	10,000
<i>Kalkaska.</i>				
ass	Orange	Feb. 22, 1876	Geo. Ives, Crofton	12,500
aland		April 1, 1876	A. C. Beebe, Kalkaska	10,000
Kalkaska		April 1, 1876	A. C. Beebe, Kalkaska	10,000
Long		April 1, 1876	A. C. Beebe, Kalkaska	10,000
Leon	Orange	Feb. 22, 1876	H. McGuire, Crofton	12,500
Manistee		April 1, 1876	Amos C. Beebe, Kalkaska	20,000
Shanty		April 1, 1876	Amos C. Beebe, Kalkaska	10,000
<i>Kent.</i>				
Barber		April 6, 1876	O. B. Barber, Caledonia	5,000
Bucks	Caledonia	April 6, 1876	T. D. Buck, Caledonia	10,000
Emons		April 6, 1876	D. Kinsey, Caledonia Stat'n	5,000
Goos	Cascade	April 8, 1876	J. S. Smith, Cascade	10,000
Hilton	Bryson	April 6, 1876	J. K. Hilton, Ross	15,000
Lower	Solon	April 6, 1876	W. Graham, Lockwood	10,000
Middle	Solon	April 6, 1876	W. Graham, Lockwood	10,000
Pine Island		April 6, 1876	C. Post, Belmont	20,000
Sand Lake		April 6, 1876	G. W. Grabb and B. Eldridge, Sand Lake	10,000
Upper	Solon	April 6, 1876	W. Graham, Lockwood	10,000
Walden		March 8, 1876	G. S. Walden, Cascade	10,000
<i>Lake.</i>				
Batcheldors	Yates	March 16, 1876	C. H. Forman, Forman	10,000
Big Star	Lake	March 16, 1876	A. Sitzer, Baldwin	50,000
Crooked	Yates	March 16, 1876	C. H. Forman, Forman	20,000
Davenport	Webber	March 16, 1876	G. W. Townsend, Baldwin	10,000
Kinne	Webber	March 16, 1876	N. J. Kinne, Reno	10,000
McCansey	Webber	March 16, 1876	G. W. Townsend, Baldwin	10,000
McLaughlin	Webber	March 16, 1876	G. W. Townsend, Baldwin	5,000
Twin Lakes	Pleasant Plains	March 16, 1876	C. H. Forman, Forman	10,000
Twin Lakes	Webber	March 16, 1876	G. W. Townsend, Baldwin	10,000

## WHITE FISH DEPOSITS.—CONTINUED.

COUNTY, AND NAME OF LAKE.	Township in which Wholly or Mainly Located.	Date of Deposit.	NAME AND ADDRESS OF DEPOSITOR.	No. of Fish Deposited.
<i>Lapeer.</i>				
Bailey	Hadley	April 4, 1876.	Wm. Hemmingway, Lapeer	5,000
Bronson	Oregon	March 7, 1876.	L. J. Haddrill, Lapeer	10,000
Davis	Oregon	March 7, 1876.	L. J. Haddrill, Lapeer	10,000
Loom	Metamora	April 4, 1876.	E. P. Barrows, Metamora	5,000
Merritt	Metamora	April 4, 1876.	E. P. Barrows, Metamora	5,000
Napessing	Elba	March 7, 1876.	Wm. Hemmingway, Lapeer	20,000
Pleasant	Attica	March 7, 1876.	Ira Green, Lapeer	5,000
Rileys	Hadley	April 4, 1876.	J. H. Hemmingway, Hadley	10,000
Russell	Attica	March 7, 1876.	H. Watkins, Attica	10,000
Seven Lakes		March 7, 1876.	G. W. Miller, Dryden	10,000
Stocker	Metamora	April 4, 1876.	E. P. Barrows, Metamora	5,000
Tuples	Metamora	April 4, 1876.	E. P. Barrows, Metamora	5,000
West	Oregon	March 7, 1876.	L. J. Haddrill, Lapeer	10,000
Wheelock	Lapeer	March 7, 1876.	E. T. Slayton, Lapeer	5,000
Wolf	Metamora	March 7, 1876.	A. B. Coryell, Thomas	5,000
<i>Lenawee.</i>				
Brighton	Cambridge	March 18, 1876.	Isaac Allen, Cambridge	7,500
Cooks	Woodstock	March 18, 1876.	P. Bartlett, Brooklyn	10,000
Goose	Woodstock	March 18, 1876.	N. Osborne, Kelly's Corners	10,000
Kelly	Cambridge	March 18, 1876.	Isaac Allen, Cambridge	7,500
Lower Wolf	Cambridge	March 18, 1876.	Isaac Allen, Cambridge	7,500
Silver	Woodstock	March 18, 1876.	L. Parsons, Kelly's Corners	10,000
Upper Wolf	Cambridge	March 18, 1876.	I. Allen, Cambridge	7,500
<i>Livingston.</i>				
Blains	Hartland	March 9, 1876.	B. Blain, Brighton	5,000
Bruin		Feb. 24, 1876.	I. V. Reeves, Pinckney	10,000
Coon	Genoa	March 9, 1876.	J. D. Gale, Howell	7,500
Gales	Genoa	March 9, 1876.	J. D. Gale, Howell	7,500
Half-Moon		Feb. 24, 1876.	I. V. Reeves, Pinckney	20,000
Howell	Maine	March 9, 1876.	J. D. Gale, Howell	7,500
Island		Feb. 24, 1876.	I. V. Reeves, Pinckney	10,000
Joslin	Unadilla	March 23, 1876.	H. Gregory, Unadilla	10,000
Lee	Hartland	March 16, 1876.	Giles Ross, Highland	10,000
Maxfield	Hartland	March 16, 1876.	Giles Ross, Highland	10,000
Noble	Brighton	March 9, 1876.	Albright & Thomson, Brighton	5,000
Patterson		Feb. 24, 1876.	Ira V. Reeves, Pinckney	20,000
Peet	Genoa	March 30, 1877.	L. Meyer, Brighton	5,000
Rumion	Tyrone	March 30, 1876.	J. F. Seaton, Fenton	10,000
Sackners	Tyrone	March 8, 1876.	J. W. Ingrams, Fenton	20,000
Thompson	Howell	March 30, 1876.	H. B. Blackman, Howell	10,000
Webster	Maine	March 9, 1876.	J. D. Gale, Howell	7,500
Williams	Unadilla	March 23, 1876.	O. H. Obert & Co., Unadilla	10,000
Woodburn		Feb. 24, 1876.	I. V. Reeves, Pinckney	10,000
<i>Mason.</i>				
Beautiful	Summit	March 16, 1876.	Wm. Warner, Ludington	20,000
<i>Missaukee.</i>				
Muskrat	Reeder	March 31, 1876.	M. D. Richardson, Lake City	20,000
<i>Montcalm.</i>				
Burgess	Eureka	March 9, 1876.	J. C. Burgess, Greenville	20,000
Clear		March 9, 1876.	N. H. Evans, Fenwick	5,000
Cody	Maple Valley	March 9, 1876.	R. A. Owen, Coral	20,000
Cowdin	Maple Valley	March 9, 1876.	H. Cowdin, Coral	10,000

## WHITE FISH DEPOSITS.—CONTINUED.

COUNTY, AND NAME OF LAKE.	Township in which Wholly or Mainly Located.	Date of Deposit.	NAME AND ADDRESS OF DEPOSITOR.	No. of Fish Deposited.
<i>Crystal.</i>				
Crystal	Crystal	March 30, 1876.	J. P. Young, Crystal	20,000
Sydney	Sydney	March 31, 1876.	G. Gilbert, Stanton	10,000
		March 9, 1876.	N. H. Evans, Fenwick	5,000
		March 9, 1876.	N. H. Evans, Fenwick	5,000
	Cato	March 9, 1876.	S. J. Youngman, Cato	20,000
	Maple & Winifld	March 30, 1876.	R. A. Owen, Coral	20,000
		April 6, 1876.	G. W. Crabb and B. Eldridge, Sand Lake	20,000
		April 6, 1876.	C. N. Merriman, G'd Rapids	10,000
<i>Muskegon.</i>				
	Laketon	April 12, 1876.	J. L. Horning, Muskegon	20,000
		April 12, 1876.	A. B. Buell, Twin Lake	20,000
<i>Newaygo.</i>				
		April 12, 1876.	John E. Griffith, Detroit	30,000
		April 12, 1876.	A. E. Upton, Fremont Cent.	10,000
		April 12, 1876.	A. E. Upton, Fremont Cent.	10,000
		April 12, 1876.	A. E. Upton, Fremont Cent.	10,000
<i>Oakland.</i>				
	Highland	March 16, 1876.	G. Ross, Highland	10,000
	Orion	April 3, 1876.	Isaac Haddrill, Orion	10,000
		March 7, 1876.	A. S. Warner, Orion	10,000
		March 7, 1876.	S. W. Stanton, Oxford	5,000
		March 7, 1876.	S. W. Stanton, Oxford	5,000
	Oxford	March 7, 1876.	C. Losey, Oxford	10,000
	Bloomfield	April 4, 1876.	J. H. Peabody, Detroit	20,000
	Bloomfield	March 8, 1876.	A. Porter, Pontiac	5,000
	Orion	April 4, 1876.	Isaac Haddrill, Orion	10,000
	Oakland	March 7, 1876.	L. Woodward, Rochester	5,000
	Orion	March 7, 1876.	A. S. Warner, Orion	10,000
		March 7, 1876.	S. W. Stanton, Oxford	5,000
		March 8, 1876.	Wm. Beaty, Pontiac	10,000
	White Lake	Feb. 19, 1876.	R. W. Hopkins, W. L. Center	55,000
		March 8, 1875.	W. Beaty, Pontiac	10,000
		March 7, 1876.	S. W. Stanton, Oxford	5,000
	Orion	March 7, 1876.	L. B. Kelly, Orion	10,000
	Oxford	March 7, 1876.	T. L. Pierce, Oxford	10,000
	Commerce and W't Bloomfield	Feb. 19, 1876.	J. C. Buckner, Northville	35,000
		March 7, 1876.	S. W. Stanton, Oxford	5,000
	Pontiac and Waterford	March 8, 1876.	T. S. Christian, Pontiac	20,000
		March 8, 1876.	Wm. Beaty, Pontiac	10,000
	West Bloomfield	March 27, 1876.	D. B. Allen, Four Towns	20,000
	Orion	April 4, 1876.	J. Haddrill, Orion	10,000
	Novi	Feb. 19, 1876.	A. Briggs, Pokagon	50,000
	Waterford	March 8, 1876.	E. S. Covert, Pontiac	10,000
<i>Osceola.</i>				
	Rose Lake	Feb. 22, 1876.	Melvin Bailey, LeRoy	25,000
<i>Shiawassee.</i>				
	Woodhull	March 27, 1876.	Wm. Colby, Laingsburg	10,000
	Woodhull	March 27, 1876.	Wm. Colby, Laingsburg	10,000
	Woodhull	March 27, 1876.	G. M. Gibbs, Laingsburg	10,000



WHITE FISH DEPOSITS.—CONTINUED.

COUNTY, AND NAME OF LAKE.	Township in which Wholly or Mainly Located.	Date of Deposit.	NAME AND ADDRESS OF DEPOSITOR.	No. of Deposits
<i>St. Joseph.</i>				
Hog Creek	Burr Oak	March 21, 1876	J. C. Bishop, Burr Oak	10
Klingers	White Pigeon	March 21, 1876	T. E. Clapp, White Pigeon	25
Long	Colon	March 18, 1876	G. W. Teller, Colon	20
<i>Van Buren.</i>				
Cedar	Antwerp	March 11, 1876	L. A. Fitch, Mattawan	5
Crooked	Keeler	March 25, 1876	S. J. Evans, Keeler	15
Lake of the Woods	{ Decatur and } { Hamilton }	March 25, 1876	E. L. Hawks, Decatur	20
Lime	Antwerp	March 11, 1876	L. A. Fitch, Mattawan	10
Mud	Antwerp	March 11, 1876	L. A. Fitch, Mattawan	5
Prospect		March 25, 1876	W. Pependick, Prosp't Lake	10
Round	Keeler	March 25, 1876	S. J. Evans, Keeler	10
<i>Washtenaw.</i>				
Base	Dexter and Putnam	Feb. 24, 1876	Thos. Birkett, Base Lake	20
Big Portage	Dexter and Putnam	Feb. 24, 1876	Thos. Birkett, Base Lake	20
Blind		March 23, 1876	A. H. Watson, Unadilla	10
Low	Manchester	April 7, 1876	E. Davidson, Clinton	10
Parks	Webster	March 11, 1876	D. Hescott, Ann Arbor	10
Portage	Dexter	Feb. 24, 1876	J. K. Brokaw, Pinckney	20
Silver	Dexter	Feb. 24, 1876	J. K. Brokaw, Pinckney	12
South	Lynden	March 23, 1876	A. F. Bott, Unadilla	10
Watson		March 23, 1876	A. H. Watson, Unadilla	10
<i>Wayne.</i>				
Yerks	Plymouth	Feb. 19, 1876	F. N. Clark, Northville	100
<i>Wexford.</i>				
Union	Colfax	March 31, 1876	John Cassety, Meanwataka	20

The following are the deposits in the great lakes :

LAKE.	PLACE OR POINT OF DEPOSIT.	DATE OF DEPOSIT.	No. of Fish
Lake Erie	At Monroe and vicinity	March 31, 1876	150
" "	At different points north from Monroe 10 to 15 miles	April 1, 1876	150
" "	At different points south from Monroe to the State Line	" 1, 1876	150
Lake Michigan	At New Buffalo	Feb'y 28, 1876	130
" "	At Grand Haven	April 8, 1876	290
" "	South from Grand Haven, at Pigeon Creek	" 11, 1876	80
" "	At Port Sheldon	" 11, 1876	100
" "	At Holland	" 11, 1876	120
" "	Half way between Holland and Saugatuck	" 11, 1876	100
" "	At Saugatuck	" 11, 1876	100
" "	At Saugatuck Point	" 11, 1876	80

The following are the deposits in the rivers :

NAME OF RIVER.	POINT OF DEPOSIT.	DATE.	No. of Fish.
Rough River*	Near Northville	Feb'y 8, 1876	200,000
" "	" "	" 9, 1876	200,000
" "	" "	" 15, 1876	200,000
St. Clair River	Opposite Port Huron	April 12, 1876	260,000
" "	" "	" 13, 1876	240,000
Detroit River	city of Detroit	March 21, 1876	150,000
" "	" "	" 22, 1876	100,000
" "	" "	" 23, 1876	200,000
" "	" "	" 24, 1876	200,000
" "	" "	" 25, 1876	250,000
" "	" "	" 27, 1876	200,000
" "	" "	" 28, 1876	140,000
" "	" "	" 29, 1876	180,000
" "	" "	" 30, 1876	200,000
" "	" "	" 31, 1876	225,000
" "	" "	April 1, 1876	80,000
" "	" "	" 3, 1876	160,000
" "	" "	" 5, 1876	20,000
" "	" "	" 8, 1876	150,000
" "	" "	" 11, 1876	30,000
" "	At various points from Presque Isle to Stony Island	" 14, 1876	840,000
" "	Opposite Detroit	" 15, 1876	125,000
" "	" "	" 16, 1876	28,000

\* A tributary of Detroit River.

To the foregoing deposits in the Detroit River is to be added a deposit of 100,000, which escaped into the river through the rusting and consequent breakage of one of the wire protecting screens. No report has ever been made to me in what condition or order the aforesaid deposit was made, but the presumption is very strong that the fish were in good condition, and the deposit made in perfect order, as the fish seemed to be of sufficient age and capacity to undertake the job on "their own hook."

SUMMARY OF WHITE FISH WORK.

Total deposits in the inland lakes	3,382,000
Total deposits in Lake Erie	450,000
Total deposits in Lake Michigan	1,000,000
Total deposits in St. Clair River	500,000
Total deposits in the Detroit River, including the deposit in Rough River, which is a small tributary of the Detroit River, and therefore a virtual plant in the great river	3,978,000

The sum total of deposits, nine millions three hundred and ten thousand, to which should be added as a proper part of the grist of the Detroit factory, six hundred thousand eggs, in an advanced stage of incubation, donated to our good neighbors, the Fish Commission of the State of Ohio, and three hundred thousand to our excellent friends, the Commission of New York, thus aggregating, as will be seen, a grand total of ten millions, two hundred and ten thousand.

It is proper to state in this connection that of the above deposits, one million, four hundred and sixty thousand were a donation from Professor Baird, being a

part of a lot hatched under the authority of the United States Commission at the Northville Hatchery of Frank Clark, and the fry tendered to such States would at their own expense undertake their timely and reasonably assured successful deposit. Of this lot the Commission of Michigan secured the number hereinbefore named.

Now the work of successfully distributing and depositing this immense lot over so many routes, and at so many and at such diverse points, all over the State, was one of scarcely less magnitude than was the great hatch itself, the depositing extended over a period of two months, and required throughout, great vigilance as well as a persistency of endeavor, unabated from first to last.

The reports from all the deposits, save one or two, and they of the smallest consignments, were to the effect that the fish arrived in good order, and were deposited without any loss. Nor was there any failure to ship in accordance with notice to the depositors, excepting in one instance. Notice of the shipment on a certain day of a large number of cans, requiring two express wagons to move them from the Hatchery to the Michigan Central depot had been forwarded to the depositors of Kalamazoo county. Both wagons, by my order and in my presence, started off together, and in abundant time to make the trip. One express wagon arrived in time and the cans were taken aboard. The other express wagon failed to put in an appearance. The gentlemanly and veteran Conductor of the Express very considerably held his train for a brief period for the fish to arrive, but even these minutes of grace proved ineffectual, and the train moved off. From Ann Arbor I telegraphed Mr. Chase to carefully hold the fish and forward by next through train, which he did, so not a fish was lost. But one-half of the Kalamazoo depositors were not only disappointed but greatly inconvenienced by the non-arrival of the fish according to notice previously received. The stupidly malicious express wagon man never gave to Mr. Chase any reasonable excuse for his base conduct—but fearing the justly apprehended wrath to come, report says he changed his domicile, and prudently watches from over the River.

In concluding this record of our Detroit work, I not only personally desire but deem it an act of simple justice, to express my great gratitude, and tender thus publicly my heartfelt thanks to Mr. Chase, the overseer, and to his Assistant, Mr. Frank Ramsdell, for the constancy and fidelity with which they met their responsible trust. Here was a labor running through nearly six months and during all that period neither of the before named parties was off from duty a single day, Sundays even not excepted. Nor was the Hatchery left a single night during all this time, either Mr. Chase or Mr. Ramsdell sleeping each night in the Hatchery, with their water alarm clocks all set, to instantly notify should anything get out of order. Some compensation they have for their painstaking and for the great tasks so creditably and honorably performed, in the knowledge that their work was well nigh a perfect success, and that an appreciative public has affixed its deeply imprinted seal of commendation upon it.

#### WHITE FISH IN INLAND LAKES.

As the great yield of White Fish comes from the Great Lakes and their connecting straits and rivers, some, for that reason, have supposed they would be found unadapted to our inland lakes—such lakes having too limited a range to meet the requirements of their successful cultivation. But we are in the possession of facts that go to disprove this view.

Mr. Samuel Wilnot of New Castle, Canada, hatched in the years 1867—

large numbers of White Fish ova, and the fry were placed and reared in very circumscripted artificial ponds, till many of them attained the weight of a pound and upwards. Experiments of a like character have since been repeated and with similar results. But we have a case more directly in point illustrating the fact that the White Fish will live and thrive in limited areas of water. On the 15th of February, 1876, Messrs. Davis & Co., extensive fishermen and fish dealers of the city of Detroit, presented to me five live White Fish weighing about three pounds each. I moved them on the Michigan Central from Detroit in one barrel of water to Pokagon, and from there they were moved in a lumber wagon over a rough road to the State Hatchery, about two miles, and placed in a shallow pond, its area not exceeding one-eighth of an acre. In May following three of them were taken from this pond and removed to a fish preserve not exceeding five feet square, supplied with water that would flow through an orifice of less than one-fourth inch, under one foot pressure. And there they have been and are, sleek and healthy. Though on a few occasions crumbs of bread have been thrown into the pond, yet we are not certain through all these months that they have partaken of any food, except such natural supply as is yielded by the water.

Now in the light of these facts, we see no good reason why all our deep and clear spring-fed lakes, large or small, should not become the suitable abodes of this the most valuable of all the fresh water fishes.

In my judgment the great trouble is not the lake or the water, but the wicked and hungry jaws of the pickerel, the perch, *et id genus omne*. And as these ordinarily prey in shoal waters, it is deemed advisable, when deposits of White Fish are made, that they be in lakes where the water is of good depth, the White Fish naturally seeking the deepest parts of the lake.

#### COÖPERATIVE WORK ON THE WHITE FISH.

Since the publication of our first Fish Report, several of the States bordering upon the great lakes, and contiguous to Michigan, have got sharply to work upon the White Fish. Notably are the States of Ohio, Wisconsin, and Minnesota. The White Fish, together with the Salmon Trout, are beyond all comparison the most valuable fish of all in the great chain of lakes; and hence their production and possible increase by the efforts of the fish cultural States is a matter of joint, if not of equal concern to all the lake-bordering States, as well as of immeasurable interest to the industry and food supply of the country at large. Therefore the joint and correlative efforts of the several lake-bordering States are eminently proper and desirable, since the product of such joint labor and expenditure in a very large degree is, and of necessity must be, one and indivisible. Were it practicable for the surveyor to run his chain over the bed surfaces of these great waters, and divide and sub-divide their great areas into sections, ranges, and all that, and so parcel out and stake off by valid munitments of title or privilege to the several claimants their respective territory, when independent work might happily be inaugurated, and forsooth result in a healthy rivalry; but all this, it will be seen, is utterly impracticable,—utopian in the last degree. No, the great boon is a common-derived one; the great farm must exist in common; the possession a joint one; and in its bountiful harvests there abides, and ever will abide a community of interest.

What one state sows another may reap, as may be seen by reference to another part of this Report, where Michigan's plump and savory *Salmo Salar* was caught in Ohio's waters, and breakfasted on by a good-looking Buckeye, the

only grievance in the case that I know of being, that State comity, or some other comity, did not indite and forward its gilt-edged note to Michigan to join in the rare breakfast!

It gives me pleasure to add that with the lake bordering fish States there perfect concurrence of views on the whole subject, as well as entire harmony of plan and operation.

The Dominion of Canada, acting in the large faith of the perfect practicability of artificial fish propagation, has built at Sandwich, nearly opposite to the city of Detroit, the finest White Fish Hatchery on the continent, beautiful and substantial in construction, and massive enough for an annual hatch of fifty millions, and she is now performing a very liberal share of the great work, and will be entitled to, and it is hoped will receive a liberal proportion of whatever shall prove to be the outcome of the joint labor and enterprise.

I desire to make a few general observations on some of our native fishes, some of which it is hoped the Commission will soon get to work on. As a square in the way of his betters stands the inevitable

#### PICKEREL.

Of him our opinion has undergone no change. The affection we bear him is still of the left shoulder sort. He is,—we care not who may assert to the contrary,—the fresh water devil-fish! And when some well directed barb has brought him low, and he forced to grace the banquet hour, the contemplative guest can scarcely keep down the conviction that he sits at a feast of hydragenic satan. And while the feasting may forsooth give impulse to the ferocity of our nature, the remembrance lurking about that association is often a near kin to assimilation, detracts (we speak for number one) from the toothsome of the gastronomic exercise. We are not sure in the progress of the great fish cultural campaign but that one policy will be found alike applicable to both the land and water Modocs, to wit: the policy of extermination.

#### THE GRAYLING.

No species of the water fauna of Michigan is regarded with so much interest by non-resident fish men as is our Grayling. Its great rarity, its admitted gamyness, its matchless beauty of fin, color, form, its peerless grace as a swimmer, and its unique edible qualities, all combine to make him the center of interest and of grave speculation. Fish culturists, as we chance to know, in other States are anxiously waiting for Michigan to lead the way in experimenting looking to his artificial cultivation. And we conceive it to be no less a duty than a privilege for Michigan to lead in settling the question by one, or if need be, by a series of experiments, whether the Grayling is a proper fish to be taken in hand to enlarge the domain of artificial fish propagation. And it is hoped that the solution of this problem may not much longer be deferred. It is perhaps due to the Fish Commission to state one or two reasons why the Grayling is an unknown factor in the achievements of the fish culturists of the State. His spawning season is believed to be in April, some seasons possibly in March, and these are the months when our hands have been more than full with work upon the great food fishes,—the White Fish, the Lake Trout, and the Salmon of two oceans. And so this beautiful fish, from sheer necessity, has been left to enjoy,—if enjoyment it be,—his seclusion. Again, when moved by a strong desire to record some sort of a beginning, suddenly all preparation came to a halt by a serious and unexpected shrinkage of the fish fund, as stated in another

place, and so last year was again "leap-year" with the Graylings. Such are the potent reasons necessitating the delay, of which our neighbors, with apparent good reason, complain.

#### BLACK BASS KING.

In my dream, it appeared there was a convocation in Neptune's realm of the fresh water tribes, and thereat, after much deliberation and comparison of merits, the Black Bass with unanimous desire was chosen king. Singular, were the strange reverie to take on the type of reality. In very many respects does he merit the high distinction.

Not as aggressive or piratical as are many of the piscine races—manners courteous—ways singularly unobtrusive—yet when his charter of immemorial right or privilege is intrenched upon, quick resentment follows, and reparation imperiously demanded. Unswayed by any "intimidation"—accepting nothing—yielding nothing not recognized by the code of his realm—"to live and let live" being the decalogue of his faith and practice—such in general characteristics and character is our Black Bass. And I feel quite sure the day is not very remote when fish culturists the country through will come to see in him, at least, some claims to kingship.

Bee, what are his universally conceded good qualities. He is among the swiftest of the gamy—his platter reputation suffers by comparison with none—his family government is just splendid—for the children born unto him he cherishes a tender care and affection, watching over and protecting them from the myriad dangers that lurk about their ova life, and which follow them through the weeks and months of tender infancy. He will live and thrive in sea or river—in high or low temperature, in fact almost equally well wherever dame fortune appoints his habitation.

And despite all the violators of the fourth commandment, as well as all the transgressors of the sovereign Statute, forbidding the use of barbarous spear and net, and commanding the observance of close seasons, "his tribes increase." Indeed, I know of no species where fish culturists, from the amount of seed sown have received larger or more satisfactory returns.

So instead of going to a remote east and a still remoter west for stock with fish to populate our waters, why not be content with the rich native supply, already sporting with unrivalled beauty and superiority in many a neighboring river and lake, indeed, almost beneath the very shadows of our roof trees.

#### THE EEL.

Of foreign fish, not yet introduced into the waters of the State, I am well persuaded the Eel is the favorite with the people. The Superintendent has a spoon-hole crammed full of letters importuning work to be commenced and vigorously pushed forward on the eel. Time and lack of funds, to which possibly may be added the well-known difficulty of firmly holding our customer, must be pleaded in excuse for the delay. I am well aware the sleek and unoffending eel is with many the butt of unceasing jest, and a fruitful subject of invidious comparisons. Indeed, with the anti-eelers, in their merry and draw disquisitions on the subject, grave doubts are expressed as to his right to exist in the State—they being uncertain as to the kingdom from which he comes, and equally unsettled as to the kingdom unto which he is appointed to go; and so their right to existence at all, is not unfrequently lugged in question. But in the face of all this, I stoutly maintain ichthyology as a science, and

pisciculture as an industry, would be sadly defective without him; and that the lake or the river is lacking in an important element of interest and attractiveness by his absence.

His good qualities outnumber many of the more pretentious piscine nations. He is not a cannibal as are many; neither is he a pirate or a brigand. He secures his living by honest methods, and minds in a preëminent degree his own business. Besides, he is in a certain way, *his way*, gamy. And when captured by the craft of the angler, his fat and well rounded carcass becomes a tempting delicacy for either dyspeptic or gourmand. Hence we think no system of aquaculture complete without the eel.

The only drawback to his introduction into any body of water, and the drawback we cannot believe to be a very serious one, lies in his propensity to glean his food from the bottom of the pond or lake or river, and so by simple inadvertence, with no intent or "malice prepense" of any sort, might regard himself on the little scattering spawn that has almost miraculously escaped destruction from his more rapacious neighbors.

#### A MISUNDERSTANDING AND WHAT CAME OF IT.

The Superintendent, acting under the advice of his superiors in authority had, by every means not incompatible with the successful prosecution of the general work, saved from the appropriation of 1874-5, a sum amounting to \$1,387.54.

This sum so saved and husbanded, was confidently relied upon to be used during the spring and summer of 1876,—it being the ever memorable Centennial year,—to introduce into the waters of the State his pet breeds,—the Grayling, Black Bass, and Eels. And while the note of preparation was being sounded for this work, he was politely informed by the worthy Auditor General that that little tub of \$1,387.54 had no bottom! Shades of Izaak! here was a stunner,—an unmistakable center shot. The Superintendent at first could see in it only a play of "bluff," at which two might engage, but when he remembered the sovereign State of Michigan never indulged in that sort of pastime and desiring an era of peace on both land and water, he deferred to the judgment of the great Auditor. So, standing amidst the wreck of shivered hopes and shattered preparations, the plain, rugged Saxon of the matter must be confessed: he succumbed to the inevitable.

Now, in full view of all this, and in all equity and fairness, as with humility, we ask that the deficit be covered back into our in no wise plethora fish fund,—that the sum may still be employed according to the original intention to wit, in introducing into Michigan's valuable waters, the Grayling, the Black Bass, and Silver Eels. To be more explicit, we ask that the appropriation for the current fish-cultural year, be supplemented by the amount which has reverted to the State Treasury,—a reversion through no fault or lache of the Commissioners or Superintendent,—a bare pittance in the State's vaults, and not needed there whilst it is imperatively needed by the Commission if any increase be desired in the State's stock of Grayling, Black Bass, and Eels.

There are one or two subjects of great importance to the fish interests of the State upon which I had hoped the Commissioners in the appendix of the Report, over their own signatures, would have favored us with their views and recommendations. I refer specially to fish shutes or ladders, and to the fish law of the State; but as they have not done so, I am, *nolens volens* committed to this brief exposition of views on these subjects.

#### FISH SHUTES.

Fish shutes or ladders are a necessity of successful and permanent State fish culture. The necessity grows out of two things, the instinct of the fish, and the physical geography of the State. And as we cannot give the fish a new or an improved instinct, nor is it practicable to change in any considerable degree the physical geography of the State, so fish ladders have to be supplemented to meet these great and irreversible conditions.

The anadromous fish bears a command from his Creator to go to the sources of streams and rivers to "increase and multiply" his kind. Nature, sometimes, in the form of great falls and cascades, but man much oftener, puts obstructions in the way of the fish to obey this high command. These obstructions, I mean those introduced by man, are commonly called *dams*.

Now, a shute, or fish ladder, is any contrivance of stone, or brick, or wood, that can enable the fish to climb to the top of the obstruction or dam, and so allow him by the use of his fin-propelling power to prosecute his journey on up stream *ad libitum*, where he has just as much and just as good a right to be and to live as he had at the foot of the dam, and where too the riparian proprietors have just as much property in him as the riparian owners ever had who chance to have their domicile below the dam. And when any man, corporation, neighborhood, or State, arbitrarily elects to cut off the chance or privilege of the up-stream riparian proprietor to reduce this property to possession, their act is in plain violation of gospel, law, and common sense, and to this trinity of authorities have again and again decided. Richard Roe, who chances to live up stream is just as good a looking man, and is just as much entitled to a good trout or salmon dinner as is John Doe, who lives on the flat below the dam. And that, in substance, is all there is of it. No man can shut me in my moonlight, nor can he shut off my sunshine, nor shie away the rain specifically sent rainfall. No more can any man rightfully destroy or appropriate my property in, or divest me of my privilege or right of capture to the fish that inhabit the common stream or river. Laws wisely looking to their propagation and regulating the seasons of their capture, are quite another thing, and do not touch the question of interdependent property and right.

As to the form or style of fish shutes, there are many kinds, and as regards expense or cost, there is a very wide margin. Some that have been built, and which are now in use, have cost thousands of dollars, while others, which probably answer every purpose, have not cost as many hundreds. Height of dam, body of water, location, kinds of fish seeking passage, and a dozen other things, must of necessity enter into the cost estimates.

As to the time of their erection, the proper time is most indisputably at the time the dam is built,—cheapness and probable efficiency are secured by putting them in the shutes then.

As respects the propriety, or justness, or necessity of their instant construction in the dams of the State, many things are to be considered. Most of the dams of the State were erected prior to the passage of the fish-cultural law, and erected, too, without the remotest thought that Shad, or Salmon, or other foreign anadromous fish would ever occupy any of the streams or rivers of the State, and very probably in nearly every case were built without let or hindrance, or objection from any one.

Now, it is to be presumed that the owners of dams are an honorable class of

men; that they are law-loving and law-abiding, and do not desire to shirk the performance of any clearly defined duty or responsibility. They are our fellow-citizens, and have a common interest in whatever law or enterprise shall redound to the common welfare and glory of the State. And when the necessity actually arises, and they having determined as to the feasibility or safety of their insertion, as affecting their water-power, and further having informed themselves as to the best kinds and best methods of construction, I think in the great bulk of cases, dam-owners will, of their own volition, without the law's intimidation or compulsory process of any sort, address themselves to the requirements of both fish culture and of fish shute laws. We are at present in what may be regarded the experimental stage of the work, without any absolute knowledge that the fish planted by the commission are hindered in their up stream aspirations, hence moderation and a due consideration of all the circumstances and phases that attend upon the question are eminently wise and just.

If shutes are not voluntarily erected by dam-owners or their lessees, by the existing law, it is made the duty of the fish commissioner to institute the enforcement proceedings. He is to give notice, and if giving notice, he is by necessary implication to take cognizance of the effect or result of his notice, and in the event of non-compliance by the party upon whom the notice is served, the commissioner wakes up to the fact—however reluctantly he may come to it—that by the terms of the law he has a case of misdemeanor on his hands. Now it isn't every person that knows exactly how to manage a case of misdemeanor and should the commissioner, not himself probably a disciple of the law "Horn Books," undertake its management, he might find himself out of court, before he was fairly in! Besides the law has seen fit to create him an officer of the State without esteeming him worthy of any pay, and to expect a good sharp hang-on prosecution case without pay, would be the cap-sheaf of all the anomalies. But some one suggests,—there is the fish fund for our forlorn commissioner to draw on. Ah, were he to undertake that, a case of misdemeanor would probably be but one of the light afflictions of his sublime office. Nor is the Attorney General of the State at hand to help him out of the dilemma, and even if he were summoned to the case, it is quite possible that he would rub his eyes, and archly looking over his spectacles, settle down to the conclusion, that as it is one of those moist cases, it is hardly within the scope of his duty, the limit of his duty extending only to the dry cases. And so our law-battered and law-badgered commissioner in his patriotic labor to clear away the obstructions and make easy swimming for such of the finny tribes as are headed up stream, finds instead, himself impassably obstructed,—and to him, the difference between a *fac simile* and a sick family, is made for once startlingly apparent.

Why not send this whole business to the vicinage of the dam? Leave it with the supervisor of the township in which the dam is located; or what would probably be still better, leave it with the County board. They need not act collectively, except they so prefer, but can appoint from their number a committee on dams and shutes. The supervisors are the neighbors of the dam-owners, and can confer with them in a friendly way, and counsel together as to the necessity of the shute, and so mutually and with good feeling throughout agree on the best time, and together devise the best means and methods to accomplish the desired end. And on the necessity of the shute being clearly established, should any dam owner or lessee prove refractory and refuse

refuse to erect a shute on due notice by the committee or board, then power should be conferred to institute compulsory proceedings and compel a performance according to the terms of the law. This power to require and to regulate the erection of fish shutes, being brought to the vicinage of the dam, it is altogether likely to arouse a home interest in the question will be awakened, a home expression obtained, a neighborhood good feeling and confidence inspired, which, I have no doubt, will be far more likely to bear good and peaceable fruit than will those apparently arbitrary, coercive forms of procedure shadowed forth under the existing law.

#### FISH AND GAME LAWS.

The fish and the game laws as at present spread out in the pages of the statute books are too complex,—taken together, they are too much of a hodge-podge. They have been enacted and repealed in part or in whole, and reenacted and amended and reamended till the genus and species of the law's true content disappear in the general rubbish. They need to be reenacted or rather modified,—made few and simple, and thoroughly divested of all nonsensical verbiage, rendered so plain that he who runs may read and understand. Let them be of such compact sense and form that they may be pasted in the crown of your hat, an easy and complete guide and chart to whomsoever shall carry the rod and the gun.

Complaint has been made that the fish laws are now partial, that they operate unequally and unfairly. This, if so, should not be. General laws, so far as the same can be rendered applicable, should obtain throughout all the State's territorial domain. A law that is not of sufficient immediate importance to commend itself to the approval of the public judgment, and which fails to command a ready obedience, had better be stricken from the statutes altogether. All fish or game laws of a doubtful or experimental character as a general thing do more hurt than good; and to lumber the fish or game code with anything that is not of vital, present need, only tends to dull the force of such laws as are of vital and indispensable import. The fewer the fish and the game laws, the simpler they are, so that they cover the certain necessity of their enactment, all the better.

#### SOME THINGS PROPER FOR SOME PEOPLE TO KNOW.

Now and then we meet with persons, probably good intentioned, who will persist in regarding this "fish business," as they style it—a very simple thing—as an agreeable sort of pastime, and any position thereunder a kind of sinecure—the whole involving but little skill, labor or responsibility. If such persons are honest in their convictions their judgments need to be disabused. Let me kindly assure any such persons that there is not a bit of play about it. It is all work, and work too that can be neither skipped nor dodged. And that the live fish-man (those that are dead or semi-dead not wanted—of no use), earns every cent of his money. Consider his work. On the white fish it is of nearly six months' duration. No let up to it, not even Sundays. Day after day finds him at his post from sunrise till sunset, and should things incline to go to the bad the lamps are struck and the night becomes to him as the day. At his work shop are the alarm water clocks; at the head of his bed are the night alarm wheels, not seldom ringing out more horribly than a coach and four over the cobble-stone pavement, and shooting is the mild penalty decreed for disobedi-

ence to the clock's summons. At two or three o'clock in the morning he awakes, repairs to the hatchery and with the water just above the freezing point, he prepares his cans of fish for the out-going morning train. This followed up for days and sometimes for weeks, with scarcely a single day's interruption. Nor is the attendant upon the train or the wagon much more fortunate. Two days and two nights in succession, with little rest from labor and with no sleep, is not a remarkably rare experience. Retiring early at night that the rents and breakages of his nether wear, caused from too much collision with cans and chests and trunks and such like, may be "fixed up" against the need of the morning, has its compensations in that it affords opportunity for meditation and repose. Jumping from the comfortable wagon seat to the rough where the bottom has caved in, in the hope that the two hundred pound lightened load may save the team and fish from being stalled, to find yourself stalled and the team and fish moving on,—this hardly comes within Dr. Webster's definition of pastime. Now such and kindred experiences do, and unavoidably will, cross the pathway of the faithful and wide-awake fish propagator, and he takes, as we think, his occupation from the role of those exercises denominated merry-wakes and pastimes. And in the blazing focus of these experiences, what stuff must that biped be made to begrudge our hard-worked water culturist a few days of summer warmth and sunshine in which to black his boots, say his neglected prayers, and make a short trip to visit his good mother-in-law!

No, the man that has never pulled at the oar knows not the labor of it; neither does the man who has never engaged in earnest fish propagation know anything of the labor, or the skill, or the watchfulness it involves. I maintain that successful fish-culture is neither a blunder nor a venture,—but is a science, as much a real science as is government or hydrostatics. It is an art, as much a real art as is watch-making or ship-building; and the man who thinks he may acquire it in perfection, by a study or an apprenticeship of a few hours or days will find his fish eggs dying by hundreds and by thousands from no cause but unskilled hands, and many, very many of his valuable fry he will discover to be in the last agonies, from no cause, save an unsanctified conceit.

#### STOCK NOW ON HAND.

The work of the current season is well under way,—much greater difficulty was experienced in the procuring of the White Fish ova this year than last. All the eggs, owing probably to the earlier ripeness of the spawn, and the continuous warm weather all through November, causing the water to be in a correspondingly low temperature, have given us far more trouble to keep them in good condition than those of last year. And yet, confronted as we have been by the difficulties, there is still a large supply left,—the trays being filled to near their full capacity.

A statement of the stock of the two hatcheries at this date (Dec. 25th, 1877) may be important; not alone as showing the present status of the fish work, but as affording some clue or basis of calculation as to the probability of a surplusage of funds to be expended upon the grayling, the black bass, or other spring-spawning varieties.

There are now upon the trays of the Pokagon hatchery half a million or more of White Fish ova, and about one million of Salmon Trout eggs. The proper care of these will require the constant labor of Mr. Michael, the faithful and indefatigable overseer of the Hatchery from the beginning, and also that of his

assistant, Mr. Albert Briggs, with possibly the occasional help of one or more pickers.

Upon the trays of the Detroit hatchery the overseer, Mr. O. M. Chase, reports between eight and nine millions of White Fish eggs. To carry these forward to March and April, the probable period of their incubation, will require the assiduous labors of the overseer and of his assistant, Mr. Wm. Hines, and a probable force of three or four pickers daily. So it will be seen, with ordinary good luck, a large draft on the fish fund will necessarily be required to carry the present stock through; whilst bad water, bad weather, or ill-luck from any unforeseen cause or causes will unavoidably enhance the volume of our expenses. Added then to the large expenses incurred for the hatching of such immense numbers of fish, there remains to be added the expenses of their deposit; and would the Commission deem it advisable to order them distributed largely into the interior lakes, the probability of any considerable overplus from the current year's appropriation would be at best but a remote one. In all sincerity and earnestness I see but a faint glimmering of a chance for the Grayling, Black Bass, and Eel during the coming spring and summer, except that portion of the appropriation which reverted to the Treasury of the State be restored to the behoof and uses of the Commission.

#### GRATUITOUS AID.

One of the most salient proofs of the favor in which our industry is held, and which would seem to assure its ultimate success, is the gratuitous aid it so persistently evokes.

And it seems to me eminently proper that honor should not only be accorded to whom honor is due, but that a record should be made by State fish culturists in their public reports, most frankly and heartily acknowledging the great benefits which have resulted to their cause from the free-will offerings of its friends. For it is my firm conviction that no mean proportion of the excellent exhibit which the States have made of their artificial fisheries is directly attributable to the volunteer service rendered. Indeed, but for this, with the very limited appropriations made, some of the fish States, which now seem to be in a prosperous way, would, to-day, be but in the primary stages of their work. Some of the younger fish States, in this respect, have been specially favored. The Fish Commission of Maryland has had its beautiful hatching house and ponds, costing several thousand dollars, with an unlimited privilege of water, all supplied to it by the city of Baltimore, and all the roads of the State have transported their cans of fish and attendants free of charge. Mr. Shaw, the intelligent and wide-awake Commissioner and Superintendent of the State of Iowa informs me that he has had a railroad car exclusively granted him free of all charge, to be attached, on his order, to any of the trains in transporting and distributing fish, and during last fall his car has been on all the trunk roads of his State, planting many thousands of valuable fish in the streams and rivers and places contiguous to the railway lines, the officers and employés of the roads rendering him every needed assistance.

The Commission of Wisconsin, too, has had donated to its use, by the city of Milwaukee, a large room in its beautiful water works building, ample room for the hatching of many millions of fish, and water supplied to any amount required, free of all cost and charge.

Minnesota, too, and other fish States, in their published reports, bear the

same grateful testimony of the deep interest manifested in the fish-culture work by all interests, and by all classes of people.

But in this regard we claim for our own State a proud preëminence. The Commission, from its earliest organization, has had, in its efforts to inaugurate and to establish, on a permanent basis, this great industry of the State, the sympathy and the hearty coöperation of all the people. Not alone a moral support, but gratuitous, material aid, valuable, indeed almost indispensable to the success of our plans and operations, has never been lacking, and Michigan ranks with the fish States, conceded to be among the foremost, is, in large degree, due from this very source. To even name the men and parties who have helped us, would add many pages to our Report. There is that great band of depositors, drawn from all the ranks of business life, who, in the day time and in the night time, in wind and in storm, have promptly met the cans of fish at the depots, and sped them with careful haste to the lake or river appointed for their multiplication and increase. What could we have done but for their ready and willing services? Why, to have drawn pay and rations for them from our little fund, would have "swamped" us before the half-mile stake of our annual race were reached.

And then the grand rail roads of the State,—all have, on application, carried our cans of fish and attendants free of charge, thereby enabling us to plant fish in a large majority of the counties of the State. The road to which our especial thanks and obligations are due, is the Michigan Central and branches. The two hatchling houses,—one in Detroit and the other near Pokagon,—both connected with this great trunk line, have, as a necessary result, largely enhanced our obligations to this well appointed and valuable road. We make our humble bow and most cordial acknowledgments also to the great Lake Shore and Michigan Southern, also the Grand Rapids and Indiana, Flint and Pere Marquette, Canada Southern, Detroit and Milwaukee, Detroit, Lansing and Lake Michigan, The Grand Trunk, Detroit, Hillsdale and Indiana, and the Detroit and Bay City; and to the roads operating mainly outside of the State, the Chicago and the Northwestern, commands special notice, having transported two large shipments of California Salmon and one of White Fish with their attendants all round the lake to its junction with the matchless waters of Lake Superior, and for the great courtesy of the various officers of the several lines, and for the prompt and cheerful assistance of the train dispatchers, conductors, express and baggage men, language is too feeble to express the full measure of our gratitude.

One or two additional cases of assistance are especially noteworthy. The Fish Association of the City of Detroit, through the kind offices of Captain Drummond, on the 16th of April last, gave us the use of their steam tug, *W. Livingston*, Captains Danger and Cary commanding, with which we were enabled to deposit in most perfect order, for several miles up and down the Detroit River, nearly a million of fish.

Hon. J. A. Leggatt, Mayor of the City of Grand Haven, was instrumental in securing for us two steam tugs free of all cost to the Commission, by means of which nearly six hundred thousand fish were planted under the most favorable conditions in Lake Michigan, all the way from Grand Haven to Saugatuck Point.

The deposits in Lake Erie were made by Messrs. John Paxton and J. Chamberlain of Monroe, and A. J. Keeney of Erie, they voluntarily supplied at their own cost and charge the tugs and boats necessary for the work. The

many other cases invoking our warmest gratitude and thanks, but the above will suffice to show in what esteem the fish-cultural work is regarded by the people from every section of the State.

Here we close our Report, and with a just sense as we trust, of the immeasurable obligations we are under for all past favors and kindnesses, and with zeal quickened and faith reassured by the lively hope and expectation of the favors to come, we commit and commend the future of this great labor and enterprise to the enlightened judgment and partiality of its friends.

GEORGE H. JEROME,

*Superintendent of the Michigan State Fisheries.*

APPENDIX.



## APPENDIX.

### UNITED STATES FISHERY ACT.

The appended bill is of special importance to the people of Michigan, as its provisions are in the interest of the Lake fisheries as well as the coast. Besides, it will be noticed that it was under this Act that a U. S. Fish Commissioner was appointed and the U. S. Fish Commission established—a Bureau that has rendered to the Michigan Fish Commission, as well as to other State Commissions, services of great value.

**JOINT RESOLUTION** for the protection and preservation of the food-fishes of the coast and lakes of the United States.

**WHEREAS**, It is asserted that the most valuable food-fishes of the coast and the lakes of the United States are rapidly diminishing in number, to the public injury, and so as materially to affect the interests of trade and commerce; therefore,

*Be it resolved by the Senate and House of Representatives of the United States of America, Congress assembled*, That the President be, and he hereby is, authorized and required to appoint, by and with the advice and consent of the Senate, from among the civil officers or employés of the Government, one person of proved scientific and practical acquaintance with the fishes of the coast, to be Commissioner of Fish and Fisheries, to serve without additional salary.

**SEC. 2.** *And be it further resolved*, That it shall be the duty of said Commissioner to prosecute investigations and inquiries on the subject, with the view of ascertaining whether any and what diminution in the number of the food-fishes of the coast and the lakes of the United States has taken place; and, if so, to what causes the same is due; and also whether any protective, prohibitory, or precautionary measures should be adopted in the premises; and to report upon the same to Congress.

**SEC. 3.** *And be it further resolved*, That the heads of the Executive Departments be, and they are hereby, directed to cause to be rendered all necessary and practicable aid to the said Commissioner in the prosecution of the investigations and inquiries aforesaid.

**SEC. 4.** *And be it further resolved*, That it shall be lawful for said Commissioner to take, or cause to be taken, at all times, in the waters of the sea-coast of the United States, where the tide ebbs and flows, and also in the waters of the lakes, such fish or specimens thereof as may in his judgment, from time to time, be needful or proper for the conduct of his duties as aforesaid, any law, custom, or usage of any State to the contrary notwithstanding.

Approved February 9, 1871.

## ACT CREATING THE BOARD OF FISH COMMISSIONERS.

[No. 124.]

AN ACT to establish a Board of Commissioners to increase the product of the fisheries, and to make an appropriation therefor.

SECTION 1. *The People of the State of Michigan enact*, That it shall be the duty of the Governor, by and with the consent of the Senate, to appoint two persons, residents of this State, who, with the Governor, shall constitute a Board of Fish Commissioners. The persons so appointed shall hold their office until the expiration of the next regular session of the Legislature, whose duty it shall be to select a suitable location for a State fish-breeding establishment, for the artificial propagation and cultivation of White Fish and such other kinds of the better class of food-fishes as they may direct, upon the best terms possible. Said Board may receive from the State Treasurer all the expenses actually disbursed by them while in discharge of their respective duties.

SEC. 2. It shall be the duty of said Board to appoint one Superintendent of Fisheries of the State, whose duty it shall be to obtain the ova from such fish, and at such places as said Board may direct, take charge of the establishment during the hatching seasons, and report to the Governor annually upon the practical results and success of the enterprise; at a salary, however, not to exceed twelve hundred dollars per annum.

SEC. 3. The said Board may take, or cause to be taken, any fish in any manner or at any time, for purposes connected with fish-culture or with scientific observation. All it shall further devolve upon said Board to supervise generally the fishing interest and secure the enforcement of all the laws relating to the protection of fish and fisheries in the State.

SEC. 4. The sum of seven thousand five hundred dollars is hereby appropriated for the year eighteen hundred and seventy-three, and a like sum for the year eighteen hundred and seventy-four, for the necessary expenses in carrying this act into effect, which the Treasurer shall pay to them on the warrant of the Auditor General, from time to time, as their vouchers for such expenses shall be exhibited and approved.

SEC. 5. In case appropriations by other States contiguous to the waters of the State of Michigan shall be made, and a disposition for a joint action with the State of Michigan be expressed, it shall devolve upon the Governor to communicate and arrange the action for the said Commissioners, with the Governors of said States.

Approved April 19, 1873.

[11.]

JOINT RESOLUTION giving construction to section four (4) of act number one hundred and twenty-four (124) of the laws of eighteen hundred and seventy-three relative to the expenses incurred by the board of commissioners on fisheries.

[Approved February 20, 1875. *Laws of 1875, p. 300.*]

Resolved by the Senate and House of Representatives of the State of Michigan, That the years eighteen hundred and seventy-three and eighteen hundred and seventy-four mentioned in section four of act number one hundred and twenty-four, laws of eighteen hundred and seventy-three, shall be construed as commencing on the first day of July, eighteen hundred and seventy-three, and the first day of July, eighteen hundred and seventy-four, and continuing for one year from said first days of July, respectively.

Approved February 20, 1875.

[No. 71.]

AN ACT to amend section one (1) of act number one hundred and twenty-four (124) of the session laws of eighteen hundred and seventy-three, entitled "An act to establish a board of commissioners to increase the product of the fisheries, and to make an appropriation therefor," approved April nineteen, eighteen hundred and seventy-three.

[Approved April 8, 1875. *Laws of 1875, pp. 109-10.*]

SECTION 1. *The People of the State of Michigan enact*, That section one (1) of act number one hundred and twenty-four (124) of the session laws of eighteen hundred and seventy-three, entitled "An act to establish a board of commissioners to increase the product of the fisheries and to make an appropriation therefor," approved April nineteen, eighteen hundred and seventy-three, be amended so as to read as follows:

SECTION 1. *The People of the State of Michigan enact*, That it shall be the duty of the Governor, by and with the advice and consent of the senate, to appoint three persons, residents of this State, who shall constitute a board of fish commissioners. The persons so appointed shall hold their office, one for two years, one for four years, and one for six years; and their successors to be appointed at the expiration of the several terms of office, shall each hold their terms of office for six years. It shall be the duty of the persons so appointed to select a suitable location for a State fish-breeding establishment, for the artificial propagation and cultivation of white fish and such other kinds of the better class of food fishes as they may direct, upon the best terms possible. Said board may receive from the State Treasurer all the expenses actually disbursed by them while in discharge of their respective duties.

SEC. 2. This act shall take immediate effect.

[No. 117.]

AN ACT making appropriation for the board of fish commissioners for the year eighteen hundred and seventy-five and the year eighteen hundred and seventy-six.

[Approved April 23, 1875. *Laws of 1875, p. 151.*]

SECTION 1. *The People of the State of Michigan enact*, That the sum of seven thousand dollars is hereby appropriated for the year eighteen hundred and seventy-five, commencing July first, eighteen hundred and seventy-five and ending June thirty, eighteen hundred and seventy-six, and a like sum for the year eighteen hundred and seventy-six, commencing July first, eighteen hundred and seventy-six and ending June thirty, eighteen hundred and seventy-seven, for the necessary expense incurred by the board of fish commissioners, which the State Treasurer shall pay to said board on the warrant of the Auditor General, from time to time, as their vouchers for such expenses shall be exhibited and approved.

SEC. 2. This act shall take immediate effect.



AN ACT to prevent fishing with seines and pound and trap nets in the small inland lakes and streams in the State of Michigan.

[Approved March 16th, 1865. Laws of 1865, p. 352.]

(2087.) SECTION 1. *The People of the State of Michigan enact*, That it shall not be lawful hereafter to fish with seines, trap nets, pound nets, or any species of continuous nets, in any of the inland lakes or small streams of all the territory, according to the United States survey, north of the township line numbered twenty north.

(2088.) SEC. 2. Any person offending against the provisions of this act shall, upon conviction thereof, be liable to a fine of not over one hundred dollars, or imprisonment in the county jail not over sixty days, to be determined by a court of competent jurisdiction.

AN ACT to amend an act entitled "An act to provide for the erection and maintenance of shutes for the passage of fish through the dams across the streams in this State."<sup>1</sup>

[Approved March 21, 1865. Laws of 1865, p. 685.]

(2089.) SECTION 1. *The People of the State of Michigan enact*, That an act entitled "An act to provide for the erection and maintenance of shutes for the passage of fish through the dams across the streams in this State," approved March sixteenth, the year of our Lord eighteen hundred and sixty-one, be and the same is hereby amended so as to read as follows:

(2090.) SEC. 2. There shall be erected and maintained in each dam across a stream which by law is a public highway, by the owner or occupant thereof, or by those persons using the waters thereof, through the medium of any canal or race, sufficient and permanent shutes to admit the passage of fish in such stream during the months of April, May and June in each year: and if the owner or occupant of any such dam, or person or persons using the water thereof, through the medium of any canal or race, shall neglect or refuse, for the period of sixty days to construct and maintain such shutes, as aforesaid, whenever requested, in writing so to do by any ten freeholders of the same county, such person or persons shall be deemed guilty of a misdemeanor, and for each and every sixty days that such person or persons shall so neglect or refuse, he or they shall be punished by a fine not exceeding one hundred dollars, or by imprisonment in the county jail not exceeding ninety days, or by both such fine and imprisonment, in the discretion of the court.<sup>2</sup>

(2091.) SEC. 3. Whoever obstructs the main channel or course of any river or creek by placing therein nets or fishing apparatus of any kind whatever, for the purpose of taking or stopping fish of any kind, shall thereby incur, for each offense, a fine not exceeding twenty-five dollars; and in no case shall the said channel or course, so opened, be less than one-third of the whole breadth of the river.

AN ACT to prevent the obstruction of the free passage of fish along streams and inland rivers, by the interposition of fish weirs, weir dams, or weir nets.

[Approved March 30, 1869. Laws of 1869, p. 145.]

(2092.) SECTION 1. *The People of the State of Michigan enact*, That it shall not be lawful for any person or persons to place a weir dam, fish weir, or weir net, across a race, drain, or stream, or inland river of this State, in such a manner as to obstruct the free passage of fish up and down the same; and any person violating the provisions of this act shall be liable to a penalty of not less than five nor more than fifty dollars for each such violation, and also for the payment of two dollars additional penalty for every day he shall continue to keep up such fish weir or weir net, in violation of this act, after having been duly notified by any elector of the township wherein such fish weir or weir net may be, feeling himself aggrieved thereby, to remove the same; and the penalty or penalties to be recovered before any court of competent jurisdiction, in any township or county where such offense shall have been committed.

SEC. 2. This act shall take immediate effect.

<sup>1</sup> This amendatory act is inserted in the place of the original, as it supersedes it.

<sup>2</sup> As amended by Act 63 of the Laws of 1867, p. 94, approved March 20, 1867.

## AMENDMENTS TO GENERAL FISH LAW.

The following are the amendments of the General Law:

AN ACT to amend section two thousand and eighty-seven of the compiled laws of eighteen hundred and seventy-one, being section one of an act entitled "An act to prevent fishing with seines and pound or trap-nets in the small inland lakes and streams in the State of Michigan," approved March eleven, eighteen hundred and sixty-five.

SECTION 1. *The People of the State of Michigan enact*, That section two thousand and eighty-seven of the compiled laws of eighteen hundred and seventy-one be and the same is hereby amended so as to read as follows:

(2087.) SECTION 1. *The People of the State of Michigan enact*, That it shall not be lawful hereafter at any time to fish with seines, trap-nets, pound-nets, dip-nets, or any species of continuous nets, or during the months of March, April, May, and June, by spearing or shooting in any of the waters of the State of Michigan, except Lakes Michigan, Superior, Huron, St. Clair, the St. Clair and the Detroit Rivers, and Lake Erie: *Provided*, Nothing in this act shall be construed as prohibiting the sole owners of fish ponds from fishing therein, as they may think proper.

Approved March 27, 1873.

AN ACT to amend section five of an act entitled "An act to protect fish and preserve the fisheries of the State," approved March twenty-first, eighteen hundred and sixty-five, being section two thousand and seventy-six of the compiled laws of eighteen hundred and seventy-one.

SECTION 1. *The People of the State of Michigan enact*, That section five (5) of an act entitled "An act to protect fish and preserve the fisheries of this State," be and the same is hereby amended so as to read as follows: No speckled trout or grayling shall be killed at any time by means of nets, traps, or seines, in any inland lake, river, or stream, nor by any other means, between the first day of October and the first day of April next succeeding.

Approved April 15, 1873.

[No. 188.]

AN ACT to regulate the catching of fish in certain waters of this State.

[Approved May 1, 1875. Laws of 1875, p. 221.]

SECTION 1. *The People of the State of Michigan enact*, That no person shall extend any pound, trap, stake, or set-net of any kind, or any other device for the purpose of taking fish in Lake Erie (within the jurisdiction of this State), further than one mile in an easterly direction measured from a line running from Point Mouille, in township 10 North, in Monroe county, in this State, to Stony Point, in said county, nor further than one mile out from a line running from Stony Point to Raisin Point, in said county, nor further than one mile out from a line running from Raisin Point to Bay Point, or North Cape, of Maumee Bay, at the State line between the States of Michigan and Ohio. Nets, or other devices for taking fish, extending from the shores of islands in Lake Erie within this State, shall not be extended further than one mile from shore of said islands.

SEC. 2. No person shall use any pound, trap, stake, or set-net, or device of any kind for taking fish, in the Detroit River, or the head of Lake Erie to Point Morille, one mile in an easterly direction from said point, nor in Lake St. Clair within a radius of one mile from the different mouths or outlets of St. Clair River, or within a radius of the same distance from the present light-house, near the outlet of Lake St. Clair, within the waters of this State.

SEC. 3. No person shall use any net whatever, or device of any kind for the purpose of catching fish, in the waters of Lakes Erie or St. Clair, within this State, beyond such limits as may be designated in this act. No person shall use any pound, trap, stake, like, set-net, or device of any kind for taking fish, in the St. Clair River within the jurisdiction of this State, excepting as provided for in section four of this act.

SEC. 4. No sweep net exceeding one hundred and fifty fathoms in length shall be used in any waters in this State for the purpose of taking fish. No sweep net exceeding sixty fathoms in length shall be used in the waters of Detroit River or St. Clair River within the boundaries of this State.

SEC. 5. No person shall attach, either directly or indirectly, to any bridge across either of said Detroit River or St. Clair River, or to any pier, part, or appurtenance of said bridge, any net or device by which the passage of fish shall be prevented or impeded. No bridge company, or other company, or person having the control of such bridge, shall license or permit, either for hire or gratuitously, any such net or device to be in any way attached thereto, or to any part thereof.

SEC. 6. It shall not be lawful for any person to catch or take White Fish, between the twentieth day of November and the first day of March succeeding in each year, in any of said waters of Lake Erie or Detroit and St. Clair rivers; and immediately after said twentieth day of November, all nets, piles, stakes, and all other appliances, every kind which have been used in the business of fishing, shall be carried or caused to be carried to the shore, or inside the channel bank, by the person or persons who have used them; and they shall also cause the ground beneath the waters where such fishing has been carried on, to be cleared, so far as may be reasonable to be done, from all debris and material found thereon, which has resulted from said business.

SEC. 7. Any person who shall attempt to divert the natural progress or running of White Fish within any of the waters mentioned in the different sections of this act, by shingling, or any other device calculated to frighten or divert such fish from their natural course, shall forfeit the sum of one hundred dollars, and imprisonment not exceeding sixty days, at the discretion of the court. Pound nets or seines shall not be construed to come within the provisions of this section, when used in compliance with this act.

SEC. 8. Any person charged with offending against the provisions of this act, may be tried before a justice of the peace of the county in which the offense is charged, if he have been committed, in the same manner as other offenders are tried where the justice has jurisdiction, and, upon conviction, such person shall be subject to a fine not exceeding fifty dollars, for each and every offense, and to imprisonment in the county jail until such fine is paid; but not for a period exceeding sixty days.

SEC. 9. It shall be the duty of said Commissioners of State Fisheries, or of the sheriffs of the different counties in their respective jurisdictions, to enforce the provisions of this act, and when, upon information or otherwise, said Commissioners or sheriffs shall discover any violations thereof, to institute the necessary proceedings to punish such violation.

SEC. 10. No part of this act shall be construed as a prohibition upon fishing with hooks, or with spears, or any instrument or device similar in principle of its operation to such hooks or spears, at any time, and in any waters, nor upon fishing with sweep nets of any length not exceeding one hundred and fifty fathoms, in the waters where pound, stake, trap, or set-nets, or set devices of any kind for taking fish, may be used under the provisions of this act.

SEC. 11. It shall not be lawful to use sweep nets within two miles of the mouths of the St. Clair River during the months of December, January, and February, in each year, nor to use seines in the above named locality during the spawning season of blue bass.

SEC. 12. Nothing in this act contained shall prohibit the catching of soft fish, such as geon, pike, or carnivorous fish at any time.

[No. 195.]

AN ACT to amend section two of chapter sixty-three, being section two thousand and ninety of the compiled laws of eighteen hundred and seventy-one, relative to the protection of fish and the preservation of fisheries.

[Approved May 1, 1875. Laws of 1875, p. 227.]

SECTION 1. *The People of the State of Michigan enact*, That section two of chapter sixty-three, being compiler's section two thousand and ninety of the compiled laws of eighteen hundred and seventy-one, be and the same are amended so as to read as follows.

SEC. 2. There shall be erected and maintained in each dam across any stream which by is a public highway, by the owner or occupant thereof, or by any person or persons, the officers of any corporation using the waters thereof, through the medium of any dam or race, sufficient and permanent shutes or fish ladders, to admit the passage of fish in such stream during the months of April, May, and June, in each year; and if the owner or occupant of any such dam, or person or persons, or the officers of any corporation using the waters thereof through the medium of any canal or race, shall neglect or refuse for the period of sixty days, to construct and maintain such shutes or fish ladders as aforesaid, whenever requested in writing so to do by the Fish Commissioner of this State, such person or persons, or officers of any corporation, shall be deemed guilty of a misdemeanor, and for each and every sixty days that such person or persons, or officers of such corporation, shall so neglect or refuse, he or they shall be punished by a fine not exceeding five hundred dollars, or by imprisonment in the county jail not exceeding ninety days, or by both such fine and imprisonment, in the discretion of the court.

SEC. 2. There shall be added to said act one section to stand as section four, to read as follows:

SEC. 4. In respect to the construction and maintenance of fish shutes or fish ladders on dams owned by corporations, the duties and liabilities imposed by this act shall devolve and be imposed upon the president and secretary of such corporation.

[No. 204.]

AN ACT to amend an act entitled "An act to amend section five of an act entitled 'An act to protect fish and preserve the fisheries of this State,' approved March twenty-first, eighteen hundred and sixty-five, being section two thousand and seventy-six of the compiled laws of eighteen hundred and seventy-one," approved April fifteen, eighteen hundred and seventy-three.

[Approved May 3, 1875. Laws of 1875, p. 233.]

SECTION 1. *The People of the State of Michigan enact*, That an act entitled "An act to amend section five of an act entitled 'An act to protect fish and preserve the fisheries of this State,' approved March twenty-first, eighteen hundred and sixty-five, being section two thousand and seventy-six of the compiled laws of eighteen hundred and seventy-one," approved April fifteen, eighteen hundred and seventy-three, be and the same is hereby amended so as to read as follows:

SEC. 5. No person shall catch or take from any lake, river, or stream of this State, by any means whatsoever, any speckled trout from the first [day] of September, in any year until the first day of May following thereafter; nor shall any person catch or take any grayling, by any means whatsoever, from any such lake, river, or stream, from the first day of November, in any year, until the first day of June following thereafter; nor shall any person purchase, buy, or sell any such fish during said prohibited time; nor shall any person take or catch any speckled trout or grayling, in any such lake, river, or stream, by means of a spear, net, or seine, or in any other manner whatever, except by hook and line, at any time during the year. In all prosecutions under this act it shall be *prima facie* sufficient on the part of the people to show that the defendant was found in possession of any such fish at any time within the period when the catching or taking of such fish is prohibited as aforesaid. It is hereby made the duty of the prosecuting attorney, the sheriff and his deputies, and every constable of any county, and the supervisor of any township, to prosecute any person for a violation of any of the provisions of this section when complaint is made before a justice of the peace. It shall be lawful, however, for the Superintendent of Fisheries to give permits in writing to any person to catch or take any such fish in such manner as such superintendent shall direct, at any season of the year, for the purposes of propagation; but in any prosecution for a violation of any of the provisions of this section, such permission must be shown affirmatively by the defendant.

SEC. 2. This act shall take immediate effect.

## GAME LAWS.

The protection of game, and the preservation of elk, deer, birds, and wild fowl, are so intimately connected with the subject of fish culture and the preservation of our waters and fisheries, that it is deemed proper to give the Game Laws a place with the compiled Fish Laws. Parties having occasion to refer to either classes will find the reference under one head of great convenience:

## THE GAME LAWS OF MICHIGAN.

AN ACT to revise and consolidate the several acts relating to the protection of game, and for the better preservation of elk, deer, birds, and wild fowl.

[Approved April 3, 1869. Laws of 1869, p. 211.]

(2093.) SECTION 1. *The People of the State of Michigan enact, That no person shall pursue, or hunt, or kill any wild elk, wild buck, doe, or fawn, save only during the months of October, November, and December in each year, or kill or destroy, by any means whatever, or attempt to take or destroy any wild turkey at any time during the year, except in the months of September, October, November, and December, in each year; or kill or destroy, by any means whatever, any woodcock until after the fifth day of July, nor any prairie chicken, or pinnated grouse, ruffed grouse, commonly called partridge, or pheasant, or any wood duck, teal duck, or mallard duck, save only from the fifth day of August in each year to the first day of February next following.*<sup>1</sup>

(2094.) SEC. 2. No person or persons shall kill or destroy, or attempt to kill or destroy, any quail, sometimes called Virginia partridge, save only during the months of October, November, and December, in each year; and no person or persons shall kill or destroy any quail in this State, at any time after the passage of this act, until the first day of October, eighteen hundred and seventy-two, under a penalty of five dollars for each quail destroyed.<sup>1</sup>

(2095.) SEC. 3. No person or persons shall at any time, with a trap, or snare, net, take any partridge, prairie chicken, wood duck, teal duck, mallard duck, or quail, attempt to take, with any trap, snare, or net, any partridge, prairie chicken, or quail. *Provided, however, That it shall be lawful to trap quail and take them alive, for the purpose of keeping them alive through the winter, and for no other purpose whatever; and it shall also be lawful to take with a trap, snare, or net, any wood duck, teal duck, or mallard duck for breeding purposes.*<sup>1</sup>

(2096.) SEC. 4. No person or persons shall at any time kill or attempt to kill any wild duck, or other wild fowl, with or by means of a swivel or punt gun, or rob or destroy the nests of any wild ducks or wild geese, or in any manner kill or molest the same whilst they are sitting at night on their nesting places.

(2097.) SEC. 5. No person or persons shall sell, or expose for sale, or have in his or her possession for the purpose of selling or exposing for sale, any of the birds or animals protected by this act after the expiration of thirty days next succeeding the times limited and prescribed for the killing of any such birds or animals: *Provided, however, That it shall be lawful to expose for sale, and to sell, any live quail for the purpose of preserving the same alive through the winter.*<sup>1</sup>

(2098.) SEC. 6. Any person or persons violating any of the foregoing provisions of this act shall be deemed guilty of a misdemeanor, and shall likewise be liable to a penalty of fifty dollars for each offense, and shall on conviction thereof, stand committed to the common jail until such penalty is paid, provided that such imprisonment shall not exceed thirty days.

(2099.) SEC. 7. No person shall at any time, within this State, kill any robin, night hawk, whippoorwill, finch, thrush, lark, sparrow, cherry bird, swallow, yellow bird, blue

bird, brown thrasher, wren, martin, oriole, woodpecker, bobolink, or any song bird, or rob the nests of such birds, under a penalty of five dollars for each bird so killed, and for each nest so robbed.

(2100.) SEC. 8. That any railroad, express company, or other common carrier, or any of their agents or servants, or other persons having any of the above named birds or animals in their possession for transportation, or shall transport the same, after the expiration of the thirty days next succeeding the times limited and prescribed for the killing of such birds or animals, shall be punished by fine not less than ten dollars nor more than one hundred dollars: *Provided, that such penalty shall not apply to the transportation of live quail which are to be kept alive through the winter, or to the transportation of such birds or animals in transitu through this State from other States where it is lawful to kill such birds or animals at the time of such transportation.*

(2101.) SEC. 9. No person or persons shall use any gun or guns, or fire-arms, to maim, kill, or destroy any wild pigeon or pigeons, at or within one-half of the mile place, or places where they are gathered in bodies for the purpose of brooding their young, or known as pigeon nestings; and no person or persons shall use any gun, guns, or fire-arms, to maim, kill, or destroy any wild pigeon or pigeons within their roostings, anywhere within the limits of this State; and every person so offending against the provisions of this section, or any part thereof, shall be subject to a penalty of fifty dollars, with costs of suit.

(2102.) SEC. 10. A prosecution may be brought by any person in the name of the people of the state of Michigan, against any person or persons violating any of the provisions of this act, before any justice of the peace of any county in which such violation is alleged to have taken place, or before any court of competent jurisdiction; and it is made the duty of all prosecuting attorneys in this State to see that the provisions of this act are enforced in their respective counties, and they shall prosecute all offenders, on receiving information of the violation of any of the provisions of this act; and it is made the duty of sheriffs, under-sheriffs, deputy-sheriffs, justices and police-officers, to inform against and prosecute all persons whom there is probable cause to believe are guilty of violating any of the provisions of this act.

(2103.) SEC. 11. The provisions of this act shall not apply to any person who shall take any of the birds or animals protected by this act for the sole purpose of preserving them as specimens for scientific purposes, nor to any person who shall collect the eggs or nests of any bird for such scientific purposes: *Provided, That in a prosecution for the violation of any of the provisions of this act it shall not be necessary for the prosecution to prove that the killing of the bird or animal, or the taking of the nest eggs, as the case may be, was not done for scientific purposes.*

(2104.) SEC. 12. All prosecutions under the provisions of this act shall be commenced within three months from the time such offense was committed.

(2105.) SEC. 13. All acts and parts of acts contravening any of the provisions of this act are hereby repealed.

AN ACT to prevent the destruction of muskrats and muskrat houses, in the marshes along the shore of Lakes Erie, St. Clair, Huron, and Michigan.

[Approved April 3, 1869. Laws of 1869, p. 187.]

(2106.) SECTION 1. *The People of the State of Michigan enact, That no person or persons shall kill, destroy, or take, by any means whatsoever, within the limits of the marshes bordering on the waters of Lake Erie, Detroit River, Lake St. Clair, River St. Clair, Lake Huron, and Lake Michigan, any muskrat found in said marshes, or in the banks of any bayous or creeks in said marshes, between the fifteenth day of August and the first day of January, under the penalty of three dollars for each muskrat killed, destroyed, or taken in violation of this act.*

(2107.) SEC. 2. It shall be unlawful for any person or persons to destroy or disturb any muskrat house in said marshes, under a penalty of five dollars for each muskrat house destroyed in violation of this act.

(2108.) SEC. 3. Every penalty prescribed by the preceding sections of this act shall be sued for in the name of the people of the State of Michigan, before any justice of the peace in the county where the alleged offense was committed, which suit shall be commenced and carried on in the same manner that prosecutions for misdemeanors are, and the penalties collected in pursuance of this act shall be paid into the county treasury of the county where the offense was committed, for the support of township libraries of such county.

<sup>1</sup> As amended by Act 135 of the Laws of 1871, p. 212, approved and took effect April 15, 1871.

<sup>1</sup> Vide note to Section 1 of this Act.

(2109.) SEC. 4. This act shall not be so construed as to prevent the catching and killing of any animals specified in the foregoing sections, where there is danger of their doing injury to property, either public or private.

AN ACT to amend section one of an act entitled "An act to revise and consolidate the several acts relating to the protection of game, and for the better preservation of elk, deer, birds, and wild fowl," approved April 3d, eighteen hundred and sixty-nine, being section two thousand and ninety-three of the compiled laws of eighteen hundred and seventy-one.

SECTION 1. *The People of the State of Michigan enact,* That section one of an act entitled "An act to revise and consolidate the several acts relating to the protection of game, and for the better preservation of elk, deer, birds, and wild fowl," approved April three, eighteen hundred and sixty-nine, being section two thousand and ninety-three of the compiled laws of eighteen hundred and seventy-one, be and the same be hereby amended so as to read as follows:

(2093.) SECTION 1. *The People of the State of Michigan enact,* That no person or persons shall pursue, or hunt, or kill any wild elk, wild buck, doe or fawn, save only during the months of October, November, and December in each year; or kill or destroy by any means whatever, or attempt to take or destroy, any wild turkey at any time during the year, except in the months of September, October, November, and December in each year; or kill or destroy, by any means whatever, any woodcock until after the fifth day of July; or any prairie chicken, or pinnated grouse, ruffled grouse, commonly called partridge or pheasant, or any wood duck, teal duck, or mallard duck, save only from the first day of September in each year to the first day of January next following.

Approved March 27, 1873.

[No. 201.]

AN ACT to amend sections one and eight of an act entitled "An act to revise and consolidate the several acts relating to the protection of game, and for the better preservation of elk, deer, birds, and wild fowl," approved April third, eighteen hundred and sixty-nine, being sections two thousand and ninety-three and two thousand and hundred of the compiled laws of eighteen hundred and seventy-one, as amended by act number forty-six of the session laws of eighteen hundred and seventy-three.

[Approved May 3, 1875. Laws of 1875, p. 231.]

SECTION 1. *The People of the State of Michigan enact,* That sections one and eight of an act entitled "An act to revise and consolidate the several acts relating to the protection of game, and for the better preservation of elk, deer, birds, and wild fowl," approved April third, eighteen hundred and sixty-nine, being sections two thousand and ninety-three and two thousand and one hundred of the compiled laws of eighteen hundred and seventy-one, as amended by act number forty-six of the session laws of eighteen hundred and seventy-three, be and is hereby amended so as to read as follows:

(2093.) SEC. 1. That no person or persons shall pursue, or hunt, or kill any wild elk, wild buck, doe, or fawn, save only in the Upper Peninsula from the first day of August and in the Lower Peninsula from the fifteenth day of September, to the fifteenth day of December in each year, or kill or destroy by any means whatever, or attempt to take or destroy any wild turkey, at any time during the year, except in the month of October, November, and December in each year, or kill or destroy by any means whatever, any woodcock until after the fifth day of July, or any prairie chicken, or pinnated grouse, ruffled grouse, commonly called partridge or pheasant, or any wood duck, teal duck, or mallard duck, or any water fowl, save only from the first day of September in each year to the first day of January next following.

(2100.) SEC. 8. That any railroad, express company, or other common carriers, or any of their agents or servants, or other persons having any of the above named birds or animals in their possession for transportation, or shall transport the same, after the expiration of ten days next succeeding the time limited and prescribed for the killing of such birds or animals, shall be punished by fine not less than ten dollars, nor more than one hundred dollars; *Provided,* That such penalty shall not apply to the transportation of live quail which are to be kept alive throughout the winter, or the transportation of such birds or animals *in transitu* through this State, from other States where it is lawful to kill such birds or animals at the time of such transportation.

## FINANCIAL STATEMENT

THE FISH COMMISSION, EMBRACING THE EXPENDITURES FROM DECEMBER 1, 1874, TO FIRST DAY OF JULY, 1875,—COVERING TERM OF FIRST APPROPRIATION.

DEBIT.			
To balance of appropriation, by Act No. 124, 1873, on hand December 1st, 1874.....			\$5,690 45
To proceeds of sale of fish trays, boxes, and pump logs, property of the Fish Commission, to N. W. Clark.....			168 70
Total fund.....			<u>\$5,868 15</u>
CREDIT.			
By amount paid for Maine Salmon, 1875.....		\$80 00	
"    "    for California Salmon, 1874-5.....		185 87	
"    "    to N. W. Clark & Son, for hatching two millions White Fish eggs.....		2,000 00	
By amount paid to N. W. Clark & Son for one hundred and fifty thousand Lake Trout fry.....		300 00	
By amount paid for hatching 200,000 White Fish ova and in distributing 2,200,000 White Fish fry.....		447 81	
By amount paid for depositing Lake Trout fry.....		29 00	
"    "    for lumber, materials and labor on hatchery, and care of hatchery, fish, and ponds.....		163 16	
By amount paid for freight and incidental expenses in publishing and distributing Report of 1873-4.....		39 05	
By amount paid for blank books and stationery.....		33 40	
"    "    for printing.....		7 00	
"    "    for postage.....		18 00	
"    "    to John P. Clark, expenses attending meeting in New York of U. S. and State Commissioners.....		36 50	
By amount paid to E. R. Miller, for expenses and disbursements as Fish Commissioner.....		26 10	
By amount paid to A. J. Kellogg, for expenses and disbursements as Fish Commissioner.....		64 72	
By amount paid to Charles Michael, overseer of State Hatchery and grounds.....		350 00	
By amount paid to Geo. H. Jerome, Superintendent of State Fisheries.....		700 00	
Total expenditures.....		\$4,480 61	
Balance July 1st, 1875, unexpended, and which by decision of Auditor General, reverted to State Treasury.....		1,387 54	
		<u>\$5,868 15</u>	<u>\$5,868 15</u>

## STATEMENT

Under Second Appropriation, commencing July 1st, 1875, ending June 30th, 1877, covering expenditures from July 1st, 1875, to December 1st, 1876.

DEBIT.		
To appropriation by Act No. 117, laws of 1875.....		\$14,000 00

## CREDIT.

By amount paid for taking Salmon Trout ova at Mackinaw.....	\$18
By amount paid for materials and labor on Pokagon Hatchery and care of fish and premises.....	587 58
By amount paid for express freight charges on 800,000 California Salmon eggs.....	518 55
By amount paid for hatching and depositing California Salmon of the lot of 1875-6.....	643 53
By amount paid for Land-locked Salmon of 1876.....	23 50
By amount paid for examination of hatching-house and apparatus and procuring use of the Holton hatching box.....	42 81
By amount paid for procuring one million Salmon Trout ova, 1876.....	289 00
By amount paid for procuring ten millions White Fish ova, hatching them and depositing the fish.....	2,478 91
By amount paid to J. W. Ingersoll, building the Detroit State Hatchery.....	409 00
By amount paid for screens, trays, troughs, boxes, apparatus and furniture of the Detroit Hatchery.....	604 70
By amount paid to John Reilly for plumbing and building four hundred and fifty feet stone tiling drain for Detroit Hatchery.....	233 66
By amount paid to H. A. Lacey for rent of lot for 1875-6 for Detroit State Hatchery.....	50 00
By amount paid to Wm. Cowie for rent of lot for 1876-7 for Detroit Hatchery.....	50 00
By amount paid to Seth Green for use of Holton hatching box for the years 1875-6 and 1876-7.....	200 00
By amount paid for 24 second-hand 12-gallon fish cans.....	17 00
By amount paid for iron safe, for the safe keeping of record books, receipts and papers of Fish Commission.....	25 00
By amount paid for 40 feet seine for procuring spawning fish.....	9 50
“ “ “ “ books for the Fish Commission.....	8 04
“ “ “ “ postage.....	48 73
“ “ “ “ record books, letter files, and stationery.....	38 00
“ “ “ “ printing.....	17 75
“ “ “ “ to Eli R. Miller for disbursements as Commissioner and for expenses of depositing fish.....	108 46
By amount paid to George Clark for disbursements as Commissioner, and for expenses of procuring White Fish ova.....	42 70
By amount paid to Andrew J. Kellogg for disbursements as Commissioner.....	15 48
By amount paid to Oren M. Chase, Overseer of Detroit Hatchery, for 2 months and 23 days services.....	233 34
By amount paid to Charles Michael, Overseer of the Pokagon Hatchery, for 17 months.....	850 00
By amount paid to Geo. H. Jerome, Superintendent of the State Fisheries, for 17 months.....	1,700 00
Total expenditures from July 1, 1875, to December 1, 1876.....	\$9,263 54
Balance on hand December 1st, 1876.....	4,736 46
	<u>\$14,000 00</u>

Vouchers for the above items of expenditures are on file in the Auditor General's office.

## INVENTORY

OF BUILDINGS, FURNITURE, FISH HATCHING APPARATUS, AND OTHER PROPERTY OF THE MICHIGAN FISH COMMISSION, ON HAND DECEMBER 20, 1876.

State hatching house, ponds, and fishery at Pokagon.....	\$1,192 00
Overseer's house at Pokagon.....	396 00
9 fish preserves, including partitions and passageways.....	179 92
Barn and out-buildings at Pokagon Fishery.....	50 00
18 fish egg-troughs, with screens, trays, and fixtures.....	108 00
20 hatching boxes, and 160 trays.....	100 00
2 large water cooling tanks or vats.....	40 00
State hatchery in Detroit.....	409 00
Boxes, troughs, trays, furniture, and apparatus, Detroit hatchery.....	620 00
Out-buildings of Detroit hatchery.....	25 00
454 feet 4-inch bore stone tiling, Detroit hatchery.....	90 00
35 fish cans for moving and planting fish.....	348 00
2 hand saws.....	2 00
26 large iron faucets and twelve wooden ones.....	24 00
1 dirt shovel.....	1 00
1 scoop shovel.....	1 50
1 steel rake.....	1 00
1 grub axe.....	1 50
3 large fish egg tin pails.....	4 50
10 dippers.....	2 00
6 paint and tray brushes.....	3 00
2 kerosene cans.....	2 00
2 heating stoves.....	30 00
1 cook-stove, pipe, and furniture.....	24 00
146 lbs stove pipe.....	14 00
250 feet 4-inch bore pump logs.....	35 00
1 bedstead.....	2 00
1 mattress.....	4 00
4 sheets.....	3 00
1 pair blankets.....	4 00
4 comforters.....	8 00
2 pillows and cases.....	3 00
4 chairs.....	1 00
1 table.....	3 00
1 copy-book, press, water holder, and brush.....	10 00
3 tin syphon tubes.....	1 50
24 feet rubber tubing.....	10 00
4 thermometers.....	2 00
3 wooden pails.....	1 00
2 wash tubs.....	2 00
3 copper scoops.....	2 00
4 tin ova pails, large size.....	4 00
3 lanterns.....	5 00
4 lamps.....	4 00



2 pairs shears for wire cloth and sheet iron.....	\$3 00
Curtains and fixtures.....	10 00
3 suits oil-cloth overcoats and overalls.....	10 50
18 stools.....	6 00
1 alarm clock.....	3 00
1 iron safe for record books and papers.....	25 00
Buck saw.....	1 00
Ice-pack and ice tongs.....	1 50
Meat-block and meat chopping knife.....	1 50
Iron pond rake.....	5 00
1 seine, large.....	1 00
1 40-foot seine.....	9 50
24 tin pans.....	5 00
Seal and set of dies, marking cans and Hatchery goods.....	13 00
2 hatchets.....	2 00
Axe and helve.....	1 00
Record blank books.....	10 00
State Commission, fish library.....	38 00
Postal balance.....	3 00

\$3,921 25

INFORMATION WANTED.

It is earnestly hoped that every person, whether a resident or non-resident of Michigan, who shall capture any of the varieties of fish planted by the Fish Commission in any lake, or river or stream of the State, will, at the time of the catch forward particulars and accurate descriptions of the same to the undersigned.

State where caught—when—by whom—in what way—length of fish—weight—color—body and fin markings—and, if eaten, flavor and quality of fish. The record of such catches will be carefully preserved, and made an interesting feature of future reports.

GEO. H. JEROME,  
Superintendent, Niles, Mich.

NAMES AND ADDRESSES OF COMMISSIONERS OF FISHERIES.

*United States.*

PROF. SPENCER F. BAIRD..... } Smithsonian Institute,  
Washington, D. C.

*Dominion of Canada.*

W. F. WHITCHER..... Ottawa.  
W. H. VENNING..... St. John.

*Arkansas.*

J. H. FISH..... Pine Bluffs.  
R. STEELMAN..... Little Rock.  
N. B. PEARCE..... Fayetteville.

*California.*

B. REDDING..... Sacramento.  
R. THROCKMORTON..... San Francisco.  
D. FARWELL..... San Francisco.

*Connecticut.*

WILLIAM M. HUDSON..... Hartford.  
ROBERT G. PIKE..... Middletown.  
JAMES A. BILL..... Lyme.

*Georgia.*

THOMAS P. JAMES, Commissioner of Agriculture and Fisheries..... Atlanta.

*Illinois.*

V. A. PRATT..... Elgin.

*Iowa.*

C. F. SHAW, Commissioner and Superintendent..... Anamosa.

*Kentucky.*

WACK THOMAS, President of the Board..... Louisville.  
J. H. DARBEY..... Caldwell County.  
WOLK LAFFOM..... Hopkins County.  
J. W. COOMBS..... Warren County.  
J. J. WALTON..... Hart County.  
JAMES B. CASEY..... Kenton County.  
JOHN A. STEELE..... Woodford County.