

amounts, had been very successful, and brought in fares ranging from 80,000 to 90,000 pounds of codfish. As soon as they arrived at Gloucester and reported how much the voyages had been benefited by the use of frozen herring, the owners at once sent an order to Captain Smith, who was in Boston, for 30,000 herring; but at this time all of the fish had been disposed of for food, and consequently the Georgesmen could not obtain them. Nevertheless, the seed had been sown from which the frozen-herring trade has grown to its present proportions, exerting an almost incalculable influence on the fisheries as well as providing the masses with a large amount of cheap and wholesome food.

39.—MINUTE UPON THE DEATH OF OREN M. CHASE, GEORGE W. ARMSTRONG, AND CHARLES H. BROWNELL.

By THE MICHIGAN BOARD OF FISH COMMISSIONERS.

The Michigan State Board of Fish Commissioners directs this minute to be spread upon its records in respectful and affectionate remembrance of a friend, as well as in sincere sorrow for the loss of their most efficient and helpful officer, Oren M. Chase, superintendent of fisheries for the State of Michigan, and in memory of two of his most trusted and respected assistants, George W. Armstrong and Charles H. Brownell, the overseer and assistant of the Petoskey Station.

In the fateful storm which swept over the Great Lakes on the 11th day of November, 1883, which will long be remembered throughout this State by reason of the loss of life occasioned, Oren M. Chase, George W. Armstrong, and Charles H. Brownell, while engaged upon the work of this commission, were drowned in Little Traverse Bay, opposite the village of Petoskey.

No man who knew either of them doubts that they each met death as bravely and quietly as they met the duties and responsibilities of life, nor do we doubt that they made as brave a struggle for life as ever men made when overwhelmed by cruel seas and bitter cold which no mortal strength or skill could overcome or long resist. For each possessed the best things that made life dear and worth a manful struggle to retain, as sterling characters, health, and a hopeful future of honorable usefulness in their chosen work, and, more potent still, homes where their loss can never be repaired.

Oren M. Chase was born at Rochester, in the State of New York, in the year 1840, where he spent his childhood, and at the age of about twenty years removed to Michigan, beginning life as a farmer near Dimondale. By his own efforts he cleared a farm of about 40 acres, upon which he remained for a number of years, and then returned to Rochester to reside. After his return he was employed by the New York Central Railroad as baggage-master at Rochester. While con-

nected with the railroad, Mr. Chase became acquainted with the pioneer fish culturist, Mr. Seth Green, who, recognizing his many sterling qualities, induced him to enter the employment of the New York Fish Commission. Mr. Chase took up the duties with that energy and singleness of purpose which were characteristic of the man, and made rapid advancement in the principles and practical detail of the work.

In the summer of 1875, Mr. George H. Jerome, then superintendent of fisheries, applied to Mr. Seth Green for assistance in securing a competent person to undertake Whitefish work at Detroit, expressing at the same time a preference for Mr. Chase. Mr. Green consented, and Mr. Chase came here for the season to inaugurate that work. But little time was required to satisfy the commissioners of Mr. Chase's entire competency, and he was given full charge of the operations, which were so successfully conducted by him that he was permanently employed.

Mr. Chase remained in charge of the Detroit hatchery until September, 1882, when he was appointed State superintendent of fisheries. He entered upon the work at Detroit with the crude apparatus then used, in the face of many discouragements, and achieved most honorable success. To his unflinching energy, consummate skill, and thoughtful, intelligent application to his duties, we owe all that is permanently useful in this department. He has perfected and simplified the apparatus for hatching by his invention of the automatic jar; and by his thoughtful experiments and keen observation rendered safe and comparatively easy the methods of gathering the ova, and thus made it possible for the commission to meet the urgent necessity for operations that can be increased almost without limit.

In addition to the skill and industry that made him a competent overseer of a single work, he had also the business capacity, good judgment, address, and promptness of decision that made him an invaluable superintendent. He was just and considerate to those under him; loyal and most helpful to those under whom he worked. He never spared himself or was afraid of work that promised to avert disaster or give results of value. He was progressive, ready to learn, and never content to rest upon moderate results or partial successes.

But admirable and valuable as Mr. Chase's official and technical work has been, he was more than a good officer in the force, or at the head, he was an honest, courteous, manly man. At this board we shall sorely miss his practical counsel, and his ready sympathy with every suggestion that looked to extended usefulness of the work in which his heart was so earnestly enlisted.

Mr. Brownell had been employed for a number of years at the Pokagon hatchery, where he won the confidence and respect of all by his intelligent devotion to his work, and his manly bearing. Upon the recommendation of the Michigan commission he was appointed superintendent of the Nebraska commission. That post he relinquished on account of a prolonged sickness in the winter of 1883, and upon his re-

covery this commission was very glad to welcome him back and secure his valuable services.

Mr. Armstrong, while not a regular employé until September, 1883, had yet served for several seasons in gathering whitefish ova. He had gained the reputation of being one of the most skillful and capable among experts. He was also well known for his industrious habits, honorable dealing, and good judgment. When the increased appropriation, granted by the legislature, made possible extended operations by this commission, Mr. Armstrong was the first man engaged.

They were three manly fellows that any commission might well have been proud of, as we were. They were three fast friends, who were always loyal to each other and themselves, their families, and their friends.

And this minute is the saddest that shall ever be made upon these records.

40.—POACHERS OR DESTRUCTIVE VISITORS OF FISH-PONDS.

By JAMES ANNIN, Jr.

[Abstract, by Chas. W. Smiley, of a paper in the Transactions of the American Fish Cultural Association for 1891.]

I. KINGFISHERS.—The notes of this bird are heard from early spring until cold weather, and even before the spring season is opened, as if impatient for it to come. He is never satisfied, being on the lookout from daylight till dark, and is ever ready for the plunge. He can take as many fish as the average sportsman.

The best way to destroy him is by a small, round, steel trap, the kind without the shank or tail piece. Fasten it to the top of a 10 or 15 foot pole, near a fishing ground, where the bird may think it a splendid spot for observations, and he will drop both feet squarely into the trap. Occasionally it will take hawks and owls, but very few robins or small birds.

II. DUCKS.—The domestic duck is very destructive, not only to fish and fish eggs, but to the food of fish. I have seen the tame duck devour a trout 6 inches long. I have been annoyed by the wild ducks called saw-bills or shell-drakes, and I was not able to exterminate them by shooting. Red flannel flags I found to have the effect of scaring them away.

III. OWLS.—The common hoot or screech owl will cause some trouble. One day I found an owl in a muskrat trap, some 4 inches under water. He was after the fish food of the stream, such as the fresh-water lobster, caddis worm, shrimp, &c. They can be caught in the kingfisher traps.

IV. HERONS.—The blue heron deals death with his long, heavy, sharp bill to everything in the fish line. He poaches mostly in the early morning and after dark, coming into shallow water, even within a rod