STATE OF MICHIGAN.

THIRD REPORT

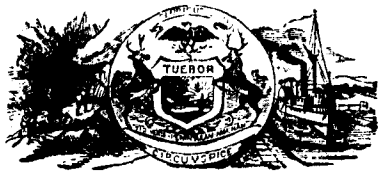
OF THE

SUPERINTENDENT

Compliments of

GEO. H. JEROME,

Superintendent of State Fisheries.



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THIRD BIENNIAL REPORT

OF THE SUPERINTENDENT OF THE

MICHIGAN STATE FISHERIES.

To His Excellency, C. M. CROSWELL,
Governor of the State of Michigan:

Well, drifting with the tide of human events, we are come to that point of our piscicultural work and history when another biennial report of Michigan's fish and of her fisheries is in order. If we take but a cursory look into the two former Reports, the fact is quite clearly evidenced that we have traveled a very respectable distance from the place whence we started. And the Report to be submitted will, we think, show plainly enough, that we are still marching on. Therefore a moment by way of retrospection may not be without its use and value.

Contemplate the situation in the spring of 1873. At that time an almost universal apathy prevailed. To arrest public attention at all to the subject of aquaculture was a task of no easy performance. An ignorance, widespread and apparently deep-rooted regarding Michigan's abundant waters as sources and means of food supply, covered the State as with a pall. And although it was a patent fact, confessed on all hands with confusion and sorrow, that the lakes and the streams, and the rivers were yielding but a minimum of the stores of former days—good fishing "played out" being almost the universal lament of the home-returning angler; yet the cause and the remedy for this condition of things were problems to the solution of which the mind and the heart of even intelligent thinking people had scarcely yet been turned. All was crude—chaotic. No crystallizing processes of the public judgment and action had been agreed upon, for their character and their need even were not yet clearly apprehended.

The law of that year, creating a Board of Fish Commissioners, was born in unfaith. Legislator said to legislator, and neighbor to neighbor, what possible good is to come of it? What! can you *rob* (yes, that was the word in frequent use) the fish of their spawn—fecundate them, and take them away from their native waters to your homes, and shops, and factories, and there hatch and rear them artificially? Can you restock our depleted, almost depopulated lakes and streams, and then fence them in against excessive, ill-timed and improper methods of fishing, and not trench upon the sovereign rights of the dear people? Such and kindred interrogatories fell often enough and harshly upon the public ear of the State. But these very questions, betraying a pitiable want of intelligence as they did, possessed the rare merit of awakening debate,—they quickened and ripened public sentiment—inspired faith and

begat action, and thus the little leaven gloriously triumphed. And now the State of Michigan, in all that relates to the fishery question, thank Heaven! has found her way out of the sloughs of ignorance and doubt, and she to-day treads the dry and the solid earth. Nor is she single and alone. Her advance position and rank are become with many of her sister States a common possession and boast. Indeed, this great industrial enterprise, the creation of fish food supply, by artificial methods and appliances, progressing has progressed, till now nearly all the civilized world salute it. Very many of the States of the new world, and the empires of the old, have woven this industry into their systems of public administration, and are wisely throwing about it the much needed shield of protective laws, typifying plainly enough a material development and progress unattained by any former civilization. Twenty-seven States—very nearly two-thirds of all the States of the Union, have, through their Legislatures, created Boards of Fish Commissioners—voted them pretty generally liberal supplies, and enjoined them with such means and opportunities as to them are vouchsafed, to "push things." They hardly needed any such injunction, for we know of no public service that has so uniformly and so fortunately been favored with such zealous and faithful workers. Twenty-seven States are already enrolled as fish States, and if we are not misinformed, and blinded to those presages that betoken future events, four more States this very winter will be voted into the fish-farming Republic. But gratifying as is the outlook, and pleasing as are the reflections intuitively suggested, we are not at liberty to pursue them. Facts and figures—dry statements, with their deductions, logical or otherwise, as transpiring events shall prove, have been, and I suppose must continue to be, the chief staple of our fishery Reports. To these, then, for the general make up of our Third Biennial Report, we turn, and ask in their behalf a careful and thoughtful perusal.

THE WHITEFISH.

This fish is to Michigan the fish of fishes. Its consumption by our people is larger than that of any other species. And commercially, it is to Michigan of more value than any other variety found in our lakes. It is indeed in every sense and degree, save in the single one of its not being a game, or a hook-biting fish, all that the practical and philanthropic fish culturist can desire. The size to which it grows,—the range of its habitat,—its fecund habit,—its plump form, and flanks of silver sheen, with its sweet and savory flesh, all combine to render it the most valuable fresh water fish on the continent. In the fishery act, creating the Board of Fish Commissioners, a pre-eminence was designedly accorded it. The act specially directed the Board to make provision "for the propagation and cultivation of Whitefish and such other kinds of the better class of food fishes as they may direct." It is seen no other fish is named in the act. With the other food fishes, their cultivation was left optional with the Board, not so with the Whitefish. The propagation of the Whitefish is enjoined, specially, unequivocally, and is not left to the discretion or caprice of the Board, or to the appointees of the Board. So regarding the Whitefish, and so construing the fishery act, a very considerable amount of our labor and of our funds, each year, have been expended in the cultivation of the Whitefish, and as we think, with certain and satisfactory results, as will quite plainly appear by letters of fish depositors and others, published in another part of the Report. Hence, by reason of its great importance, we cannot too critically scrutinize those means and agencies that bear proximately or remotely upon the Whitefish question, yielding, as they will and do, a great diversity of results. And

that we might the better apprehend the whys and the wherefores of successful Whitefish culture, we have instituted some experiments, carrying them forward to their logical conclusions, which experiments, as will be seen, quite vitally affect certain pre-existing notions and beliefs relating to Whitefish propagation. For with Whitefish culture, as with everything else, if experiment gives you the dividends and the divisors, fish-cultural quotients may be obtained with very nearly mathematical certainty. Preliminary then to a statement of the Whitefish fry we have produced and their distribution, I will recite briefly the substance of our crucible or experimental work.

In the first place, water temperature is of primary significance in fish culture. No accurate data can be furnished as touching the success or non-success of fish-cultural labor, except the temperature of the water be noted, and work made to harmonize with the conditions of the water as ascertained. A low temperature retards fish embryonic development,—limits the food supply of the water, and in consequence the growth of the fish is correspondingly restricted and gradual. Whilst on the other hand, a high temperature quickens the fœtus growth, largely increases the food stores of the water, thereby causing a rapid growth of the young fry, marvellously in contrast with the fry placed in water of a low temperature. This is not simple hypothesis, nor is it guess-work. Within the year experiments have been made with special reference to these very points, and they have most conclusively demonstrated their absolute correctness. Whitefish ova, taken from the same mother, fertilized with the same parent milt, will, if placed in water at 60° or 70°, become living fish in 30 or even a less number of days; while if the ova be placed in water at 33° or 34°, it will take five or six months for them to become living fish. So, if the alevin be placed in water ranging from 50° to 60° the food contained in the umbilical vesicle will be consumed in five or six or seven days,—while if placed in water at 34°, it will carry its food sac from fifteen to twenty-five days. A year ago, Mr. Chase, the overseer of the Detroit hatchery, by raising the temperature of the water, hatched several hundred Whitefish in January, and placed the fry in water at 34°. Each day he inspected his fish and made memoranda. He found the fry carried the food sac from fifteen to twenty-five days. And when the contents of the little fish's knapsack were gone, he found his fry darting about, with apparent deliberate aim and purpose, as if in pursuit of something. A closer inspection of the water developed the presence of minute insects,—the water flea or cyclop, which could be seen plain enough in a good light with the naked eye, and it was to secure these insects that the fry, in water at 34°, were making their agile leaps. He gave them bits of the common cracker, pulverized very fine, and found they would take particles of it into their mouth, hold them there for a moment, and then spew them out, and suddenly dart off to make sure of a water flea, their native food. He continued to feed and to watch the fry, giving them in the place of crackers, liver grated and pressed through a sieve, so that it was of about the consistency of coagulated blood. And so, in this January 34° water, and in an apartment of water some 14x20 inches, he reared his fish. And samples of them, last September, were on exhibition at the Chicago Exposition, and also at the Detroit Museum during the State Fair. And most beautiful samples of fish were they.

While these experiments were going on at Detroit, a very similar class were being made at the Pokagon hatchery—of course with different temperature of water, and with different influences and surroundings, but verifying with equal satisfaction, the great truths and laws of nature. The eggs at the Pokagon fishery were of the same stripping and fertilization of the Detroit lot. But the

ry were placed in water at 48° and 50°. The result was that the alevins carried their food sac very rarely beyond the seventh day, and very soon thereafter partook readily of artificial as well as of native food. The food supplied at Pokagon, was mainly bonny-clabber, at first, but as the fish grew, dishes of prepared liver or kidney, seasoned sometimes with cream, were fed to them two or three times a day. The Pokagon fish grew much more rapidly than the Detroit fry, and in June were found to be two or three times as large. Undoubtedly this disparity of growth, arose in large measure from the higher temperature of the water, yielding, as it did, an increased, and quite probably more nutritious supply of native food. The Pokagon Whitefish came to the surface for particles of meat or other food thrown to them, but not quite as sharply as do the Salmon, and the Trout, and the Grayling; yet through the intelligent and persistent efforts of fish-cultural propagandism, it is not improbable that the beautiful Whitefish may become a very respectable fly-fish. The Pokagon Whitefish were also on exhibition at the Chicago Exposition, last September, and at the Detroit Museum, eliciting the interest and admiration of many visitors.

Now these experiments appear to be very nearly conclusive of some things, and must put a quietus upon the clamor as regards the early hatch of whitefish. It has been the opinion of many, beyond all dispute or doubt honestly entertained, that if the hatch occur in January, or February, or even in March, that the fry are doomed to early graves, and consequently our labor has been in vain. Experiment disproves this view. It shows that the hatch is not necessarily largely fatal though it be in early January, for even in the very heart of winter the water flea, or cyclop, and other animalculæ are abroad. And experiment further shows that the needs of the fry in a January temperature are few and limited as compared with the fry living in a higher temperature. In January the little food of its sac will subsist the fish fifteen, twenty-five days, and the little water flea will make it a fat meal, whilst in a May temperature of the water, the water ant, or shrimp, or crab will hardly meet the longing of its ormandizing appetite. So it is seen almighty nature is ever true to herself. She needs to take no lessons of the sons or of the daughters of men, for with her the beginning and the end are alike obvious and sure. Is it, can it be true, that she would create, lacking the wisdom and the power to sustain? No, I do not believe it. For the tiniest creation that disports in a drop of water or basks in a ray of light, provision for its preördained and predestined life and there has neither been forgotten nor omitted.

I most freely and with all frankness admit, in our hatching of Whitefish it is wisdom and good policy to employ our utmost endeavor to secure a late hatch, and for the reason, too, which experiment has rendered obvious as the sun day, to wit: water pastures as well as land pastures are very apt to be better in April and May than in bleak January and February, and good pastures, all know, are mighty good things to have when engaged in stock-growing of any sort.

And so, we think, without unseemly assumption, we may safely assert that we know more about this whole matter than we did when tussling with "baker" and "crucifix," for all along the avenues and by the waysides of our fish journey we have been gathering here a little and there a little, and casting it away into our scrap collection till the unpretentious primer has attained to very respectable proportions. We have been sifting, weighing, experimenting, and to the superwise and often superserviceable caviler, who knows it all, and has some left over, experiments are the edged tools, rather

dangerous things to be careless with. Undeniably in fish matters, as in all things else, it is best for us all to try and prove things, and finding the true, embrace it in the love of it, and finding aught opposed to natural law and to truth, cast it away as the veriest chaff and stubble.

The following is a tabulated statement of our work and of our deposits of Whitefish since the publication of our last Report. We think it will speak for itself, and shows quite conclusively that the Overseers and their corps of helpers have not been given to excessive napping.

WHITE FISH HATCH AND DEPOSITS OF 1876-7.

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.				
Pine	.....	March 29, 1877	C. H. Chamberlain, Plainwell	25,000
Barry.				
Warner	Prairieville	March 29, 1877	Lester Warner, Plainwell	15,000
Berrien.				
Little Indian	Berrien	March 10, 1877	J. B. Metzer, Niles	10,000
Meader	Buchanan	March 10, 1877	J. W. Broccus, Buchanan	15,000
Murphy	Berrien	March 10, 1877	J. M. Murphy, Berrien Cent'r	10,000
Round	Berrien	March 10, 1877	C. Michael, Pokagon	10,000
Salmon	Berrien	March 10, 1877	C. Michael, Pokagon	10,000
Tinkam	Niles	March 10, 1877	P. Tinkam, Summerville	10,000
Branch.				
Lehr	Sherwood	March 24, 1877	Wm. Lehr, Sherwood	10,000
Calhoun.				
Gang Lakes, 6 of them	Clance	March 10, 1877	E. J. Arthur, Albion	30,000
Montcalm	.....	March 24, 1877	E. J. Arthur, Albion	10,000
Turtle	Burlington	March 24, 1877	S. S. Wemple, Union City	20,000
Town Line	Battle Creek	March 10, 1877	H. Willis, Battle Creek	10,000
Cass.				
Birch	Porter	March 24, 1877	J. F. Merritt, Williamsville	20,000
Curtis	Pokagon	March 10, 1877	C. Michael, Pokagon	10,000
Donnell's	.....	March 24, 1877	L. Osborn, Vandalia	20,000
Magician	Silver	March 10, 1877	A. E. Gregory, Dowagiac	15,000
Crawford.				
Portage	.....	April 14, 1877	Jessee A. Barker, Grayling	35,000
Genesee.				
Grand Blanc	Grand Blanc	March 27, 1877	T. S. Bishop, Fenton	20,000
Pick-Nick	Forest	March 5, 1877	A. K. Hunton, Otisville	10,000
Smith Hill	Forest	March 5, 1877	A. K. Hunton, Otisville	10,000
Weeks	Forest	March 5, 1877	A. K. Hunton, Otisville	10,000
Ingham.				
Frye	.....	March 29, 1877	James Frye, Onondaga	10,000
Lane	Onondaga	March 29, 1877	J. W. Jones, Onondaga	10,000
Jackson.				
Chatfield	Leoni	March 10, 1877	T. Pangborn, Mich. Centre	10,000
Gaycock	Leoni	March 10, 1877	T. Pangborn, Mich. Centre	15,000
Portage	.....	March 10, 1877	M. Shraw, Grass Lake	25,000
School Section Lake	.....	March 10, 1877	T. Pangborn, Mich. Centre	15,000
Spring	Napoleon	March 10, 1877	John Taylor, Napoleon	10,000
Vineyard	.....	March 15, 1877	F. H. Cook, Brooklyn	20,000

WHITE FISH HATCH AND DEPOSITS OF 1876-7.—*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.				
offin	Kalamazoo	March 10, 1877	H. Lewis, Kalamazoo	10,000
st	Pavilion	March 10, 1877	J. C. Schilling, Kalamazoo	10,000
amilton	Ross	March 10, 1877	H. M. Hamilton, Bedford	10,000
ewis	Kalamazoo	March 10, 1877	H. Lewis, Kalamazoo	10,000
eMartin	Howard	March 10, 1877	D. D. McMartin, Kalamazoo	10,000
Kent.				
ngleright	Township 11	March 29, 1877	D. O. Ingleright, S. Lake	20,000
Lapeer.				
ime	Hadley	March 12, 1877	Wm. Algae, Ortonville	10,000
iller	Deerfield	March 12, 1877	J. D. Brown, Columbiaville	15,000
epessing	Elba	March 31, 1877	Wm. Hemmingway, Lapeer	25,000
tter	Otter Lake	March 31, 1877	C. B. Benson, Otter Lake	20,000
leasant	Attica	March 12, 1877	Ira Green, Lapeer	20,000
yan	Lapeer	March 31, 1877	S. N. Vincent, Lapeer	10,000
Lenawee.				
ear		March 7, 1877	H. Covell, Medina	15,000
rownsville	Tecumseh	March 7, 1877	C. M. Woodward, Tecumseh	15,000
eep		April 10, 1877	J. H. Beatty, Toledo	25,000
vans	Franklin	March 7, 1877	H. Lancaster, Clinton	25,000
lobe Mill	Tecumseh	March 7, 1878	C. M. Woodward, Tecumseh	10,000
uaker	Raisin	March 7, 1877	C. M. Woodward, Tecumseh	10,000
ilver	Woodstock	March 15, 1877	L. Parsons, Woodstock	15,000
amplers	Cambridge	March 7, 1877	W. H. Lazenby, Adrian	30,000
Livingston.				
riggs	Green Oak	March 6, 1877	P. B. Holdridge & L. B. Fonda, Brighton	20,000
onda	Brighton	March 6, 1877	P. B. Holdridge & L. B. Fonda, Brighton	20,000
sland	Green Oak	March 6, 1877	P. B. Holdridge & L. B. Fonda, Brighton	25,000
ellogg	Genoa	March 6, 1877	B. T. O. Clark, Brighton	15,000
ee	Hartland	March 5, 1877	G. Ross & H. S. Holdridge, Highland	10,000
ime	Genoa	March 6, 1877	B. T. O. Clark & P. B. Holdridge, Brighton	15,000
ong	Hartland	March 5, 1877	H. S. Holdridge, Highland	25,000
axfield	Hartland	March 5, 1877	H. S. Holdridge & R. Tinny, Highland	20,000
ont	Brighton	March 6, 1877	B. T. O. Clark & P. B. Holdridge, Brighton	10,000
igger	Genoa	March 6, 1877	B. T. O. Clark & P. B. Holdridge, Brighton	10,000
re	Hamburg	March 6, 1877	B. T. O. Clark & P. B. Holdridge, Brighton	20,000
ickerel	Brighton	March 6, 1877	P. B. Holdridge & L. B. Fonda, Brighton	15,000
ogers	Unadilla	March 10, 1877	H. McCloy, Stockbridge	10,000
chool	Brighton	March 6, 1877	B. T. O. Clark & P. B. Holdridge, Brighton	15,000
outh	Brighton	March 6, 1877	B. T. O. Clark & P. B. Holdridge, Brighton	10,000
arden	Genoa	March 6, 1877	B. T. O. Clark & P. B. Holdridge, Brighton	10,000
oodruff	Brighton	March 6, 1877	P. B. Holdridge & L. B. Fonda, Brighton	15,000

WHITE FISH HATCH AND DEPOSITS OF 1876-7.—*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.
Mason.				
Mears	Amber	April 3, 1877	J. L. Towns, Amber	20,000
Mecosta.				
Chippewa	Chippewa	April 3, 1877	G. H. Jerome, Jr., Niles	30,000
Oakland.				
Andrus	Highland	March 5, 1877	G. Ross & H. S. Holdridge, Highland	20,000
Dunham	Highland	March 5, 1877	R. H. Tenny, Highland	20,000
Fish	Oxford	March 12, 1877	C. Losey, Oxford	20,000
Gilbert		March 21, 1877	H. Gardiner, Birmingham	20,000
Little	Oakland	March 12, 1877	L. Woodward, Rochester	10,000
Stony	Oxford	March 12, 1877	T. L. Pierce, Oxford	20,000
Otsego.				
Caldwell	Township 22	April 14, 1877	B. J. Gagnier, Gaylord	20,000
Otsego		April 13, 1877	G. H. Jerome, Jr., & A. Briggs, Niles	50,000
Thumb		April 14, 1877	F. M. Warner & W. Baker, Gaylord	50,000
St. Joseph.				
Palmer	Colon	March 24, 1877	C. H. Farrand, Colon	25,000
Van Buren.				
Bear		March 24, 1877	D. Anderson, Bear Lake	20,000
Clear	Pine Grove	March 24, 1877	T. Johnson, Kendall	15,000
Fish	Almena	March 24, 1877	T. Johnson, Kendall	15,000
Moons	Sec. 13	March 24, 1877	E. V. Spring, Irvington	15,000
North	Almena & Pine Grove	March 24, 1777	T. Johnson, Kendall	15,000
Washtenaw.				
Long	Lynden	March 10, 1877	O. Clark, Chelsea	15,000
Pleasant	Freedom	March 15, 1877	E. Haire, Manchester	25,000
Raisin	Bridgewater	March 15, 1877	D. W. Palmer, River Raisin	20,000

The following are the deposits in the great lakes:

Lake.	Point or Place of Deposit.	Date of Deposit.	No. Fish.
Lake Erie	South from Monroe, in vicinity of Vienna	March 1, 1877	150,000
" "	At Monroe	" 8, 1877	300,000
" "	Near the mouth of Otter Creek	" 8, 1871	150,000
" "	At or in the vicinity of Stony Creek	" 20, 1877	167,000
" "	At Monroe	" 20, 1877	167,000
" "	At La Salle	" 20, 1877	167,000
Lake Michigan	At Grand Haven, from a steam tug, six miles miles from shore, in 50 fathoms water	" 27, 1877	520,000
" "	In Grand Traverse Bay, at the mouth of the Boardman River	April 3, 1877	500,000
" "	At South Haven	" 6, 1877	500,000
Lake Huron	In Saginaw Bay, three miles from shore in deep water	March 22, 1877	400,000
" "	At mouth of Saginaw River, at Saginaw Bay	April 13, 1877	250,000

The following are the deposits in the rivers.

River.	Point of Deposit.	Date of Deposit.	No. Fish.
. Clair River..	Opposite Port Huron, near the Grand Trunk R. R. depot	March 3, 1877	500,000
" " ..	Opposite Port Huron, in vicinity of Grand Trunk R. R. depot	" 17, 1877	500,000
. Joseph River	In Dowagiac, a tributary of the St. Joseph River, the lot that was hatched at the Pokagon hatchery	Jan. 10, 1877..	300,000
etroit River...	Opposite city of Detroit	Feb. 1, 1877...	10,000
" " ...	" " "	" 2, 1877..	15,000
" " ...	" " "	" 3, 1877..	20,000
" " ...	" " "	" 4, 1877..	20,000
" " ...	" " "	" 5, 1877..	30,000
" " ...	" " "	" 6, 1877..	30,000
" " ...	" " "	" 7, 1877..	30,000
" " ...	" " "	" 8, 1877..	25,000
" " ...	" " "	" 9, 1877..	30,000
" " ...	" " "	" 10, 1877..	20,000
" " ...	" " "	" 12, 1877..	20,000
" " ...	" " "	" 13, 1877..	65,000
" " ...	" " "	" 14, 1877..	80,000
" " ...	" " "	" 15, 1877..	75,000
" " ...	" " "	" 16, 1877..	60,000
" " ...	" " "	" 17, 1877..	40,000
" " ...	" " "	" 18, 1877..	50,000
" " ...	" " "	" 20, 1877..	80,000
" " ...	" " "	" 21, 1877..	75,000
" " ...	" " "	" 22, 1877..	20,000
" " ...	" " "	" 23, 1877..	80,000
" " ...	" " "	" 24, 1877..	60,000
" " ...	" " "	" 26, 1877..	100,000
" " ...	" " "	" 27, 1877..	100,000
" " ...	" " "	" 28, 1877..	125,000
" " ...	" " "	March 1, 1877	100,000
" " ...	" " "	" 2, 1877	100,000
" " ...	" " "	" 3, 1877	80,000
" " ...	From a ferry boat	" 24, 1877	500,000
" " ...	At Campau's Fishery	" 30, 1877	100,000
" " ...	At Martin's Fishery	" 31, 1877	100,000
" " ...	Opposite city of Detroit	April 1, 1877.	15,000

SUMMARY OF WHITEFISH DEPOSITS.

otal deposits in the inland lakes	1,175,000
" " " Lake Erie	1,101,000
" " " " Michigan	1,520,000
" " " " Huron	650,000
" " " St. Joseph River	300,000
" " " St. Clair River	1,000,000
" " " Detroit River	2,255,000

The following table shows the date of taking the eggs, at what fishery the ggs were taken, the number of female fish stripped, and the number of eggs ecured:

Date of Taking, 1876.	Stony Island Fishery.	Belle Island Fishery.	Grosse Point Fishery.	Craig's Fishery.	No. of Eggs Taken.
Oct. 27 and 28	32 fish stripped				855,000
" 29	30 " "				820,000
" 30	52 " "				2,300,000
" 31	94 " "				3,975,000
Nov. 1	128 " "				3,500,000
" 1		22 fish stripped			500,000
" 8			25 fish stripped		500,000
" 22				5 fish stripped.	100,000

There were shipped from the Detroit Hatchery, of this season's work, to the New York City Aquarium, Whitefish eggs as follows:

December 5th, 1876	25,000
February 12th, 1877	5,000

LAKE HERRING.

At the time of procuring the Whitefish eggs, two Herring were stripped, and 15,000 eggs were taken. December 5th, 1876, 10,000 of the Herring eggs were shipped to the New York City Aquarium. The balance of the Herring eggs were retained, and 3,000 fry were obtained. The Herring fry were deposited on the 14th day of April, 1877, in Gardner Lake, Otsego Co.

GERMAN WHITEFISH.

There were also received, as a part of this season's work, at the Detroit Hatchery, through the courtesy of Professor Spencer F. Baird, on the 9th of February, 1877, seventeen hundred eggs of the Whitefish of Germany. The eggs were procured in Germany, shipped by ocean steamer to Prof. Baird, and by him forwarded to the Detroit Fishery. But from the long and circuitous journey they had to perform, or from some other cause not ascertained, a considerable portion of the eggs did not live to hatch. Those that did survive, hatched the latter part of March. Only 409 of the fry lived to be planted. These were deposited on the 14th day of April, 1877, in Gardner Lake, Otsego county; a small, deep lake, where no American Whitefish have ever been deposited, and this lake is believed to be free from predaceous fish.

The German eggs were a trifle larger than the Detroit Whitefish eggs. The fry too, had a larger food sac, and it did not become absorbed in the same number of days as did the sac of the American Whitefish. No structural or physiological differences to a common observer, however, were noticeable between the German and the American fry. It is most earnestly hoped that these four hundred and odd emigrants from the old world, will make for themselves comfortable and healthy homes in the reservation to which Michigan partiality has assigned them, and at no very remote period will present themselves before a competent tribunal for full naturalization papers.

The foregoing covers the hatch, the distribution of the fry, and all the material items relating to our work at the Detroit Hatchery during the season of 1876–7. And as this report embraces the work of the season of 1877–8, as well as that of 1876–7, I think it better to have the two statements or records come together as nearly as may be; for in this way they can be more readily and conveniently referred to. In this regard I make a departure from the two former reports, but the departure, I think, is not without merit, and will receive the approval of all who may find occasion to read or to refer to the Report.

The following then, is the itemized record of our work upon the Whitefish during the season of 1877–8:

The eggs were obtained as during the last two seasons, from the fishery of Mr. Horace Gray, at Stony Island, some fifteen miles from Detroit.

The spawn takers were O. M. Chase and G. W. Armstrong, who were assisted by Louis Gray, Charles Sovey, and John Anglum. Mr. Eli R. Miller, President of the Board of Fish Commissioners, was present during the taking, and took charge of all shipments of the ova from the fishery to the hatchery in Detroit, accompanying each shipment in person. And through his great vigilance and carefulness in their transit, the superior quality of the eggs of this season, I think, is in a good measure due.

The subjoined table shows the date when the Whitefish were captured; the number of female fish manipulated, and the number of eggs procured:

Date of Taking the Spawn.	Number of Female Fish Stripped.	Number of Eggs Taken.
November 7, 1877	18	500,000
" 8, 1877	26	850,000
" 9, 1877	8	250,000
" 10, 1877	150	5,000,000
" 11, 1877	52	1,600,000
" 12, 1877	100	3,500,000
" 13, 1877	52	1,500,000
" 14, 1877	50	1,200,000
" 15, 1877	21	700,000

The total number of fish stripped, four hundred and seventy-seven. The total number of eggs obtained, fifteen million and one hundred thousand.

The following is a statement of the Whitefish deposits of this season. The table giving the county and the name of the lake; the township in which the lake is located; the date of the deposit; the name and address of the depositor, and the number of fish deposited:

WHITEFISH HATCH AND DEPOSITS OF 1878.

County and Name of Lake.	Township in which Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Planted.
Allegan.				
Dumont		March 16, 1878	S. S. Dryden, Allegan	40,000
Minor		March 16, 1878	Wm. C. Weeks, Allegan	40,000
Barry.				
Fair	Barry	March 26, 1878	G. R. Main, Cedar Creek	20,000
Clear		March 26, 1878	James Boyd, Baltimore	40,000
Twin Lakes	Hastings	March 26, 1878	W. K. Barber, Hastings	40,000
Loon	Assyria	March 16, 1878	H. Willis, Battle Creek	10,000
Highhill	"	March 16, 1878	H. Willis, Battle Creek	10,000
Berrien.				
Juday	Buchanan	March 16, 1878	H. H. Haskins, Buchanan	50,000
Tinkam	Niles	March 30, 1878	P. Tinkam, Summerville	20,000
Pokagon Ponds	Pokagon	March 30, 1878	H. H. Porter, Pokagon	10,000
Branch.				
Eagle and 4 connecting lakes		March 9, 1878	A. E. Tomlinson, Sherwood	60,000
Marble	Quincy	March 19, 1878	C. R. Hannan, Quincy	40,000

WHITEFISH HATCH AND DEPOSITS OF 1878.—*Continued.*

County and Name of Lake.	Township in which Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Planted.
Calhoun.				
East Lake	Tekonsha	March 9, 1878	A. D. Eldred, Tekonsha	20,000
West Lake	"	March 9, 1878	A. D. Eldred, Tekonsha	20,000
Mud	"	March 9, 1878	A. D. Eldred, Tekonsha	20,000
Turtle	Burlington	March 9, 1878	S. S. Wemple, Union City	20,000
Batt and Lewis	Tekonsha	March 30, 1878	S. B. Allen, Tekonsha	20,000
Cass.				
Birch		March 9, 1878	J. F. Merritt, Williamsville	20,000
Cory		March 9, 1878	H. W. Brown, Corey	20,000
Long	Porter	March 19, 1878	Geo. Meacham, Union	40,000
Baldwin		March 19, 1878	Geo. Meacham, Union	40,000
Indiana		March 19, 1878	Geo. Meacham, Union	40,000
Twin Lakes	Wayne	March 16, 1878	C. C. Morton, Dowagiac	50,000
Barron	Howard	March 30, 1878	H. Pruyn, Niles	60,000
Stone	LaGrange	March 9, 1878	C. C. Allison, Cassopolis	20,000
Lafferty	Mason	March 9, 1878	J. H. Keene, Cassopolis	20,000
Crawford.				
Portage		March 29, 1878	J. O. Hadley, Grayling	100,000
Genesee.				
Giles	Fenton	March 14, 1878	L. C. Welch, Linden	20,000
Long	"	March 14, 1878	M. T. Thurber, Fenton	60,000
Long	"	March 28, 1878	M. T. Thurber, Fenton	60,000
Forbes	"	March 14, 1878	J. C. Forbes, Fenton	10,000
Forbes	"	March 28, 1878	J. C. Forbes, Fenton	40,000
Pip	Holly	March 14, 1878	A. Trapnagen, Fenton	10,000
Pip	"	March 28, 1878	A. Trapnagen, Fenton	40,000
Silver	Fenton	March 28, 1878	W. H. H. Smith, Fenton	40,000
Pinery	"	March 28, 1878	W. H. H. Smith, Fenton	20,000
Crooked	"	March 28, 1878	J. C. Forbes, Fenton	40,000
Hillsdale.				
Baw-Beese		March 19, 1878	W. P. Foote, Hillsdale	50,000
Long	Reading	March 19, 1878	S. Kellogg, Reading	40,000
Ingham.				
Laur	Onondaga	March 26, 1878	J. W. Jones, Onondaga	40,000
Ionia.				
Long	Orleans	March 5, 1878	J. D. Oakley, Orleans	20,000
Peck	Berlin	March 14, 1878	E. H. Bliven, Saranac	20,000
Jackson.				
Lords Lake	Tompkins	March 16, 1878	J. H. Townley, Thompkins	20,000
Vineyard	Columbia and Norvell	April 2, 1878	E. N. Palmer, Brooklyn	100,000
Clark's	Columbia	April 2, 1878	J. L. DeLamater, Brooklyn	60,000
Kalamazoo.				
Harrison	Schoolcraft	March 30, 1878	H. J. Allen, Schoolcraft	40,000
Gourdneck		March 16, 1878	H. C. Dalloway, Kalamazoo	40,000
Lewis	Kalamazoo	March 16, 1878	H. Lewis, Kalamazoo	20,000
Campbell	Comstock	March 16, 1878	O. F. Campbell, Galesburg	20,000
Gull	Richland	March 29, 1878	E. R. Miller, Richland	80,000
Long	"	March 29, 1878	E. R. Miller, Richland	20,000
Kent.				
Pralls		March 14, 1878	E. W. Dodge, Lowell	20,000
Hilton	Byron	March 21, 1878	J. K. Hilton, Ross	40,000

WHITEFISH HATCH AND DEPOSITS OF 1878.—*Continued.*

County and Name of Lake.	Township in which Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Planted.
Kent.				
Crystal	Byron	March 21, 1878	J. K. Hilton, Ross	20,000
Lincoln	Spencer	March 5, 1878	H. M. Fuller, Greenville	20,000
Olans	Solon	March 21, 1878	G. H. Dalrymple, Cedar Springs	20,000
Maxwell		March 21, 1878	G. H. Dalrymple, Cedar Springs	20,000
Lapeer.				
Rood	Mayfield	March 13, 1878	H. D. Rood, Lapeer	20,000
Wolf	Metamoras	March 13, 1878	A. B. Coryell, Thomas	10,000
Napessing	Elba	March 13, 1878	Ira Green, Lapeer	50,000
McKeens	Oregon	March 13, 1878	L. Levally, Columbiaville	20,000
Lenawee.				
Silver	Woodstock	March 22, 1878	L. Parsons, Woodstock	70,000
Goose	"	March 22, 1878	N. Osborne, Woodstock	70,000
Mallory		March 19, 1878	C. H. Boies, Hudson	20,000
Wamplers	Cambridge	March 19, 1878	W. H. Lazenby, Adrian	50,000
Livingston.				
Blaine	Hartland	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Williams	Brighton	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	20,000
Birdnell	"	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Beach	"	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Clark	"	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Clark	"	April 11, 1878	B. T. O. Clark and C. Thomson, Brighton	20,000
Hartwick	Genoa	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Warden	"	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Lime	"	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Tiger	"	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Haltby	Green Oak	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	20,000
Tre	Hamburg	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	20,000
Tre	"	April 11, 1878	B. T. O. Clark and C. Thomson, Brighton	20,000
Finans	"	March 5, 1878	B. T. O. Clark and C. Thomson, Brighton	10,000
Pound	Genoa	April 11, 1878	B. T. O. Clark and C. Thomson, Brighton	20,000
Pleasant	Hamburg	April 11, 1878	B. T. O. Clark and C. Thomson, Brighton	40,000
Thompson	Howell	March 5, 1878	H. B. Blackman, Howell	30,000
Walker's	Hamburg	March 5, 1878	C. D. Stewart, Brighton	20,000
Whalen	Hartland	March 7, 1878	H. Wyman, Hartland Centre	30,000
Webster	Genoa	March 5, 1878	Geo. Gale, Howell	10,000
Webster	"	April 11, 1878	Geo. Gale, Howell	20,000
Ley	"	March 5, 1878	Geo. Gale, Howell	10,000
Ley	"	April 11, 1878	Geo. Gale, Howell	20,000

WHITEFISH HATCH AND DEPOSITS OF 1878.—*Continued.*

County and Name of Lake.	Township in which Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Planted.
Livingston.				
Gale	Genoa	March 5, 1878	Geo. Gale, Howell	10,000
Gale	"	April 11, 1878	Geo. Gale, Howell	20,000
Coon	Marion	March 5, 1878	Geo. Gale, Howell	20,000
Coon	"	April 11, 1878	Geo. Gale, Howell	40,000
Brooks	Genoa	March 5, 1878	T. B. Brooks, Howell	10,000
Patterson	Putnam	March 26, 1878	Ira V. Reeves, Pinckney	40,000
Half-Moon	"	March 26, 1878	Ira V. Reeves, Pinckney	40,000
Island		March 26, 1878	Ira V. Reeves, Pinckney	40,000
Mud	Brighton	March 5, 1878	P. B. Holdridge, Brighton	20,000
Brophy	Hartland	March 7, 1878	H. McKeever, Hartland	20,000
Green's	Marion	March 26, 1878	S. Green, Howell	40,000
Cedar	"	March 26, 1878	David O. Smith, Howell	40,000
Missaukee.				
Muskrat		March 22, 1878	D. Reeder, Lake City	80,000
Montcalm.				
Whitefish	Pierson	March 21, 1878	F. F. Taylor, Pierson	80,000
Wood	"	March 21, 1878	F. F. Taylor, Pierson	60,000
Muskegon.				
Little Blue Lake		March 29, 1878	C. N. Merriman, G'd Rapids	6,000
Oceana.				
Crystal		March 29, 1878	C. N. Merriman, G'd Rapids	6,000
Pentwater Lake		March 29, 1878	C. N. Merriman, G'd Rapids	4,000
Round		March 29, 1878	C. N. Merriman, G'd Rapids	4,000
Oakland.				
Big		March 14, 1878	E. A. Botsford, Davisburgh	10,000
Davis		March 14, 1878	E. A. Botsford, Davisburgh	10,000
Long		March 14, 1878	E. A. Botsford, Davisburgh	10,000
Timbered	Waterford	March 14, 1878	Wm. Beaty, Pontiac	40,000
Pickerel	"	March 14, 1878	Wm. Beaty, Pontiac	40,000
Otter	"	March 14, 1878	Wm. Beaty, Pontiac	40,000
Orion	Orion	March 13, 1878	C. K. Carpenter, Orion	50,000
Honewell	Milford	March 7, 1878	H. S. Holdridge, Highland	20,000
Hopkins	Highland	March 7, 1878	H. S. Holdridge, Highland	20,000
Rowe	"	March 7, 1878	H. S. Holdridge, Highland	20,000
Lewis	"	March 7, 1878	H. S. Holdridge, Highland	20,000
Walnut	Bloomfield	March 14, 1878	J. A. Bigelow, Birmingham	40,000
Wing	"	March 14, 1878	L. Stanley, Birmingham	40,000
Sears	Milford	March 7, 1878	R. H. Tenny, Highland	30,000
Tenny	"	March 7, 1878	R. H. Tenny, Highland	30,000
Dunham	Highland	March 7, 1878	R. H. Tenny, Highland	30,000
Williams	Waterford	March 14, 1878	F. Williams, Waterford	40,000
Oxbow	White Lake	April 1, 1878	R. W. Hopkins, W. L. Center	60,000
St. Joseph.				
Pickerell	White Pigeon	March 19, 1878	W. N. Elliott, White Pigeon	40,000
Sand Lake		March 9, 1878	L. A. Clapp, Centreville	20,000
Klingers	White Pigeon	March 19, 1878	J. B. Shipman, Coldwater	50,000
Van Buren.				
Crooked		March 30, 1878	W. H. LeSeur, Mattawan	40,000
North		March 30, 1878	Abram Wildy, Kendall	40,000
Four-mile Lake	Paw Paw	March 30, 1878	J. E. Abrams, Paw Paw	40,000
Wolf		March 16, 1878	T. Buckhout, Kalamazoo	40,000
Taylor	Lawrence	March 30, 1878	Geo. H. Jerome, Jr., Lawrence	40,000
Clear		March 30, 1878	Tobias Johnson, Kendall	40,000

WHITEFISH HATCH AND DEPOSITS OF 1878.—*Continued.*

County and Name of Lake.	Township in which Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Planted.
Van Buren.				
Fish		March 30, 1878	Tobias Johnson, Kendall	40,000
Washtenaw.				
Raisin Lake		April 2, 1878	D. W. Palmer, River Raisin	80,000
Joslin		April 2, 1878	P. Blum, Bridgewater	40,000
Shafer		April 2, 1878	P. Blum, Bridgewater	40,000
Columbia		April 2, 1878	P. Blum, Bridgewater	40,000
Mud		March 22, 1878	L. D. Watkins, Manchester	60,000
Silver	Dexter	March 16, 1878	J. H. Brokaw, Pinckney	40,000
Little Portage	"	March 16, 1878	J. H. Brokaw, Pinckney	40,000
Silver Lake		April 2, 1878	C. Vogel, Manchester	40,000
Wexford.				
Clam Lake	Clam	March 22, 1878	B. Ballou, Clam Lake	120,000

The following are the deposits of Whitefish of the hatch of 1877–8 in the great lakes bordering upon the State of Michigan:

Lake.	Point of Deposit.	Date of Deposit.	No. of Fish.
Lake Erie	By E. B. Paxton, Detroit; about 3 miles from harbor at Monroe in deep water, using 2 boats for conveyance of 20 cans	March 11, 1878	400,000
Lake Huron	By Oren M. Chase, Detroit, in Saginaw Bay at Bay City	" 28, 1878	400,000
Lake Michigan	By Albert Briggs, Pokagon, at Grand Haven, at the mouth of Grand River	" 14, 1878	50,000
" "	By Dr. J. C. Parker, Grand Rapids, at Grand Haven, 3 miles from harbor in deep water, using tugs for the conveyance of the 25 cans	" 30, 1878	500,000
" "	By G. W. Armstrong, Dimondale, at Ludington, at the mouth of the Pere Marquette River	April 8, 1878	500,000
" "	By C. N. Merriman, Grand Rapids, in Pentwater harbor, mouth of Pentwater Lake, in deep water	March 29, 1878	380,000

The following are the deposits in the rivers bounding the State, of the hatch of 1877–8:

Name of River.	Point of Deposit.	Date of Deposit.	No. of Fish.
St. Clair River	In the harbor at Port Huron, just below Lake Huron	March 18, 1878	400,000
Detroit River	At Ives & Green dock, opposite Hatchery	" 1, 1878	125,000
" "	" " " " "	" 3, 1878	250,000
" "	" " " " "	" 6, 1878	300,000
" "	" " " " "	" 8, 1878	240,000
" "	" " " " "	" 9, 1878	150,000
" "	" " " " "	" 11, 1878	60,000
" "	" " " " "	" 13, 1878	400,000
" "	Deposited from the yacht of John P. Clark at the foot of Belle Isle	" 15, 1878	100,000
" "	Three miles above the Light-house at the head of Belle Isle	" 15, 1878	100,000
" "	At Grosse Isle	" 15, 1878	150,000
" "	At Grassy Island	" 15, 1878	150,000
" "	At Ives & Green's Dock	" 16, 1878	500,000
" "	At A. M. Campau's fishery	" 16, 1878	80,000
" "	At the foot of Belle Isle	" 17, 1878	100,000
" "	" " "	" 18, 1878	100,000
" "	At the head of Belle Isle	" 18, 1878	100,000
" "	At Ives & Green's Dock	" 19, 1878	1,200,000
" "	At A. M. Campau's fishery	" 20, 1878	100,000
" "	At Ives & Green's Dock, and in the vicinity of the Detroit Hatchery	" 20, 1878	100,000
" "	At Ives & Green's Dock, and in the vicinity of the Detroit Hatchery	" 25, 1878	100,000
" "	At Ives & Green's Dock, and in the vicinity of the Detroit Hatchery	" 29, 1878	200,000
" "	At Belle Isle	April 3, 1878	300,000
" "	At Ives & Green's Dock	" 3, 1878	100,000
" "	At Belle Isle	" 10, 1878	125,000
" "	At Ives & Green's Dock	" 10, 1878	60,000

SUMMARY STATEMENT OF WHITEFISH DEPOSITS DURING THE SEASON OF 1877–8.

Total deposits in the inland lakes	4,700,000
" " " Lake Erie	400,000
" " " Lake Huron	400,000
" " " Lake Michigan	1,430,000
" " " St. Clair River	400,000
" " " Detroit River	5,190,000

Now, in closing this review of our Whitefish work for the season of 1877–8, the reader will not fail to notice that the number of fish deposited in each individual interior lake of this year is far in excess of the deposits made of any previous year. This year, in lakes no larger, nor better adapted to Whitefish growth than are those lakes where our first deposits were made in 1874, we have deposited ten, twenty, forty, sixty, or even more thousands. The number of applications for fish of the years 1874 and 1878 are about the same. But the grist of the two seasons, it will be noted, is widely different. In 1874 the utmost capacity of our fish hopper was a million and a half. In 1878, its capacity

was nearly thirteen millions. Rejoiced as we would have been to have made the deposits of '74 as large as were those of '78, yet we were, and are, ignorant of that wonderful alchemy with which to transmute a quart measure into a gallon measure, or a foot rule into a ten foot pole. Each year the fish people of the State have had every fish we could produce, with thanks and with regrets.

Now I venture to say, had it been possible to have made in '74 the very liberal deposits which we were enabled to make in '78, that those lakes where our fish have been seen and caught in limited numbers, would to-day swarm with the finny tribes, for it would be the difference between three thousand and thirty thousand or of five thousand and of fifty thousand. And I wish those dear people, few in number though they are, who gabble in such mellifluous cadence on every soft occasion, "failure," "unsuccess,"—and who would, had they the courage to lead out the beast, place a lion at every cross-roads of our journey, would remember these great head-light facts, to wit: that our first Whitefish deposits were in 1874 (not in 1872 as they are wont to report) and that they were, not from option, but from necessity, extremely limited in number. The very generous deposits of 1878 we mean shall be exceeded by several millions by the deposits of 1879. And that they will be is contingent upon only one thing, and that a most improbable event—the *running out* of the *Detroit River!* To such parties as still wish our Whitefish for their lakes, we would say, have no fears of overstocking, for while the perch, the pike, the pickerel, the pot-hunting poacher, and the violator of the eighth commandment are abroad, of desire unchained, unbidden of good manners and unhindered by penal codes, with this Apollyon confronting your endeavor, the danger of overstocking I do not regard alarmingly imminent. Still in the face of this legion of affrights and discouragements, my counsel is, forward—abating not one jot or one tittle of faith in the work so auspiciously begun, remembering a simple sling and a few small pebbles gathered of the brook caused once a giant to bite the dust, and who shall say that the small sling and the brook-washed pebbles may not possess overmastering virtue still?

THE DETROIT HATCHERY.

As this is the place where we have for the last three years produced all our Whitefish, I deem it proper in this connection to relate briefly the story of our Detroit situation and prospects.

The location of the hatchery in Detroit was in the nature of an experiment. Home fish-culturists as well as many from abroad predicted that it would be a failure. They said the roily condition of the water—the gas—the tar, and the rust of the pipes, and the filth and the pollution from the drainage of a great city, would be fatal to the hatch of Whitefish. But we thought different. We thought water pure and excellent enough for the uses and thrift of a great city, would be found amply good enough for the hatching of fish ova, and so the sequel proved. Indeed, so far from a failure it has been a magnificent and an unequalled success. Prior to our location in Detroit we paid one dollar per thousand (two dollars per 1,000 was modestly asked!) for hatching our Whitefish. We are now producing them at a cost not to exceed ten cents per thousand. Let the question of location and water become settled, and settled in our interest, so that we can make some contemplated changes, and substitute in the place of the old our new hatching improvements, and we will give to the people

of the State live fish at five cents per thousand—cheaper than "fiat" itself—and fish, too, none of your leather-mouthed, wallowing in the mud, semi-hibernating breeds—but fish of the "ton"—members of the royal line, that know how to sport in courtly dignity an adipose dorsal.

At one of the early meetings of the Fish Board, when the question of location of hatchery was up for consideration,—this was when Gov. Bagley, the early, warm, and constant friend of this industry of the State, was a member, knowing, as we well did, the universality and the abundance of Michigan's waters, the following resolution was unanimously agreed upon and passed:

"*Resolved*, Under no known or probable cast of circumstances or of events, can the Board conceive it to be their duty to erect a State Fish Hatchery at any place in the State where a charge shall be made for the use of the water necessary to operate such hatchery."

This resolution was spread upon the records of the Commission, and is to-day unrescinded, and more we think, is unrescindable, for in the opinion of the sages of the bar, and of men hoary with judicial honors, any attempt in the direction of its rescindment would be at least quasi-unconstitutional, as well as contrary to sound public policy. Since, in a State like Michigan, which runs, so to speak, by water,—water is Heaven's largess,—the primal, paramount ordination, operative and of full effect ere territorial ordinances or State constitutions derived an existence.

Now, the location of the Hatchery in Detroit was with the understanding that water should be furnished free. I do not say that this understanding was of an authoritative character, but was of that tacit, consenting sort,—the desire and promise of men, who, as touching the success of our artificial fisheries, thought and felt as they supposed all others should feel and think. And so the Hatchery was built and work commenced. And although the tax rod has been over us in our Detroit field of labor, we confess with all gladness and thankfulness, that we have not experienced its slightest smart. We here, and now aver that we have uniformly been dealt with by the city and by its Board of Water Works with a kindness and consideration far beyond our deserts, and therefor we would express our thanks and gratitude without stint or qualification. Only, and humbly do we pray for the assurance of the continuance of their kindly offices—this, only this, nothing more. By way of conclusion, as well as by way of suggestion, and not by any manner or form of means in way of offset, we would simply say that a State Fish Hatchery is by no means an inconsequential affair. Well conducted it is a pretty fair advertising card for a city. It does draw scores upon scores of visitors, not only from the State but from all parts of the country, to witness its marvelous workings. It is a bank of discount as well as a bank of *deposit*, and its clearings are very apt to inure to the advantage of the city or town of its location. Of the thirty millions or upwards of our hatch, more than ten millions have been given back to that great river,—none grander on the continent,—whose floods ceaselessly sweep on and by, and are justly the pride and joy of the beautiful and rapidly growing "City of the Straits." Freely of the waters of the Detroit River have we received, and freely have we returned to it the product of our small appropriation and the work of diligent hands. It is in our heart to do still more. If the liberality of the past presage the future, we shall hope to cease to be tenants at will, build larger, introduce new utensils, apparatus and appliances of fish production, and so double, treble, quadruple the yield. And if this consummation shall come to mark one of the

great days of our fish calendar, we faithfully promise not to forget to score the credit and the honor to whom the credit and the honor are due.

THE CISCOQUETTES.

There are found in Bristol, Long, and Culver lakes, all located in Barry county, large numbers of fish which the inhabitants residing upon the borders of these lakes and in their vicinity, have been accustomed to call Ciscoquettes. The fish in all three lakes are about the same size, ranging from a pound and a half to three pounds, and are undoubtedly in their origin, one species. They are the most numerous, it is stated, in Long Lake, but are very plenty in all three of the lakes, and with a seine can be caught in large numbers. In flavor, habits, outline, form and general markings, they seem identical with the Whitefish of the Great Lakes.

On the first of December, 1877, Mr. James Boyd, of Baltimore, Barry Co., sent to me, by express, several specimens caught in Bristol Lake. I weighed them, and found their average weight a trifle over two pounds. Some were heavy with eggs, but the eggs did not appear to be ripe, although approaching the size of the mature Whitefish ova. Scores of people that have been accustomed to the use of the Whitefish all their lives, and others who have caught them and sold them in the markets for years, saw them at Niles, and all without exception, pronounced them genuine Whitefish. They were cooked with the Whitefish of Lake Michigan, placed upon the same supper platter, and the guests were unable to distinguish the Whitefish from the Ciscoquette, so identical was their meat in appearance and in flavor. The question how they became denizens of these lakes is still an open one, with no very near prospect of a solution that will be accepted as satisfactory and conclusive by the disagreeing parties.

SALMON OR LAKE TROUT.

During the last two seasons a very fair work has been done upon the Lake Trout. The eggs were procured from Lake Michigan at Milwaukee and Sheboygan, and as the eggs ordinarily mature late in the fall, very considerable difficulty was experienced in their procurement. The weather at this season of the year is much of the time stormy, with high and cold winds, and the tugs employed in the lake fisheries, being of the smaller class, these and other things combine to render the taking of the eggs, not alone a work of art and skill, but one of great physical labor and difficulty. The fishing too, is now done far out in the lake. Until recently good fishing could be had from five to ten miles from the shore, now they have to set their nets twenty, thirty, and even forty miles from the shore, and not so good lifts are obtained, even at those distances from the shore, as were within a very few years made right in sight of the harbors of those cities.

Then there are superadded obstacles that have to be encountered in our ova harvesting. The tugs being small, the lake nearly all the time rough, the continual rocking of the boat, and sometimes so violent even as to upset alike pans, pails, and operator, make it almost impossible to secure that perfect impregnation of the ova, which could and would be assured under more favorable conditions and circumstances. Eggs too, so taken, are, although fertilization may have been secured, doubtlessly injured in a way and degree, possibly not within the range of ordinary observation, which materially affect the after vitality

and health of the embryo and the coming fish. Facts noted during the ova incubation, as well as during the alevin state, go strongly to corroborate this view. So, it is seen that the land, or the shore ova-stripper and he who takes his ova treasures while "rocked in the cradle of the deep," have very unequal tasks to perform.

The hatching of the Lake Trout eggs has all been done at the Pokagon hatchery and by the use of spring water. Spring water of the ordinary temperature I do not regard as the most desirable water to produce the hatch, although I am well aware many eminent fish culturists of the country maintain that spring water is as good as any, if not the best. But I must beg leave to differ. The natural deposit of the eggs by the parent fish is in the cold deep water of the lakes, which cold water, as irrefragible experiment has verified, retards the germ development, producing a slow and a natural evolution of the life principle and of the fœtus growth, so that when maturity and birth ensue you will have the product of natural causes—a creature of more compact tissue, of hardier, healthier function, than if brought into existence by forced, unusual or unnatural causes and agencies. The ovum placed in water at 48° or 50° is placed in what would appear to be an abnormal state. The fœtus is unduly stimulated and quickened and premature birth is the result. Time, in this as in many things else, I regard as of the very essence of perfect development. Water at 50° will most undoubtedly give you infant fish, and so if you are in a hurry about it, artificially raise the temperature to 60° and you will have fish ten, twenty days earlier still, all apparently active, vigorous little wrigglers, the very Anaks of promise as one would naturally suppose, but turn upon them if you please the lens of fish *materia medica* and you will discover far down in their constitutions the seeds of consumption, rickets, dropsy, or something else that shall quickly enough remove them from the scenes of their earthly trials, verifying with fearful certainty and directness the adage, "soon ripe, soon rotten." Cure for these poor, wasting-away creatures may not be found in the waters under the earth, nor can healing come to them from the wings of the wind. You may get your grave stones ready, since no learned Esculapian nor invented nostrum can save them—they are bound to die and to die early. No, a reasonably moderate, slow hatch—a natural, normal hatch as near as may be, is I think in all cases the better hatch. The avoidance of an early or a premature hatch at the Pokagon fishery has been secured by the use of pond water—there being a difference in the pond water and the water as it flows directly from the spring of from 10° to 12°, and a much lower temperature, if deemed desirable, could be had at no very considerable expense by the utilization of the Dowagiac river, which during the winter months is all the time in the thirties, and much of the time low down in the thirties.

The following is a tabulated statement of the hatch and distribution of the Lake Trout for the season of 1877.

LAKE TROUT HATCH AND DISTRIBUTION OF 1877.

County and Name of Lake.	Township where Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Deposited.
Barry Co.				
Gun		March 26, 1877	T. S. Cobb and R. D. Russell, Kalamazoo	25,000
Berrien Co.				
Big Paw-Paw		March 1, 1877	A. Briggs, Pokagon	20,000
Little Indian	Berrien	March 10, 1877	C. Michael, Summerville	5,000
Clear	Buchanan	April 2, 1877	S. A. White, Buchanan	5,000
Pike	Bertrand	April 2, 1877	S. A. White, Buchanan	5,000
Redding	Bertrand	April 2, 1877	S. A. White, Buchanan	7,500
Calhoun Co.				
Duck	Clarence	March 11, 1877	E. J. Arthur, Albion	10,000
Cass Co.				
Magician	Silver	March 10, 1877	A. E. Gregory, Dowagiac	5,000
Jackson Co.				
Chatfield	Leoni	March 15, 1877	T. Pangborn, Mich. Centre	10,000
Kalamazoo Co.				
Bodfish	Ross	March 15, 1877	W. G. Kirby, Augusta	5,000
Crooked	Texas	March 15, 1877	J. G. Fuller, Mattawan	7,000
Gourdneck		March 15, 1877	D. Waterbury, Kalamazoo	10,000
Gull	Richland	March 15, 1877	Eli R. Miller, Kalamazoo	18,000
Long	Richland	March 15, 1877	Eli R. Miller, Kalamazoo	3,500
Lyons	Comstock	March 15, 1877	—— Johnson, Kalamazoo	3,000
Twin Lakes	Alamo	March 15, 1877	John Baker, Kalamazoo	3,000
Paw Paw	Texas	March 15, 1877	E. Hope, Kalamazoo	3,500
Livingston Co.				
Fonda	Brighton	April 12, 1877	P. B. Holdridge and L. B. Fonda, Brighton	3,000
Island	Green Oak	April 12, 1877	P. B. Holdridge and L. B. Fonda, Brighton	3,000
Maxfield	Hartland	April 12, 1877	H. S. Holdridge and R. H. Tenny, Highland	3,000
Long	Hartland	April 12, 1877	H. S. Holdridge and R. H. Tenny, Highland	3,000
Oro	Hamburg	April 10, 1877	P. B. Holdridge and B. T. O. Clark, Brighton	3,000
Oakland Co.				
Dunham	Highland	April 12, 1877	R. H. Tenny, Highland	3,000

The following is the record of our Lake Trout deposits during the season of 1878,—showing county and name of lake; township where located; date of deposit; name and address of depositor; and number of fish deposited:

LAKE TROUT DEPOSIT OF 1878.

County and Name of Lake.	Township where Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Deposited.
Barry Co.				
Loon	Assyria	March 12, 1878	S. DeBalls, Battle Creek	3,000
Tamarac	Barry	March 12, 1878	E. C. Chapin, Hickory Corners	3,000
Gun		April 18, 1878	T. S. Cobb, Kalamazoo	12,500
Berrien Co.				
Big Paw-Paw	Watervliet	March 25, 1878	J. G. Portman, Watervliet	10,000
Branch Co.				
Eagle		April 24, 1878	A. E. Tomlinson, Sherwood	4,000
Marble	Quincy	April 3, 1878	Charles R. Hannan, Quincy	10,000
Calhoun Co.				
East	Tekonsha	April 24, 1878	A. D. Eldred, Tekonsha	2,500
West	Tekonsha	April 24, 1878	A. D. Eldred, Tekonsha	2,500
Mud	Tekonsha	April 24, 1878	A. D. Eldred, Tekonsha	2,500
Turtle	Burlington	April 24, 1878	S. S. Wemple, Union City	2,500
Batt and Lewis	Tekonsha	Abril 24, 1878	S. B. Allen, Tekonsha	4,000
Cass Co.				
Birch		March 25, 1878	J. F. Merritt, Williamsville	7,000
Alone	Wayne	March 12, 1877	H. H. Taylor, Dowagiac	3,000
Corey		April 24, 1878	H. W. Brown, Corey	6,000
Long	Porter	April 3, 1878	Geo. Meacham, Union	5,000
Baldwin		April 3, 1878	Geo. Meacham, Union	5,000
Indiana		April 3, 1878	Geo. Meacham, Union	5,000
Barron	Howard	March 14, 1878	Henry Pruyn, Niles	10,000
Stone	LaGrange	March 25, 1878	C. C. Allison, Cassopolis	7,000
Lafferty	Mason	March 25, 1878	J. H. Keene, Cassopolis	5,000
Indian		March 17, 1878	E. B. Gilbert, Dowagiac	5,000
Dowagiac River		March 26, 1878	H. H. Porter, Pokagon	1,000
Genesee Co.				
Long	Fenton	April 15, 1878	M. T. Thurber, Fenton	6,000
Forbes	Fenton	April 15, 1878	J. C. Forbes, Fenton	3,000
Pip	Holly	April 15, 1878	A. Trapnagen, Fenton	3,000
Silver	Fenton	April 15, 1878	W. H. H. Smith, Fenton	6,000
Pinery	Fenton	April 15, 1878	W. H. H. Smith, Fenton	6,000
Crooked	Fenton	April 15, 1878	J. C. Forbes, Fenton	3,000
Hillsdale Co.				
Baw-Beese		April 3, 1878	W. P. Foote, Hillsdale	5,000
Ionia Co.				
Long	Orleans	April 23, 1878	E. Dorr, Orleans	5,000
Kalamazoo Co.				
Campbell	Comstock	March 12, 1878	O. F. Campbell, Galesburg	10,000
Kent Co.				
Crystal	Byron	April 18, 1878	J. K. Hilton, Ross	6,000
Hilton	Byron	April 18, 1878	J. K. Hilton, Ross	6,000
Lincoln	Spencer	April 23, 1878	H. M. Fuller, Greenville	7,500
Maxwell		April 18, 1878	J. H. Dalrymple, Cedar Springs	2,500
Olans	Solon	April 18, 1878	J. H. Dalrymple, Cedar Springs	2,500
New Boston	Plainfield	April 18, 1878	J. Korreck, Grand Rapids	5,000
Pine Island	Plainfield	April 18, 1878	A. Korreck, Alpine	7,500
Reeds		April 18, 1878	J. C. Parker, Grand Rapids	10,000

LAKE TROUT DEPOSITS OF 1878.—*Continued.*

County and Name of Lake.	Township where Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Deposited.
Lenawee Co.				
Southards	Raisin	April 3, 1878	O. P. Layard, Adrian	5,000
Wamplers	Cambridge	April 3, 1878	W. H. Lazenby, Adrian	10,000
Livingston Co.				
Pleasant	Hamburg	April 23, 1878	B. T. O. Clark and C. Thomson, Brighton	6,000
Mont		April 23, 1878	B. T. O. Clark and C. Thomson, Brighton	3,000
Long		April 23, 1878	B. T. O. Clark and C. Thomson, Brighton	3,000
Worden		April 23, 1878	B. T. O. Clark and C. Thomson, Brighton	3,000
Thompson	Howell	April 23, 1878	H. B. Blackman, Howell	5,000
Walker's	Hamburg	April 23, 1878	C. D. Stewart, Brighton	5,000
Whalen	Hartland	April 11, 1878	H. Wyman, Hartland Centre	6,000
Webster	Genoa	April 23, 1878	Geo. Gale, Howell	5,000
Coon	Marion	April 23, 1878	Geo. Gale, Howell	5,000
Half-Moon	Putnam	March 26, 1878	Ira V. Reeves, Pinckney	3,333
Island	Putnam	March 26, 1878	Ira V. Reeves, Pinckney	3,333
Patterson	Putnam	March 26, 1878	Ira V. Reeves, Pinckney	3,334
Mud	Brighton	April 23, 1878	P. B. Holdridge, Brighton	5,000
Brophy	Hartland	April 11, 1878	H. McKeever, Hartland	6,000
Cedar	Marion	April 27, 1878	D. O. Smith, Howell	5,000
Montcalm Co.				
Wood	Pierson	April 18, 1878	F. F. Taylor, Pierson	5,000
Crystal	Crystal	April 23, 1878	H. H. Steffey, Crystal	7,500
Oakland Co.				
Big		April 16, 1878	E. A. Botsford, Davisburgh	5,000
Long		April 16, 1878	E. A. Botsford, Davisburgh	5,000
Timbered	Waterford	April 15, 1878	Wm. Beaty, Pontiac	6,000
Pickerel	Waterford	April 15, 1878	Wm. Beaty, Pontiac	6,000
Otter	Waterford	April 15, 1878	Wm. Beaty, Pontiac	6,000
Orion	Orion	March 13, 1878	C. K. Carpenter, Orion	3,334
Walnut	Bloomsfield	April 15, 1878	J. A. Bigelow and L. Stanley, Birmingham	6,000
Wing	Bloomsfield	April 15, 1878	J. A. Bigelow and L. Stanley, Birmingham	6,000
Dunham	Highland	April 11, 1878	R. H. Tenny, Highland	15,000
Tenny	Milford	April 11, 1878	R. H. Tenny, Highland	3,000
Williams	Waterford	April 15, 1878	F. Williams, Waterford	6,000
Andrus		April 11, 1878	H. S. Holdridge, Highland	7,500
Maxfield		April 11, 1878	H. S. Holdridge, Highland	5,000
Lee		April 11, 1878	H. S. Holdridge, Highland	2,500
Long		April 11, 1878	H. S. Holdridge, Highland	5,000
St. Joseph Co.				
Pickerel	White Pigeon	April 3, 1878	W. N. Elliott, White Pigeon	5,000
Sand Lake		April 24, 1878	L. A. Clapp, Centreville	5,000
Kaiser	Fabius	April 24, 1878	C. F. Kaiser, Fabius	7,500
Mud	Fabius	April 24, 1878	A. C. Prutzman, Three Rivers	4,000
Van Buren Co.				
Four Mile	Paw-Paw	March 12, 1878	J. E. Abrams, Paw-Paw	10,000
Sister Lakes		March 16, 1878	E. Pardee, Dowagiac	10,000

EXPERIMENTING WITH LAKE TROUT EGGS.

Mr. O. M. Chase, on the 10th day of December last, took from the Pokagon hatchery forty thousand Lake Trout eggs to the Detroit hatchery, and placed them in one of his automatic glass jars. To give them that perpetual agitation and motion which are given to the Whitefish eggs, nearly three times the quantity of water is required, the eggs being very much larger and their specific gravity greater. The needed agitation and motion of the eggs is obtained, but whether the dead eggs will rise readily to the surface, and float off with the escaping water, as do the dead Whitefish eggs—or whether the shells of the eggs will in any way or degree be injuriously affected by their continual rounds of motion in the jar—these and other questions of a correlative character, cannot be conclusively determined until the experiment is given wider range and scope. The general outlook, however, is favorable, that Lake Trout eggs and quite possibly other kinds besides those of the Whitefish, may be successfully hatched by the use of the automatic glass jars.

ALBINOS.

In the hatch of the Lake Trout of 1878 there were discovered six Albino minnows. These remained with the other fry, were fed the same, and in all respects cared for and treated the same as the general hatch. But when the time came for distributing the Lake Trout, these were retained and placed in a small apartment of one of the hatching troughs by themselves, where four of them are still kept, the other two having been sent, upon urgent request, as sample fish curiosities to the Chicago Exposition and to the Detroit State Fair, where they somehow and by some means missed their way in getting back. They have been remarkably healthy and have thriven to a degree in excess even of their darker complexioned brothers and sisters. They are entirely white—gills, gill-covers, fins, back and sides—the entire fish being of a cream color or whiteness. It has been rather broadly hinted that this phenomenal result has been induced or produced by a free use of cream! Well, I will say they were not hatched in cream, nor have they been fed on cream, our dwindled and dwindling away little fish fund warranting no such extravagant outlay. Our little albino friends have the kind wishes of lots of good people, and the prayer is quite universal that their precious lives may be spared.

CALIFORNIA SALMON.

A very considerable work has been done by the Commission upon the California Salmon. During the month of October, 1877, one hundred thousand eggs were shipped from Camp Baird on the McCloud river, a tributary of the Sacramento, to the Pokagon hatchery. The eggs arrived in good order, there being a loss not to exceed five per cent, and were very successfully hatched. The United States Fish Commission made no charge for the eggs except to require us to pay the freight, the express company's charges. But the express company's charges on California Salmon eggs are simply outrageous—no milder term can or should be used in connection with the charge. It would seem that the man with his wheelbarrow could bring them through and make a profit at the prices charged. In October, 1875, the Michigan Commission paid as the express company's charges on between seven and eight hundred thousand fish eggs—not pears, not apricots, nor figs, nor dates—but *fish eggs,*

the sum of $518.55. The eggs are boxed with inch boards—the boxes of sizes easily handled, and require and doubtless receive no more attention than do boxes of grapes, or pears, or other fruits and luxuries, the product of that luxuriant and gold-bearing country. If such charges come and are the offspring of "subsidy," cursed be subsidy!

The following is the distribution of our hatch of California Salmon for 1878:

DISTRIBUTION OF CALIFORNIA SALMON FOR 1878.

County and Name of Lake.	Township where Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Deposited.
Allegan Co.				
Dumont		Jan. 22, 1878	S. S. Dryden, Allegan	3,500
Minor		Jan. 22, 1878	Wm. C. Weeks, Allegan	3,500
Berrien Co.				
Ponds, Perry Tuttle	Niles	Nov. 18, 1877	Perry Tuttle, Niles	300
Ponds, J. H. Hatch	St. Joseph	March 2, 1878	J. H. Hatch, St. Joseph	300
Ponds, C. C. Sutton	Benton Harbor	March 2, 1878	C. C. Sutton, Benton Harbor	300
Big Paw Paw		March 1, 1878	J. G. Portman, Watervleit	4,000
Calhoun Co.				
Town Line		March 4, 1878	H. Willis, Battle Creek	2,000
Goguac		April 29, 1878	Thomas Hart, Battle Creek	3,500
Cass Co.				
Barron	Howard	Feb. 5, 1878	Henry Pruyn, Niles	5,000
Pokagon Creek.		Jan. 2, 1878	H. H. Porter, Pokagon	3,500
Miller's Creek.		Jan. 9, 1878	H. H. Porter, Pokagon	1,000
Indian Lake		Jan. 10, 1878	E. B. Gilbert, Dowagiac	2,000
Charlevoix Co.				
Walloon		Jan. 23, 1878	D. D. Hughes, Jr., Grand Rapids	5,000
Clare Co.				
Crooked	Surrey	April 12, 1878	H. B. Roney, East Saginaw	7,000
Hillsdale Co.				
Baw-Beese		Feb. 14, 1878	W. P. Foote, Hillsdale	3,000
Kalamazoo Co.				
Gull	Richland	May 3, 1878	Eli R. Miller, Richland	3,000
Long	Richland	May 3, 1878	Eli R. Miller, Richland	500
Lenawee Co.				
Silver	Richland	March 4, 1878	L. Parsons, Woodstock	2,000
Goose	Woodstock	March 4, 1878	N. Osborne, Woodstock	2,000
Mallory	Woodstock	Feb. 14, 1878	C. H. Boies, Hudson	2,500
Tiffin River		Feb. 14, 1878	E. W. Ames, Hudson	2,500
Palmyra Pond	Palmyra	Feb. 14, 1878	W. G. Smith, Palmyra	2,500
Southard	Raisin	Feb. 14, 1878	O. P. Layard, Adrian	2,500
Livingston Co.				
Patterson	Putnam	March 4, 1878	J. V. Reeves, Pinckney	2,000
Half Moon	Putnam	March 4, 1878	J. V. Reeves, Pinckney	2,000
Island		March 4, 1878	J. V. Reeves, Pinckney	2,000

DISTRIBUTION OF CALIFORNIA SALMON FOR 1878.—*Continued.*

County and Name of Lake.	Township where Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Deposited.
Oakland Co.				
Pond, J. Van Hoozen	Rochester	March 4, 1878	J. Van Hoozen, Rochester	1,000
Van Buren Co.				
Sister Lakes		Jan. 3, 1878	E. Pardee, Dowagiac	3,000
Washtenaw Co.				
Silver	Dexter	March 4, 1878	Isaac K. Brokaw, Pinckney	2,000
Wayne Co.				
Detroit River		Nov. 1, 1878	O. W. Chase, Detroit	100

HYBRIDS AND NATIVE SALMON.

In the fall of 1877 a few experiments were made at the Pokagon State Hatchery in the way of hybridization of fish. The experiments were both interesting and reasonably satisfactory. November 12th, about one thousand Brook Trout eggs were impregnated with the milt of the Kennebec or Atlantic Salmon. Quite a large portion of the eggs hatched, and the fry seemed to be of the usual strength and health of the fry of the salmonoid family. November 20th about the same number of brook trout eggs were fertilized with the milt of the California Salmon, and a considerable portion of the eggs hatched. October 22d, there were taken from a California Salmon eighty eggs, apparently normal in all respects and fully mature. October 24th, one hundred and fifty eggs were procured from another California Salmon, and both lots were impregnated with the milt of a California Salmon. A portion of the eggs hatched. These Salmon, male and female, were hatched and raised at State hatchery, and were from the stock of 1874. Now these cases show most conclusively that the Salmon will breed, when in a degree domesticated and confined in very limited areas of water. The most wonderful effect, however, upon Salmon, resulting from confinement, limited supply of water, and restricted area, is the stunting, or the dwarfing of the fish. They seem to grow rapidly enough for the first six, or twelve, or eighteen months, but beyond that their growth becomes exceedingly gradual, and in some cases is quite entirely checked; rendering it very evident to my mind that the Salmon will not thrive in aquariums, nor in ponds of water, large or small where good currents of water cannot be produced. It is the strong current—the dashing, splashing force of the water that imparts flash to their eye, and puts flesh upon their silvery flanks more rapidly and of surer effect, than will any amount of petting, nursing or of feeding. And I am compelled to confess that I have no great faith in the success of the California Salmon in our small and quiet lakes, except such lakes should chance to be visited, and that too rather frequently by some meteorological disturbances, such as water-spouts, hurricanes, and the like. And the application of these great agencies as promotive of the comfort and of the growth of a few Californians, might quite likely be considered a waste of kind Nature's physical forces.

LAND-LOCKED SALMON.

ut a small amount of labor, and a very inconsiderable part of our fund have n expended up to the present time on the Land-locked Salmon. It has been lly four years since the commencement of their artificial cultivation in the ntry. The few eggs that have been obtained from the State of Maine, have n in very great demand in all parts of the East, as well as in the Middle and stern States. And so, in consequence of the small stock and the universal and, the apportionment to Michigan has been only a few thousands. Ar-gements however, of quite a recent date, have been perfected at Grand Lake am, in the State of Maine, the establishment erected there being under the t control and direction of the State and of the National Fish Commission, means of which a much larger supply of eggs, it is hoped, may be secured, future distribution among the several States. This year's procurement of s at Grand Lake Stream, I am informed, is one million seven hundred usand, a number largely in excess of any previous year. But if not blinded the glare of recent transpiring events, the time is not far distant when higan will become quite independent of her sister pine State. For it is be-ed that, if she has not already, she soon will have in her own borders, and hin her own beautiful lakes, such a supply of this gamy and most excellent as will suffice for all the needs of reproduction. Recent discoveries point e conclusively to such a consummation.

n the 19th of November last, Land-locked Salmon were caught in Log Lake, lkaska county; they being of the deposit of May, 1876, weighing over eight nds, and measuring twenty-nine inches, and others are reported as having n seen in the lake of a still larger size. But what is of still greater signifi-e and encouragement, the opinion prevails among the people of Kalkaska the work of spawning in Log Lake is *un fait accompli*, and that the open-spring will produce numerous attestations of this fact. Hon. Eli R. Miller, A. Bleazby, A. C. Jackson, and others, who visited the lake last November, who are no novices in matters ichthyological, entertain this opinion very ngly, and give salient reasons too, in support of their judgment. Mr. Mil-, when at Kalkaska, urged upon the people residing there, and of those ding in the vicinity of the lake, the great importance of preserving the fish, of protecting them absolutely against all fishing, and against all intruders, ning whence they may. If indeed, the fish are there, and of this there is not cintilla of doubt, and if they are become spawners, obeying in their lives the ine mandate, "increase and multiply," they may prove of almost incalcu-le benefit to the fisheries of the State, and should be protected and preserved, eed be, by the sovereign authority and sinew of the State. It is however, st earnestly hoped that the sober judgment and good sense of the people of lkaska will dominate, and so set to rest all fear and apprehension as regards ir being fished out, or in any way improperly meddled with, and that they sacredly preserve Log lake with its fin treasures for the larger behoof of cherished art, as well as for their own fair renown.

The following are the deposits of our stock of Land-locked Salmon of the ch of 1878:

County and Name of Lake.	Township where Located.	Date of the Deposit.	Name and Address of the Depositor.	No. of Fish Deposited.
Berrien Co.				
Tinkam	Niles	April 13, 1878.	A. Briggs, Pokagon	5,000
Calhoun Co.				
Metcalf		April 22, 1878.	A. T. Metcalf, Kalamazoo	4,000
Goguac	Battle Creek	April 22, 1878.	E. Harbeck, Battle Creek	4,000
Clare Co.				
Crooked	Surrey	April 12, 1878.	H. B. Roney, East Saginaw	4,500
Roney		April 12, 1878.	H. B. Roney, East Saginaw	1,500
Montcalm Co.				
Whitefish	Pierson	April 18, 1878.	J. C. Parker, Grand Rapids	7,000

THE GRAYLING.

Ichthyology has no fish of its nomenclature which has so stoutly and so successfully resisted the attempts of fish culturists for its domestication and colonization as has our beautiful and queenly *Thymallus Signifer*. As if belonging to some oath-bound secret organization, they withhold the secret of their spawning season, causing fish savants to differ widely in their opinion as to the period of their "lying-in," some insisting it is in February, others, in March, others, in April, and others, in May, and others still there are who affirm that the period is elective and optional with the Grayling, whether it be in January or in July! The Grayling seems to say, with a sort of self conscious satisfaction, to those persons and parties who have become slightly lunatic in their desires to transfer him from his present haunts to grace and enrich other waters and other homes, "mind your own business," and so he is to this very day and hour "master of the situation." The Michigan Fish Commission have planned two expeditions, equipped and provided them with all that was deemed necessary to insure the sought for success, both expeditions being under the leadership of that veteran angler and prince of good fellows, Daniel H. Fitzhugh, Jr., of Bay City, who, in his knowledge of the haunts, habits, and instinctive traits of character of the Grayling, is, by the unanimous admission of men renowned in the gentle art, without a peer or a rival. The party of the first expedition, that of 1877, were in camp on the Manistee river, seven miles from the village of Grayling, on the 14th day of April, thought to be abundantly early to secure our stock of eggs. But almost before our tents were unfolded a deputation from the Manistee, flowing at our feet, entered camp Fitzhugh and very cavalierly informed our General that it was too late—and so events proved.

The second expedition, that of 1878, arrived at camp Jerome, on the Manistee, twelve miles from the village of Grayling, on the 30th of March, more than two weeks earlier than the year before,—and yet the great harvest was past, only a little gleaning could be done and that of a very unsatisfactory character. A few Grayling stragglers, principally of the lean, hungry Cassius kind, were secured—their spawn and milt obtained, but so poor and feeble was the issue that many of the eggs never had a birth, and the fry that survived the perils of their birth died very young, deeply lamented of course. So, being foiled, defeated in compassing the specific objects for which we started forth, a

v thought and a new purpose inspired the situation. Being there in force is was the first expedition) and with all needed equipments for a large "take" the Grayling, it was adjudged the proper thing under the circumstances, capture what adult Grayling we well could and remove them to the State tchery or other good quarters to be retained as a stock of breeders. Hence- hands were ordered to the boats, with orders to take as captives every Gray- g that had the temerity to come to our lines. Under this order some fifteen ndred were taken. And now all that remained was the disposition of our ptives, and this was the disposition:

April 20th, 1877.—300 were delivered at the State Hatchery ponds with ly a loss of seven, twenty-four cans and two barrels being used in their trans- rtation.

April 25th.—300 were delivered at the State Hatchery, with a loss of only ree, 30 cans being used in their transportation.

May 4th.—300 were shipped to State Hatchery, with but a trifling loss— me number of cans used.

May 11th.—300 were shipped to State Hatchery, with a loss of eight or ne, 32 cans being employed for their transportation.

May 18th.—75 were deposited by Mr. VanDeering, of Jackson, in Sandstone eek, at Trumbull; a strong and spring supplied creek, between one and two ls in width, and tributary to the Grand River.

May 18th.—75 were deposited in Goguac Lake, Calhoun county, a lake of ge size and of very rare beauty and attractions, and which is being protected the citizens of Battle Creek with a zeal and a vigilance worthy the highest mmendation. The officers and members of the Sportsman's Club of Battle eek took charge of the Graylings and made the deposit.

May 18.—75 were deposited in Spring Brook, Kalamazoo county, a tributary the Kalamazoo River; the brook being a rod or more in width, and is made inly from large and cold springs. The deposit was made by Thomas S. bb and James McNabb, at a point in the stream known as Gov. Throop's rm, some four miles from the village of Kalamazoo.

May 18th.—75 were planted in the head waters of Dowagiac Creek, a large butary of the St. Joseph River, E. L. Hawks, of Decatur, made the deposit good time and in good order.

One fact of great interest and importance was developed in our Grayling rk of this year. The Superintendent when at Grayling, while handling the e fish, en transit, discovered one fully ripe spawner, but was unable to procure milter with which to fertilize the ova. She was stripped and her eggs care- lly counted by two competent parties, and the yield was found to be 3,555, ll size ripe eggs. The fish was weighed after the extrusion of the spawn, d weighed exactly nine ounces. This surely, considering the size of the nale, was a most remarkable yield,—a yield quite largely in excess of the pular and accepted belief, as well as at variance with the belief of those who ve supposed they were *au fait* as to these things. The Grayling, according to sample above given, which in its fecund habit, has generally been supposed be about on a par with the Speckled Trout, is far more prolific than the ook Trout. This large ova yield, if normal and to be relied on as a test, or lex case, I regard a very encouraging sign in the propagation of the Grayling. Now, in our efforts to obtain the spawn of the Grayling, great obstacles are countered. The season of the year is unfavorable,—the haunts of the Gray- g are unfavorable—away in the deep woods, miles away from any human hab-

itation, and over roads with an ox team, scarcely making a mile per hour, and such roads too, through fen and bog, and over logs and stumps that would shake bad temper from any corpus, or quite as likely *shake it in*, if luckily non-resident before, why the chances were hardly even had we succeeded in procuring eggs, of one-half surviving the perilous transit out of the woods. I think the much better way, all things considered, would be for one or two persons to go armed and equipped, *cap a pie*, for a match trial of patience and endurance. As soon as the tents are drawn and staked, say boldly to Mr. Grayling, we have this time come to stay,—we are going to sit down on you, "you bet," and we think it but meet and honorable that you should be notified of it. Satisfied that you are sincere and that your resolution is well taken, the Grayling, I believe, will prove the most accommodating of fish. And if fortunately securing the fertilized spawn, the party should be prepared with screens, and boxes, and races to hatch the eggs on the spot. The water will prove doubtless of the very best, and the trouble and expense not much, if any greater, than at a State Hatchery. And then the fry, when at the proper age, can easily and with safety be shipped to such points of delivery as deemed advisable and desirable.

In this way, I believe a victory may be achieved over our coy and coquettish customer. And not only their haunts, but the time and manner of their nesting and egg-laying discovered with reasonable certainty.

I am not ignorant of the opinion prevailing in some quarters, to wit, that the Grayling cannot be propagated by artificial methods, and is entirely outside the range of the fish-cultural art. That attempts to handle the fish, fructify the ova, and rear the fry are and ever will be abortive. But Grayling have been fish-culturally manipulated, the ova fecundated and hatched, and the fry a denizen of our ponds. They are, passing all dispute, a delicate and a peculiar fish, and may require special, and possibly as yet unknown, methods of manipulation and treatment, ere entirely satisfactory results are recorded. But that Mr. Thymallus Signifer will successfully and permanently resist the march of observation, of experiment, and especially of that earnest fish-cultural endeavor which has so strongly set in, achieving victories over almost everything that swims, I do not believe. Domestication and his increase by human device and purpose, are quite certain to come along sooner or later, in that majestic sweep with which man is now asserting his prerogative of "dominion."

EELS.

Well, the eel has at length put in an appearance. He is now a veritable Michigan institution, growing and spreading himself beyond hope of check or eradication. Well aware am I that the greetings he received on his arrival into the State were not quite universally of a friendly character. Many there are who welcomed him with wild huzza, and with willing hands and quickened step provided him with "a habitation and a home," while here and there are a few who think, and not undoubtingly conscientiously too, that while we were in the emigration business we might have made choice of a better race of emigrants. Well, for the comfort and consolation of such as cannot see in the eel the *summum bonum* of gustatory desire and think his room better than his company, I wish to say, our Eels were selected with great circumspection and care. We did not go to the slums and to the "five points" of the cities, nor to the correction and poorhouses, and jails of the east for them, but to the crystal flowing waters of the storied and verse-immortalized Hudson; and even from the silvery floods that roll at the feet of young Priam's Troy, we sharply

discriminated, selecting only those who bore well attested testimonial of distinguished pedigree and good character. So we entertain high hopes that the eels of Michigan's adoption will fulfill the promise of our carefulness of selection.

I well know the eel with many is the very sphinx of the waters—whence he cometh, and whither he goeth, and what wise end he subserveth in the economy of creation, are questions about equally puzzling to professor and to janitor. A few there are who affect to believe that his well-rounded belly and sleek look come from perpetually feasting upon the extruded ova of his betters. That he by original, inherent wickedness stops the wheels of mill and factory, and is a graceless outlaw and tramp. Now some of this is well told fable and the rest of it downright calumny, reflecting quite as seriously upon the libeler as upon the party libeled. That he does now and then change pastures, without leave or license of anybody, when his condition and happiness are better assured by the change, we admit. But I think this, instead of constituting one of the counts in the indictment against him, is very much to his credit. That he is a believer of scripture, and does fulfill the sacred injunction, "increase and multiply," is most true, but that he by design or otherwise puts an embargo on mill and factory, or stops for an instant the hum of wheel or spindle, is a charge of grave and libelous import, and, standing as a friend to the prisoner at the bar, we demand the proof. And as regards his spawn-devouring appetite and habit, this too is without any salient proof to support it. For he, like Bruin, at the first approach of a nor'easter, has the good sense to go into winter quarters. And during the period of his hibernation, the Whitefish, the Lake Trout, and the Salmon probably of this latitude, and the Brook Trout, and the Grayling, and other salmonoid species, do lay their spawn, and ere the eel is well awake from his winter's nap, the eggs are become swift-finned minnows, quite too smart and sensible for his angular movements. The sins of the water lizard, which does not hibernate, and which does gorge itself to Falstaffian fullness on the spawn of the Whitefish and Salmon Trout, they would visit upon our unoffending eel. Hence it is hardly in the category of strange things, with vision natural and spiritual, dulled by a prejudice as unreasoning as long-existent, that the water-lizard and the eel should thus get confounded, whilst as a matter of tangible and occular fact scarcely any two existences of the water are more unlike than are the vulgar, ill-shapen, clog-moving water lizard and the graceful swimming, silver-lined *Anguilla Communis*.

But oh! how the anti-eelers cry out against the form of our eel,—reptilian they say, and all that. Well, its *form*, it is pretty generally believed, is not unlike that which seduced from faith and fealty other forms of supposed supernal grace and beauty, barring the gates of Eden for all the ages. I do not know exactly how his form could be changed or improved, and the eel retain his eelhood. Man has never achieved any very pronounced success in his endeavors to refashion or reconstruct nature, and my faith is hardly of the size of a mustard seed that he ever will.

And now, that the eel, from no choice or election of his own, is an inhabitant of the State, square dealing, as well as sound policy require that we extend to him a fair chance,—throw about him the panoply of equal laws, and accord to him ungrudgingly all the benefits that come of amity and good neighborhood.

Now, a brief recital of our work upon the eel. In the Hudson River, at

Troy, just below the dam, is the field of our operations. We provide ourselves with fine wire dip nets or screens, and have boxes conveniently and properly anchored for the reception of our catch, and as soon as the catch is sufficient for a shipment of fifteen or twenty cans full, we start them off. The catch of 1877 was as follows:

May 28th	100	June 1st	70,000
May 29th	200	June 2d	150,000
May 30th	200	June 7th	20,000
May 31st	200	June 11th	3,000

On the first, second, and third of June, the water seemed alive with them, and millions might have been caught. But unluckily, our buckets held only so much, and though the shower was heavy and continued for three days, our cans, and boxes, and races, not being constructed of india rubber, we were able to secure but a tithe of the great harvest.

In their packing and shipment a new method was adopted. Mr. Chase, who superintended the work at Troy, prior to the shipment of any, experimented with different cans. He placed some eels in cans full of water of the temperature of the river. Others he placed in water reduced to 48°, about the average temperature of spring water. Others still, he kept in ice water, brought down and kept near freezing point; and still others were put into cans where had been placed two or three inches of wet earth or mud, and filled up the can with fresh cut or pulled river grass, a coarse grass, and kept the can moist and cool by putting upon the top of the grass, now and then, a handful of well pounded or pulverized ice. He found at the end of twenty-four hours that the eels in the mud and grass can, were in much the best condition, none having died, and all lively, not to say merry as crickets. So all of our eels have been shipped in this way, and it possesses great advantages over the old methods. Aside from the greater health and safety of the fish, they are far more easily attended in their transit; one attendant being ample for moving any number of cans. The cans too, are but a little over one-third as heavy as cans filled with water, and so are much more easily and safely handled. And another important consideration, the freight upon them is only about one-third of what it is on eels moved in the old way, in cans of water. Although Michigan is the first to move eels in this way, and is most undoubtedly entitled to letters patent, yet our friendship for the eel, and our ardent hope for the extension of his empire, have induced us to forego all such sordid considerations, and so we do most cordially and freely donate our discovery to the uses and behoof of all good and true eelists.

One difficulty we experienced in our eel work. We ship our eels on the New York Central from Troy to Buffalo, and the R. R. management do not like to, and will hardly consent to take in one shipment as many as is profitable for us to move in a single shipment. Indeed we came very near loosing an entire shipment by the supposed lack of room to move our cans on the express train. The cans were taken aboard without objection, at Troy, but were thrown off at Schenectady, and although we assured the train dispatcher that they were perishable property, and represented hundreds of dollars of value, and the transportation receipts and tickets were plainly enough to be seen in our right fist, and telling him with much emphasis that if we were left on the platform to perish in a burning June sun, some things were just as likely to happen as others, all this produced no preceptible impression, till we declared we would,

if he would permit it, carry what cans we could on the fore and aft platforms of of the car, and the balance we would lash to the cow-catcher, for go they must. The cans went aboard again, and were piled and stacked with just room enough to peer about and make the count to see that all were aboard. Arrived at Buffalo, we found relief in the ever accommodating Lake Shore and Canada Southern. May the good Lord bless these lines and their management, and their tracks not only outlive all the profane centuries, but run parallel with the long promised "thousand years."

The following is a statement of our eel deposits during the season of 1877. The table showing where deposited; by whom; when; and the number of cans and fish:

EEL DEPOSITS DURING 1877.

Where Deposited.	By Whom.	When.	No. of Eels.
	Berrien County.		
Jerome Lake	G. H. Jerome and L. Curtis	June 8, 1877	1 can, 5,000
In long race and mill ponds of Dowagiac Creek, near Niles	G. H. Jerome and L. Curtis	" 8, 1877	1 can, 5,000
	Calhoun County.		
Kalamazoo River at Albion	T. H. Griffin	" 7, 1877	2 cans, 10,000
Long pond at Marshall		" 7, 1877	2 cans, 10,000
Goguac Lake	E. Harbeck	" 7, 1877	2 cans, 10,000
St. Mary's Lake	E. Harbeck	" 7, 1877	1 can, 5,000
	Cass County.		
Dowagiac Creek at Dowagiac	Henry Michael	" 13, 1877	3 cans, 15,000
Ponds at Pokagon State Hatchery	A. W. Briggs	" 13, 1877	1 can, 5,000
	Gratiot County.		
Mill-pond on Pine River, at St. Louis	D. O. Cuff	" 13, 1877	1½ cans, 7,500
Mill-pond on Pine River, at Alma	D. O. Cuff	" 13, 1877	1½ cans, 7,500
	Ionia County.		
Prairie Creek, at Ionia	A. W. Dodge	" 12, 1877	Nearly 2 cans, 8,000
Blass Pond	A. W. Dodge	" 12, 1877	Part 1 can, 2,000
Woodnow Lake, 6 miles north of Ionia	A. W. Dodge	" 12, 1877	1 can, 5,000
	Jackson County.		
Grass Lake	C. Feckenscher	" 7, 1877	4 cans, 20,000
Grand River, at Jackson	H. E. Southworth	" 7, 1877	4 cans, 20,000
Spring Arbor Lakes	Van Dearing	" 7, 1877	3 cans, 15,000
	Kalamazoo County.		
Gourdneck and Hogshead Lakes	D. Waterbury	" 12, 1877	2 cans, 10,000
	Livingston County.		
Oar Creek, a tributary of Huron River	Giles Ross	" 12, 1877	1½ cans, 7,500
	Oakland County.		
Ore Creek and other branches, Saginaw River	Giles Ross	" 12, 1877	1½ cans, 7,500

EEL DEPOSITS DURING 1877.—*Continued.*

Where Deposited.	By Whom.	When.	No. of Eels.
	Shiawassee County.		
Shiawassee River, at Owosso	R. G. McKee	June 12, 1877	1 can, 5,000
Diamond Lake, near Laingsburgh	R. G. McKee	" 12, 1877	1 can, 5,000
Looking Glass River	M. Beardsley	" 12, 1877	½ can, 2,500
Marsh Lake	M. Beardsley	" 12, 1877	½ can, 2,500
Wolf Lake	M. Beardsley	" 12, 1877	½ can, 2,500
Eel Lake	M. Beardsley	" 12, 1877	½ can, 2,500
	St. Clair County.		
Black River, near Port Huron	E. H. Jones	" 12, 1877	3 cans, 15,000
	St. Joseph County.		
Long Lake	W. B. Akey	" 12, 1877	1 can, 5,000
Mill-pond, at Colon	W. B. Akey	" 12, 1877	1 can, 5,000
	Washtenaw County.		
Huron River, at Ann Arbor	M. S. Davis	" 7, 1877	1 can, 5,000
Huron River, at Dexter	E. B. Taylor	" 7, 1877	3 cans, 15,000
Joslin Lake	P. Blum	" 12, 1877	1 can, 5,000
Shafer Lake	A. Blum	" 12, 1877	1 can, 5,000
Silver Lake	W. Blum	" 12, 1877	1 can, 5,000
River Raisin, above Raisin Lake	D. W. Palmer	" 12, 1877	2 cans, 10,000

In the foregoing deposits I in every case received letters from the depositors informing me that the eels arrived generally in excellent condition, in many of the cans no dead eels being found, whilst in a very few cans a trifling percentage of loss was noticed. The deposits were all made in good time and in very satisfactory order.

The following is a statement of our eel deposits for the season of 1878. The eels were procured at Troy, in the Hudson as before, and packed and shipped in the same manner as during the season of 1877. In the time of their "running" there was a difference between the two seasons of but two or three days, the run commencing towards the close of May and ending about the 10th of June.

EEL DEPOSITS DURING 1878.

Where Deposited.	By Whom.	When.	No. of Eels.
	Allegan County.		
Dumont Lake	S. S. Dryden	June 6, 1878	1 can, 5,000
Minor Lake	Wm. C. Weeks	" 6, 1878	1 can, 5,000
	Berrien County.		
Brandywine Creek	Geo. H. Jerome and G. W. Armstrong	June 7, 1878	1 can, 5,000
	Barry County.		
Mill Pond	Geo. Prichard	June 12, 1878	1 can, 5,000
	Branch County.		
Marble Lake	C. R. Hannan	May 31, 1878	2 cans, 10,000
	Calhoun County		
Town Line Lake	H. Willis	June 6, 1878	1 can, 5,000
Goguac Lake	E. Harbeck	" 6, 1878	3 cans, 15,000
Turtle Lake	S. S. Wemple	" 12, 1878	1 can, 5,000

EEL DEPOSITS DURING 1878.—CONTINUED.

Where Deposited.	By Whom.	When.	No. of Eels.
	Cass County.		
Allen Lake	H. H. Taylor	June 6, 1878	1 can, 5,000
Birch Lake	Wm. Dibble	May 31, 1878	1 can, 5,000
Long Lake	Geo. Meacham	" 31, 1878	1 can, 5,000
Baldwin Lake	Geo. Meacham	" 31, 1878	1 can, 5,000
Birch Lake	J. F. Merritt	June 13, 1878	1 can, 5,000
Stone Lake	C. C. Allison	" 13, 1878	1 can, 5,000
	Genesee County.		
Pinery Lake	W. H. H. Smith	June 8, 1878	1 can, 5,000
Hibbard Lake	Geo. A. Woodhull	" 8, 1878	1 can, 5,000
Barnum Lake	" "	" 8, 1878	1 can, 5,000
Severance Lake	" "	" 8, 1878	1 can, 5,000
	Hillsdale County.		
Baw-Beese Lake	W. P. Foote	May 31, 1878	3 cans, 15,000
Mill Ponds, St. Jo. River, at Jonesville	H. C. Adams	" 31, 1878	3 cans, 15,000
Hog Lake	Howe & Sheriff	" 31, 1878	1 can, 5,000
Duck Lake	" "	" 31, 1878	1 can, 5,000
	Ionia County.		
Peck Lake	E. H. Bliven	June 8, 1878	1 can, 5,000
	Jackson County.		
Mud Lake	C. Feckenscher	June 6, 1878	1 can, 5,000
Tims Lake	" "	" 6, 1878	1 can, 5,000
Fays Lake	C. E. Fay	" 6, 1878	1 can, 5,000
	Kalamazoo County.		
Comstock Mill Ponds	C. H. Dunbar	June 6, 1878	1 can, 5,000
Woods Lake	E. J. Roos	" 6, 1878	1 can, 5,000
East Lake	" "	" 6, 1878	1 can, 5,000
Howard Lake	Isaac Stevens	" 6, 1878	1 can, 5,000
Lime Lake	" "	" 6, 1878	1 can, 5,000
Humphrey Lake	P. H. Gilkey	" 6, 1878	1 can, 5,000
	Kent County.		
Pratt's Lake	E. W. Dodge	June 8, 1878	1 can, 5,000
Booth's Bay, Grand River	" "	" 8, 1878	1 can, 5,000
Flat River	C. Purple	" 8, 1878	2 cans, 10,000
Perch Lake	J. C. Parker	" 8, 1878	1 can, 5,000
Lincoln Lake	H. M. Fuller	" 13, 1878	1 can, 5,000
	Lapeer County.		
Pleasant Lake and streams near lake	Ira Green	June 4, 1878	3 cans, 15,000
Napessing Lake	" "	" 4, 1878	3 cans, 15,000
Flint River	L. Richards	" 4, 1878	4 cans, 20,000
Hemmingway Lake	J. A. Brown & Sons	" 4, 1878	2 cans, 10,000
Lawrence & Richmond Mill Pond	" " "	" 4, 1878	1 can, 5,000
Millers Lake	M. & J. C. Sweet	" 4, 1878	1 can, 5,000
Wolf Lake	A. B. Coryell	" 4, 1878	2 cans, 10,000
	Lenawee County.		
Wampler's Lake	W. H. Lazenby	May 31, 1878	3 cans, 15,000
	Livingston County.		
Ore River	Clark & Thompson	June 12, 1878	1 can, 5,000
Mud Lake	P. B. Holdridge	" 12, 1878	1 can, 5,000
Thompson Lake	H. B. Blackman	" 12, 1878	1 can, 5,000
Shiawassee River	J. Holt	" 12, 1878	1 can, 5,000
	Montcalm County.		
Crystal Lake	H. H. Steffey	June 12, 1878	1 can, 5,000
Mud Lake		" 13, 1878	1 can, 5,000

EEL DEPOSITS DURING 1878.—CONTINUED.

Where Deposited.	By Whom.	When.	No. of Eels.
	Oakland County.		
Orion Lake	C. K. Carpenter	June 4, 1878	4 cans, 20,000
Timbered Lake	Wm. Beatty	" 8, 1878	1 can, 5,000
Pickerel Lake	" "	" 8, 1878	1 can, 5,000
Otter Lake	" "	" 8, 1878	1 can, 5,000
Big Lake	E. A. Bottsford	" 8, 1878	1 can, 5,000
Long Lake	" "	" 8, 1878	1 can, 5,000
	Oceana County.		
Pentwater River	J. C. Merriman	June 8, 1878	1 can, 5,000
	Ottawa County.		
Bayou of the Grand River	John Spoon	June 8, 1878	1 can, 5,000
	Shiawassee County.		
Shiawassee River	Newberry Brothers	June 8, 1878	2 cans, 10,000
	St. Joseph County.		
Fawn River Mill Pond	L. T. Hull	May 31, 1878	2 cans, 10,000
Mill Pond at White Pigeon	W. N. Elliott	" 31, 1878	2 cans, 10,000
Sand Lake	L. A. Clapp	June 12, 1878	1 can, 5,000
Mill Ponds at Three Rivers	A. C. Prutzman	" 12, 1878	1 can, 5,000
	Washtenaw County.		
Mud Lake	G. W. Cooke	June 6, 1878	1 can, 5,000
Little Portage Lake	J. H. Brokaw	" 6, 1878	1 can, 5,000
Lowell and Peninsula Ponds	Clark Cornwall	" 6, 1878	1 can, 5,000

In this connection, one thing it is proper should be explained and so better understood. In supplying eels to applicants, it is almost impossible to do it with that system, and regularity and certainty with which we supply our friends with other kinds of fry. All other kinds we hatch at home, and so can forecast our work and give depositors two, three, or five days' notice of shipment. But it is not so with the eel. He is our master. He runs when he pleases, and stops running when it pleases him. His movements one day are those of stragglers, and the very next day you shall find him moving in columns heavy and in battalions strong. And all we can do is to be sure and have our buckets right side up, and if the shower come, catch it, and bless the Lord. Then follows the immediate shipment, notice of which is sent by telegraph to me at Detroit, allowing at farthest but one or two days time to send my notices to depositors. So, it is seen, it is sharp work, and applicants and depositors must not find fault if their every expectation is not fully met. We do in the premises and under the circumstances our very "level best," and that is the best we have. Some applicants possibly may not get served at all, for it is impossible to serve all first, and before the round is fully made, and while our cans are ready and waiting upon the banks of the Hudson, the eel like the Arab "may fold his tent and silently steal away." We certainly desire no inequity. Our wish and purpose is to meet the utmost hope and expectation of all of our friends who are giving their shoulder in aid of this great industry of the State. But should any failures to supply applicants occur, they should be remembered, and compensation meted out from the gathered harvest of the following year or years.

GOLD FISH.

At the closing of our eel work at Troy last June, we had on hand ten or fifteen empty cans not used in the transportation of eels. We knew of no better use to put these empty cans to, than to avail ourselves of the kind offer of friends in Troy to fill them with Gold Fish for the ponds of the State Hatchery. The fish, ninety odd, were donated to us, and are of a large size, averaging in the neighborhood of a pound each, and are very beautiful specimens of their species. Not one died on the passage. They are remarkably healthy, only three or four having died since coming into our possession. They add very considerably to the attractions of the State Hatchery ponds, and if deemed advisable at any time they can doubtlessly be utilized and their progeny multiplied almost indefinitely. They are of the genus *Cyprinius*, and are of a prolific habit, very hardy, and capable of living and fattening in waters not only of a high temperature, but in waters of no very great value for the cultivation of other varieties. Their culture where engaged in, is both easy and remunerative.

EVIDENCES OF FISH CULTURE SUCCESS.

Having completed the statement of our Hatchery work and of the distribution of our fish, the inquiry very naturally comes along—and what are the results? Well, the water is a rather difficult element to explore. Our five senses seem much better adapted to land explorations than for the surveys and discoveries held by the billow and the flood. It matters not how much or how little seed sowing there may have been, for it is hardly possible under any cast of events or of circumstances to gather up the full crop and bear it to the stall and to the market place, and cry out to the children of faith as well as to those who are not of the seed of Abraham, lo! behold! The husbandman has solid land on which he stands and labors, and his cereals and his fruits are as patent to him as the new risen sun which he salutes; whilst the fisherman, moving over his domain of anxious and forsooth of racking labor, sinks, though he be Peter, save his Lord be hard by, and knows not with certainty whether plenty or dearth shall be his recompense. I tell you friends there is an immense amount of *trust* in fish-farming. But trust sometimes brings in very fair dividends. In the case of Michigan fish-farming trusting has not been altogether vexation and vanity, as will appear from the testimony I am about to transcribe. And the testimony to be offered, it must be remembered is of a casual procurement, voluntary, and is in no form or degree of a stipendiary nature. It has not been hunted up by one nor by many for an object, as is often the case "to make the worse appear the better reason," but is the sole fruit of plain common observation as exercised in the affairs of every day life. And yet what we have I do not believe covers one-twentieth part of the evidence that actually exists, and which could be produced, were it deemed advisable to make an effort looking to such result. But such as we have is the more acceptable and convincing because of the manner of its production. The letters were all addressed to me, which address of course I omit, being a thing quite superfluous, and it will save space in the Report. The letters are given in the order of their dates.

UNION CITY, *February 5, 1877.*

I have not yet seen any of the Whitefish deposited in Turtle Lake, but others have seen them, and they report them as being good sized minnows.

S. S. WEMPLE.

CLIMAX, *February 8, 1877.*

At the request of H. Bishop, I write to inform you, that he has recently speared two Whitefish in Portage Lake, in the town of Charleston. They were each nine inches long, each weighed four ounces. He has seen great numbers of them in the lake of this size, and also a few of more than double the size, but has not caught any of the larger ones.

F. HODGMAN.

LAPEER, *February 12, 1877.*

While fishing a few days ago in Lake Nepessing, I discovered what I took for a large school of minnows, something I had never seen before in this Lake, and what seemed strange to me, they were all of one size,—about four inches long. Supposing them to be Shiners, I proceeded to catch some, when to my surprise they were Whitefish.

IRA GREEN.

The Lapeer paper of the same date as the above says:

There may be seen at the post office, several Whitefish taken from Lake Nepessing, about four inches long, found in eight or ten feet water. They are specimens of the 20,000 fry placed in the lake last spring, and were about one-half inch long when deposited. We are told the Whitefish in the lake are thriving well.

DETROIT, *February 13, 1877.*

Five thousand Whitefish were put into Vineyard Lake three years ago this spring, I heard that last fall two of them were speared weighing about one and a half pounds each. Mr. Selleck says he saw numbers of them in the fall of 1874, then five or six inches long; also in fall of 1875. They were then from nine to ten inches long, and very active. Color same as in Lake Erie.

A. P. COOK.

KALAMAZOO, *February 17, 1877.*

The California Salmon, planted in Spring Brook, have been heard from. We learn that a man caught quite a large number of minnows in the brook a few days ago, and took them to Gull Lake for bait for fishing, when some one who happened to know them, recognized them as California Salmon. They are quite large, and hundreds of them can now be seen from the bridge that crosses the brook at the river road.—*Kalamazoo Daily Telegraph.*

LOCKWOOD, Montcalm Co., *February 17, 1877.*

The Whitefish we planted last year in Upper, Middle, and Lower lakes, were seen in great numbers last fall, and were from three to three and a half inches long, and I believe are doing splendidly. We anticipate a bountiful harvest.

W. GRAHAM.

ALGANSEE, *February 17, 1877.*

My boy, seeing a school of fish in Camp Lake, caught one of them, which I think was a Whitefish. We compared it with a salt Whitefish, and I saw a fresh one the following day; in color and form there was an exact similarity. It measured six and three-fourths inches. I have lived here 24 years, and have fished some, and never before knew any fish taken from this lake that resembled Whitefish.

J. F. CAMP.

TRAVERSE CITY, *February 18, 1878.*

The 20,000 Whitefish I deposited in Silver Lake, Grand Traverse Co., have been heard from. A man by the name of Nast, who lives on the bank of the lake, told me last week, that in November, he saw several times, shoals of them along the shores in water from three to six feet deep. They were from three to five inches long. Mr. Nast is a sportsman, and a close observer, and would not be likely to be deceived.

T. H. CLYDE.

ONONDAGA, *February 20, 1877.*

Some of the Whitefish put into Crane Lake are probably killed by Pickerel. Yet we are sure a good many are doing well. We saw them last fall in considerable numbers, swimming lively about the lake. One of my neighbors caught a pickerel and found a Whitefish in his belly about four inches long.

J. G. KETTLER.

GRASS LAKE, *February 21, 1877.*

Our Whitefish are doing well. I saw some in Grass Lake in the fall. They were about a finger's length, that is, if the fingers are not too long.

C. FECKENSCHER.

RIVER RAISIN, *February 21, 1877.*

You will recollect you furnished us with 5,000 Whitefish one year ago last April. During my absence last autumn, my daughter caught two of them and put them back again into the lake.

D. W. PALMER.

TRAVERSE CITY, *February 28, 1877.*

Israel Dawdy caught several Salmon in the Boardman River the last two seasons. They were from nine to ten inches long. T. H. CLYDE.

ALBION, *March 12, 1877.*

There were 10,000 Whitefish fry put into Duck Lake three years ago. I think they have been seen that will weigh two pounds. E. J. ARTHUR.

GRASS LAKE, *March 12, 1877.*

I saw a school of Whitefish in our Grass Lake about ten days ago, when out fishing, say from 500 to 1,000, from four to six inches long. I never saw a nicer sight. C. FECKENSCHER.

BURLINGTON, *March 27, 1877.*

My son speared a Pickerel last October, that weighed ten and a half pounds, and he had in him a Whitefish, head and gills consumed, balance of Whitefish weighed three-fourths of a pound. A neighbor of mine also caught a pickerel, weight, eleven pounds, and found in him a Whitefish ten or twelve inches long. B. ELLIS.

CEDAR SPRINGS, *April 5, 1877.*

Last Summer I saw many schools of the Whitefish we put into Sand and Whitefish lakes a year ago, looking finely. They were in schools of from 75 to 200. I. H. DALRYMPLE.

ST. JOSEPH, Mich., *May 5, 1877.*

It gives me pleasure to inform you that some farmers from the country took a fine Salmon on the lake shore, just north of the north pier at the mouth of the St. Joseph river, this morning, in a small seine, hauling for shore fish. They brought it into town and did not know what it was,—called it an "unknown" fish. I purchased it to send to you, but being Saturday afternoon, and the fish having been handled a good deal, concluded not to do so. I laid it on paper and drew two profiles of it, as near as I could. It was somewhat dried, and perhaps I did not lay it in natural position. Myself, an old Californian, know it is *genuine.*

In flavor it equalled any I ever tasted. Meat not quite as high colored perhaps as a larger one, although a very fine salmon color. It was a female with mature roe,—I should say half or more grown. The weight was 2¾ pounds; length 20⅛ inches; greatest girth, 11½ inches. Very truly yours, W. B. RANSOM.

UNION CITY, *June 25, 1877.*

Our Whitefish of one year old, deposited in Turtle Lake, are four inches long, and appear to be thrifty. S. S. WEMPLE.

DECATUR, *July 19, 1877.*

Curtis R. Botsford caught a Whitefish six and a half inches long out of Lake of the Woods. I think it must be one of them that I put in March 25, 1876. E. L. HAWKS.

OWOSSO, *July 27, 1877.*

I saw a young Salmon, caught by Fred. Patterson, of this place, May 10th, with a small hook. Length, about nine inches; weight, six ounces. This is the only one I know positively of being caught, but have seen quite a large number in the river; size, from six to ten inches. A. WILLIAMS.

HIGHLAND, *August 6, 1877.*

I have been informed by Henry Adams, a very reliable neighbor, that he saw in Andrus Lake, the fore part of this month, Whitefish eight inches in length. Also, Alfred Maxfield told me he caught with a spear, in Maxfield Lake, three Whitefish eight inches long, and all are well satisfied that the culture of fish in our inland waters is a success. GILES ROSS.

CHICAGO, *August 10, 1877.*

My friends in Elk Rapids say that in May last two Salmon were caught below the Rapids, in the ripples. They bore a strong resemblance to the Trout family, but were not spotted or speckled, different from any Trout ever seen at the Rapids. They were stronger in the head and jaw,—the tail broaded, and was more forked shaped than any Brook Trout. They were fifteen inches long and weighed from one and a half to two pounds. No one at the Rapids had ever seen fish like them. They were taken by a boy using a worm for bate. W. DAVID TOMLIN.

GRASS LAKE, *November 12, 1877.*

Our eels are doing tip-top,—have caught one about seven inches long, and have seen them still longer. They are running out of the outlet, down stream about three miles, into the Leoni mill pond; from there they find their way out through the water wheel and most all get killed. Those that do not can never come back. They keep on going down into Grand River, and find their way into Lake Michigan. To stop all this, I have put a wire screen across the outlet. C. FECKENSCHER.

TRAVERSE CITY, *November 15, 1877.*

Over 500 pounds of fish, supposed to be Salmon, were taken in a pound net, one night this week. The individual fish of the catch weighed from five to twenty pounds each. They were a different fish from the Salmon Trout.—*Correspondence Post and Tribune.*

GREENVILLE, *November 29, 1878.*

A party speared, November 24th inst., in Marston Lake, which connects with Lincoln Lake, eighteen Whitefish, and said he could have speared a barrel full. All which he speared, and all he saw, were about of the same size. Ten of the eighteen were sent to me. One was full of eggs. The others were males, or if females they had cast their spawn. H. MERRITT FULLER.

Mr. Fuller very kindly sent me two of the fish mentioned above, which I have preserved in alcohol. They weighed each fourteen ounces. Length, thirteen and one-half inches each. I think are from a lot of 5,300 deposited in Lincoln Lake, April 10, 1874.

HOWELL, *January 12, 1878.*

Two years ago you sent me 10,000 Whitefish fry, which I placed in Thompson's Lake. Last spring a couple of Whitefish, half grown, were caught in the lake. H. B. BLACKMAN.

DOWAGIAC, *January 19, 1878.*

My son says he saw some of the Whitefish in the outlet of lake Alone, which you sent me a year and a half ago. They were about five inches in length. H. H. TAYLOR.

UNION, *January 28, 1878.*

The Whitefish we planted in Baldwin, Indiana, and Long Lakes, March 21, 1876, have been seen. I saw quite a large school in September, 1876. They appeared very lively. They were near the middle of the lake. Mr. E. W. Jackson, who lives on the bank of Baldwin Lake, tells me he has seen large schools of the Whitefish frequently during the past summer, and that they looked well. GEO. MEACHAM.

WILLIAMSVILLE, *January 29, 1878.*

I think the Whitefish I placed in Birch Lake are doing well, as I saw signs of them several times during the past summer. J. FRED. MERRITT.

HIGHLAND, *January 29, 1878.*

The fish you sent me last spring are doing well. Have seen quite a number. One of my neighbors caught a Pickerel, and found a Whitefish five inches long in him. Our dead-heads are beginning to think there is something in the little fish after all. H. S. HOLDRIDGE.

HARTLAND CENTRE, *February 1, 1878.*

Most four years ago I received 5,000 of your Whitefish for Whalan Lake. And in crossing the lake last November, I saw a nice school of Whitefish about a foot long. HENRY WYMAN.

HOWELL, *February 5, 1878.*

Two Whitefish, six inches long, were caught in a creek running out of Thompson Lake last winter. Long Lake, about three miles east of this place, is finely stocked with Whitefish. I heard of them quite frequently last spring. One day last week parties were fishing through the ice with minnows, and a school of Whitefish came around the hole, so many that the water seemed to be filled with them. They got a a spear and speared three of them about a foot long each. H. B. BLACKMAN,
President of the Howell Game and Fish Club.

FENTON, *February 19, 1878.*

Nearly four years ago, we partially stocked Long Lake with Whitefish furnished us by the Fish Commissioner. Some few this winter have been caught, and the deposit is reported to be in a flourishing condition. W. H. H. SMITH,
Secretary Fenton Piscatorial Club.

BIRMINGHAM, *March 16, 1878.*

Last fall Mr. John Durkee speared a Whitefish in Long Lake, twelve inches long. Jack Keyser and young Harkins caught two in Walnut Lake, about the same size, supposed to be of the lot deposited in 1874, all of which causes us to think fish culture successful.

J. ALLEN BIGELOW,
LUTHER STANLEY,
G. M. TROWBRIDGE, and many others.

BROOKLYN, *March 22, 1878.*

Mr. Edgar Ambler, of this place, caught a Whitefish last fall in Vineyard Lake with hook and line, that he judged would weigh from two and half to three pounds. Z. A. Selleck, one year ago now, saw from twenty to thirty Whitefish in the lake, which he claims would weigh from three to four pounds. These were from the deposit of four years ago.

E. N. PALMER.

PAW PAW, *March 22, 1878.*

Those Trout were safely deposited in Four-Mile Lake on the 12th, all lively as crickets. To-day I was on the beach and saw several, perhaps twenty, looking as if they were enjoying life. I caught one, and it looked full, as if he had made a good meal off something.

J. E. ABRAMS.

READING, *March 22, 1878.*

Of the lot of Whitefish I deposited nearly four years ago, in Long Lake, Hillsdale County, there were three caught in June, 1877, weighing about three pounds apiece.

SYLVESTER KELLOGG.

BROOKLYN, *March 23, 1878.*

The California Salmon have been seen in the Grand River, both above and below Lake Vineyard by different persons. The Salmon were judged to be from eight to ten inches long, and very numerous.

E. N. PALMER.

COMSTOCK, *March 23, 1878.*

The 12th of this month, I caught one of the Whitefish I put in the Comstock Mill Lakes two years ago. It was eight and one-fourth inches long. Should judge by the finding of this one, that they are here and are doing well.

C. H. DUNBAR.

ROSS, *March 23, 1878.*

A year ago I saw in Hilton Lake, some of the Whitefish you sent me in April, 1876. They were about three inches long.

J. K. HILTON.

FENTON, *March 25, 1878.*

The boys are taking Whitefish from Long Lake, weighing three pounds and upwards. They have been caught through the ice with a hook. Last week my son caught three. I weighed one after it was dressed, and head and fins taken off. It weighed one pound and twelve ounces. The flavor and appearance very much like the Detroit River fish, but not so fat. One of the fish contained eggs.

GEO. A. WOODHULL.

ONONDAGA, *March 26, 1878.*

I am sure the Whitefish deposited one year ago in Lane Lake, are doing well, as several have been taken that were from two to three inches long.

J. W. JONES.

BRIGHTON, *April 5, 1878.*

The Whitefish in Fonda, Island, Briggs, and Pickerel Lakes are doing well. They have been seen in large schools. They were some twelve inches long last year, and would weigh from one and one-half to two pounds. We feel very much encouraged about our fish culture.

P. B. HOLDRIDGE,
B. FONDA.

BIRMINGHAM, *May 7, 1878.*

The Whitefish deposited four years ago, are occasionally showing themselves, so we know they are doing well. They weigh about one and one-half pounds, as near as we can judge, and may the time come when we can get enough for a splendid meal.

J. ALLEN BIGELOW.

RIVER RAISIN, *May 9, 1878.*

As I suppose it will interest you to know of your success in "seed-sowing," I write to inform you that on the 1st of May I saw, in a drain I have, eight or ten feet wide, two or three feet deep, and over one-half mile long, that discharges its waters into Raisin Lakes, twelve Whitefish that were from seven to eight inches in length. As I came near the drain I observed an unusual agitation of the water, which is very transparent and clear, and standing still, they very soon played up and down the stream, and I had a fair view of them.

D. W. PALMER.

ORLEANS, *May 20, 1878.*

Henry Autliff, fore part of last month, speared a Whitefish nine inches long,—there were ten or twelve in the school. He says it was as nice tasted a fish as he ever ate. He was speared in a mill pond, and must have come either from Long or Woodward Lake.

J. D. OAKLEY.

BIRMINGHAM, *May 29, 1878.*

I have to report that Frank Durkee found, in Long Lake, Oakland County, a large Pickerel with a Whitefish in its mouth. The Pickerel would weigh six or seven pounds. The water was shallow, and Durkee got the Whitefish, but the Pickerel escaped. The Whitefish was alive, and Durkee brought it to this village. It would weigh about one and one-quarter pounds, and is probably of the deposit of March 1874, which proves the fish will live.

J. A. BIGELOW.

BATTLE CREEK, *August 28, 1878.*

I suppose any information bearing on the success of fish and eel planting will be of interest to you. Well, we have heard from the eels! A fishing party spearing on St. Mary's Lake last evening, speared three eels. They were all of about the same length. I measured one of them which was 21 inches in length.

H. H. HUBBARD.

COLON, *August 30, 1878.*

A couple of little boys, yesterday, caught one of your eels, that was put in Sturgeon Lake one year ago last June. It measured 12¼ inches, and weighs a little over three ounces. I have it preserved in alcohol.

W. B. AKEY.

ANN ARBOR, *September 24, 1878.*

I received the cans of Whitefish, 25,000, for Gun Lake, Barry County, April 9, 1874, and put them in the lake in good order. A year and a half afterwards, while spearing in the lake one night, we speared one Whitefish and saw others. The one speared weighed fourteen ounces, and was twelve inches long. I know other parties who saw and speared others the same fall. I think a good share of those Whitefish are now in that lake, and are grown to full size.

HENRY C. GARRETT.

GRASS LAKE, *September 26, 1878.*

The eels are doing nicely in Grass Lake. A few of us made a wire screen and put it in the outlet of the lake, so to keep the eels from going down stream into the Leoni mill pond, as they would find the outlet at the mill, and get killed going through the wheel, a good many being found below the mill dead. Have we a lawful right to put in a screen in the outlet, to keep the eels from going down stream and getting killed?

C. FECKENSCHER.

I think I replied to my wide-awake eel friend that he had a right to do anything to save the eel from the torments of "the wheel," or to save it from any unnatural death, and made no charge for my opinion!

PETOSKEY, *October 18, 1878.*

I caught in Round Lake, in Emmet County, a true California Salmon. Weight, two and one-half pounds.

MATTHEW M. HUGHES.

ALLEGAN, *November 16, 1878.*

When fishing with hook and line last summer, in the Kalamazoo River, Mr. L. B. Place, of this village, caught a California Salmon over a foot long. At that time some person, he does not now remember who, told him of having caught another of these fish. It will be remembered that a lot of fry was deposited in the upper waters of this stream a few years ago, and that a Salmon eighteen inches long, was caught at Otsego last spring. We know also, that the fish have been seen in the river at several places, and it is evident that the experiment of propagating them here has been successful.

EDWY C. REID.

KALKASKA, *November 19, 1878.*

I send you this day by express, one of the Schoodics. It was speared in Log Lake to-day, and weighed after loss of much blood, eight pounds. There are others there much larger, and they are spawning. If you wish to do anything with the spawn, now is the time. Can you not come up? The fish has created quite a sensation. They all tell me that there never was a fish seen in this lake before we planted the Salmon there.

A. A. BLEAZBY.

This is the fish referred to under the head of "Land-Locked Salmon. And we here desire to express our very great obligations to Mr. Bleazby for sending us so valuable a fish, refusing, as he does, any compensation for his time and trouble, or any reimbursement for the heavy express charges advanced by him. The fish was taken from Niles to Kalamazoo, for the inspection of the State Fish Commissioners. Photographs of it were taken, and for a dead corpus the reception accorded it in that village, was large and enthusiastic. And on Sunday, November 24th Anno Domini 1878,—five days after the fatal spear had drank its life blood, it was served to numerous friends of the fish cultural art, "*Salmo Gloveri*" constituting the attractive and the gustatory item in that day's *menu* of the Burdick.

LOWELL, *December 12, 1878.*

There was a Salmon speared here last week in Grand River. I tried to get it to send to you, but it was run off before I could secure it. Also one eel caught, one foot long, and returned to the river. Send me more eels, more Whitefish, some Salmon, any kind you deem best, for I want to have a hand before I die in making pleasure for the boys when I am gone.

E. W. DODGE.

BATTLE CREEK, *December 15, 1878.*

The eels in Goguac and St. Mary's are a fact. A. L. Clark, of this city, and a party with him, speared three in St. Mary's last June. The largest one was twenty-one inches long. Arthur Smith, of this city, caught one recently in Goguac, eighteen inches long, and Osgood ate the eel, or I should have sent it to you. A good many have seen them in Goguac this summer, and there have been others caught.

E. HARBECK.

Other and further testimony is coming in almost daily, corroborative and cumulative of the success which has followed and is following in the footsteps of our fish-cultural labors. But our worthy State Printers, under the plea of necessity, rule it out, they being required to have our Report on the tables of the members on the opening of the Legislature in early January. But what need of more witnesses? With the evidence already submitted I am quite content that the case shall go to the great jury of the people, and will confidently trust in and abide by their verdict.

POKAGON STATE HATCHERY.

Since our last Report, great and important changes have been made at the State Hatchery. The capacity of the hatching troughs, which troughs also subserve a very important purpose as nurseries of the young fry, has been quite materially increased. Every part of the building is now utilized. Water can be supplied direct from the springs, or from the large ponds that environ the hatchery, in any quantity desired. The water in the ponds, which is just as pure and free of sediment as at the springs, on the 1st day of November last showed a difference in temperature of 6 degrees—the spring water being about 50° and the pond water 44°. This difference is further increased by several degrees during the winter months, a very great advantage in the hatch of many varieties of fish. This result has been secured by deepening and enlarging the surface area of the ponds. The hatchery is now supplied with ponds which in size, depth, and number are not excelled by any State Hatchery. The ponds not only furnish an abundant supply of water for hatching, but afford every facility for keeping different samples of fish, in such numbers as may be deemed advisable for experimental and scientific purposes, and for propagation. The ponds are amply large to give us each season a very liberal

supply of breeding fish, and this as we get a little further on will, we hope, prove to be one of the great benefits to flow from our system of ponds. The ponds, too, as now constructed, have removed every objectionable feature of our hatchery surroundings. To obtain our fall of nine or ten feet, it was necessary to go three or four hundred feet below the springs, into the middle of a bog or marsh. This bog, which was very offensive and unhealthy during the warm weather of summer, has all been carted away, and excavations made down to blue clay, and the whole area divided and subdivided into beautiful ponds of various sizes. No part of the bog or marsh remains, and the premises are improved quite as much in appearance as in their general healthfulness and usefulness.

Our wagon roads and our walks to the hatchery and ponds are now perfectly accessible and convenient, and the work of the hatchery and the care of the fish, and the oversight of the ponds, all are rendered correspondingly easy. A commodious ice-house has been erected on the banks of one of the ponds, and it is believed that it may in all ordinary seasons be filled from the pond on which it lies, as this pond is so arranged as to be flooded, and the water then shut off, giving it a chance to form ice the same as a pool of still water. Ice is almost indispensable in our hatchery and hatching operations. It is needed sometimes for our hatching troughs, and in nearly all the shipments of fish ice is used in greater or less quantity. And to get our ice from Niles or from Pokagon, as hitherto obliged to do, has been a great trouble as well as no inconsiderable expense. The food for our fish, cream, bonny-clabber, liver, lights, heart, kidneys, etc., by placing in the ice-house, is not only kept from spoiling, but is kept palatable and healthful for our fish.

One thing of a physical character only remains to render the Pokagon institution a very model of its kind. In the view now so largely entertained, that water of a low temperature is better for the hatch of nearly all varieties of fish, especially Lake Trout, Whitefish, and possibly of the entire family of salmonoids, it would seem desirable to devise some method or means by which a lower temperature of water may be had during the late autumn and winter months. Now kind Nature in the fullness of her beneficence has supplied the Pokagon fishery with the very thing that meets this desideratum. Less than 100 feet from the hatchery flows the Dowagiac River. The current above and past the hatchery is very rapid, and mill-wrights and mechanics are all agreed that the fall will allow a current wheel to be placed in the stream to work a pump, and so supply any amount of water direct to the tanks and troughs. Mr. Michael, the first overseer, himself a mill-wright, estimated the expense at $250. Other mill-wrights and mechanics have estimated the cost about the same, some placing it a little higher. But will we get any colder water than we now get from the hatchery ponds? This is the first and the natural enquiry. Well, that we might not be left to simple speculation as regards that, I directed my overseer, Mr. Porter, to keep an accurate each day record of the temperature of the Dowagiac during the winter of 1877–8,—and it will be remembered last winter was an exceptionally mild winter. The following is his record, commencing December 16:

December	16	36°	January	11	34°	February	6 34°
"	17	37	"	12	35	"	7 34
"	18	37	"	13	35	"	8 34
"	19	39	"	14	35	"	9 34
"	20	40	"	15	36	"	10 34
"	21	41	"	16	35	"	11 34
"	22	41	"	17	35	"	12 34
"	23	42	"	18	35	"	13 34
"	24	42	"	19	36	"	14 36
"	25	43	"	20	37	"	15 36
"	26	43	"	21	37	"	16 36
"	27	44	"	22	36	"	17 36
"	28	46	"	23	35	"	18 36
"	29	43	"	24	34	"	19 37
"	30	40	"	25	34	"	20 37
"	31	39	"	26	34	"	21 37
January	1	39	"	27	34	"	22 37
"	2	37	"	28	35	"	23 37
"	3	35	"	29	34	"	24 37
"	4	33	"	30	33	"	25 37
"	5	33	"	31	34	"	26 37
"	6	33	February	1	34	"	27 37
"	7	33	"	2	34	"	28 37
"	8	33	"	3	34	March	1 37
"	9	34	"	4	34	"	2 38
"	10	34	"	5	34		

The record of the temperature of the water at the Detroit Hatchery, where our Whitefish are being so successfully and so numerously hatched, covering the same period of time, is as follows:

December	16	39°	January	11	34°	February	6 34°
"	17	39	"	12	34	"	7 34
"	18	40	"	13	34	"	8 34
"	19	40	"	14	34	"	9 34
"	20	42	"	15	34	"	10 34
"	21	42	"	16	34	"	11 34
"	22	42	"	17	34	"	12 34
"	23	42	"	18	34	"	13 34
"	24	42	"	19	34	"	14 34
"	25	43	"	20	34	"	15 34
"	26	43	"	21	34	"	16 34
"	27	43	"	22	34	"	17 34
"	28	43	"	23	34	"	18 34
"	29	42	"	24	34	"	19 34
"	30	41	"	25	34	"	20 34
"	31	40	"	26	34	"	21 34
January	1	39	"	27	34	"	22 34
"	2	38	"	28	34	"	23 34
"	3	36	"	29	34	"	24 34
"	4	35	"	30	34	"	25 34
"	5	34	"	31	34	"	26 34
"	6	34	February	1	34	"	27 34
"	7	34	"	2	34	"	28 34
"	8	34	"	3	34	March	1 34
"	9	34	"	4	34	"	2 34
"	10	34	"	5	34		

So it is seen that the temperature of the Dowagiac and the Detroit River, covering the same period of time, is not very widely diverse—the temperature of the Detroit River being somewhat more regular. But could the water of the Dowagiac, at the temperature as indicated, be made to fill our supply races, it would be found, I think, sufficiently low for the successful hatch of Whitefish, Lake Trout, and other varieties that seem to require a lower temperature than spring water. The purity of the Dowagiac river water during the winter months much exceeds that of the Detroit river. During the winter months of last year it was as clear as crystal, not being roiled once by rains or freshets, whilst the weather and water clerk at the Detroit hatchery of last winter has written down opposite fully one-third of the days, "water very roily,"—"water roily,"—"water some roily," and once, "water thick with mud and grass," from which mud balls were made approaching the standard wicket size.

Mr. Charles H. Brownell has been the overseer of the Pokagon hatchery since last May. He has had quite an extensive experience in the handling and care of fish, and is in addition a good mechanic, as the races, and boxes, and screens, and other hatching apparatus of the hatchery, they being of his construction, bear conclusive testimony. But what is of larger importance than mere mechanical skill, he brings to his position as overseer great promptness and energy, and withal an independence in the performance of his duties as valuable as rare. In his management thus far, while finding but very little to criticise, I have found much to commend. Order, system, and a sharp vigilance over the State's property, and over the interests connected with the hatchery, are characteristic traits in his administration of affairs, and these traits, if continued in full force and effect can hardly fail to secure large and beneficial results.

Mr. O. M. Chase is still the overseer of the Detroit hatchery. But he is so well and favorably known as a fish-cultural expert and worker that none of the space of the Report need be taken in mention of him or of his management.

Suffice it to say that he has now on his hands seventeen millions of fish eggs! that's all,—and if they do not come out sixteen millions nine hundred and ninety-nine thousand live fish, the fault he intends shall not lie within an English mile of his door.

ILLUSTRATED REPORT.

It was our hope and purpose to give in the Third Report of the Michigan State fisheries, cuts and illustrations of the Fish Shute that has been adopted by Michigan; also exterior and interior views of the two State hatcheries—showing the races, troughs, boxes, screens, jars, and other fish-producing paraphernalia. Also views of the ponds with their beautiful surroundings, and cuts of our unrivaled Grayling and other breeds, as well as of those foreign varieties whose acclimatization we are attempting. But as all this would cost "right smart," a careful looking over of the large work mapped out for the season of 1878–9 frightened us from our contemplated purpose. We dared not assume the risk lest some important work already begun should meet with an improper or an untimely end. So our "cuts" for the present are "tabled," but we hope not permanently, as we think an illustrated Report gotten up with judgment and good taste, will not only awaken a new and a larger interest in the work of our artificial fisheries, but will also add intrinsically to the value of a fishery Report.

FISH SHUTES.

It is with unalloyed satisfaction that I report the solution of the fish shute problem. No one subject connected with all the fish work of the State has given the Fish Commission so much annoyance and pressed upon them with such a weight of responsibility. It has been the vexing and the vexed labor of their thought and of their hands. And I venture to say, there is no one question associated with fish-cultural industry, take the broad country over, that has given and is giving fish culturists an equal amount of anxious thought. Not but that there are a plenty of patents—some worthless—some relatively valuable, that is, good in parts and spots, but none that I know of or have read of, which work in all their phases and relations with absolute precision and certainty, and that give to fish culturists and dam owners, and other parties in interest, perfect satisfaction. Hardly two men in all the country can be found to agree as touching the merits or demerits of any one of them. The people too have been greatly exercised over the shute question. In several counties of the State, Supervisor Boards have passed resolutions, urging compulsory proceedings, and entire neighborhoods have circulated and signed petitions, praying that the shute law be enforced, and that owners, lessees, and occupants of dams be notified and compelled to erect the shutes. The bewildered dam owners and occupants in several cases, cognizant of the public feeling and the public desire for shutes, and not being quite willing to undertake a matter of so much importance "blind," have written to me to know what to do,—saying in substance in their correspondence, "We are willing, but ignorant,"—"we have our lumber and nails, and our stone, and brick, and lime all ready, but we can't find carpenters nor masons who can furnish plans and who are indoctrinated into the mysteries of shute building." They have never seen this fish-shute animal—and what are the length of his ears, or how many legs he travels on, or what his gait and "get up;" of these they have no adequate conception. Whether the shute required of them should be built above the water, or beneath the water, perpendicularly, horizontally, spirally, or aslant; about these things they know as much as their neighbors, and their neighbors are as wise as owls! So this whole shute business from Alpha to Omega, while puzzling to the brain and harrassing to the spirit of our fellow-citizens, has borne no valuable flower, nor bud, nor fruit.

The Legislature of 1877, perceiving the difficulties under the old shute law, passed an act, No. 222, approved May 23, 1877, requiring the Board of Fish Commissioners to procure made a draft of a shute, with such details and specifications in respect to materials and construction as would enable an ordinary carpenter to properly construct and place the same, and to procure lithographed two thousand copies to be mailed to each of the organized townships of the State. By the same law, owners and occupants of dams all over the State are required to construct their shutes, and their construction is to be in accordance with such draft and specifications in all essential details. Now note, by the terms of the law, the plan was not to be for one stream, or for one dam, but for all streams and for all dams—not for one year, but for all the years. This at first blush seemed to be the requirement of an impossibility, and it is a wonder that the Commissioners on seeing the law, did not give back their commissions, declaring in justification of such act, that they were not "sufficient for these things." Less resolute men would have quailed before the great responsibility. And I think it the crowning compliment of their lives that

they did address themselves to the imposed work, and executed the trust committed to them so faithfully and well. Here were but three persons, claiming no superior wisdom, having no knowledge of the subject above that of the average intelligent citizen, themselves neither inventors, nor architects, nor machinists, nor even common carpenters—were directed by the assembled sovereignty of the State to produce a shute that should do good square work, allowing no saving peradventure,—it must work not simply in one favorable locality, but in all localities, even where the surroundings might be adverse. And what if the shute should fail or balk, and scores and scores of them erected at thousands of dollars of expense, and no fish climbing their steps? It seems to me the Legislature could not have fully realized what a labor and responsibility they were imposing upon good and law-abiding citizens when they put the bill upon its passage.

Well, the law being enacted, the Commissioners met, and at the solicitation of his associates, the working oar was placed in the hands of Eli B. Miller, the President of the Board. He at once began a correspondence with Prof. Baird, and with Mr. Atkins of Maine, and with inventors and shute-builders at home and abroad, and for days and weeks read, compared notes, and gravely pondered. Finally he settled down into the conviction that the fish-ladder views and plans, so far as the same were then matured, of the Hon. B. F. Shaw, the intelligent and the indefatigable Superintendent of the Hawkeye State fisheries, possessed fully as much merit as any, and were more likely than any plan he had examined, to meet the conditions of the law under which he was acting, there being in Shaw's plan a *common-senseness* and a simplicity that commended it to his judgement and approval over all other plans and shutes. So this shute was the one determined on, and through and by the authority delegated to the Board of Michigan Fish Commissioners "Shaw's fishway" has been adopted by the State of Michigan, and is the legally required shute to be erected in the dams of the State. Its adoption, I understand, was secured without charge or royalty of any sort, and all the proceedings covered in the adoption of the shute by the State of Michigan were with the concurrence and with the best wishes of Mr. B. F. Shaw, the inventor. Or in other words, its use has been donated without charge or restriction of any kind by the inventor to the State of Michigan in perpetuety. I understand it has also been adopted by Iowa and Minnesota, and I think by one or two other States.

Mr. Miller, on the adoption of the shute, went to work at once to procure the two thousand lithographed copies of plan, etc., named in the act, and after what seemed to be a long and an unnecessary delay on the part of the lithographers, the copies were delivered to him, and he personally attended to the mailing of them to the township clerks, as directed by statute.

Now, what are some of the merits of this shute? In the first place, it is inexpensive. It can in many dams be placed probably from one to two hundred dollars, whilst in our large rivers and highest dams the cost may go from three to six hundred dollars. Some of the shutes introduced into the dams of the Eastern States have cost from five thousand to twenty-five thousand dollars.

The shute is also simple in construction, it can be built by any ordinary carpenter, is readily adjusted to its place, not easily got out of repair, and when well built and strongly anchored will keep its position in all weather and in all stages of water. In the next place, the principle upon which it is constructed and method of operation agree with the instincts and known habits of fish. From the water's edge of the pond is a fall, say six, nine, or twelve

inches into a pool of almost still or standing water,—then a fall and a pool in succession, winding in square form in tiers or sections underneath each other till the stream is reached below. Any fish can jump six, or nine, or twelve inches into the pool above, where it can take a rest if it like, and so continue its journey on and up, resting meanwhile in each pool if it so desires, till it leaps into the still pond above. The fall and pool method of ascent up and over dams I believe to be the true principle of a fish shute—in harmony with nature's arrangements and in accord with the habits of fish. And then the location of the shute quite at the foot of the dam, is, in my judgment, the very *sine qua non* of a successfully working fish shute. By this plan the entrance of the fish to the shute is on a line, or very nearly so, with the face of the obstruction or the face of the dam, and so the entrance to it is found to be plum in the way of the fish's search. Fish, in their desire to change pastures and to find nesting places for their eggs and young in the sources of streams and rivers, are very much like swine, or sheep, or cattle. These, when the old range is become short and scorched by a torrid summer sun, will follow round and round the line of the fences, and not break away one hundred or five hundred yards into the middle of the field in expectation of grazing upon the sweet scented clover, but will keep up their march along the line of the fence till they come to the displaced rail or to the low spot, and then leap over into the inviting pasture or meadow. Precisely so is it with fish. And those shutes where the ingress is one hundred, or two hundred, or five hundred feet away from the face of the dam, are, I think, defective in principle,—few fish there be that find it, and fewer still are they that enter in thereat.

Another great advantage of our shute, it is, so to speak, self-adjusting. Like the auctioneer's suspenders, "long enough for a man, and short enough for a boy," the shute adapts itself to all streams and to all localities,—to low falls and to high falls,—to streams of large or small volume of water. It will work in the dams of the St. Joseph or Grand River, and without the least change of working principle, or of construction, it can be placed in Trout or Grayling streams, and working in them probably with equal satisfaction and success. Other advantages the shute possesses, but they need not here and now be enumerated.

But the objector, and he is always an omnipresence, asks, what do you really know about it? Are not the advantages you have named after all, but bare hypothesis, each and all liable to be exploded, and torn up by the roots, when reduced to practice? Practice, we well know, is a great razer of theories, and a conscienceless demolisher of brain castles however expensively or elegantly constructed. But that we might speak of the shute with increased confidence in its adaptability to accomplish the ends sought, we have subjected it in a limited way to practical tests. I directed my overseer, Mr. Brownell, to build three good sized models. One of these was on exhibition at the Detroit State Fair during the whole week, where it was seen and inspected by thousands. Another one, during all of Fair week and the week following, was on exhibition and in actual working operation at the Detroit City Museum, every hour of the day and night, where it was seen by hundreds and even thousands of people. Three or five hundred young salmon and trout, from three to five inches in length, were placed in the lower half of a large tank, and there they could be seen to constantly enter the shute, passing up thirteen falls and through thirteen pools, till they leaped exultant into the open lake above. Not one fish, witnessed by eager and admiring hundreds, was seen to

go back and seek an exit by the route and by the door he entered. Some would leap from one pool to another in sharp succession, and resting for a moment or two, push forward and up in a way that plainly enough said, we are having a good time. Others took it more leisurely, seeming to be making surveys of the country over which they passed, doubtless with a view to good entries and preëmptions. But not one of them all that started out failed to attain the Canaan to which he aspired. Oh, well, these were your young and unwary fish, just foolish enough to go along up and through this water mouse trap! But stop, the six months fingerling in this matter is just as wise as is the three-year old and the five or the ten pound fish. It is not age nor size that sends them along up their precipitous journey. The calf of an hour old knows where to find its sustenance as well as the yearling steer. This fish-ladder climbing is a thing of instinct, inborn perception—it is the *fashion* of their natures so to do. But then, were not these young Salmon and Trout educated to perform these very clever tricks? Oh! no. Bless you, it is not within the domain of education. No license nor certificate of educator is required for their graduation, for in the self-same hour they were thrown out upon the sea of existence, they were educated and diplomaed too by the Almighty himself.

The objector is still around, he will not give it up. These, he says, are your smart fish—they naturally leap and race as if their skins could scarcely hold them. How is it with your lazy, sleepy kinds of fish? Well, anticipating this very objection, I requested the overseer to go and secure a lot of minnows, shiners, dace, and put them on trial in our third model, then in operation at the Pokagon hatchery. And it is found that these, dull and listless as they are accounted to be, pass through and up and over with just about the same facility and glee as do the *Salmo Fontanalis* and the *Salmo Salar*. And so I confidently expect, with the shutes properly erected and properly attended, that the stoneroller, the redhorse, the sheephead, the sucker, and the sturgeon, *et id genus omne*, will pass through the shutes, and over and up to their ancestral homes, and in their own divinely appointed times return to the lakes to herald the welcome gospel to thousands and tens of thousands of their tribes that the long blockade is raised. And thus our friends of the far up countries may hope, under the operation of our excellent shutes, ere long to see the uncounted finny hosts on the springtime flood advancing,—revel in the opportunity of their capture, and bearing homeward bag, or basket, or wagon load full, shall with friends old and new gathered round, and forsooth with music and dancing, renew the well remembered feast, "Suckers and milk."

GAME LAWS.

The general supposition with civilized communities, has been and is, that laws are enacted because they are needed, and that their observance follows as a necessary sequence their enactment. But in the case of game laws, the reverse of this seems to be true. There are lots of people, and many of them too, who would consider it an affront, not to be thought intelligent and respectable, who are wont to look upon game laws as the fancy part of legislation,—the sop thrown to sportsmen, answering to the turkey-morocco binding of the code, and subserving no higher use than the delectation of State pride,—a self-satisfying dilatation of the tail and the feathers of the State's emblem! Why, and as to their observance, that they aver was not in all the thought of the committees who framed, or of the Legislature which said, "it is hereby

enacted,"—and if any sting or fang were ever put into them, long years agone these were extracted. And so according to the profound ratiocination of their profound understanding, game laws are to be regarded at most and at best, as but a kind of *brutum fulmen*, possibly scaring somebody from over the geographical line, and if doing this, they infer the plenitude and the wisdom of their enactment. These easy, good souls, who think laws are well enough for every body else but themselves, and seem willing and ready enough to be at one end of the rope, are in a general way the habitual and the wickedest violators of our game laws. One of this class will approach you, as if he considered your father and mother inmates of an idiot asylum, and with long drawn pharisaical accent ask, do you suppose these sportsmen's game laws were meant for us common people? 'taint possible they could be intended for home use and for home consumption! Just see with what jejune look, and concealed yet menacing rascality, the base interrogator flings into your face his suppositious interrogatory. And coolly he turns away, as if the hero of a great victory, and sets about to repeat, and to repeat his violations unhindered and unabashed, of every game law to be found inside of the covers of the code.

Now these views of our game laws wherever and by whomsoever entertained, are essentially, radically erroneous and injurious. Never, as affecting the fame or the prosperity of a State, was there an opinion or error more egregious than to suppose that the treasures and the luxuries, which abound in forest and stream, and which constitute no mean element of the pride and the revenue of the commonwealth, can be indiscriminately pounced upon, and scrambled for as if they were but the contents of a common grab-bag, and yet survive such universal scramble. History, in all its pages, furnishes no saving precedent. Greed, as it wells up from the desires, if not the fury of human nature, unrestrained and unwhipt, is, and ever has been waste and devastation. License is debauch, and debauch is contamination and death. Famine, gaunt and bony stalks in the wake of every roving Hun or lawless Goth, and the utter extinction of nature's rarest gifts and bounties are the sure and the deserved visitation to any people who fail to discern the laws by which they are preserved and transmitted.

No wiser laws can be found upon any statute page, than are just, equal, and equitable game laws. They not alone typify the intelligence, the refinement, and the elevating civilization of a people, but they preserve in perpetuity a most valuable interest of every State, an interest that is unique and cannot be substituted, and it is an interest too, that is certain, certain as shadow follows substance, to wane and die in the absence of the needed protective laws. But game laws, to be of any value, must be observed, enforced. If honored more in their breach than in their observance, better tear them boldly and bodily from your statute book,—they have little business there; for they are a stumbling block, and an offence instead of a finger-board to patriotic service and duty. If the game laws are not right, amend or repeal, and make those that will be right. If oppressive and unjust in any degree or particular, strip them of every semblance of oppression and injustice. If partial, as is sometimes alledged, pillory without benefit of clergy, everything that smacks of clan, class, or favor. If not pointed or explicit, make them explicit. If not intelligible to the average intellect, make them of such comprehensive terseness and plainness that every man or boy, or woman or girl who may go forth with rod or gun shall know to a certainty every rod and foot of the way of their game privileges. Then who can, who shall dare complain? One law, equal, just,

wise, founded in the State's higher welfare, giving us protection at home and honor abroad, must, and I believe will command universal respect and obedience.

Have the people of Michigan brought this question calmly home to their thought and judgment? Are they aware that the farm game, and the game of the forest, is retreating year by year farther and farther from the old homes they so dearly prize, and which they are soon to leave to their families and their children? Worried, chased, driven forth without let or mercy, finding even but comparative shelter and security in the great woods that skirt our northern boundary. And even all through those wild districts, the report comes that the path of the butcher hunter may be traced by the flocks of carrion birds that follow upon his trail. Deer, turkey, grouse, and other valuable game are but the sport of his trigger exercise, objects given to him as he supposes to test his markmanship, and to afford to him the opportunity to peddle to his associates his braggart vernacular. Game laws of usual penalties for such vile forms in human shape! Aye, cat o'ninetails and fagots were punishment too mild.

So, too, are the fish retiring from our rivers and streams, lacking that protection absolutely essential to creature multiplication and life. Many streams which but recently abounded with the Brook Trout and the Grayling, are now nearly or quite depopulated. And so from a carelessness or from a neglect to enforce the game code, the work of depletion will go on, and except arrested by the patriotism and the manhood of the State, extinction is sure to come, and at no very remote future. The extinction, or that which approaches it, of our beautiful Grayling, would be to Michigan an irreparable loss, a loss scarcely to be computed by dollars and cents, for the fame of her Grayling streams is in both hemispheres and in all lands. Jealously and with argus vision must we guard at least this great fish interest, though others be suffered to take a secondary place, for I verily believe, our *Thymallus Signifer* "the flag fish," had his discovery occurred at an earlier period in the history of the State, would have been adopted as the graceful emblem of our State's honored escutcheon. Reports too have found their way to us that in many of the streams of northern Michigan the Trout and the Grayling are being slaughtered by the hundreds and by the thousands. Anglers from abroad, and home bearers of the rod visit the haunts of the Trout and the Grayling, succeed in large takes, eat a few, bag a few—and the great balance are left to rot on the beach in a summer's sun. Shame on the man, who will thus abuse the State's hospitality, and a shame of crimson sting and hue mantle the cheek of him who esteems thus lightly home and citizenship. In proof of the waste and destruction that are going on, I will here add the brief testimony of one, who I believe, was a former resident of the State, and whose fame in the art of angling is only exceeded by that which he has achieved in the art and in the great field of journalism. He says:

"After my two days' angling last August on the Au Sable, during which I contented myself with sixty fish when many times that number could have been taken, I met a party of three who counted their trophies by the thousand, and who took away with them eight or ten large boxes filled with odorous proofs of their prowess. I heard of other parties equally merciless, and learned to my regret and disgust, that it is the habit of these 'slaughterers of the innocents' to creel all that come to their hook, big and little indiscriminately, and then after selecting the largest, cast the dead fingerlings back into the river, or on to its banks to rot. How long, think you, can either the Au Sable or Manistee

and such ignominious drafts upon their present abundance? I have lived long enough to see many of what were once the best trout streams in the country depleted by such processes."

In view of these deplorable things, transpiring in the blaze of the second century of the Republic's history, it is with special joy and hope that I salute the clubs that are being formed all through and over the State, organized in the interest of game protection. Their numbers are rapidly increasing, but none too rapidly to save what remains. All good citizens, loyal to the State's highest and best interests, should strike hands with the objects and purposes which these clubs symbolize. They are publicly organized, their objects publicly declared, membership is open to all, are of a fraternal character, and the ends sought to be attained are common ends, vital and dear to one citizen as to another.

And in devising and shaping such legislation as may be regarded needful to protect and to perpetuate the valuable game of the State, I think the declared views and wishes of the Game and Fish State organization, and of the numerous coöperating local or branch organizations, are of a potential character, and should receive a generous consideration at the hands of those who have been chosen to give form and body to our laws. Why not? The Game and Fish Club membership embraces a large intelligence—a ripe judgment, admitted disinterestedness of motive, personal sacrifices the members have made—they have given the whole subject much and careful consideration, viewing it from every possible standpoint; and they are our neighbors and friends, our constituents and our fellow citizens.

But let the issue be what it may, game protection, ample, rigorous, or otherwise, as the exigencies of the case shall seem to require, must not be lost sight of. Protection must be given, enforced at any sacrifice. Wherever bay the hounds of destruction, there the laws' potent remedies must not fail to go, and be administered vigorously, and to the letter, without favor or partiality. Sensible as is the age in which we are privileged to live, and sensible as the people of Michigan have the credit of being in all general matters of State pride and of State interest; why not be sensible in this? and without rancor or division of any sort, mutually pledge and agree to do watever is meet and possible, to preserve for our children, as they have in a good degree, been preserved to us,—those great bounties of a common and of a beneficent Providence.

THE GREAT LAKES.

Upon this subject we wish to speak with much frankness and without reserve. It is known not only to the people of this country, but to the whole civilized world that the Republic has for much of its northern boundary, a continuous water-course of river and lakes, not excelled in magnitude nor value by any on the face of the globe. This water-course stretches over nearly twenty-five degrees of longitude, from the great hills of the east to the grand prairies of the west. These inland seas, with their connecting straits and rivers, are valuable as is true, almost beyond the power of computation, for the merchant's ship, and vessel, and barge, and for the lumberman's raft, and as a royal highway of travel. Yet they subserve a more universal, if not a higher use. As sources and as means of food supply, they rival the Gulf, and press hard upon the oceans, limiting the oceans to those parts that fringe the Republic. Eight States, among the largest and most populous of the Union, border upon these waters, and while the proximity of these eight States to the lakes, may afford

to them some slight advantages, not shared by the States lying more remote, yet the interest is national, broad as the Union. Every State is participant, and the richer for the riches which they yield. The Great Lakes are free to all. No doubly-barred nor bolted doors and combination locks frown upon any American citizen desirous of sharing in their husbandry. Capital and labor are as free to enter upon their broad areas, in the hope of returns and dividends, as they are to go into the great woods, or out upon the unfenced prairies, or at the bases of the auriferous bearing ledge and quarry. Since American enterprise and pluck have won, and despite of jealous, or envious, or covetous neighbors, hold them all.

Now, conceding this view of the case, there is one most alarming fact, that confronts us and must be confessed. It is this: these Great Lakes,—national lakes,—these, the common food store-houses of the people, are being plundered, robbed, impoverished. Capital and labor have turned, and are turning their backs upon them, and men of strong and healthy sinew, and of willing wills, are to-day idle in the places where once they gleefully labored with sleeves up-rolled and with faces aglow with sweat to land their overburdened nets. If asked how this change has been wrought, the answer (however much we may desire its evasion) cannot be evaded. Human greed, attended as it ever is by profligacy, unrestrained and unregulated by law,—the pot-hunters' and the free-booters' watchword, "after us a famine,"—empty buckets down and full ones up, these have accomplished their fell work. And the same passions, influences, and agencies, unchecked, allowed even but the old time opportunity and verge, will keep the lakes impoverished and comparatively valueless as food supplies for the people till the day of judgment. Effects have *usually* their origin in causes, and to lament with moistened eye, and with choking accent, these patent sad effects, without any search, with their accompanying remedies for the cause or causes, of which the bemoaned effects are the unmistakable product, is puerility in its lowest ebb and estate. The fish food fertility of the lakes may be recovered and even increased, beyond the statistics which any former record can produce. This we do not think in the least degree problemmatical, and it seems clear that the work of restoration, resupply cannot be commenced too soon. And it is work alone that can do it. Grave homilies, well rounded whereases,—and ponderous resolves of the regulation quarto size, well enough in their appointed times and places, yet these will not compass the desired end. Work, decision, determination, that cannot be induced nor driven to take a back seat, are the agencies of its accomplishment. This work, we think, is of two kinds. Immediate measures should be devised to arrest the waste and the destruction of the lakes, present fertility and supply, and a law or laws, with trusty officers behind them, enacted to prevent the recurrence of the waste, if luckily the ascending tide be gained.

And then in near relationship to this comes the catching of the fish, the stripping of the breeders, the fertilization of their liberal yields, the successful hatching, the wise and the careful deposit. Plant, plant if need be by the hundred millions our artificially hatched fish, distributing them with liberal hand at all destitute points and through all the dearth-stricken districts, and supplement this by a second years' equal work, and if the luxuriant harvests do not begin to appear withhold not the third years' labor. This being done, we almost know the peoples' finny stalls will again creak under the weight of their fullness and of their fatness. But whose work is this that we have briefly outlined? In the former Reports, a coöperative undertaking on the part of the

eight States that border upon the lakes was suggested. This undoubtedly would be well enough, provided the aforesaid eight States would get at it and labor in harmony and with energy, and the labor and expense, if shared in common would be quite inconsiderable, hardly felt by the States entering into the compact. But the trouble has been and is, there is no authorized body or power to draw up the common understanding—no supervising agent, no superintending agency, nor mouthpiece to voice the popular wish, and promulgate its orders, and so perchance should the locomotive, half by design and half by accident get under fair headway, there is no director nor engineer aboard to guide its movement—it being very emphatically true, "what is everybody's business is nobody's business." Michigan has done, is doing, and we think will ever be found willing to do her just share of this work. The great States of Ohio and Wisconsin have aided most generously, but beyond this, very little has been done, nor is the outlook remarkably promising.

Now, inasmuch as no adequate remedy has been brought to bear upon this question and the people's loss is unrelieved and continuing, one of two things, we think, will give health and abundant vigor to the now prostrate and suffering patient. Either the general government should create a special commission whose duty shall be to take this whole matter in charge—see that the laws relating to the protection of the lake's fisheries are enforced, and further, see that such means and measures generally be devised and put in operation as in its intelligent judgment will arrest further waste and destruction, and restore the fish food supply of the great lakes. But if this be thought unadvisable, then the National Fish Commission, already organized, and of which Prof. Spencer F. Baird is the honored head, should be allowed to take this business specially in charge and push it to every legitimate and rightful conclusion. If not already empowered, give him the power to appoint his agent or agents, who shall exercise a most rigorous surveilance of the lakes' interests, and to erect their fish hatcheries on the connecting rivers or along the margins of the lakes themselves, and equip them with superintendent and overseers, skilled help, utensils of an approved pattern, and with aught else essential or valuable for the attainment of the ends sought. Now, in the carrying into execution of either plan, we can see no impropriety, no injustice done to any body or to any interest, nor is there, as we humbly conceive, any constitutional stretch or bar to its fullest exercise. On the contrary, we believe it to be within the scope and of the duty of the government, and in furtherance of the country's truest interests, to see to it, that the glory and the bounty of the Great Lakes be not suffered to diminish and to die.

We find our excuse for the foregoing views, and for their expression here, in the large work Michigan has done, is doing, and means to do, to restock with valuable food fishes, the lakes, as well as by reason of her close geographical and physical relation to them.

FISH DEPOSITORS.

I venture to say no State has been favored with a more self-sacrificing, enthusiastic, and trusworthy corps of fish depositors than has Michigan. In several years of service there has been scarcely a single failure to meet the cans, and depositors have in nearly every case made the deposit with great promptness and efficiency. But in one or two particulars I will be allowed to suggest a modification or a change. Applicants, who are almost always the actual depositors of our fish, should, in their applications, name as the place or station

of delivery of the cans, that railroad station which will suit as far as practicable and possible our convenience, and which will not too greatly inconvenience themselves. Some applicants, without stopping to consider, will name a station on a branch road, when it will be found on a moment's reflection, some station on the trunk or on the main line will be equally as convenient for them. In all cases, so far as practicable, order your fish sent to a station on main or trunk lines, for if ordered to a station on a branch or a plug road, the order may not be met, or if met, it will be at much cost and inconvenience to the commission.

Depositors, too, must not forget that all our fish come from two points of shipment. Our Whitefish are shipped from Detroit, and all our other varieties (except eels), are shipped from Pokagon, a station on the line of the Michigan Central. Then some persons apply where they have but a weekly or a semi-weekly mail, and so when the time for the shipment of the fish arrives, the applicant fails to receive seasonably his notice of the shipment, and the cans of fish are taken from the station by other parties, and the deposit made in lakes or waters not intended. Now, it will be better for such applicants to give me the address of some friend or person residing at the station, or else at some place where a daily mail is received, who will act for them, and either make the deposit himself, or notify the applicant in time for him to make it. As a general thing, it is quite impracticable to give more than two or three days' notice. Again, depositors should never hold their fish at the stations nor at their homes. They should come all prepared, whether it be in the day-time or in the night-time, when the train arrives, to take an immediate departure for the lake. If held at the station or at their homes, the fish require your constant attention, you cannot leave them, and then if they should unfortunately get the cholic or pneumonia, or some other sudden ailment, you would hardly know what to give them, nor what to do. So it is far better to put out with them at once, and you will find it quite as comfortable and vastly better for the fish, to be whistling your way to the lake, and thus be early free of both the labor and the responsibility.

In a few instances our cans have not been promptly returned. The failure to return the cans promptly, oftentimes results in serious consequences. They are our tools, we can do nothing without them. Notices may have gone out to other depositors, and when the day set for the shipment arrives, if the cans are not returned, either the shipment must fail altogether, and depositors disappointed and subjected to loss of time, and possibly of money, or else our very wits' ends are taxed to devise substitutes for the cans. We have on one or two occasions, by reason of the non-return of the cans, resorted to barrels, wash-tubs, and huge ash pails, with which to move our fish on the day promised. But we don't want to form a *habit* of doing things in this way, and we devoutly hope our depositing friends will save us from the peril of any such habit. Now the above suggestions to depositors, if remembered, will greatly facilitate our labor, and enable us to perform our part of the work with method and with certainty.

THE RAILROADS.

All the railroads of the State, and indeed some outside of the State, are carrying our cans free of charge, and in very many cases, and in all I believe where application is made, an attendant is allowed to go with the cans of fish, such attendant being enjoined to devote his entire time and attention to his cans of fish, and so save the baggageman and the trains' men from all possible labor and responsibility in regard to the cans and the fish. Now such very gen-

erous consideration, whether of corporations or of individuals, on behalf of the State's fishery interests, justly merits more than a passing thought or notice. While the pecuniary service thus rendered by the railroads is not only very great, saving very considerably our small appropriation, and thereby enabling us to make larger hatches, and a wider distribution of our fish, yet the moral effect in advancing this great industry of the State is quite as valuable, if not more so than the pecuniary benefit derived. Individuals and parties all over the State, seeing and knowing the interest which these great corporations are taking in the State's efforts to re-stock our rivers and lakes with the most valuable breeds of food fishes, eventuating too, as we hope and believe it will, in making the State of Michigan the very paradise of game and fish, are themselves incited to emulate their example, and to labor with us and for us diligently, without promise or hope of pecuniary reward.

So while we would not withhold from the railroads of the State the full measure of credit to which they are entitled for their direct assistance, a larger credit and our larger thanks are due them for those silent but certain benefits that flow to us in virtue of their great example. Little more than thanks, thanks can we to-day return to the management of these roads, and to their employés and attaches of every rank and relation for their uniform courtesy, and for their aid cheerfully rendered when solicited, but we hope and pray the day is not very distant when every class and every interest throughout all the States' broad limits, shall find little occasion to doubt the faithfulness or the disinterestedness with which the Michigan Fish Commission have met their high and responsible trust, and shall be privileged to reap liberally of the sure and bountiful harvest, the product of patient and industrious seed-time.

STOCK ON HAND.

At the time our Report went to the printers, Dec. 16, 1878, we had upon our trays and in our automatic jars about seventeen millions of Whitefish eggs, and in very superior condition. The fry will be ready for distribution in March and April. The Board of Fish Commissioners will meet seasonably and determine upon the waters in which they should be planted. All our Whitefish eggs are being hatched at the Detroit fishery.

At the Pokagon State Hatchery we have 175,000 California Salmon, which it is thought should go mainly into the rivers that empty into the great lakes. The California Salmon, I think, is too large a fish for the great bulk of our interior lakes. The limited range which these lakes afford, and more especially the still, unruffled character of their waters, are unnatural to the Salmon and will be found unsuited to become the habitats of this Boanerges of the imperial family, *Salmo*. Undoubtedly many of them would live if placed in our inland lakes, but I am well persuaded, such homes are very prisons to them—the spirit and the pride of their character is held perpetually in restraint, and effeminacy and dwarfhood under such conditions, their certain heritage. They need the race-course of the rivers, and they need the vaster arena of the great lakes, very seas as they are, in all save the impregnation of their waters with the chloride of sodium. In these lakes they will grow and fatten, and in their appointed times ascend the rivers as they do those of the great Pacific slope. Entertaining this belief, as I most sincerely do, I cannot advise their deposit to any great extent in our interior lakes. The Salmon now on hand are very healthy and vigorous, indeed we never had in our hatching troughs a more promising lot. They will have to be deposited at farthest during the month of January.

There are also on the trays of the Pokagon hatchery some 400,000 Salmon, or Lake-trout eggs. Succeeding in their hatch, the fry will be ready to plant in March and April. Large and deep interior lakes are regarded as among the suitable waters for the deposit of the Lake-trout.

We have also on the trays of the Pokagon hatchery between 200,000 and 300,000 Brook Trout eggs. Succeeding, as we earnestly hope we may in their hatch, the troutlets will be ready to plant in March and April. As the speckled trout is by Divine ordination a fish of the streams, *Salmo Fontinalis*, signifying of the "fountains"—babbling brooks, spring-fed and swift-coursing rill and rivulet being the patrimony bequeathed them by an honored ancestry, applications for them for the inland lakes cannot be entertained, for it would hardly show a wise discretion, with our limited provided commissariat supplies, to wage a war against destiny. Applications, too, for them for those rivers whose waters during the summer months reach a temperature of 70° or 80° (this would be a premeditated slaughter of the "innocents") will, of necessity, have to go to the waste basket.

Applications also for them for purely private waters, springs, ponds, or streams owned or controlled by a single individual or party, are as respectfully as irrevocably ruled out, and this "ruling out" comes in virtue of the public character of our work, and also because of the injustice which might result to private or individual investment and enterprise. It is well known there are within the State many private trout hatcheries and establishments, where considerable means are invested and labor and skill employed, and it seems to me contrary not more to good policy than to good faith for the State to interpose any bar to these local, private institutions, supplying, if within their power, every private order and demand. If the State will farm her public waters as they should be farmed, she will have a plenty of work on hand to engage her attention for some time to come, and this, the stocking of her *public* waters we conceive to be her first, her legitimate, and her paramount duty.

But applications for Brook Trout fry will be gladly received and filed for those public brooks, streams, and rivulets whose waters course through whole townships or counties, and which are mainly spring-fed and maintain during all the year a pretty uniform stage of water, and their summer temperature ranging anywhere between 55° and 65°. Such streams are the natural habitat of the Brook Trout, and the closer our partnership is with nature in the stocking of waters with the Brook Trout the greater the assurance that our labor will not be in vain.

And then there is some stock in prospect. Our application has been sent, and is on file at Washington with the National Fish Commission, for as large a supply as possible of the Land-Locked Salmon ova. I shall confidently look for a larger quota than has ever before been apportioned to the State, as I understand their supply this season is larger, and then our conclusively established success with the Land-Locked Salmon may operate, as I hope it will, in inducing the National Commission to regard our this year's application with unusual favor.

The eel, too, is of course, a part of our prospective stock. But work upon him is usually of quite a contingent character, his being the "estate of remainder." If our fund be not exhausted upon the Whitefish, the Salmon, the Lake Trout, the Brook Trout, Grayling, and Land-Locked Salmon in their claim of priority attentions, why then the residue is most magnanimously accorded to the eel. But to forecast what this residue will be 60 or 90 days in advance, is

to predict "which way the cat will jump." In any throw of events it is always an unknown quantity, and thus may be, and indeed is rather likely to be of such diminutive proportions as to preclude that degree of consideration which the eel's modesty should secure. His "run" and the close of the fish-cal year are separated scarcely by a lunar month, and so our fish-cultural attentions are necessarily given to him at a time when the sands of our Appropriation are running at best but feebly, if at all. A change in the eel's habit, or a change in the time of the the termination of the fiscal year—either occurrence would doubtless be productive of a larger eel plant in our lakes, but this is hardly to be expected, as the State, looking to its armorial insignia, will hardly think it comports with its dignity to make overtures and concessions, while the eel, remembering his ancestral line and tenacious of his inherited rights and privileges, will very likely decline to recede from his view of the case.

ONE OR TWO LOCAL MATTERS, PARAPHRASED.

It has come to me, by the road stuff and calumny usually travel, "round Robin Hood's barn," that the Pokagon institution isn't popular at home, and that the cockney quidnunes have in solemn conclave resolved that the fishery isn't very much of a bonanza after all. Lord! what a pity! And then this being the conclusion of such very learned fish experts, as well as of those *impartial* souls who have been "weighed in the balances" and found not "to fill the bill," it makes it a pity as deep as a well and as broad as a barn door, fitly suggesting a raiment of "sackcloth and ashes."

Suppose we seek the key to this wonderful fishy cypher. Most unluckily the State's cow, pastured at Pokagon, hasn't but three teats all told, and quite a herd has been noticed within lowing range who wouldn't object one particle to drawing from her their sustenance, and undoubtedly if given the opportunity, would milk her dry! And then the possibility too, isn't as remote as is the planet Neptune, that if my trusted overseers could only see it to be in the line of their duty to let down the bars and give them now and then a Sunday free fish, that the stock of its home popularity would quickly enough jump up to "resumption" point.

And then another trouble, the dear folks of the neighboring vicinage don't boss the institution, although they have rather broadly hinted their willingness to do so. It has been quite a herculean labor to beat into them (a labor not yet fully accomplished), that they have no fishery rights, or privileges, or interests at the State Hatchery above those of the citizen of Petoskey, or of Bay City, or of Lansing,—they have the same, no more, no less. But some will persist in considering it a sort of a local institution, whereas it is in law and in fact, a State institution, and a pretty good one too. Pokagon has no more right to appoint its pic-nics on the margins of our ponds, and to send its children to us for their holiday amusement and entertainment, than has Detroit or Kalamazoo or Grand Haven. And if children are sent there, or if they run away from their homes and are found, throwing things into the ponds and worrying our fish, they are in the worse climate possible for a "shake," and if that don't cure the depravity, the *pater familias* may be called upon to obey a warrant to respond in exemplary damages, for order is Heaven's first law, and protection to our ponds and fish, are the "Ten Commandments." If the ponds want more water let on, or drawn off, or if the fish want "stirring up," we propose to do all that business ourselves, and when we need assistance, a very polite note, possibly gilt-edged, will be forwarded soliciting it. No one has ever been

turned away from visiting the State Hatchery. We invite and welcome all of every age, and sex, and race, to see what we have done and are doing, and as far as we ourselves know, what we propose to do, and of the thousands who have visited us, no one yet has ever been charged a single nickel for the attentions shown and for the privileges of the visit, while an entrance fee to many other State hatcheries is required and received. Gentlemen, ladies, appreciate the State's kindnes, and retire from their visit thanking the Overseer and his assistants for their civility and attentions.

One other thing, our improvements don't quite please our very disinterested friends. These, nature's boss journeymen, ranking even Israel's great temple builder, think they clearly see where we have missed it, and that too, to the great sorrow of the fish fund,—they never lose sight of the fish fund, for if not absorbed by these "tissue" elected supervising architects themselves, why of course their judgment directs that it be held as a sacred relic for *their* posterity. For a moment note their guileless prattle: "Look there,—that big island out there in one of the ponds,—the 'fish fund' caught it there you'd better believe!" Why kind and loving friends, that beautiful island there, that is of such agonizing interest to you, was built in the interests of economy,—to save our fund, can't you see it? It would have cost three times as much to have wheel-barrowed it away, as it did to pile it up and round it out and make it the gem of an island that it is. "Well, there are the rustic bridges,—how about them? You don't hatch fish with them,—do you?" Well no, not exactly that,—but as you can't have your broth while the hare is in the bush, those bridges are there to help us catch our hare,—they are our "Joliet cut-offs," to save time, and labor, and shoe-leather in feeding and caring for our fish, and in the oversight of our ponds, and to enable us more certainly to keep at bay night marauding pot-hunter and poacher. "But how about that beautiful fenced lot, and harbor for boats, and variegated tent, &c.? a big slice of 'fish fund' must have got away there, if things ain't awful deceiving." A full answer might be contained in four words,—that's not your business,—I never found it much profitable attending to other people's business, but have managed to keep out of the poor-house by giving some attention to my own. But as I do not desire to appear curt, and as I am in the way of explaining matters a little in the hope of relieving this chronic anxiety for the "fish fund," and for the neighborhood's general solace and cheer, I will in a few words explain. Our hatchery and ponds are all located upon the Methodist camp-meeting grounds, and as the Superintendent and overseers are *ex officio*, constituted a sort of constabulary force to keep the bishops, the clergy, and the laity, within the rules and regulations as laid down by good Father Walton, of blessed memory, during all of camp-meeting week, I had thought it proper that I should have a place of my own, where I could pitch my tent, and at least for one week, be an efficient constable and a good methodist. So last spring I met the trustees, and made known my need and want. They replied, "Oh, yes, we will be glad to have you take a lot,—take any lot you please that is not occupied, and you shall be perfectly welcome to it." Then I went, and being of a modest habit (I don't know as this is generally known), selected a *swamp lot*,—the most unsightly lot to the eye of sight, but not so to the eye of faith, that could be found in all their acres. Its banks, I saw, were washed by the beautiful Dowagiac, and the rest I took on trust. And now there is there a harbor for boats, matched floors, a bath-room, a red and white and blue tent, doors, gates, rustic fences, and seats, and all that, but the wages of the carpen-

ters and the men who worked out my orders, their board and their lodging, and the material used in the varied construction and ornamentation of the lot, these all were of my personal procurement, and were paid for by me individually,—the entire thing being a matter preëminently and exclusively of individual judgment and enterprise. Already having one partner of a sex and with qualities, financial, social, moral, that gave me great content, I did not elect to take the State into partnership in this business. Will the "fish fund" alarmists please take a note of this, as it may act as a sedative of rare excellence to nervously affected systems. But to cut this whole matter short, as regards the islands, bridges, graveled roads, and sodded walks, &c., &c., I desire simply to say, not one single blow of it all has been done to my knowledge to the neglect or omission of a single important work or duty. Our regular and active fish work closes usually in June, the eel being our last customer. Then the Overseers address themselves to cleaning up their hatcheries,—mending breakages, repairing tools and fish apparatus, painting the troughs and races, and varnishing their hundreds of wire screens, all of which will very likely keep them well employed through July, and as August comes along, I enquire if their work is all done up? Are the tools all sharp? the nets and the wire protecting screens mended? the crevice in the pond out there made secure? They reply all right, all sound. Satisfied as to this, I hand them a plat of a rustic bridge, or tell them of a road to be graveled or a walk sodded, with which they can fill up the few comparatively leisure days of August. They go at it, and the work is speedily enough pushed forward to its completion. Now this is the origin and the upshot of whatever there is of ornamentation in our fishery ponds, grounds, and surroundings, and I hold it just about as easy, while about it, to do all work well and tastefully, as to do it shoddily, shabbily, and untastefully, and how much more satisfactory the outcome. And as for idlers about me, I can't endure them,—not more does nature abhor a vacuum, than do I abhor the ingrained idler. I would sooner see employés of mine turning hand-spring somersaults, or vigorously whittling away on huge pine knots with an inch blade penknife, than to see them listlessly lounging about perched on skeleton dry-goods boxes, or stolidly and aimlessly seeking the summer day shade.

And now, if an insight has been gained, in the few paragraphs I have employed, into the cause and animus of the Summerville and Pokagon disquietude and sputteration, as touching the fishery and its management, my object will have been fully secured. And perhaps my brief characterization of the situation was not very pressingly necessary. So let it pass. I have stated facts, and narrated them in a vein of pleasantry, and none need take umbrage thereat.

A PLAIN SUMMARY VIEW OF THE CASE.

Too well aware am I that the tribe of the Thomases is not yet extinct. Now, as when incarnate Deity walked Judea's plains, there are those who believe and "believing, doubt." In all soberness, I ask, is this astir and labor and expenditure in restoring food fishes to our depleted, yes, barren waters, but a cleverly acted "comedy of errors," or the farce of "much ado about nothing?" Is Prof. Baird, United States Fish Commissioner, who as Naturalist and Scientist, is the peer of any, of any age or nation, himself befogged, enmeshed? and devoting his great life to a cheat and a delusion? Not a syllable of it will I believe. Are Milner, and Roosevelt, and Lyman, and Atkins, and Hallock, and Rowe, and an hundred more, among the ablest and the best of America's citizens, all deceived, all humbugged in this matter? Peddle, if you will, such

stuff in the market place, but bring it not up to the temple and the shrine where these worship and bring willing oblation. Are England, and France, and Germany, and Russia, and Italy, and other countries and governments, which we have been wont to esteem as at least semi-civilized, become so retrogressive and effete as to suppose it necessary to create, equip, and endow artificial fishery establishments and sustain them from year to year by liberal drafts from their not remarkably plethoric exchequers? Must it be confessed that we all, individuals, communities, and governments are on the down grade and rushing to that limbo, the domicilium of folly and of blind fatality, yoked hopelessly and irremediably to outer darkness and confusion? Is it verily all mist and vista and night? Facts multiplied by facts, the accumulation of but a little more than a decade of years, furnish incontestable proofs to the contrary.

As regarding the development and progress of the piscicultural art, no pretense is made, nor has been made that our success is an unbroken success—that every egg stripped from the mother fish has been fertilized, and that every fecundated egg has become a living fish, and every living fish the progenitor of a long line of fishes. No claim that I am aware of, from any body or from any quarter has ever been made that the art or the science, or both, are become clothed in the seamless garment of perfection. We both hope, and we know different, for when a thing of human device is become absolutely perfect it don't longer belong here—it is of the class of exotics, and should be transferred to some other patch of God's universe. A beginning and progress, these are the alphabet of our faith, and by this sign we struggle and hope to conquer. I have no doubt, the means and methods to-day employed to promote pisciculture or aquaculture, using the terms as of interchangeable import, considered and justly too, far superior to those of ten years ago, will inside of the next decade give way to still new and improved means and methods, and the apparatus and appliances in use to-day, seemingly incapable of amendment or improvement, will in the years to come be superseded by others, which in directness of application and in efficiency of execution, shall excel the old as daylight doth a farthing candle—for there is nothing in art, nor in science as applied to art, permanent, but change. This view, however, don't disturb in the least the great central, immutable fact, patent as is the headlight of a number one locomotive, that the waters that roll at our feet and sparkle in the rising and setting sun like unto jeweled Sheba, may all be utilized and made to contribute largely to the sum total of human needs and happiness. Absolutely barren waters, barren away back, "whereof the memory of man runneth not to the contrary," by the adaptation of human agencies and by the use of artificial appliances, may become fruitful as the very Nile. Waters robbed, plundered by the unprincipled pot-hunter and by roving outlaw of all their finny inhabitants, can be, have been restocked, and they restored to their pristine fullness. And why not? tell me if you can? Is there any law, or hindrance, or inexorable decree against this thing? In our efforts to recover and to fertilize barren waters do we usurp the province of Omnipotence? Is it to be, barren once, barren forever? Treeless we found the prairies, and treeless are they to remain, unendingly? Not quite do men so think and reason. And if one-third of an acre of water can grow ten thousand trouts and bring them forward large enough and fat enough for Governor or gourmand, why can't an half acre, or an acre do as much? If St. Mary's lake in Calhoun Co., can grow an eel from three to four inches long to 22 inches in length in

the short period of fourteen months, twenty days and twenty-two hours, why can't St. Agatha's lake, or St. Jerome lake tally as well?

One thing, however, must be well borne in mind and never lost sight of in the solution of the fish problem: it is this. It is quite possible, indeed almost probable, that we have not complied, or are not in accord with all the essential conditions of success. We may toil most diligently and pray most fervently, and yet if one link in the chain of causes be wanting, or broken, or may be, if but rusted, all the superstructure, however magnificent and costly, will surely tumble into ruins. I am quite well persuaded, before we can count on those good round measures of success, we will have to change our tactics a somewhat. It is almost certain that we have got to adopt more thorough, and possibly more systematic methods of tillage. And it is quite probable too, that as physical law, and empire, and superior thrift, and intelligence, have pushed from the eastern segment of the continent the land savages, far away in the haze of the setting sun, so those savages of the water, the pike, the pickerel, the perch, and other of the Modoc water tribes, may have to retire to make room for the quaker Whitefish, the cavalier Trout, the thyme-fragrant Grayling, and the regal Bass. And it is more than likely that we will have to clean up our meadow and forest brooks—clean out the pestiferous rubbish—turn away the vile drainage of barnyard and pig sty, and very likely have to plant along their rippling margins the cress, insect-bearing herbs, shrubs, and twigs. It is little less than certain that the streams and rivers cannot be made the common receptacle of slabs, tailings of mills, and saw-dust cartings, things which might enrich the land, but dumped into the water breed pollution, poison, and death. Certain it is that that fetid, polluted mass, the reeking offal of mill and factory must not be permitted to come nigh to the water's edge, for this, in less time than it took Mercury to make the transit of the sun, would kill the devil-fish himself. The game laws must be accounted wise and proper—close times observed, and punishment for their infraction made certain. And violated law must be no respecter of persons.

Then again, there must be more wide-spread intelligence on the general subject. The people must take it up and work out for themselves the great problems of fish culture. It is astonishing how crude are the notions still entertained in some quarters. Some people, I have myself met specimens, have the idea, and an engine of ten-horse power can't dislodge it from them, that fish are the product of spontaneity—they come and go according to the "dip" of the moon or the "dapple" of the twilight,—a veritable Topsy kind of race—they somehow exist but they never were born, and consequently they have no birthrights nor wants. They reason, as their *beginning* is in bone their *continuation* is but bone, and cartilage, and gristle, and *therefore* they are without stomachs or digestive organs and can fast twelve or twenty-four months and enjoy themselves all the same; aye! they rather expect them to grow and wax savory and plump on what is left over from nothing! Now in such soil and with such sponsors, to expect a large and valuable crop of fish would be to put Providence to his best "trumps." Knowledge—intelligence is a greater factor and producer than muscle or brawn, and there is where the fish-cultural work needs most its accessions of strength, and I have faith that in its eventual coming we shall not be disappointed.

But what is possibly still more essential to certain success in fish culture, is to be resolved and plucky. All hands must stop croaking—croakers, whether on land or in the water, should be allowed a wide berth. Go to work resolutely, persistently, and if the old flint-lock don't go off at the first pull of the trigger, pick the flint and try it again, and still again if necessary, till game abundant and luscious comes to your creel. We must have large faith in nature, and in nature's laws—ascertain her methods and processes, work for and with her, and we will find her the most kind and benignant of employers. Some people's faith don't seem to be longer than a yard-stick. Because, forsooth, they can't lug home a back load of fish, grown to marketable size between the new and the full moon, irate and inconsolable they throw down and away their tools, and with a pitiful cry, as if their lungs were burdened with certain prophesy, shout—"the jig is up"—"just as I told you"—"you had better turn book-agents or electricity peddlers and let alone this water-farming, as you call it." Well, the advice is cheap, and they who like a cheap article can take it if they like. Ah, poor souls indeed! lacking faith *and spine*. If confided to my charge I would quickly enough hand them over to some sanitary institution and order them on a diet of starch and whalebone, if peradventure they thereby might be recovered and restored to that perpendicular and upright position which the Almighty ordained man should occupy in the midst of his works. standing and defiantly erect, the masterpiece and glory of the creative fiat.

CONCLUSION.

Men of Michigan, in view of the whole question, as brought to notice by the statements and facts of the Report now submitted, it would seem quite supererogative to tell you that this is your great interest, for I do not forget that it was at your behest that this enterprise sprang into existence, and through you has taken on whatever of shape and vigor it possesses. And full well do I know, behind it still are the same potent agency, and vitalizing influences, awaiting only your summons to call them into use, to assure its permanency and crown it with ultimate safety and value.

The established increase of the people's supply of palatable and nutritious food, is not the work of any class, nor of any section, nor is it of any interest that I can conceive of, dissociated from the common welfare. And the labor necessary to accomplish this sought for and most desirable result, cannot by any show of means, be held to rest exclusively with the Board of Fish Commissioners, nor with the Superintendent, nor with the Overseers, for they at most and at best, are but the servants of the law, and are incapable of doing but little more than to give counsel and direct the great army which should be found co-öperating and laboring with them for the one common end. The real work and the responsibility have a much broader basis,—these rest upon the great citizenship of the State. Every man that owns an acre or a plat of land,—every man that carries in his pocket a key to a shop,—every man that sports a professional shingle, or through apostolic or other anointing, gives his *licensed* exegesis of the texts of the humble fishermen of the lake of Gallilee,—every man that measures or weighs his profits at the counter, or computes them at the counting table, each and all within the State's wide limits, has a direct interest in the sowing, as he hopes to share in the ripening and of the ripened harvests. As I was attracted to the Peninsula State by the broad area and fatness of these thousands of lakes, and rivers, and streams and rivulets, many of them now impoverished and sterile, and by the abounding game of the great forests, none grander between the seas, so too hundreds and thousands others, now constituting a portion of the citizenship of the State, a citizenship which might justly awaken the pride and the envy of any commonwealth, have been drawn hither

by the same attractive forces, and thousands upon thousands more, if true to ourselves and vigilant of our interests, shall come to dwell upon the margin of the river and the brook, and by the borders of the glassy lake and lakelet, as they warble and shimmer in alternate light and shade, on very nearly every section of the State's domain. Repel this incoming population if we will,—repel it if we dare, but surely as the Heavens are above, will the avenging nemesis of opportunities neglected, of duties unperformed, draw the dark shadow, ineffaceable and eternal across the disc of Michigan's fairer renown. Oh! no, we cannot afford to let our waters go to waste. We cannot afford to have our forests ruthlessly fired by vandal hunter, and their tempting game mercilessly and indiscriminately butchered and thrown to the vultures. We cannot afford to confront and stigmatize that new and advancing civilization that gladly would enfold us as a mother enfolds her first born, beckoning us as it does with beseeching look and with tremulous cadence on to the sure guerdon of honest and faithful stewardships. We must stand by these great interests, single-handed, or banded, we must address ourselves, if need be, by a solemn oath, to their preservation in perpetuity, for I tell you, they are, passing all dispute, interests elemental and vital and cannot be surrendered except at the sacrifice of duty, of interest and of honor.

It is my hope on the expiration of the year upon which I have entered, to be relieved from further active duty in this department of State work. Though with harness on or harness off, whether in the ranks or out of the ranks, I can never lose my interest in this, the youngest, the fairest, and as I think the saintliest of all of Michigan's great industries. I shall watch it with much of the feeling and affection with which a fond parent follows his boy, as he turns his back on the dear old home, and pushes forth into the world, an individualized power, and self-consecrated, in quest of fortune and of fame. I think I know something of the anxiety and responsibility, as well as of the roll-up-sleeve kind of work it has cost, to bring Michigan up to that rank which, thank Heaven, she occupies in the roll of the fish States. There must now be no lapsing from grace, no backsliding, no surrender. All the signs of the horoscope betoken the nearing to the goal. To falter now and look back, coveting the miserable "truck" of that plague smitten Egypt, from which we are escaped, were the culmination of folly and of pusilanimity. Albeit, we may not forget the rough roads, nor the rugged hills that are behind, nor may we safely seek to shun the few eminences that lift their craggy fronts before. These however, being overcome and passed, to such as have kept the faith and kept their feet aright also, there shall be opened up a vista of cheering and most goodly promise. For even now are we come to its outer gate, hard by, scarcely a league away, beautiful, fragrant, luxuriant, and far outstretched, prefigured by many types and shadows, lies the promised valley. That it may be Michigan's pride and ambition to enter upon this enchanting valley, and possess it, and occupy it, alike its crown of honor, and its enduring heritage, is the earnest hope and heart-felt wish of him who has been aided and honored beyond his deserving.

GEORGE H. JEROME,
Superintendent of the Michigan State Fisheries.

IN MEMORIAM.

GEORGE CLARK,

DIED OCTOBER 14TH, 1877.

In the demise of their associate, the Board of Fish Commissioners sadly mourn that inscrutable dispensation which has deprived them forevermore of the presence of one whom they well loved and trusted. Mr. Clark attracted and endeared to him friend and associate, not less by the thoroughness of his convictions and by the sagacity of his counsels than by his genial temper and preëminently social virtues.

His beautiful and spacious home, at Ecorse, a few miles out from Detroit, and on the banks of that great river, whose annual husbandry contributed to his estate, occupied by him for half a century, and all about which are the evidences of culture and refinement, was a very sanctuary of good cheer and of a large-hearted hospitality. Fish-culturists, masters and learners of the art, found and thronged his home. He greeted each comer, friend or stranger, with outstretched palm and with a kindly welcome, and was as constant and mindful of their wants and comforts, as if each were a loved and cherished member of his household. In his presence and about his hearth-stone altars, distinctions availed little. None were forgotten—equal and honorable attentions were accorded to each, and all shared alike in the rare geniality and bounty of his friendship. None, we venture to say, ever went out from his home but that, as he felt the warmth of his parting hand, offered the silent, if not the audible prayer, God bless George Clark and his house, for it is here I have slept in peace, and abided in comfort and in safety.

But it is perhaps more appropriate in this connection to speak of him in his public character. He was the senior member of the Board—was a member at its organization in May, 1873, and continued such to the time of his death. His selection to a position on the Board was one of preëminent propriety and fitness. We hesitate not to say, that Gov. Bagley during his two terms of executive service, never in any appointment of all he made, exercised a sounder judgment or a juster appreciation. We can now call to mind no name in all the State that could have met so perfectly the requirements of the newly-created fish law as the name of the humble, yet widely known and universally respected fisherman of Ecorse. He brought to the position a study and an experience of more than a half a century. He had seen the lakes and the

rivers in their prime, when it was work, sweating work to land the burdened nets, and he had lived to see them, when the harvest of the nets was insufficient to pay the day laborers. He knew of, and was sharer in their fatness—he saw and sorrowed over their dearth and their leanness. He was a close observer, a good talker, a willing listener, a large and a retentive reader, a man sober and practical in all his views and transactions. He was no visionary—no chimerist, mounting on stilts to-day but to find his level to-morrow. No hobbies did he ride, as is the wont of many till the ribs of the poor beasts shine through their flanks as the rafters of some decayed old building. All his views were sober, steady—common-sense—eminently practical, and through long years of experience, and by much reflection and comparison, they had blossomed and ripened into duties and convictions.

He brought, too, to his official position a special intelligence, the very thing which the Board as a board lacked. Theoretically his associates of the Board were well enough, but in that special intelligence with which their duties and their usefulness stood so intimately connected, they were at best but novices and certified probationers. They leaned upon their friend to help them through many a breaker and over many a shoal, and the confidence and trust so reposed never failed them. In the early sessions of the Board questions which arose of a doubtful augury or of a tangled web, were handed over to him as a thing of course, and by him were solved with a promptness and a facility equaled only by the simplicity of his statements and the modesty with which he voiced his conclusions. In short, he was just the man to found a new industry of the State, and to him more than to any one else belongs the credit of whatever of symmetry and grace and excellence there now appears, or shall appear in the superstructure.

Mention of one or two more elements of his character must not be omitted, for these we esteem of cardinal significance and value.

Mr. Clark was by habit and by conviction a conscientious man, not in that flippant, debased sense of the term whereby many now a days vault, or seek to vault into public favor, regardless alike of fitness and of consequences, but conscientious in that higher and nobler view, which, eliminating self and all private thought, and interest, and reputation, regards the public interest and the public life as the paramount good. Office and citizenship he believed to be sacred trusts—talent sconferred not to be hid, but to be used. In this faith he lived and labored, bringing at all times to his public work a zeal and a devotion rarely witnessed in persons holding official positions. Of the five years of which he was a member of the Board, and of the numerous meetings held, the records show that he never once during all these years was an absentee. While all who knew him will cheerfully bear testimony that he was prompt and diligent in his private business and affairs, yet these he held in subordination, as of minor consequence, giving himself up as often and as long as necessary to the performance of those graver duties which he conceived might be of public need or necessity. His was the true and the just estimate of the public man.

One other element or quality shone out radiant and sublime in the character of our friend. He had faith—great faith. He had faith in Providence, faith in progress, faith in man. He put large measures of faith in every work he undertook. He sowed and he planted in faith, and in all those grand life struggles which enter into and fill up the allotted three score and ten years, faith stood by him, his valiant and tried adjutant. He believed in the new State industry that had been inaugurated—that it was a step taken none too

soon, nevertheless a step in the right direction, and of hopeful presage, and of its success he was buoyant and never in doubt, and daily did he put things in order as if the looked for realization were at hand. And although clouds and darkness, and hail and tempest might visit it and temporarily check its advance, yet having its foundations in human aspiration and progress, and underlying the great fountain springs of the public welfare, with him its eventual triumph seemed fixed and sure as Heaven's immutable decrees. Brave, heroic man! May thy faith be the prophecy and the fulfillment.

But our brother is gone. A dear and a trusting family are stricken with grief. The Board, of which for five long years he was the central figure, remember his presence and turn away in sadness. Neighbors and acquaintances for many years to come will with stifled utterance rehearse the stories of his affectionate neighborly regard, and of his unostentatious charities. The State, which had not in all its boundaries a truer or a juster citizen, will long and tenderly enfold him in her remembrance. But of all who cherish his memory and mourn his departure, none followed his bier to its final resting, with truer anguish, than did that voiceless, sightless child of his love—that great enterprise—to which he gave of his early, and his last days, and bequeathed it the rich legacy of his virtues.

—"Life's fitful fever o'er,
He sleeps well."

APPENDIX.

APPENDIX.

UNITED STATES FISHERY ACT.

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

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

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

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

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

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

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

Approved February 9, 1871.

ACT CREATING THE BOARD OF FISH COMMISSIONERS.

[No. 124.]

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

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

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

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

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

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

Approved April 19, 1873.

[No. 11.]

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

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

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

Approved February 20, 1875.

[No. 71.]

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

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

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

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

SEC. 2. This act shall take immediate effect.

[No. 117.]

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

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

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

SEC. 2. This act shall take immediate effect.

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 unlawful for all persons to put into any of the waters of this State, where fish are taken, any offal, blood, putrid brine, putrid fish, or filth of any description; and any person so offending shall be fined in any sum not exceeding three hundred dollars, or imprisonment 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 from the catching and curing of fish, shall be burned or buried ten rods distant from the 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 in the waters of this State, shall not be less than five inches in extension, knot to knot; and the size of the meshes of all the pot of said nets, shall not be less than two and a half inches in extension, knot to knot, in pound or trap nets used for catching White Fish; and the size of the meshes of all the lead of pound or trap nets used in catching other kinds of fish, shall not be less than four inches in extension, knot to knot; and the size of the meshes of all the pot of said pound or trap nets shall not be less than two inches in extension, knot to knot, under penalty and on pain of forfeiture of the nets, or fine not exceeding three hundred dollars, or both, at the discretion of the court: *Provided*, That the penalties of this section shall not apply or work injury to persons who are the present owners of pound or trap nets, but apply to all pound or trap nets hereafter manufactured.

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

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

(2077.) SEC. 6. Any act in contravention of sections two, four, and five of this act, shall subject all parties concerned in the breach of the said sections, whether the actual transgressors or accessories, to a penalty of not more than one hundred dollars nor less than twenty-five dollars with all expense of prosecution, or to imprisonment in the county jail for a period not exceeding thirty days, or both, at the discretion of the court.

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

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

(2080.) SEC. 9. All forfeitures occurring under sections one, two, three, four, five, six, eight, and nine of this act may be recovered by action of debt, with costs of suit, before any court of competent jurisdiction, one moiety thereof to the person who

sues for the same, and the other moiety to be paid into the hands of the county treasurer, 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 of the waters fronting or bordering land where fish are taken by the legal owners or occupants of such lands, any vessel or ship ballast, stone, sand, coal cinder, ashes, log slabs, decayed wood, bark, saw-dust, or obstruction, or filth of any other description, or to place or drive any pound net piles or stakes, or any other piles or stakes, or posts, or build any platforms or piers, or any species of seines or continuous trap nets, to the extent of the breadth of such legal owner or occupant's lands so far as the channel banks of the rivers, and to one mile from the beach or shore, at low-water mark of the lakes, straits, inlets, and bays on said waters fronting such owner or occupant's lands, and it shall subject any boat owner, or captain of any vessel, to a fine of not exceeding fifty dollars, who shall willfully run into or molest any pound net, trap, or other stationary nets, or fixtures set in the lakes for fishing purposes.[1]

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

AN ACT to prevent fishing with seines and every kind of continuous nets, in the waters of the counties of Branch, Livingston, Cass, St. Joseph, Kent, Ionia, Genesee, 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 not be lawful hereafter to fish with seines or any species of continuous nets in any of the inland lakes or small streams of the counties of Branch, Livingston, Cass, St. Joseph, Kent, Ionia, Genesee, and Calhoun, nor in any of the lakes, rivers, or streams of Macomb county.

(2084.) SEC. 2. Any person offending against any of the provisions of this act, shall, on conviction thereof, be liable to a fine of not more than one hundred dollars, or imprisonment in the county jail not more than sixty days, to be determined by a court of competent jurisdiction.

AN ACT to amend an act entitled "An act to amend an act to amend an act to prevent fishing with seines, and every kind of nets in certain counties in the State of Michigan," approved March sixteen, 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 act entitled "An act to amend an act entitled 'An act to prevent fishing with seines and every kind of nets, in certain counties in the State of Michigan,'" and approved March sixteenth, eighteen hundred and sixty-one, be and the same is hereby amended so as to read as follows:

(2085.) SECTION 1. That it shall not be lawful hereafter to fish with seines or any species of continuous nets, in any of the inland lakes or small streams of the counties of Jackson, Hillsdale, Washtenaw, Van Buren, Calhoun, Kalamazoo, Barry, Eaton, and the townships of Rollin, Medina, Seneca, Dover, Hudson, Cambridge, Franklin, and Woodstock, in Lenawee county.

(2086.) SEC. 2. Any person offending against any of the provisions of this act shall, on conviction thereof, be liable to a fine of not over one hundred dollars, or imprisonment in the county jail not over sixty days, to be determined by a court of competent jurisdiction.

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 inland lakes and streams in the State of Michigan.

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

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

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

AN ACT to amend an act entitled "An act to provide for the erection and maintenance of shutes for the passage of fish through the dams across the streams of 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 entitled "An act to provide for the erection and maintenance of shutes for the passage of fish through the dams across the streams in this State," approved March sixteenth, in the year of our Lord eighteen hundred and sixty-one, be and the same is hereby amended so as to read as follows:

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

(2091.) SEC. 3. Whoever obstructs the main channel or course of any river or creek, by placing therein nets or fishing apparatus of any kind whatever, for the purpose of taking or stopping fish of any kind, shall thereby incur for each offense, a fine not exceeding twenty-five dollars; and in no case shall the said channel or course so left 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 and inland rivers, by the interposition of fish weirs, weir dams, or weir nets.

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

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

SEC. 2. This act shall take immediate effect.

[1] This amendatory act is inserted in the place of the original, as it supersedes it.
[2] As amended by Act 66 of the laws of 1867, p. 94, approved March 20, 1867.

AMENDMENTS TO GENERAL FISH LAW.

The following are the amendments of the General Law:

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

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

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

Approved March 27, 1873.

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

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

Approved April 15, 1873.

[No. 188.]

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[No. 195.]

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

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

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

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

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

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

[No. 204.]

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

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

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

(2076.) SEC. 5. No person shall catch or take from any lake, river, or stream of this State, by any means whatsoever, any speckled trout from the first [day] of September in any year until the first day of May following thereafter; nor shall any person catch or take any grayling, by any means whatsoever, from any such lake, river, or stream, from the first day of November, in any year, until the first day of June following thereafter; nor shall any person purchase, buy, or sell any such fish during said prohibited time; nor shall any person take or catch any speckled trout or grayling, in any such lake, river, or stream, by means of a spear, net, or seine, or in any other manner whatever, except by hook and line, at any time during the year. In all prosecutions under this act it shall be *prima facie* sufficient on the part of the people to show that the defendant was found in possession of any such fish at any time within the period when the catching or taking of such fish is prohibited as aforesaid. It is hereby made the duty of the prosecuting attorney, the sheriff and his deputies, and every constable of any county, and the supervisor of any township, to prosecute any person for a violation of any of the provisions of this section when complaint is made before a justice of the peace. It shall be lawful, however, for the Superintendent of Fisheries to give permits in writing to any person to catch or take any such fish in such manner as such superintendent shall direct, at any season of the year, for the purposes of propagation; but in any prosecution for a violation of any of the provisions of this section, such permission must be shown affirmatively by the defendant.

SEC. 2. This act shall take immediate effect.

GAME LAWS.

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

THE GAME LAWS OF MICHIGAN.

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

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

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

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

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

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

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

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

(2099.) SEC. 7. No person shall at any time, within this State, kill any robin, night-

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

hawk, whipporwill, finch, thrush, lark, sparrow, cherry bird, swallow, yellow bird, blue bird, brown thrasher, wren, martin, oriole, woodpecker, bobolink, or any song bird, nor rob the nest of such birds, under a penalty of five dollars for each bird so killed, and for each nest so robbed.

(2100.) SEC. 8. That any railroad, express company, or other common carrier, or any of their agents or servants, or other persons having any of the above named birds or animals in their possession for transportation, or shall transport the same, after the expiration of the thirty days next succeeding the times limited and prescribed for the killing of such birds or animals, shall be punished by fine not less than ten dollars, nor more than one hundred dollars: *Provided*, That such penalty shall not apply to the transportation of live quail which are to be kept alive through the winter, or to the transportation of such birds or animals *in transitu* through this State from other States, where it is lawful to kill such birds or animals at the time of such transportation.[1]

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

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

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

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

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

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

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

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

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

(2108.) SEC. 3. Every penalty prescribed by the preceding sections of this act shall be sued for in the name of the people of the State of Michigan, before any justice of the peace in the county where the alleged offense was committed, which suit shall be commenced and carried on in the same manner that prosecutions for misde-

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

meanors are, and the penalties collected in pursuance of this act shall be paid into the county treasury of the county where the offense was committed, for the support of the township libraries of such county.

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

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

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

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

Approved March 27, 1873.

[No. 201.]

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

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

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

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

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

[No. 64.]

AN ACT to amend section 1 of chapter sixty-four, compiled laws of eighteen hundred and seventy-one, as amended by act number forty-six of the session laws of eighteen hundred and seventy-three, as amended by act number two hundred and one of the session laws of eighteen hundred and seventy-five, approved May third, eighteen hundred and seventy-five, relative to the preservation and protection of game.

SECTION 1. *The People of the State of Michigan enact*, That section one, of chapter sixty-four, of the compiled laws of eighteen hundred and seventy-one, being compiler's section two thousand and ninety-three, as amended by act number forty-six of the session laws of eighteen hundred and seventy-three as amended by act number two hundred and one of session laws of eighteen hundred and seventy-five, and approved May third, eighteen hundred and seventy-five, be amended so as to read as follows:

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

SEC. 2. This act shall take immediate effect.

Approved April 21, 1877.

[No. 104.]

AN ACT to encourage the propagation of fish in the State of Michigan.

SECTION 1. *The People of the State of Michigan enact*, That it shall be unlawful for any person or persons to kill or take speckled trout or other fish from any private lake, pond, or stream, used for the propagation of such fish (except by the consent of the proprietor of such lake, pond, or stream).

SEC. 2. Any person or persons violating section one of this act shall be deemed guilty of a misdemeanor, and, upon conviction, shall pay a fine of not less than ten dollars and not exceeding one hundred dollars for each offense, and shall, on conviction thereof, stand committed to the county jail until such penalty is paid: *Provided*, That such imprisonment shall not exceed three months.

SEC. 3. A prosecution may be brought in the name of the people of the State of Michigan against any person or persons violating the provisions of this act, before any justice of the peace of the county in which such violation is alleged to have taken place, or before any court of competent jurisdiction; and it is made the duty of all prosecuting attorneys in this State to see that the provisions of this act are enforced in their respective counties, and they shall prosecute all offenders on receiving information of the violations of this act.

SEC. 4. It shall be the duty of the proprietor of any such private lake, pond, or stream, who is engaged in the propagation of fish as contemplated by this act, to post or cause to be posted in a conspicuous manner, at places not more than twenty rods apart, commencing on either side of such private lake, pond, or stream where it

enters the premises of the owner sought to be protected, and extending along or near either bank to the place where such waters leave such premises, public notices, painted on boards in large and plain letters, that the owner, naming him, is engaged in such business, and all persons are prohibited from killing, taking, or catching any fish in the waters within the limits of such notices.

Approved May 9, 1877.

[No. 122.]

AN ACT for the incorporation of associations for yachting, hunting, boating, fishing, rowing, and other lawful sporting purposes.

SECTION 1. *The People of the State of Michigan enact*, That any ten or more persons of full age, citizens of the United States, a majority of whom shall also be citizens of this State, who shall desire to associate themselves for yachting, hunting, fishing, boating, rowing, and other lawful sporting purposes, may make, sign, and acknowledge before any officer authorized to take acknowledgment of deeds in this State, and file in the office of the Secretary of State, and also in the office of the county clerk where the business of the association shall be conducted, a certificate in writing, in which shall be stated the name or title by which such association shall be known in law; the particular business and object of such association; the number of directors or managers to manage the same, and the names of such directors, or managers, for the first year of its existence, but nothing in this act contained shall authorize the incorporation of any association for any purpose repugnant to any statute of this State or prohibited thereby.

SEC. 2. Upon filing a certificate as aforesaid, the persons who shall have signed and acknowledged the same, and their associates, and successors, shall thereupon, by virtue of this act, be a body politic and corporate by the name stated in such certificate, and by that name they and their successors shall and may have succession and shall be persons in law, capable of suing and being sued, and they and their successors may have and use a common seal, and the same may alter and change at pleasure; and they and their successors by their corporate name, shall in law and equity be capable of taking and receiving real and personal estate, either by purchase, gift, grant, lease, or bargain and sale, devise and bequest, not exceeding twenty-five thousand dollars in the aggregate, for the purpose of their corporation, but for no other purpose, and the same at pleasure, grant, bargain, mortgage, sell or lease, for the use of said association; make all needful rules, regulations, and by-laws, for the management of its affairs, not inconsistent with the constitution and laws of the State or of the United States, to elect and appoint the officers and agent of such association, for the management of its business, and to allow them a suitable compensation.

SEC. 3. As soon as such certificate shall have been filed as above provided, any ten of the corporators may call the first meeting of such association in the following manner, that is to say, they shall file with the said county clerk and the Secretary of the State a written call for the said meeting, which call shall be signed by such persons, and shall briefly set forth the day, hour, and place of meeting, and the purposes thereof. The time of such meeting shall be not less than four weeks nor more than eight weeks from such call. After filing such call as aforesaid, they shall also cause a correct copy thereof to be published in some paper circulating in the county wherein the clerk's office is situated in which the said call is filed, once in each week for three successive weeks before the time of meeting. At such meeting, and annually thereafter, there shall be elected from such members as shall be residents of this State the officers of such association, and five directors or managers, who with such other officers of the said association not exceeding four in number, as shall be designated by the by laws of such association, shall constitute the Board of Directors. The said Board shall have the control and management of the funds, and the business affairs of the said association. A majority of the said Board shall constitute a quorum for the transaction of business, and when any vacancy shall occur among such directors by death, resignation, neglect to serve, ineligibility, or otherwise, such vacancy shall be filled in such manner as shall be provided by the constitution and by-laws of such association.

SEC. 4. In case it shall at any time happen that an election of officers, directors, or managers, shall not be made on the day designated by the constitution and by-laws, said association for that cause shall not be dissolved, but it shall and may be lawful on any other day to hold an election for officers, directors, or managers, in such manner as may be directed by the constitution and by-laws of such association.

SEC. 5. Any association organized under this act may, by its constitution and by-laws limit and fix the amount of expenditure and debts that such directors and managers may incur on behalf of said association in any respect; and if said directors or managers shall incur an indebtedness exceeding the amount so limited and fixed, the association shall be liable for same, and the directors and managers shall be severally and jointly liable to the said association, its successors and assigns, in an action founded on the statute for all and any indebtedness which shall exceed the amount so fixed and limited by the constitution and by-laws and which such association shall have paid.

SEC. 6. No such corporation shall use the name or style of any other existing corporation organized under this act.

SEC. 7. The articles of association filed as required by this act or a copy thereof certified by the officer with whom they are so filed, may be given in evidence in any court of this State for or against said association; said association shall possess the general powers conferred by and be subject to the provisions and restrictions of chapter fifty-five, title ten, of the revised statutes of eighteen hundred and forty-six, so far as the same may be applicable to associations formed under this act.

SEC. 8. This act shall take immediate effect.

Approved May 14, 1877.

[No. 136.]

AN ACT making appropriation for the Board of Fish Commissioners for the year eighteen hundred and seventy-seven, and the year eighteen hundred and seventy-eight.

SECTION 1. *The People of the State of Michigan enact*, That the sum of seven thousand dollars is hereby appropriated for the year eighteen hundred and seventy-seven, commencing July first, eighteen hundred and seventy-seven, and ending June thirty, eighteen hundred and seventy-eight; and the sum of seven thousand dollars for the year eighteen hundred and seventy-eight, commencing July first, eighteen hundred and seventy-eight, and ending June thirty, eighteen hundred and seventy-nine, for the necessary expense incurred by the Board of Fish Commissioners, which the State Treasurer shall pay to said board on the warrant of the Auditor General, from time to time, as their vouchers for such expenses shall be exhibited and approved: *Provided*, That not more than two hundred dollars per annum be applied for the use of water in the city of Detroit.

SEC. 2. The sum of seven thousand dollars the Auditor General shall add to and incorporate with the State tax for the year eighteen hundred and seventy-seven, and the further sum of seven thousand dollars he shall add to and incorporate with the State tax for the year eighteen hundred and seventy-eight, which sums, when collected shall be paid into the treasury to reimburse the same for the amounts to be drawn as provided in section one of this act.

Approved May 16, 1877.

[No. 199.]

AN ACT to prevent hunting for game with fire-arms, dogs, or otherwise on any enclosed lands or premises of another, in this State, without the consent of the owner or lessee of such lands or premises.

SECTION 1. *The People of the State of Michigan enact*, That it shall be unlawful for any person or persons to hunt for game with fire-arms, dogs, or otherwise on any enclosed lands or premises of another, in any county of this State, without the consent of the owner or lessee of such lands or premises.

SEC. 2. Any person or persons violating the provisions of the foregoing section of this act, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall pay a fine not less than five nor more twenty dollars, in the discretion of the court, and costs of prosecution. And in case the fine imposed and costs of prosecution shall not be paid, the defendant shall be confined in the county jail of the county, not

less than five nor more than thirty days: *Provided, however*, That no complaint shall be made or entertained against any person for the violation of any of the provisions of this act, unless the same shall be made by the owner or lessee of the land or premises so trespassed against [upon].

Approved May 23, 1877.

[No. 202.]

AN ACT to amend section two of an act entitled "An act to provide for the erection and maintenance of shutes for the passage of fish through the dams across the streams of this State," being compiler's section two thousand and ninety of the compiled laws of eighteen hundred and seventy-one, as amended by act number one hundred and ninety-five, of the session laws of eighteen hundred and seventy-five, approved May first, eighteen hundred and seventy-five, and to add five new sections thereto, to stand as sections five, six, seven, eight, and nine of said act.

SECTION 1. *The People of the State of Michigan enact*, That section two of an act entitled "An act to provide for the erection and maintenance of shutes for the passage of fish through the dams across the streams of this State," being compiler's section two thousand ninety of the compiled laws of eighteen hundred and seventy-one, as amended by act number one hundred and ninety-five of the session laws of eighteen hundred and seventy-five, approved May first, eighteen hundred and seventy-five, be and the same is hereby amended so as to read as follows:

SEC. 2. There shall be erected and maintained in each dam now existing or which may hereafter be constructed across any (stream or) river in this State, sufficient and permanent shutes or fish ladders to admit of the free and uninterrupted passage of fish over such dam or dams during the months of March, April, May and June in each and every year. Such shutes or fish ladders shall be put in or provided for such dam or dams in such manner as shall be prescribed by the Board of Fish Commissioners of this State.

SEC. 2. There shall be added to said act five new sections, to stand as sections five, six, seven, eight, and nine, to read as follows:

SEC. 5. It shall be the duty of the owners or occupants of any dam across any stream in this State, and the owner or occupant of any dam hereafter constructed across any stream in this State, or the owner, occupant, firm, corporation, company, person, or persons using such dam or dams, or enjoying the use of the same for any manufacturing purpose whatever, or for the purpose of furnishing water to propel any machinery, to cause to be erected in such dam or dams such permanent shutes or fish ladders, and of such construction and material as shall be prescribed by the "Fish Commissioners" of this State, such shutes or fish ladders to be completed and placed in all dams in existence at the date of the passage of this act, on or before the first day of March, eighteen hundred and seventy-eight, and all dams hereafter built shall be constructed with such shutes or fish ladders at the time of the building of said dams. All such shutes or fish ladders shall be maintained and kept in good repair by the owners or occupants of such dam or dams, or by the persons using the waters thereof as aforesaid, during the whole time of the existence of said dam or dams, and they shall keep said shutes or fish ladders open for the free passage of fish during all of the months of March, April, May, and June of each year as aforesaid: *Provided*, That on all streams where there is not a surplus of water for all legitimate purposes of the dam owner, during all of the months of March, April, May and June, that said owner shall only be required to keep such shute open when there is waste water, and to cause such waste water to pass through such shute sufficient to furnish free passage for fish up such stream.

SEC. 6. It shall be the duty of the Fish Commissioners of this State to procure made a draft of a general plan on a scale of sufficient size for a working plan for a suitable shute or fish ladder, of such construction as will in their opinion best subserve the free passage of large and small fish, both up and down the streams at the dams, on which plan shall be designated the greatest allowable slope per foot run of said shutes or fish ladders when in place in the dam; also the proper width and depth, together with such other details and specifications in respect to materials and construction, and connection with the dam, as will enable an ordinary carpenter to properly construct and place the same; and it shall be the further duty of said Fish Commissioners to procure to be lithographed two thousand fair copies of said plan and specifications and to cause to be mailed to the address of the township clerk of each organ-

ized township in the State one copy of said plan and specifications, with instructions to said township clerks to place the same on file in their offices, and not to allow said plans and specifications to be taken thence, but to keep them open to the inspection of owners and occupants of dams, and persons using the water thereof in the township for their purpose of taking copies of the same; said plan and specification shall also be open to the inspection of the general public when not in use, as above, by the owners and occupants of dams, who shall make their shutes and fish ladders in accordance with said plan and specifications in all essential details; the expenses incurred in procuring and mailing of said lithographed copies of said plans and specifications shall be audited by the Board of State Auditors, and paid by the State Treasurer out of any moneys in the State Treasury, not otherwise appropriated.

SEC. 7. The supervisor of each township is hereby made inspector of dams in his township during his term of office, and it shall be his duty to prosecute, in the name of the people, with the aid of the prosecuting attorney of his county, in all cases where this law is not complied with, upon the complaint of any twelve citizens of the county. The supervisor shall be paid out of the contingent fund of the county, the sum of two dollars for every day actually spent in the inspection of dams in his township, or while actually employed or engaged in the prosecution of any suit under this act, to be allowed and paid by the board of supervisors. And the prosecuting attorney of any county, the citizens of any portion of which are or may be affected by the erection or continuance of any dam across any river flowing through any portion of such county, whether such dam shall be located in such county or in any other county in this State, shall, upon the application of the supervisor of any township or supervisor district of his county, prosecute any person or persons for any violation of any of the provisions of this act.

SEC. 8. If the owner or occupant, or any firm, corporation, company, person or persons using or enjoying the use of any dam or dams across any stream in this State which is now built, or which may be built hereafter, shall fail to comply with all the provisions of this act with respect to the construction and maintenance in good repair of such shutes or fish ladders in any such dam or dams, after having been notified in writing by said supervisor to construct the same, he or they shall be deemed guilty of a misdemeanor, and for each and every thirty days that such owner or occupant shall neglect or refuse to comply with all the provisions of this act applicable to him or them, he or they shall be punished by a fine not exceeding two hundred dollars, or by imprisonment in the county jail not exceeding ninety days, or by both fine and imprisonment, in the discretion of the court.

SEC. 9. All fines and penalties arising under this act shall be paid into the county treasury of the county wherein said dam or dams are located, and the same shall be credited to the contingent fund of such county.

SEC. 3. All acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

SEC. 4. This act shall take immediate effect.

Approved May 23, 1877.

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FINANCIAL STATEMENT

OF THE FISH COMMISSION, EMBRACING THE EXPENDITURES FROM DECEMBER 1, 1876, TO THE FIRST DAY OF JULY, 1877, COVERING TERM OF THE SECOND APPROPRIATION.

DEBIT.

To balance of appropriation, by Act No. 117, laws of 1875		$4,791 86

CREDIT.

By amount paid for labor and materials on buildings and ponds, and for hatching and care of fish at the Pokagon State Hatchery	$1,094 86	
By amount paid for labor and incidental expenses in hatching Whitefish and distributing them at the Detroit State Hatchery	948 33	
By amount paid to procure Grayling spawn, and in the capture and distribution of adult Grayling in Michigan waters	462 84	
By amount paid in the capture, transportation, and deposit of eels in the waters of the State	426 09	
By amount paid in hatching and distribution of Lake Trout	21 96	
" " for Skeneatles Lake Trout eggs	11 35	
" " for freight, express charges, and incidental expenses in publishing and distributing Report of 1875–6	60 19	
By amount paid for stationery	13 73	
" " printing	9 50	
" " postage	24 50	
" " for insurances for 3 years of State Hatchery	12 00	
" " for tent, stakes, pole, and all complete	30 00	
" " to A. J. Kellogg, for disbursements as Fish Commissioner	2 00	
By amount paid to George Clark, for disbursements as Fish Commissioner	7 50	
By amount paid to Eli R. Miller, for disbursements as Fish Commissioner	33 66	
By amount paid to Charles Michael, overseer of the Pokagon State Hatchery	350 00	
By amount paid to Oren M. Chase, overseer of the Detroit State Hatchery	583 35	
By amount paid to George H. Jerome, Superintendent of the State Fisheries	700 00	
	$4,791 86	$4,791 86

STATEMENT

Under Third Appropriation, commencing July 1, 1877, and ending June 30, 1879, covering expenditures from July 1, 1877, to December 1, 1878.

DEBIT.

To appropriation by Act No. 136, laws of 1877	$14,000 00
To proceeds of sale of hatching troughs and old screens	5 00
Total fund for the two years	$14,005 00

CREDIT.

By amount paid for labor and materials on buildings and ponds, and hatching different lots of eggs at Pokagon State Hatchery,	$1,897 26	
By amount paid for labor and incidental expenses, hatching Whitefish ova and distributing fry at Detroit State Hatchery,	1,548 46	
By amount paid in procuring Lake Trout ova, hatching them and distributing fry	719 42	
By amount paid in procuring California Salmon ova, and distributing the fry	301 96	
By amount paid in procuring Land Locked Salmon ova and depositing the fry	57 58	
By amount paid in procuring grayling and depositing them	39 89	
By amount paid in procuring and for transportation of Gold-fish to State Hatchery ponds	19 00	
By amount paid in procuring young Eels, and in depositing them in lakes and rivers of Michigan	407 16	
By amount paid for 25 six and eight-gallon depositing fish cans—15 old and 10 new cans	28 00	
By amount paid for seine, rope, and sinkers, all complete	25 05	
" " for postage and postal cards	64 00	
" " for printing for Supt. and Commission	16 79	
" " for stationery, paper, envelopes, ink, etc	30 40	
" " By amount paid to Seth Green for use of Holton Hatching Boxes for 1877–8, and for 1878–79	200 00	
By amount paid Wm. Cowie for ground rent of lot for Detroit Hatchery for 1877–8, and for 1878–9	100 00	
By amount paid to Eli R. Miller, for disbursements as Fish Commissioner, and in procuring Whitefish ova	38 06	
By amount paid to A. J. Kellogg, for disbursements as Fish Commissioner	5 00	
By amount paid to J. C. Parker, for disbursements as Fish Commissioner	16 85	
By amount paid to A. Briggs, as overseer of the Pokagon State Hatchery	10 00	
By amount paid to H. H. Porter, as overseer of the Pokagon State Hatchery, for eight months and nine days	415 00	
By amount paid to C. Michael, as overseer of the Pokagon State Hatchery, for two months	100 00	
By amount paid to C. H. Brownell, as overseer of the Pokagon State Hatchery, for six months and fifteen days	325 00	
By amount paid to O. M. Chase, as overseer of the Detroit State Hatchery, for seventeen months	1,416 64	
By amount paid to Geo. H. Jerome, as Superintendent of the Michigan State Fisheries, for seventeen months	1,700 00	
Total disbursements and expenditures from July 1, 1877, to December 1, 1878	$9,481 52	
Balance on hand December 1, 1878	4,523 48	
		$14,005 00

Vouchers for the foregoing items of disbursements and 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 1, 1878.

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
85 fish cans for importing and planting fish	348 00
2 hand saws	2 00
36 large iron faucets and 12 wooden ones	24 00
1 dirt shovel	1 00
1 scoop shovel	1 50
1 steel rake	1 00
1 grub ax	1 50
6 large fish-egg tin pails	4 50
10 dippers	2 00
6 paint and tray brushes	3 00
2 kerosene cans	2 00
2 heating stoves	30 00
1 cook-stove, pipe, and furniture	24 00
146 lbs stove pipe	14 00
250 feet 4-inch-bore pump logs	35 00
1 bedstead	2 00
1 mattress	4 00
4 sheets	3 00
1 pair blankets	4 00
4 comforters	8 00
2 pillows and cases	3 00
4 chairs	1 00
1 table	3 00
1 copy book, press, water holder, and brush	10 00
8 tin syphon tubes	1 50
54 feet rubber tubing	10 00
4 thermometers	2 00
6 wooden pails	1 00
2 wash tubs	2 00
8 copper scoops	2 00
4 tin ova pails, large size	4 00

3 lanterns	$5 00
4 lamps	4 00
2 pairs shears for wire cloth and sheet iron	3 00
Curtains and fixtures	10 00
3 suits oil-cloth overcoats and overalls	10 50
18 stools	6 00
1 alarm clock	3 00
1 iron safe for record books and papers	25 00
Buck saw	1 00
Ice-pack and ice tongs	1 50
Meat-block and meat-chopping knife	1 50
Iron pond rake	5 00
1 seine, large	1 00
1 40-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 books	10 00
State Commission, fish library	38 00
Postal balance	3 00
1 large coal stove and pipe, for Detroit Hatchery	65 00
1 large tent, stakes, pole, and fixtures	30 00
1 large seine, ropes, floats, sinkers,—all complete	25 00
1 ice-house	75 00
1 shed for teams and for storing hatching goods	30 00
30 automatic glass jars for hatching fish eggs	45 00
	$4,191 92

INFORMATION STILL IN ORDER.

Parties can render the fish cause great service by sending to me any reliable information in regard to the fish that have been planted in the State. All communications, however, must be *sharp, brief, squarely to the point.* If fish are seen, state what kind—when seen—where—about what number, and their size, as near as you can judge. If fish are caught, state what kind—when—where—length of fish and weight. These facts communicated, will give pretty accurately our latitude and longitude, and enable us to determine what distance our fish craft has made since she left port, and very nearly the number of knots she is making per hour. So please hurry up the facts. And don't depend upon Mr. Smith nor Mr. Jones to do it—do it yourself as the fittest person in the world to do it, and then you will know, and the other fellow at the end of "the string" too will know that the thing is absolutely done, and an entry and a faithful record shall be kept of duty so performed.

GEORGE H. JEROME,
Superintendent, Niles, Mich.

NAMES AND ADDRESSES OF COMMISSIONERS OF FISHERIES.

United States.

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

Arkansas.

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

California.

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

Colorado.

WILSON E. SISTY ..... Brookvale.

Connecticut.

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

Georgia.

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

Illinois.

N. K. FAIRBANKS ..... Chicago.

Iowa.

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

Kansas.

D. B. LONG ..... Ellsworth.

Kentucky.

PACK THOMAS, President of the Board ..... Louisville.
P. H. DARBEY ..... Caldwell County.
POLK LAFFOM ..... Hopkins County.
S. W. COOMBS ..... Warren County.
C. J. WALTON ..... Hart County.
JAMES B. CASEY ..... Kenton County.

JOHN A. STEELE ..... Woodford County.
J. H. BRUCE ..... Garrard County.
T. T. GARRARD ..... Clay County.
W. C. ALLEN ..... Bath County.

Maine.

E. M. STILLWELL ..... Bangor.
HENRY O. STANLEY ..... Dixfield.

Maryland.

T. B. FERGUSON ..... Baltimore.
P. W. DOWNES ..... Denton.

Massachusetts.

THEODORE LYMAN ..... Brookline.
E. A. BRACKETT ..... Winchester.
ASA FRENCH ..... South Braintree.

Michigan.

ELI R. MILLER ..... Richland.
ANDREW J. KELLOGG ..... Detroit.
J. C. PARKER ..... Grand Rapids
GEO. H. JEROME, Superintendent ..... Niles

Minnesota.

ROBERT ORMSBY SWEENY ..... St. Paul.
WM. W. SWEENY ..... Red Wing.
DANIEL CAMERON ..... La Crescent.

Nevada.

H. G. PARKER ..... ———

New Hampshire.

SAMUEL WEBBER ..... Manchester.
ALBINA H. POWERS ..... Grantham.
LUTHER H. HAYES ..... Milton.

New Jersey.

B. P. HOWELL ..... Woodbury.
J. R. SHOTWELL ..... Rahway.
G. A. Anderson ..... Trenton.

New York.

HORATIO SEYMOUR ..... Utica.
EDWARD M. SMITH ..... Rochester.
ROBERT B. ROOSEVELT ..... New York City.
SETH GREEN, Superintendent ..... Rochester.

North Carolina.

GOV. Z. B. VANCE ..... Raleigh.
W. C. KEW ..... Raleigh.
R. P. BATTLE ..... Chapel Hill.
S. M. HOLT ..... Haw River.
S. B. ALEXANDER ..... Charlotte.
JONATHAN EVANS ..... Fayetteville.
J. R. TRISPAN ..... Tarboro.

Ohio.

JOHN C. FISHER.....Coshocton.
L. A. HARRIS.....Cincinnati.
ROBERT CUMMINGS.....Toledo.
EMERY D. POTTER, Superintendent.....Toledo.

Pennsylvania.

B. L. HEWITT.....Hollidaysburg.
HOWARD J. REEDER.....Easton.
JAMES DUFFY.....Marietta.

Rhode Island.

NEWTON DEXTER.....Providence.
ALFRED A. REED, JR.....Providence.
JOHN H. BARDEN.....Scituate.

Tennessee.

GEO. F. AKERS.....Columbia.

Utah Territory.

A. P. ROCKWOOD.....Salt Lake City.

Vermont.

W. H. LORD.....Montpelier.
M. GOLDSMITH.....Rutland.

Virginia.

MARSHALL MCDONALD.....Lexington.

West Virginia.

HENRY B. MILLER.....Wheeling.
C. S. WHITE.....Romney.
I. W. HARRIS.....Lewisburg.

Wisconsin.

GOV. W. E. SMITH, *ex officio*.....Madison.
WILLIAM WELCH.....Madison.
MOSES HOOPER.....Oshkosh.
P. R. HOY.....Racine.
MARK DOUGLASS.....Melrose.
JOHN F. ANTISDEL.....Milwaukee.
CHRISTOPHER HUTCHINSON.....Beetown.
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