STATE OF MICHIGAN.

SECOND REPORT

OF THE

STATE COMMISSIONERS

AND

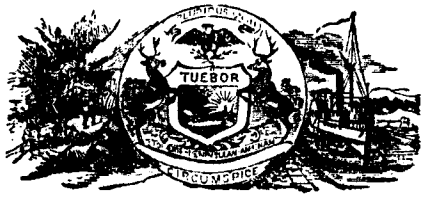
SUPERINTENDENT,

ON

STATE FISHERIES,

FOR 1875-6,

ENDING DECEMBER 20, 1876.



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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 corrollaries 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 prëeminent 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 jeoparded, 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 superfices. 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 unresting 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 Commisssion 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 Quinnat*, 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 seen to be two or three, or even four times the size of others in the same pond, and all apparently equally perfect in their organisms, and, so far as fish fanciers can judge, equally healthy. This disparity of growth or size obtains through 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 been within the scope of our observation.

REPORT OF WORK OF 1874-5.

And now having disposed of those preliminary questions and observations, which, and, 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 the Salmo Quinnat 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, Esq., near Wyandotte. These were procured by the Superintendent on the 10th of November, and conveyed by him, over the Michigan Central Railroad, in a common 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 hundred fish caught. In procuring the 200,000 ova, ten spawners were stripped and 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 this 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.

16,000 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 CULLOMS' 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 to the deposit, been seined from the lake. The plant was reported to me 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 the plant made in good order.

40,000 IN SPRING BROOK CREEK.

Dec. 26th, '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, Mr. 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 SANGIPAHO RIVER, LOUISANA.

Dec. 29th, '74.—Delivered to the U. S. Commission, eight large Government cans, aggregating at least fifteen thousand Salmon, deposited in the Sangipaho 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.

35,000 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 unit, 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, at 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—indented—presenting 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 menvied tasks. The fortunate few that survived were turned loose upon the broad waters of the beautiful Dowagiac, which flow fast 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 shrinkage of the outer shell, and which may have affected the embryo itself injuriously." 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 develo ment 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 w made in the spring of 1875. The Commissioners, adjudging it advisable make the experiment of their culture at as early a period as possible, purchas from the hatchery of N. W. Clark & Son 150,000 fry, paying therefor t price of two dollars per thousand. And that the success or non-success of t experiment might be the better ascertained, they advised the planting of th number in but one or two of the lakes of the State. Accordingly the fry we 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 thou and.

22,500 IN MINER LAKE, ALLEGAN COUNTY.

On the 31st of March, same year, there were deposited in Miner Lake 22,50 This deposit was made unluckily at a time when the spring freshet was at fu tide, bridges gone, and wagon roads almost impassable; and yet the fry we put through in fair condition, and deposited, after a four hours' wagon roa 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 i Gun Lake. Mr. H. F. Badger, of Kalamazoo, the depositor, reported to m a loss of only five or six.

As respects the results of the foregoing several deposits, we have received n intelligence. But of the eventual successful cultivation of the Salmon Tro in the better class of our inland lakes, we know of no good reason to doub But whether any considerable harvest is to come from this plant of 150,000 fr is somewhat problematical, as the season of their plant was unfavorable, an 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 entere into an agreement with N. W. Clark & Son to hatch 2,000,000, at the stipu lated price of one dollar per thousand. There were also hatched of this year a the Pokagon fishery, in addition to the large lot of California Salmon hatche there, one hundred and fifty thousand or upwards.

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

d, at a meeting on the 25th of February, 1875, held at the Governor's Room, t the Capitol, in Lansing, that the bulk of our supply be planted in the Detroit iver 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 ichigan, at the mouth of the St. Joseph River. The fry were found all alive d 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 Gran Traverse City, near the mouth of the Boardman River, the river being free fro ice, and at point of deposit deep and clear, three hundred and sixteen thousand This plant was made between 10 and 11 P. M.; fry found in good condition and deposit made in satisfactory order.

12,500 IN GOGUAC LAKE, CALHOUN COUNTY.

March 31st, 1875.—There were placed in Goguac Lake twelve thousand fiv hundred; deposit reported made in good order. This lake is a large and beau tiful 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 it 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 know 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 fiv 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 th inland lakes, forty thousand. H. F. Badger and J. B. Trowbridge, of Kala mazoo, 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 weigh 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 im mediately 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 unnec essary 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 un packing, cleaning the eggs, and laying them upon the trays, was at once com menced 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

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

The percentage of loss of eggs in the different crates varied considerably; ome crates had a loss of not more than one or two per cent, while others opened ith a loss of from three to five per cent. The Express Company's charges ere $518.55, which was paid from the Fish Fund of the State. Prof. Baird, consideration of this very liberal supply to Michigan, reserved, as he did with he former lot, the privilege of retaining some portion of the fry for stocking e lakes and rivers of other States. Some of the eggs commenced hatching a very few days, and in a few weeks all were hatched. This large lot of almon 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	Goguac 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	1,0
" 3, 1876	Diamond Lake	Cass	8,0
" 3, 1876	St. Joseph River, at Three Rivers	St. Joseph	8,0
" 3, 1876	Portage Creek	St. Joseph	2,0
" 3, 1876	Rocky Creek	St. Joseph	2,0
" 3, 1876	Sturgeon Lake	St. Joseph	4,0
" 6, 1876	Reed Lake	Kent	4,0
" 6, 1876	Church Lake	Kent	4,0
" 6, 1876	Pickerel Lake	Kent	2,0
" 6, 1876	Lamberton Lake	Kent	2,0
" 6, 1876	Soft Water Lake	Kent	2,0
" 6, 1876	Hamblin Lake	Calhoun	1,0
" 7, 1876	Clam Lake	Wexford	10,0
" 7, 1876	Boardman River, at Kalkaska	Kalkaska	8,0
" 7, 1876	Rapid River, tributary Torch Lake	Kalkaska	12,0
" 8, 1876	Pine Lake	Charlevoix	6,0
" 8, 1876	Bear Lake	Charlevoix	4,0
" 13, 1876	Big Star Lake	Lake	14,0
" 14, 1876	Walloon Lake	Charlevoix	16,0
" 15, 1876	Au Sauble River, at Crawford	Crawford	30,0
" 15, 1876	Otsego Lake	Otsego	20,0
" 17, 1876	Lake Michigan	Berrien	2,0
" 19, 1876	Lake Michigamme	Marquette	24,0
" 19, 1876	Three Lakes, connected with Mich'mme	Marquette	8,0

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 go condition, many of the deposits being without the loss of a single fish, a others with but a trifling and unimportant loss. The winter was highly favo able for work upon the inland lakes, the weather being generally mild, a with very little snow or ice to operate as hindrances to sharp and successf fish planting.

To the foregoing table of deposits must be added one more. On the 11th December, 1875, Prof. J. W. Milner, Deputy U. S. Commissioner, had receiv at the Pokagon Hatchery, thirty-three thousand Salmon fry of the abov named hatch, intending to convey them to the State of Illinois. He miss the afternoon train at Niles, and consequently was obliged to hold the fish Niles till the next morning train. The fish were provided with good quart 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 endanger their safety, caused, as was believed, from overcrowding the cans,—the Gover ment was too heavily loaded! So, to save the fish, Mr. Milner ordered the 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 deposi that many of them have been made in the inland lakes. The question b been put to me, both orally and in letters received, scores of times, if I thoug the Salmon would live and thrive in these lakes. All, of course, will not liv But I do certainly think that a very considerable portion of them will live a grow, and many of them become adult Salmon.

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

eeks, or longer, after the absorption of the food sac, so, at the time of their eposit, they are, ordinarily, very active, as well as sharp feeders. It will be oticed that this brings their deposit to about midwinter, a time when preda- ous fish are, in a measure, dormant, and indisposed to any very considerable mount of exercise for the gratification of their hunger, or their deviltry. Then ain, every mothers' one of them has implanted in him an instinct—a senti- l, as it were—that warns of danger. They very evidently do not believe that e millennium has come when they can lie down with the pickerel and the perch safety! When two, and three, and four inches long, their movements are iscovered to be of the most agile character, and when inclining to rest, which seldom, they seem in a meditative sort of mood, as if contemplating the eat fact that there are Ishmaelites in the waters under the earth as well as on the upheaved dry land, and so, if ever indulging in sleep at all, it is the eep with one eye wide open; and, hence, the value that attaches to number e 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 perpetu- e his race in waters of a much higher temperature than many other species the Salmonidæ family. All these things are favorable. But then there mes in the question of food and range, to which allusion has been made in nother part of this Report. Obviously, the larger and the deeper the lake, the tter; the greater the chances for food, the better. Of this there cannot be so uch as the suspicion of a doubt. Limited range, limited food, passing all ispute, will dwarf your Parr, your Smolt, your Grilse, and your adult Salmon. nstead of those great fellows that ambulate at will the unfenced pastures and eadows of the ocean, and perform journeys, as they are said to do, of three housand miles, large enough, strong enough to tow into port an ordinary brig, u will have your Grilse or Salmon that an average muscular boy of a dozen immers will be able to land without wetting his pants above the knee. So I dvise none of my Michigan friends to change the fashion of their dinner plat- rs; those you already have will probably be found amply large for the accom- odation 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 es- blishment of Charles G. Atkins, of Bucksport, Maine, eighteen thousand choodic, or, as they are more commonly known, land-locked Salmon eggs. rof. Baird donated them to the Michigan Commission. They arrived in full ir condition, and were at once taken to the State Hatchery and placed upon e trays. In a few days some commenced hatching, and in three or four eeks all were hatched. The fry, after the absorption of the food sac, were d 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 hould be planted in lots large enough for plain observation and marked results, nd in waters over which a supervisory control could be exercised. They were cordingly deposited as follows:

4,000 IN PARKER LAKE.

On the 18th of May last, Eli R. Miller, President of the Fish Board, deposited Parker Lake, situate in Richland township, Kalamazoo county, four thou- nd. 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 the deposit, caused the lake to be thoroughly seined of the bass, pickerel, other predatory fish.

1,000 IN LONG LAKE.

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

5,000 IN LOG LAKE.

May 19th, 1876, there were deposited by Arthur A. Bleazby, of Kalkas in Log Lake, Kalkaska county, five thousand. This lake is about two m from Kalkaska, 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, Calho county; a good lake and nearly free from predaceous fish. Fry reported ceived 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 lief 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, they seem to be growing finely. I hope, one of these days, to be able to s you a sample of them."

3,000 IN GOGUAC LAKE.

June 1st, 1876.—There were planted, under the auspices of the Sportsma Club of Battle Creek, in Goguac Lake, Calhoun county, three thousand.

1,000 IN REESE POND.

Same date as foregoing, and by the same party, there were deposited thousand in Reese Pond, Calhoun county. In this pond there are no pre cious fish, or fish of any kind, but minnows. Both of above lots were repo 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 Marsh fed by large and cold springs, three thousand, to be kept and fed in his po till Church Lake, or some other good lake in the vicinity of Marshall, could 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 be occupied by other fish. They, under the circumstances, have thriven and d 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

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

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

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

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

So the Board, in view of the strong probability of success, at its meeting in city of Detroit, all the members being present, on the 3d of August, 1876, ssed the following order: "On motion, it is ordered to hatch in Detroit, th the water of the city water works, the ensuing season, five millions hite Fish, provided a grant of the water can be had, and a suitable lot ob- ined for this purpose. And that the Superintendent, on procuring such grant water, and also a lot, proceed to erect suitable buildings and works for the tch 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 construc a hatchery as cheaply as possible, and to introduce as simple and as inexpensiv 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 renta of fifty dollars per year. The Superintendent, that he might carry into effec the wish of the Board as to cheapness of Building, etc., and being well ac quainted with what is known as the "Holton Hatching Box," and well know ing 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 abov the simple consideration of economical construction of hatchery, visited Mr Seth Green, of Rochester, N. Y., and obtained of him the unlimited use of th Holton Hatching Box, for the State of Michigan for one year, with the priv lege of three or five years, at the stipulated price of one hundred dollars pe annum. On the 9th of September, written proposals, accompanied with speci fications, were submitted to several of the leading building firms of Detroit inviting bids for the erection of the hatchery building, to be fully completed b the 24th day of September. J. W. Ingersoll was the lowest bidder, his bid be ing $409.00. The building is one story, 20x50 feet, shingle roof, planed an matched floor, sheeted on the inside walls with planed and tightly matche boards, and the space filled with well packed saw-dust. The contractor did good job, and performed it very nearly on time. The plumbing and the layin of 454 feet of four inch stone tiling drain was done by Mr. John Reilly, at 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 ap paratus and fixtures, and had them all in complete working order by the last o October. On the first day of November everything was in perfect readiness fo the procuring of the White Fish spawn from the different fisheries on the De troit River.

The subjoined table shows the date of taking, the number of female fis 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 Clar
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. . Chase, and Frank Ramsdell. Those who assisted, and took more or less awn, were Louis Gray, Guy Warwick Jerome, Joseph Brown, and John nglum. Now, it will be seen from the above table that the total female fish ipped were four hundred and five. The number of male fish, or milters, was siderably larger than the number of females. The entire ova yield was nething over ten millions,—a very superior lot, almost perfect impregna- on being secured by what is termed the dry method. The eggs were obtained most exclusively at night, and on impregnation were placed in our large fish positing cans, and early each morning taken on board a steamboat to Detroit, d as soon as practicable after their arrival placed in the hatching trays and xes. From two hundred and fifty to three hundred thousand eggs were put to each can, and the water changed every hour or two. The spawners aver- ed 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 ay is substantially the record of every other day for a period of five months or wards: picking out dead or decaying eggs, feathering them, showering them, eeping them clean and free of all sediment as possible, watching all the hases, and pre-providing against the possible friction and accidents incident o their slow and tedious incubation; this is the routine of a day, and the rec- rd 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 accu- ate each day's register of the temperature of the water, and its condition as espects roiliness and clearness; and as I deem this registry of great importance n elucidating certain theories and facts in fish-culture, and so should, in some orm, be preserved, and to the end that it may the more securely be preserved, have thought it best to embody it in this Report. Should the general reader nd 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 com- ences 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°	Roily.
" 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°	Roily.
" 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°	Roily.
" 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°	Roily.
" 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, Montieth	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
arwood	Thornapple	April 6, 1876	J. C. Bray, Middleville	10,000
all	Johnstown	March 26, 1876	S. F. Otis, Milo	15,000
arner	Prairieville	April 6, 1876	Lester Warner, Plainwell	10,000
Benzie.				
nn	Almira	April 1, 1876	A. P. Wheelock, Almira	20,000
Branch.				
amp	Algansee	March 21, 1876	J. F. Camp, Quincy	10,000
ilead	Gilead	March 21, 1876	Judson Sweeting, Gilead	20,000
ake of the Woods	Ovid	March 21, 1876	A. G. Rose, Coldwater	25,000
arble	Quincy	March 21, 1876	A. D. Young and J. Willis, Quincy	20,000
aaker	Butler	April 6, 1876	J. E. White, Litchfield	25,000
Calhoun.				
ckleys	Convis	March 28, 1876	S. J. Huniker, Bellevue	15,000
eadle	Emmet	March 23, 1876	Ed. Sandford, Battle Creek	10,000
edar	Fredonia	March 25, 1876	John Houston, Marshall	10,000
oguac	Battle Creek	Feb. 28, 1876	H. H. Hubbard, Battle Creek	20,000
raham	LeRoy	Feb. 28, 1876	H. H. Hubbard, Battle Creek	10,000
amblin	Bedford	March 23, 1876	A. C. Hamblin, Battle Creek	10,000
art	Battle Creek	Feb. 28, 1876	H. H. Hubbard, Battle Creek	10,000
t. Mary	Pennfield	Feb. 28, 1876	H. H. Hubbard, Battle Creek	10,000
own Line	Pennfield	March 23, 1876	H. Willis, Battle Creek	10,000
urtle	Burlington	March 18, 1876	S. S. Wemple, Union City	10,000
abason	Bedford	Feb. 28, 1876	H. H. Hubbard, Battle Creek	20,000
arner	Tekonsha	March 18, 1876	B. Ellis, Burlington	10,000
Cass.				
lone	Wayne	March 25, 1876	H. H. Taylor, Dowagiac	10,000
aldwin		March 21, 1876	Geo. Meacham, Union	15,000
arron	Howard	March 11, 1876	Henry Pruyn, Niles	20,000
irch		March 21, 1876	Geo. Meacham, Union	10,000
ewey	Silver Creek	March 25, 1876	Menzo Harris, Dowagiac	25,000
olmes		March 25, 1876	James A. Lee, Dowagiac	10,000
ndiana		March 21, 1876	Geo. Meacham, Union	10,000
ong	Porter	March 21, 1876	Geo. Meacham, Union	20,000
itcher	Wayne	March 25, 1876	James A. Lee, Dowagiac	10,000
hans Head		March 21, 1876	Geo. Meacham, Union	10,000
Charlevoix.				
alloon	Towns'ps 33 & 34	April 1, 1876	D. Darwin Hughes, Jr., Grand Rapids	30,000
Cheboygan.				
arts		Feb. 22, 1876	Geo. W. Hutchins, Petoskey	40,000
Clare.				
rooked	Surrey	March 16, 1876	H. S. Warner, Lake Station	50,000
Clinton.				
d	Bath	March 30, 1876	S. S. Olds, Lansing	10,000
ond	Bath	March 30, 1876	S. S. Olds, Lansing	10,000
Eaton.				
rane	Hamlin	April 6, 1876	J. G. Kettler, Onondaga	10,000
ine	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.
Emmet.				
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
Genesee.				
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	L. 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
Gd. Traverse.				
Fife	Fife Lake	Feb. 22, 1876	James Montieth, Fife Lake	25,000
Silver	Traverse	April 1, 1876	T. H. Clyde, Traverse City	20,000
Hillsdale.				
Bear	Cambria	March 18, 1876	Edward Minkly, Bankers	10,000
Long	Reading	March 18, 1876	S. H. Kellogg, Reading	20,000
Lower Sand L'ke		March 21, 1876	Wm. M. Crane, Jonesville	10,000
Round	Reading	March 18, 1876	D. W. & H. C. Mickle, Readi'g	10,000
Sure	Reading	March 18, 1876	Archer Bowen, Reading	10,000
Ingham.				
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
Ionia.				
Long	Orleans	April 5, 1876	A. Palmer, Orleans	10,000
Isabella.				
Coldwater	Township 15	March 16, 1876	H. H. Graves, Mt. Pleasant	20,000
Jackson.				
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. Feckenscher, 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. Feckenscher, 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. Feckenscher, 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.
Kalamazoo.				
Bedfish	Ross	March 23, 1876	A. L. Kirby, Augusta	10,000
Clarks	Kalamazoo	March 25, 1876	J. L. Clark, Kalamazoo	5,000
Dean	Kalamazoo	March 25, 1876	Hiram Lewis, Kalamazoo	5,000
Comstock Mill Lakes	Comstock	March 23, 1876	C. H. Dunbar, Comstock	10,000
Eagle	Oshtemo	March 23, 1876	J. N. Lefever, Climax	12,000
Eagle	Charleston	April 7, 1876	Daniel Lawler, Augusta	10,000
Gourdneck		March 25, 1876	D. Waterbury, Kalamazoo	20,000
Hall	Richland	March 27, 1876	Eli R. Miller, Richland	40,000
Hamilton	Ross	March 23, 1876	W. S. Clark, Augusta	5,000
Indian	Pavilion	March 25, 1876	B. S. Williams, Kalamazoo	25,000
Kief	Comstock	March 25, 1876	L. Kief, Kalamazoo	5,000
Lefever	Climax	March 23, 1876	J. N. Lefever, Climax	5,000
Long	Richland	March 27, 1876	Eli R. Miller, Richland	15,000
Parker	Richland	March 23, 1876	A. S. Parker, Richland	10,000
Portage Lakes	Charleston	March 30, 1876	H. F. Bishop, Climax	15,000
Pretty	Oshtemo	March 11, 1876	A. J. Rix, Oshtemo	10,000
Ransons	Schoolcraft	March 25, 1876	J. W. Nesmith, Vicksburgh	10,000
Rony	Ross	March 23, 1876	Wm. Baker, Augusta	10,000
Twin Lakes	Alamo	March 25, 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
Kalkaska.				
Bass	Orange	Feb. 22, 1876	Geo. Ives, Crofton	12,500
Island		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
Loon	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
Kent.				
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
Gooe	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
Lake.				
Batcheldors	Yates	March 16, 1876	C. H. Forman, Forman	10,000
Big Star	Lake	March 16, 1876	A. Sitser, 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.
Lapeer.				
Bailey	Hadley	April 4, 1876	Wm. Hemmingway, Lapeer	5,0
Bronson	Oregon	March 7, 1876	L. J. Haddrill, Lapeer	10,0
Davis	Oregon	March 7, 1876	L. J. Haddrill, Lapeer	10,0
Loom	Metamora	April 4, 1876	E. P. Barrows, Metamora	5,0
Merritt	Metamora	April 4, 1876	E. P. Barrows, Metamora	5,0
Napessing	Elba	March 7, 1876	Wm. Hemmingway, Lapeer	20,0
Pleasant	Attica	March 7, 1876	Ira Green, Lapeer	5,0
Rileys	Hadley	April 4, 1876	J. H. Hemmingway, Hadley	10,0
Russell	Attica	March 7, 1876	H. Watkins, Attica	10,0
Seven Lakes		March 7, 1876	G. W. Miller, Dryden	10,0
Stocker	Metamora	April 4, 1876	E. P. Barrows, Metamora	5,0
Tuples	Metamora	April 4, 1876	E. P. Barrows, Metamora	5,0
West	Oregon	March 7, 1876	L. J. Haddrill, Lapeer	10,0
Wheelock	Lapeer	March 7, 1876	E. T. Slayton, Lapeer	5,0
Wolf	Metamora	March 7, 1876	A. B. Coryell, Thomas	5,0
Lenawee.				
Brighton	Cambridge	March 18, 1876	Isaac Allen, Cambridge	7,50
Cooks	Woodstock	March 18, 1876	P. Bartlett, Brooklyn	10,0
Goose	Woodstock	March 18, 1876	N. Osborne, Kelly's Corners	10,0
Kelly	Cambridge	March 18, 1876	Isaac Allen, Cambridge	7,5
Lower Wolf	Cambridge	March 18, 1876	Isaac Allen, Cambridge	7,5
Silver	Woodstock	March 18, 1876	L. Parsons, Kelly's Corners	10,0
Upper Wolf	Cambridge	March 18, 1876	I. Allen, Cambridge	7,5
Livingston.				
Blains	Hartland	March 9, 1876	B. Blain, Brighton	5,0
Bruin		Feb. 24, 1876	I. V. Reeves, Pinckney	10,0
Coon	Genoa	March 9, 1876	J. D. Gale, Howell	7,50
Gales	Genoa	March 9, 1876	J. D. Gale, Howell	7,50
Half-Moon		Feb. 24, 1876	I. V. Reeves, Pinckney	20,0
Howell	Maine	March 9, 1876	J. D. Gale, Howell	7,50
Island		Feb. 24, 1876	I. V. Reeves, Pinckney	10,0
Joslin	Unadilla	March 23, 1876	H. Gregory, Unadilla	10,0
Lee	Hartland	March 16, 1876	Giles Ross, Highland	10,0
Maxfield	Hartland	March 16, 1876	Giles Ross, Highland	10,0
Noble	Brighton	March 9, 1876	Albright & Thomson, Brighton	5,0
Patterson		Feb. 24, 1876	Ira V. Reeves, Pinckney	20,0
Peet	Genoa	March 30, 1877	L. Meyer, Brighton	5,0
Runion	Tyrone	March 30, 1876	J. F. Seaton, Fenton	10,0
Sackners	Tyrone	March 8, 1876	J. W. Ingrams, Fenton	20,0
Thompson	Howell	March 30, 1876	H. B. Blackman, Howell	10,0
Webster	Maine	March 9, 1876	J. D. Gale, Howell	7,50
Williams	Unadilla	March 23, 1876	O. H. Obert & Co., Unadilla	10,0
Woodburn		Feb. 24, 1876	I. V. Reeves, Pinckney	10,0
Mason.				
Beautiful	Summit	March 16, 1876	Wm. Warner, Ludington	20,0
Missaukee.				
Muskrat	Reeder	March 31, 1876	M. D. Richardson, Lake City	20,0
Montcalm.				
Burgess	Eureka	March 9, 1876	J. C. Burgess, Greenville	20,0
Clear		March 9, 1876	N. H. Evans, Fenwick	5,0
Cody	Maple Valley	March 9, 1876	R. A. Owen, Coral	20,0
Cowdin	Maple Valley	March 9, 1876	H. Cowdin, Coral	10,0

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.
rystal	Crystal	March 30, 1876	J. P. Young, Crystal	20,000
	Sydney	March 31, 1876	G. Gilbert, Stanton	10,000
		March 9, 1876	N. H. Evans, Fenwick	5,000
-Shoe		March 9, 1876	N. H. Evans, Fenwick	5,000
n Lake	Cato	March 9, 1876	S. J. Youngman, Cato	20,000
n Line	Maple & Winff'ld	March 30, 1876	R. A. Owen, Coral	20,000
itefish		April 6, 1876	G. W. Crabb and B. Eldridge, Sand Lake	20,000
ood		April 6, 1876	C. N. Merriman, G'd Rapids	10,000
Muskegon.				
ear	Laketon	April 12, 1876	J. L. Horning, Muskegon	20,000
win Lake		April 12, 1876	A. B. Buell, Twin Lake	20,000
Newaygo.				
emont		April 12, 1876	John E. Griffith, Detroit	30,000
alin		April 12, 1876	A. E. Upton, Fremont Cent.	10,000
econd Lake		April 12, 1876	A. E. Upton, Fremont Cent.	10,000
ater's Lake		April 12, 1876	A. E. Upton, Fremont Cent.	10,000
Oakland.				
drus	Highland	March 16, 1876	G. Ross, Highland	10,000
tes	Orion	April 3, 1876	Isaac Haddrill, Orion	10,000
ckhorn		March 7, 1876	A. S. Warner, Orion	10,000
ear		March 7, 1876	S. W. Stanton, Oxford	5,000
chemer		March 7, 1876	S. W. Stanton, Oxford	5,000
ah	Oxford	March 7, 1876	C. Losey, Oxford	10,000
ilbert	Bloomfield	April 4, 1876	J. H. Peabody, Detroit	20,000
rave	Bloomfield	March 8, 1876	A. Porter, Pontiac	5,000
ake Sixteen	Orion	April 4, 1876	Isaac Haddrill, Orion	10,000
ittle	Oakland	March 7, 1876	L. Woodward, Rochester	5,000
ong	Orion	March 7, 1876	A. S. Warner, Orion	10,000
ong		March 7, 1876	S. W. Stanton, Oxford	5,000
tter		March 8, 1876	Wm. Beaty, Pontiac	10,000
x Bow	White Lake	Feb. 19, 1876	R. W. Hopkins, W. L. Center	55,000
ickerel		March 8, 1875	W. Beaty, Pontiac	10,000
quare		March 7, 1876	S. W. Stanton, Oxford	5,000
quare	Orion	March 7, 1876	L. B. Kelly, Orion	10,000
ory	Oxford	March 7, 1876	T. L. Pierce, Oxford	10,000
traight Lakes	Commerce and W't Bloomfield	Feb. 19, 1876	J. C. Buckner, Northville	35,000
an		March 7, 1876	S. W. Stanton, Oxford	5,000
hree Mile	Pontiac and Waterford	March 8, 1876	T. S. Christian, Pontiac	20,000
imbered		March 8, 1876	Wm. Beaty, Pontiac	10,000
nion	West Bloomfi'ld	March 27, 1876	D. B. Allen, Four Towns	20,000
oorhies	Orion	April 4, 1876	J. Haddrill, Orion	10,000
alled	Novi	Feb. 19, 1876	A. Briggs, Pokagon	50,000
atkins	Waterford	March 8, 1876	E. S. Covert, Pontiac	10,000
Osceola.				
ose	Rose Lake	Feb. 22, 1876	Melvin Bailey, LeRoy	25,000
Shiawassee.				
olby	Woodhull	March 27, 1876	Wm. Colby, Laingsburg	10,000
oon	Woodhull	March 27, 1876	Wm. Colby, Laingsburg	10,000
tevens Lakes	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 Depos
St. Joseph.				
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,
Van Buren.				
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. Popendick, Prosp't Lake	10,
Round	Keeler	March 25, 1876	S. J. Evans, Keeler	10,
Washtenaw.				
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, Pinckey	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,
Wayne.				
Yerks	Plymouth	Feb. 19, 1876	F. N. Clark, Northville	100,
Wexford.				
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 a the Northville Hatchery of Frank Clark, and the fry tendered to such States a would at their own expense undertake their timely and reasonably assured suc cessful deposit. Of this lot the Commission of Michigan secured the numbe hereinbefore named.

Now the work of successfully distributing and depositing this immense lo over so many routes, and at so many and at such diverse points, all over th State, was one of scarcely less magnitude than was the great hatch itself, th depositing extended over a period of two months, and required throughout, grea 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 smalle consignments, were to the effect that the fish arrived in good order, and wer deposited without any loss. Nor was there any fai ure to ship in accordanc with notice to the depositors, excepting in one instance. Notice of the ship ment on a certain day of a large number of cans, requiring two express wagon to move them from the Hatchery to the Michigan Central depot had been fo warded 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 othe express wagon failed to put in an appearance. The gentlemanly and vetera Conductor of the Express very considerately held his train for a brief period fo the fish to arrive, but even these minutes of grace proved ineffectual, and th train moved off. From Ann Arbor I telegraphed Mr. Chase to carefully hol 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 greatl inconvenienced by the non-arrival of the fish according to notice previously re ceived. The stupidly malicious express wagon man never gave to Mr. Chase an reasonable excuse for his base conduct—but fearing the justly apprehende wrath to come, report says he changed his domicile, and prudently watches fro 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 tende thus publicly my heartfelt thanks to Mr. Chase, the overseer, and to his As sistant, Mr. Frank Ramsdell, for the constancy and fidelity with which the met their responsible trust. Here was a labor running through nearly six month and during all that period neither of the before named parties was off from du a single day, Sundays even not excepted. Nor was the Hatchery left a singl night during all this time, either Mr. Chase or Mr. Ramsdell sleeping each nig in the Hatchery, with their water alarm clocks all set, to instantly notify shoul anything get out of order. Some compensation they have for their painstakin and for the great tasks so creditably and honorably performed, in the knowledg that their work was well nigh a perfect success, and that an appreciative publi 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 con necting straits and rivers, some, for that reason, have supposed they would b found unadapted to our inland lakes—such lakes having too limited a rang to meet the requirements of their successful cultivation. But we are in th possession of facts that go to disprove this view.

Mr. Samuel Wilmot of New Castle, Canada, hatched in the years 1867-

arge numbers of White Fish ova, and the fry were placed and reared in very ircumscribed artificial ponds, till many of them attained the weight of a pound nd 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 act that the White Fish will live and thrive in limited areas of water. On the th of February, 1876, Messrs. Davis & Co., extensive fishermen and fish dealers f the city of Detroit, presented to me five live White Fish weighing about three ounds each. I moved them on the Michigan Central from Detroit in one arrel of water to Pokagon, and from there they were moved in a lumber wagon ver a rough road to the State Hatchery, about two miles, and placed in a hallow pond, its area not exceeding one-eighth of an acre. In May following hree 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 f less than one-fourth inch, under one foot pressure. And there they have een and are, sleek and healthy. Though on a few occasions crumbs of bread ave 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 ielded by the water.

Now in the light of these facts, we see no good reason why all our deep and lear spring-fed lakes, large or small, should not become the suitable abodes of his 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 nd 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 he 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 f joint, if not of equal concern to all the lake-bordering States, as well as of mmeasurable interest to the industry and food supply of the country at large. Therefore the joint and correlative efforts of the several lake-bordering States re eminently proper and desirable, since the product of such joint labor and xpenditure 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 beds or rfaces of these great waters, and divide and sub-divide their great areas into ctions, ranges, and all that, and so parcel out and stake off by valid muniments of title or privilege to the several claimants their respective territory, hen independent work might happily be inaugurated, and forsooth result in a ealthy rivalry; but all this, it will be seen, is utterly impracticable,—utopian n the last degree. No, the great boon is a common-derived one; the great arm must exist in common; the possession a joint one; and in its bountiful arvests 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 art of this Report, where Michigan's plump and savory *Salmo Salar* was aught 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 son other comity, did not indite and forward its gilt-edged note to Michigan to jo 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 plan and operation.

The Dominion of Canada, acting in the large faith of the perfect practic bility of artificial fish propagation, has built at Sandwich. nearly opposite t city of Detroit, the finest White Fish Hatchery on the continent, beautiful a substantial in construction, and massive enough for an annual hatch of fif millions, and she is now performing a very liberal share of the great work, a will be entitled to, and it is hoped will receive a liberal proportion of whatev 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 fishe some of which it is hoped the Commission will soon get to work on. 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 still of the left shoulder sort. He is,—we care not who may assert to the co trary,—the fresh water devil-fish! And when some well directed barb h brought him low, and he forced to grace the banquet hour, the contemplati guest can scarcely keep down the conviction that he sits at a feast of hyd genic satan. And while the feasting may forsooth give impulse to the feroc of our nature, the remembrance lurking about that association is often a ne kin to assimilation, detracts (we speak for number one) from the toothsomene of the gastronomic exercise. We are not sure in the progress of the great fis cultural campaign but that one policy will be found alike applicable to both t 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 inter by non-resident fish men as is our Grayling. Its great rarity, its admit gamyness, its matchless beauty of fin, color, form, its peerless grace as a swi mer, and its unique edible qualities, all combine to make him the center interest and of grave speculation. Fish culturists, as we chance to know, other States are anxiously waiting for Michigan to lead the way in experimen looking to his artificial cultivation. And we conceive it to be no less a du than a privilege for Michigan to lead in settling the question by one, or if ne be, by a series of experiments, whether the Grayling is a proper fish to be tak in hand to enlarge the domain of artificial fish propagation. And it is hop that the solution of this problem may not much longer be deferred. It is p haps due to the Fish Commission to state one or two reasons why the Grayli is an unknown factor in the achievements of the fish culturists of the Sta His spawning season is believed to be in April, some seasons possibly in Mar and these are the months when our hands have been more than full with wo upon the great food fishes,—the White Fish, the Lake Trout, and the Salm of two oceans. And so this beautiful fish, from sheer necessity, has been left enjoy,—if enjoyment it be,—his seclusion. Again, when moved by a stro desire to record some sort of a beginning, suddenly all preparation came to halt by a serious and unexpected shrinkage of the fish fund, as stated in anoth

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

BLACK BASS KING.

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

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

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

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

So instead of going to a remote east and a still remoter west for stock with ich to populate our waters, why not be content with the rich native supply, eady sporting with unrivalled beauty and superiority in many a neighboring er 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 suaded the Eel is the favorite with the people. The Superintendent has a oon-hole crammed full of letters importuning work to be commenced and orously pushed forward on the eel. Time and lack of funds, to which sibly may be added the well-known difficulty of firmly holding our tomer, must be pleaded in excuse for the delay. I am well aware the sleek d unoffending eel is with many the butt of unceasing jest, and a fruitful bject of invidious comparisons. Indeed, with the anti-eelers, in their merry- dew disquisitions on the subject, grave doubts are expressed as to his gin—they being uncertain as to the kingdom from which he comes, and lly unsettled as to the kingdom unto which he is appointed to go; and so them his right to existence at all, is not unfrequently lugged in question.

ut 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 th lake or the river is lacking in an important element of interest and attractiv ness by his absence.

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

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

A MISUNDERSTANDING AND WHAT CAME OF IT.

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

This sum so saved and husbanded, was confidently relied upon to be us during the spring and summer of 1876,—it being the ever memorable Cente nial year,—to introduce into the waters of the State his pet breeds,—the Gra ling, Black Bass, and Eels. And while the note of preparation was bei sounded for this work, he was politely informed by the worthy Auditor Gener that that little tub of $1,387.54 had no bottom! Shades of Izaak! here was stunner,—an unmistakable center shot. The Superintendent at first could s in it only a play of "bluff," at which two might engage, but when he remem bered the sovereign State of Michigan never indulged in that sort of pastim and desiring an era of peace on both land and water, he deferred to the jud ment of the great Auditor. So, standing amidst the wreck of shivered hop and shattered preparations, the plain, rugged Saxon of the matter must be co fessed: 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 pletho fish fund,—that the sum may still be employed according to the original inten to wit, in introducing into Michigan's valuable waters, the Grayling, the Bla Bass, and Silver Eels. To be more explicit, we ask that the appropriation for t current fish-cal year, be supplemented by the amount which has reverted to t State Treasury,—a reversion through no fault or lache of the Commissione or Superintendent,—a bare pittance in the State's vaults, and not needed ther whilst it is imperatively needed by the Commission if any increase be desir 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 t State upon which I had hoped the Commissioners in the appendix of t Report, over their own signatures, would have favored us with their views a recommendations. I refer specially to fish shutes or ladders, and to the fish la of the State; but as they have not done so, I am, *nolens volens* committed to brief exposition of views on these subjects.

FISH SHUTES.

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

The anadromous fish bears a command from his Creator to go to the sources streams and rivers to "increase and multiply" his kind. Nature, some- mes, in the form of great falls and cascades, but man much oftener, puts structions in the way of the fish to obey this high command. These structions, 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, at can enable the fish to climb to the top of the obstruction or dam, and so llow him by the use of his fin-propeling power to prosecute his journey on up ream *ad libitum*, where he has just as much and just as good a right to be nd to live as he had at the foot of the dam, and where too the riparian roprietors have just as much property in him as the riparian owners ever had ho chance to have their domicile below the dam. And when any man, orporation, neighborhood, or State, arbitrarily elects to cut off the chance or rivilege of the up-stream riparian proprietor to reduce this property to ossession, their act is in plain violation of gospel, law, and common sense, and this trinity of authorities have again and again decided. Richard Roe, who nces to live up stream is just as good a looking man, and is just as much tled to a good trout or salmon dinner as is John Doe, who lives on the flat w the dam. And that, in substance, is all there is of it. No man can d in my moonlight, nor can he shut off my sunshine, nor shie away the ifully sent rainfall. No more can any man rightfully destroy or appro- te my property in, or divest me of my privilege or right of capture to the that inhabit the common stream or river. Laws wisely looking to their pagation and regulating the seasons of their capture, are quite another ing, 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 pense or cost, there is a very wide margin. Some that have been built, and ch are now in use, have cost thousands of dollars, while others, which ably answer every purpose, have not cost as many hundreds. Heighth of n, body of water, location, kinds of fish seeking passage, and a dozen other ings, must of necessity enter into the cost estimates.

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

As respects the propriety, or justness, or necessity of their instant construc- n in the dams of the State, many things are to be considered. Most of the ms of the State were erected prior to the passage of the fish-cultural law, d erected, too, without the remotest thought that Shad, or Salmon, or other reign anadromous fish would ever occupy any of the streams or rivers of the ate, and very probably in nearly every case were built without let or hin- nce, 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 "Hor 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 shar hang-on prosecution case without pay, would be the cap-sheaf of all the anom alies. But some one suggests,—there is the fish fund for our forlorn commi sioner 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 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 woul rub his eyes, and archly looking over his spectables, settle down to the conclu sion, that as it is one of those *moist* cases, it is hardly within the scope of hi 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 th obstructions and make easy swimming for such of the finny tribes as are heade up stream, finds instead, himself impassably obstructed,—and to him, the di ference between a *fac simile* and a sick family, is made for once startling apparent.

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

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

FISH AND GAME LAWS.

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

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

SOME THINGS PROPER FOR SOME PEOPLE TO KNOW.

Now and then we meet with persons, probably good intentioned, who will ersist in regarding this "fish business," as they style it—a very simple thing—s 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 re honest in their convictions their judgments need to be disabused. Let me indly assure any such persons that there is not a bit of play about it. It is all ork, and work too that can be neither skipped nor dodged. And that the live sh-man (those that are dead or semi-dead not wanted—of no use), earns every ent 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 t his post from sunrise till sunset, and should things incline to go to the bad he lamps are struck and the night becomes to him as the day. At his work hop are the alarm water clocks; at the head of his bed are the night alarm heels, not seldom ringing out more horribly than a coach and four over the obble-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 awaked, repairs to the hatchery and with the water just above the freezi 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 terruption. Nor is the attendant upon the train or the wagon much more tunate. Two days and two nights in succession, with little rest from labor with no sleep, is not a remarkably rare experience. Retiring early at ni that the rents and breakages of his nether wear, caused from too much collidi with cans and chests and trunks and such like, may be "fixed up" against need of the morning, has its compensations in that it affords opportunity meditation and repose. Jumping from the comfortable wagon seat to the ro where the bottom has caved in, in the hope that the two hundred pound light ed load may save the team and fish from being stalled, to find yourself stal and the team and fish moving on,—this hardly comes within Dr. Webster's d nition of pastime. Now such and kindred experiences do, and unavoida will, cross the pathway of the faithful and wide-awake fish propagator, and takes, as we think, his occupation from the role of those exercises denomina 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 cultur a few days of summer warmth and sunshine in which to black his boots, say 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 kn anything of the labor, or the skill, or the watchfulness it involves. I maint 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 muc real art as is watch-making or ship-building; and the man who thinks he m acquire it in perfection, by a study or an apprenticeship of a few hours or da will find his fish eggs dying by hundreds and by thousands from no cause unskilled hands, and many, very many of his valuable fry he will discover 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 experienced in the procuring of the White Fish ova this year than last. A the eggs, owing probably to the earlier ripeness of the spawn, and the contin ous warm weather all through November, causing the water to be in a corr pondly low temperature, have given us far more trouble to keep them in go condition than those of last year. And yet, confronted as we have been by th difficulties, there is still a large supply left,—the trays being filled to nea their full capacity.

A statement of the stock of the two hatcheries at this date (Dec. 25th, 18 may be important; not alone as showing the present status of the fish wo 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 oth spring-spawning varieties.

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

tant, Mr. Albert Briggs, with possibly the occasional help of one or more kers.

Upon the trays of the Detroit hatchery the overseer, Mr. O. M. Chase, re- s between eight and nine millions of White Fish eggs. To carry these for- d to March and April, the probable period of their incubation, will require assiduous labors of the overseer and of his assistant, Mr. Wm. Hines, and a bable force of three or four pickers daily. So it will be seen, with ordinary od luck, a large draft on the fish fund will necessarily be required to carry present stock through; whilst bad water, bad weather, or ill-luck from any foreseen cause or causes will unavoidably enhance the volume of our expenses. d then to the large expenses incurred for the hatching of such immense mbers of fish, there remains to be added the expenses of their deposit; and ould the Commission deem it advisable to order them distributed largely into interior lakes, the probability of any considerable overplus from the current r's appropriation would be at best but a remote one. In all sincerity and nestness I see but a faint glimmering of a chance for the Grayling, Black ss, 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 behoof and uses of the Commission.

GRATUITOUS AID.

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

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

The Commission of Wisconsin, too, has had donated to its use, by the city Milwaukee, a large room in its beautiful water works building, ample room r the hatching of many millions of fish, and water supplied to any amount quired, 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-cultu work by all interests, and by all classes of people.

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

And then the grand rail roads of the State,—all have, on application, carr our cans of fish and attendants free of charge, thereby enabling us to plant in a large majority of the counties of the State. The road to which our espec thanks and obligations are due, is the Michigan Central and branches. T two hatching houses,—one in Detroit and the other near Pokagon,—both this great trunk line, have, as a necessary result, largely enhanced our obligati to this well appointed and valuable road. We make our humble bow and m cordial acknowledgments also to the great Lake Shore and Michigan Souther also the Grand Rapids and Indiana, Flint and Pere Marquette, Canada Southe Detroit and Milwaukee, Detroit, Lansing and Lake Michigan, The Gr Trunk, Detroit, Hillsdale and Indiana, and the Detroit and Bay City; and the roads operating mainly outside of the State, the Chicago and the Nor western, commands special notice, having transported two large shipments California Salmon and one of White Fish with their attendants all round lake to its junction with the matchless waters of Lake Superior, and for great courtesy of the various officers of the several lines, and for the prompt cheerful assistance of the train dispatchers, conductors, express and bagg men, language is too feeble to express the full measure of our gratitude.

One or two additional cases of assistance are especially noteworthy. The Association of the City of Detroit, through the kind offices of Captain Dr mond, 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 enab to deposit in most perfect order, for several miles up and down the Det River, nearly a million of fish.

Hon. J. A. Leggatt, Mayor of the City of Grand Haven, was instrumenta securing for us two steam tugs free of all cost to the Commission, by means which nearly six hundred thousand fish were planted under the most favora conditions in Lake Michigan, all the way from Grand Haven to Saugat 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 supply at their own cost and charge the tugs and boats necessary for the work. Th

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

Here we close our Report, and with a just sense as we trust, of the immeasur- e obligations we are under for all past favors and kindnesses, and with zeal kened and faith reassured by the lively hope and expectation of the favors come, we commit and commend the future of this great labor and enterprise 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 rovisions are in the interest of the Lake fisheries as well as the coast. Besides, will be noticed that it was under this Act that a U. S. Fish Commissioner was ppointed and the U. S. Fish Commission established—a Bureau that has ren-red to the Michigan Fish Commission, as well as to other State Commissions, rvices of great value.

OINT 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 kes of the United States are rapidly diminishing in number, to the public injury, d 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 re-red to appoint, by and with the advice and consent of the Senate, from among the ll officers or employés of the Government, one person of proved scientific and prac-al acquaintance with the fishes of the coast, to be Commissioner of Fish and Fish-es, to serve without additional salary.

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

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

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

Approved February 9, 1871.

ACT CREATING THE BOARD OF FISH COMMI SIONERS.

[No. 124.]

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

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

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

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

SEC. 4. The sum of seven thousand five hundred dollars is hereby appropriated the year eighteen hundred and seventy-three, and a like sum for the year eighte hundred and seventy-four, for the necessary expenses in carrying this act into effe which the Treasurer shall pay to them on the warrant of the Auditor General, fr 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 State of Michigan shall be made, and a disposition for a joint action with the Stat Michigan be expressed, it shall devolve upon the Governor to communicate 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 hundred and twenty-four (124) of the laws of eighteen hundred and seventy-thr 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 t years eighteen hundred and seventy-three and eighteen hundred and seventy-fo mentioned in section four of act number one hundred and twenty-four, laws of ei teen hundred and seventy-three, shall be construed as commencing on the first day July, eighteen hundred and seventy-three, and the first day of July, eighteen hund and seventy-four, and continuing for one year from said first days of July, respective

Approved February 20, 1875.

[No. 71.]

N 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 es- ablish 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 mber one hundred and twenty-four (124) of the session laws of eighteen hundred d seventy-three, entitled "An act to establish a board of commissioners to increase e product of the fisheries and to make an appropriation therefor," approved April ineteen, 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 overnor, by and with the advice and consent of the senate, to appoint three persons, sidents of this State, who shall constitute a board of fish commissioners. The per- ns so appointed shall hold their office, one for two years, one for four years, and e for six years; and their successors to be appointed at the expiration of the several rms of office, shall each hold their terms of office for six years. It shall be the duty the persons so appointed to select a suitable location for a State fish-breeding es- blishment, for the artificial propagation and cultivation of white fish and such other nds of the better class of food fishes as they may direct, upon the best terms possi- le. Said board may receive from the State Treasurer all the expenses actually dis- rsed by them while in discharge of their respective duties.

SEC. 2. This act shall take immediate effect.

[No. 117.]

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

[*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 ollars is hereby appropriated for the year eighteen hundred and seventy-five, com- encing July first, eighteen hundred and seventy-five and ending June thirty, eighteen undred and seventy-six, and a like sum for the year eighteen hundred and seventy- x, commencing July first, eighteen hundred and seventy-six and ending June thirty, ghteen hundred and seventy-seven, for the necessary expense incurred by the ard of fish commissioners, which the State Treasurer shall pay to said board on warrant of the Auditor General, from time to time, as their vouchers for such penses shall be exhibited and approved.

SEC. 2. This act shall take immediate effect.

GENERAL FISH LAWS.

GENERAL LAW ON THE PROTECTION OF FISH AND PRESERVATION OF FISHERIES.

"AN ACT to protect fish and preserve the fisheries of this State."

[*Approved March 21, 1865. Laws of 1865, p. 717.*]

(2072.) SECTION 1. *The People of the State of Michigan enact*, That it shall be unl
ful for all persons to put into any of the waters of this State, where fish are tal
any offal, blood, putrid brine, putrid fish, or filth of any description; and any per
so offending shall be fined in any sum not exceeding three hundred dollars, or
prisonment not exceeding thirty days, or both at the discretion of the court.

(2073.) SEC. 2. All fish, offal, or filth of any description whatsoever, accruing fr
the catching and curing of fish, shall be burned or buried ten rods distant from
beach or shore of the river or lake.

(2074.) SEC. 3. The size of the meshes of all the lead of pound or trap nets, used
the waters of this State, shall not be less than five inches in extension, knot to kn
and the size of the meshes of all the pot of said nets, shall not be less than two an
half inches in extension, knot to knot, in pound or trap nets used for catching Wh
Fish; and the size of the meshes of all the lead of pound or trap nets used in catchi
other kinds of fish, shall not be less than four inches in extension, knot to knot; a
the size of the meshes of all the pot of said pound or trap nets shall not be less th
two inches in extension, knot to knot, under penalty and on pain of forfeiture of
nets, or fine not exceeding three hundred dollars, or both, at the discretion of
court: *Provided*, That the penalties of this section shall not apply or work injury
persons who are the present owners of pound or trap nets, but apply to all pound
trap nets hereafter manufactured.

(2075.) SEC. 4. The spawn of all the White Fish caught shall be forthwith
posited, by all persons catching said fish, in the waters in or near the spawning pl
from which said fish were taken.

(2076.) SEC. 5. No Speckled Trout shall be killed at any time, by means of nets
seines, in any inland lake, river, or stream.

(2077.) SEC. 6. Any act in contravention of sections two, four, and five of this
shall subject all parties concerned in the breach of the said sections, whether the ac
transgressors or accessories, to a penalty of not more than one hundred dollars
less than twenty-five dollars with all expense of prosecution, or to imprisonment
the county jail for a period not exceeding thirty days, or both, at the discretion
the court.

(2078.) SEC. 7. The board of supervisors of each, or a majority of them, shall, f
time to time, make rules and regulations for regulating the fishing with pound
trap nets, gill nets and line, and all manner of fishing tackle carried on upon all
and river shores, or upon any water adjacent to or passing through any county of
State.

(2079.) SEC. 8. The board of supervisors of each county, or a majority of them s
grant, on the application of any transient or non-resident person or persons, a writ
permission or license for one year, for each and every pound or trap net used, on p
ment of fifty dollars legal money. All persons concerned in the breach of this
shall forfeit the sum of one hundred dollars, with all costs of suit. It shall be the d
of the board of supervisors, or a majority of them, to enforce the provisions of
act; and all moneys accruing from fishing licenses and forfeitures shall be paid o
to the county treasurer.

(2080.) SEC. 9. All forfeitures occurring under sections one, two, three, four,
six, eight, and nine of this act may be recovered by action of debt, with costs of su
before any court of competent jurisdiction, one moiety thereof to the person who s
for the same, and the other moiety to be paid into the hands of the county treasur
which [shall] be exclusively used as a pauper fund.

(2081.) SEC. 10. It shall be unlawful for any person or persons to put into any
waters fronting or bordering land where fish are taken by the legal owners or o
of such lands any vessel or ship ballast, stone, sand, coal cinder, ashes, log slab
wood, bark, saw-dust, or obstruction, or filth of any other description,
or drive any pound net piles or stakes, or any other piles or stakes, or post
any platforms or piers, or any species of seines or continuous trap nets,
extent of the breadth of such legal owner or occupant's lands so far as the chann
of the rivers, and to one mile from the beach or shore, at low-water mark of t
straits, inlets, and bays on said waters fronting such owner or occupant's land
shall subject any boat owner, or captain of any vessel, to a fine of not exceedin
dollars, who shall willfully run into or molest any pound net, trap, or other st
nets, or fixtures set in the lakes for fishing purposes.[1]

(2082.) SEC. 11. Any person or persons offending against the provisions of secti
of this act shall be deemed guilty of a misdemeanor, and, on conviction there
be liable to a fine not exceeding one hundred dollars, or imprisonment in t
jail not more than ninety days, or both such fine and imprisonment, in the d
of the court; and such person or persons shall also be liable civilly for all da
done such fishing grounds to the legal owners or occupants thereof, to be rec
in an action of trespass, in any court of the county where such fishing groun
be situate, having jurisdiction thereof.[1]

ACT to prevent fishing with seines and every kind of continuous nets, in
waters of the counties of Branch, Livingston, Cass, St. Joseph, Kent, Ionia, Ge
e, and Calhoun, or in any of the lakes, rivers, or streams of Macomb county.

[*Approved March 9, 1867. Laws of 1867, p. 58.*]

(2083.) SECTION 1. *The People of the State of Michigan enact*, That it shall no
ul hereafter to fish with seines or any species of continuous nets in any of the
lakes or small streams of the counties of Branch, Livingston, Cass, St. Jos
Ionia, Genesee, and Calhoun, nor in any of the lakes, rivers, or streams of
nty.

SEC. 2. Any person offending against any of the provisions of this act, sh
tion thereof, be liable to a fine of not more than one hundred dollars, or
nt in the county jail not more than sixty days, to be determined by a co
petent jurisdiction.

ACT to amend an act entitled "An act to amend an act to amend an act to
shing with seines and every kind of nets in certain counties in the Stat
igan," approved March sixteenth, eighteen hundred and sixty-one.[2]

[*Approved March 4, 1865. Laws of 1865, p. 163.*]

SECTION 1. *The People of the State of Michigan enact*, That section one of an ac
d "An act to amend an act entitled 'An act to prevent fishing with seines
kind of nets, in certain counties in the State of Michigan,'" and approved M
nth, eighteen hundred and sixty-one, be and the same is hereby amended s
d as follows:

(2084.) SECTION 1. That it shall not be lawful hereafter to fish with seines, or
of continuous nets, in any of the inland lakes or small streams of the coun
Jackson, Hillsdale, Washtenaw, Van Buren, Calhoun, Kalamazoo, Barry, Ea
the townships of Rollin, Medina, Seneca, Dover, Hudson, Cambridge, Fran
Woodstock, in Lenawee county.

(2085.) SEC. 2. Any person offending against any of the provisions of this act s
conviction thereof, be liable to a fine of not over one hundred dollars, or impri
nt in the county jail not over sixty days, to be determined by a court of comp
isdiction.

SEC. 3. This act shall take immediate effect.

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[1] As added by Act 94 of the Laws of 1869, p. 159, approved and took effect April 2, 1869.
[2] This amendatory act inserted in the place of the original, as it supersedes it.

AN ACT to prevent fishing with seines and pound and trap nets in the small inla 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 lawful hereafter to fish with seines, trap nets, pound nets, or any species of c tinuous nets, in any of the inland lakes or small streams of all the territory, accordi 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, conviction thereof, be liable to a fine of not over one hundred dollars, or impris ment in the county jail not over sixty days, to be determined by a court of compete jurisdiction.

AN ACT to amend an act entitled "An act to provide for the erection and ma tenance of shutes for the passage of fish through the dams across the streams this State."[1]

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

(2089.) SECTION 1. *The People of the State of Michigan enact*, That an act entit "An act to provide for the erection and maintenance of shutes for the passage of f 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 here 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 there or by those persons using the waters thereof, through the medium of any ca or race, sufficient and permanent shutes to admit the passage of fish in su 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, throu the medium of any canal or race, shall neglect or refuse, for the period of sixty da to construct and maintain such shutes, as aforesaid, whenever requested, in writi so to do by any ten freeholders of the same county, such person or persons shall deemed guilty of a misdemeanor, and for each and every sixty days that such per or persons shall so neglect or refuse, he or they shall be punished by a fine not exce ing one hundred dollars, or by imprisonment in the county jail not exceeding nin days, or by both such fine and imprisonment, in the discretion of the court."[2]

(2091.) SEC. 3. Whoever obstructs the main channel or course of any river or cre by placing therein nets or fishing apparatus of any kind whatever, for the purpos taking or stopping fish of any kind, shall thereby incur, for each offense, a fine exceeding twenty-five dollars: and in no case shall the said channel or course, so open, 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 a 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 lawful for any person or persons to place a weir dam, fish weir, or weir net, across race, drain, or stream, or inland river of this State, in such a manner as to obstruct free passage of fish up and down the same; and any person violating the provisi of this act shall be liable to a penalty of not less than five nor more than fifty doll for each such violation, and also for the payment of two dollars additional pena for every day he shall continue to keep up such fish weir or weir net, in violation of t act, after having been duly notified by any elector of the township wherein such weir or weir net may be, feeling himself aggrieved thereby, to remove the same; s penalty or penalties to be recovered before any court of competent jurisdiction, in township or county where such offense shall have been committed.

SEC. 2. This act shall take immediate effect.

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[1] This amendatory act is inserted in the place of the original, as it supersedes it.
[2] As amended by Act 65 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 ghty-seven of the compiled laws of eighteen hundred and seventy-one be and the me 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 law- l hereafter at any time to fish with seines, trap-nets, pound-nets, dip-nets, or any pecies of continuous nets, or during the months of March, April, May, and June, by pearing 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 f fish ponds from fishing therein, as they may think proper.

Approved March 27, 1873.

N 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 titled "An act to protect fish and preserve the fisheries of this State," be and the me is hereby amended so as to read as follows: No speckled trout or grayling shall killed at any time by means of nets, traps, or seines, in any inland lake, river, or eam, nor by any other means, between the first day of October and the first day of pril 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 y pound, trap, stake, or set-net of any kind, or any other device for the purpose of king fish in Lake Erie (within the jurisdiction of this State), further than one mile an easterly direction measured from a line running from Point Mouille, in township Berlin, in Monroe county, in this State, to Stony Point, in said county, nor further an one mile out from a line running from Stony Point to Raisin Point, in said unty, nor further than one mile out from a line running from Raisin Point to Bay oint, or North Cape, of Maumee Bay, at the State line between the States of Michi- an and Ohio. Nets, or other devices for taking fish, extending from the shores of lands in Lake Erie within this State, shall not be extended further than one mile om shore of said islands.

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

SEC. 3. No person shall use any net whatever, or device of any kind for the purpo of catching fish, in the waters of Lakes Erie or St. Clair, within this State, beyo such limits as may be designated in this act. No person shall use any pound, tra stake, like, set-net, or device of any kind for taking fish, in the St. Clair River with 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 used in any waters in this State for the purpose of taking fish. No sweep net exce ing sixty fathoms in length shall be used in the waters of Detroit River or St. Cl River within the boundaries of this State.

SEC. 5. No person shall attach, either directly or indirectly, to any bridge acr either of said Detroit River or St. Clair River, or to any pier, part, or appurtenan of said bridge, any net or device by which the passage of fish shall be prevented impeded. No bridge company, or other company, or person having the control such bridge, shall license or permit, either for hire or gratuitously, any such net or vice 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, betwe the twentieth day of November and the first day of March succeeding in each year, any of said waters of Lake Erie or Detroit and St. Clair rivers; and immediate 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 caus to be carried to the shore, or inside the channel bank, by the person or persons w have used them; and they shall also cause the ground beneath the waters where suc fishing has been carried on, to be cleared, so far as may be reasonable to be done, fro 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 White Fish within any of the waters mentioned in the different sections of this a by shingling, or any other device calculated to frighten or divert such fish from the natural course, shall forfeit the sum of one hundred dollars, and imprisonment n exceeding sixty days, at the discretion of the court. Pound nets or seines shall n be construed to come within the provisions of this section, when used in complian with this act.

SEC. 8. Any person charged with offending against the provisions of this act, m be tried before a justice of the peace of the county in which the offense is charged have been committed, in the same manner as other offenders are tried where the ju tice has jurisdiction, and, upon conviction, such person shall be subject to a fine n exceeding fifty dollars, for each and every offense, and to imprisonment in the coun 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 t sheriffs of the different counties in their respective jurisdictions, to enforce the p visions of this act, and when, upon information or otherwise, said Commissioners sheriffs shall discover any violations thereof, to institute the necessary proceedin to punish such violation.

SEC. 10. No part of this act shall be construed as a prohibition upon fishing wi hooks, or with spears, or any instrument or device similar in principle of its oper tion to such hooks or spears, at any time, and in any waters, nor upon fishing wi sweep nets of any length not exceeding one hundred and fifty fathoms, in the wate where pound, stake, trap, or set-nets, or set devices of any kind for taking fish, m 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 St. Clair River during the months of December, January, and February, in each ye nor to use seines in the above named locality during the spawning season of bla bass.

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

[No. 195.]

AN ACT to amend section two of chapter sixty-three, being section two thousa and ninety of the compiled laws of eighteen hundred and seventy-one, relative 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 chapt sixty-three, being compiler's section two thousand and ninety of the compiled laws eighteen hundred and seventy-one, be and the same are amended so as to read as fo lows.

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 al or race, sufficient and permanent shutes or fish ladders, to admit the passage of in such stream during the months of April, May, and June, in each year; and if owner or occupant of any such dam, or person or persons, or the officers of any poration using the waters thereof through the medium of any canal or race, shall lect or refuse for the period of sixty days, to construct and maintain such shutes or h ladders as aforesaid, whenever requested in writing so to do by the Fish Commis- oner of this State, such person or persons, or officers of any corporation, shall be eemed guilty of a misdemeanor, and for each and every sixty days that such person r persons, or officers of such corporation, shall so neglect or refuse, he or they shall e punished by a fine not exceeding five hundred dollars, or by imprisonment in the ounty jail not exceeding ninety days, or by both such fine and imprisonment, in the iscretion of the court.

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

SEC. 4. In respect to the construction and maintenance of fish shutes or fish ladders dams owned by corporations, the duties and liabilities imposed by this act shall evolve 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 mend section five of an act entitled 'An act to protect fish and preserve the fisheries f this State,' approved March twenty-first, eighteen hundred and sixty-five, being ction two thousand and seventy-six of the compiled laws of eighteen hundred and enty-one," approved April fifteen, eighteen hundred and seventy-three, be and the e is hereby amended so as to read as follows:

076.) SEC. 5. No person shall catch or take from any lake, river, or stream of this e, by any means whatsoever, any speckled trout from the first [day] of Septem- in any year until the first day of May following thereafter; nor shall any person ch or take any grayling, by any means whatsoever, from any such lake, river, or eam, from the first day of November, in any year, until the first day of June follow- g thereafter; nor shall any person purchase, buy, or sell any such fish during said rohibited time; nor shall any person take or catch any speckled trout or grayling, in y such lake, river, or stream, by means of a spear, net, or seine, or in any other man- r whatever, except by hook and line, at any time during the year. In all prosecu- ions under this act it shall be *prima facie* sufficient on the part of the people to show hat the defendant was found in possession of any such fish at any time within the period hen the catching or taking of such fish is prohibited as aforesaid. It is hereby made e duty af 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 viola- tion 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 propaga- tion; 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 w fowl, are so intimately connected with the subject of fish culture and the pr ervation of our waters and fisheries, that it is deemed proper to give the Game La a place with the compiled Fish Laws. Parties having occasion to refer to eith 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 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 persons shall pursue, or hunt, or kill any wild elk, wild buck, doe, or fawn, save on during the months of October, November, and December in each year, or kill or d troy, by any means whatever, or attempt to take or destroy any wild turkey at a time during the year, except in the months of September, October, November, a December, in each year; or kill or destroy, by any means whatever, any woodc until after the fifth day of July, nor any prairie chicken, or pinnated grouse, ruff grouse, commonly called partridge, or pheasant, or any wood duck, teal duck, or m lard duck, save only from the fifth day of August in each year to the first day of F ruary next following.[1]

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

(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 qua *Provided, however*, That it shall be lawful to trap quail and take them alive, for t purpose of keeping them alive through the winter, and for no other purpose wha ever; and it shall also be lawful to take with a trap, snare, or net, any wood duck, te duck, or mallard duck for breeding purposes.[1]

(2096.) SEC. 4. No person or persons shall at any time kill or attempt to kill a wild duck, or other wild fowl, with or by means of a swivel or punt gun, or rob destroy the nests of any wild ducks or wild geese, or in any manner kill or mole 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 her possession for the purpose of selling or exposing for sale, any of the birds or a mals protected by this act after the expiration of thirty days next succeeding t times limited and prescribed for the killing of any such birds or animals: *Provid however*, That it shall be lawful to expose for sale, and to sell, any live quail for t purpose of preserving the same alive through the winter.[1]

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

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

[1] As amended by Act 135 of the Laws of 1871, p. 212, approved and took effect April 15, 1871.

rd, 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, d for each nest so robbed.

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

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

(2102.) SEC. 10. A prosecution may be brought by any person in the name of the ple of the state of Michigan, against any person or persons violating any of the visions of this act, before any justice of the peace of any county in which such olation is alleged to have taken place, or before any court of competent jurisdic- on; and it is made the duty of all prosecuting attorneys in this State to see that e provisions of this act are enforced in their respective counties, and they shall rosecute all offenders, on receiving information of the violation of any of the pro- isions of this act; and it is made the duty of sheriffs, under-sheriffs, deputy-sheriffs, nstables and police-officers, to inform against and prosecute all persons whom there robable 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 any of the birds or animals protected by this act for the sole purpose of preserv- them as specimens for scientific purposes, nor to any person who shall collect the or nests of any bird for such scientific purposes: *Provided*, That in a prosecution e violation of any of the provisions of this act it shall not be necessary for the ecution to prove that the killing of the bird or animal, or the taking of the nest ggs, as the case may be, was not done for scientific purposes.

(2104.) SEC. 12. All prosecutions under the provisions of this act shall be com- nced 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 s act are hereby repealed.

N 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 rsons shall kill, destroy, or take, by any means whatsoever, within the limits of the rshes bordering on the waters of Lake Erie, Detroit River, Lake St. Clair, River air, 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 and the first day of January, under the penalty of three dollars for each musk- 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 muskrat house in said marshes, under a penalty of five dollars for each muskrat destroyed in violation of this act.

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

[1] Vide note to Section 1 of this Act.

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

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

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

(2093.) SECTION 1. *The People of the State of Michigan enact*, That no person or p sons shall pursue, or hunt, or kill any wild elk, wild buck, doe or fawn, save only du ing the months of October, November, and December in each year; or kill or destro by any means whatever, or attempt to take or destroy, any wild turkey at any tim during the year, except in the months of September, October, November, and Decem ber in each year; or kill or destroy, by any means whatever, any woodcock until aft the fifth day of July; or any prairie chicken, or pinnated grouse, ruffled grouse, co monly called partridge or pheasant, or any wood duck, teal duck, or mallard du save only from the first day of September in each year to the first day of Janua 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 co solidate the several acts relating to the protection of game, and for the better pr ervation of elk, deer, birds, and wild fowl," approved April third, eighteen hund and sixty-nine, being sections two thousand and ninety-three and two thousand o hundred of the compiled laws of eighteen hundred and seventy-one, as amended 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 an act entitled "An act to revise and consolidate the several acts relating to the pr tection of game, and for the better preservation of elk, deer, birds, and wild fowl," a proved April third, eighteen hundred and sixty-nine, being sections two thousand an ninety-three and two thousand one hundred of the compiled laws of eighteen hundr and seventy-one, as amended by act number forty-six of the session laws of eighte 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 el wild buck, doe, or fawn, save only in the Upper Peninsula from the first day of Augu and in the Lower Peninsula from the fifteenth day of September, to the fifteenth d of December in each year, or kill or destroy by any means whatever, or attempt take or destroy any wild turkey, at any time during the year, except in the mont of October, November, and December in each year, or kill or destroy by any mea whatever, any woodcock until after the fifth day of July, or any prairie chicken, pinnated grouse, ruffled grouse, commonly called partridge or pheasant, or any woo duck, teal duck, or mallard duck, or any water fowl, save only from the first day September in each year to the first day of January next following.

(2100.) SEC. 8. That any railroad, express company, or other common carriers, any of their agents or servants, or other persons having any of the above named bir or animals in their possession for transportation, or shall transport the same, aft the expiration of ten days next succeeding the time limited and prescribed for t killing of such birds or animals, shall be punished by fine not less than ten dollars, n more than one hundred dollars; *Provided*, That such penalty shall not apply to t 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 oth States where it is lawful to kill such birds or animals at the time of such transpo tation.

FINANCIAL STATEMENT

OF 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	$5,699 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	$5,868 15

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	
	$5,868 15	$5,868 15

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 88	
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 Comsioner	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	
		$14,000 00

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
36 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
9 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 mattrass	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
54 feet rubber tubing	10 00
4 thermometers	2 00
5 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 [illegible]
Meat-block and meat chopping knife	1 50
Iron pond rake	5 00
1 seine, large	1 00
1 40-feet 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 blooks	10 00
State Commission, fish library	38 00
Postal balance	3 00
	$3,921 [illegible]

INFORMATION WANTED.

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

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

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.

H. H. FISH ..... Pine Bluffs.
R. 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.

W. A. PRATT ..... Elgin.

Iowa.

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

Kentucky.

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