

Vol. VI, No. 9. Washington, D. C. June 21, 1886.**48.—NOTES UPON FISH AND THE FISHERIES.**

[Extracted from the official correspondence and compiled by the editor.]

WHITEFISH AND LAKE TROUT EGGS SENT TO SWITZERLAND.—The minister of Switzerland, Col. Emile Frey, under date of Washington, February 15, 1886, writes that the 1,000,000 eggs of the *Coregonus albus* and the 50,000 eggs of the lake trout have reached Switzerland in the very best condition, and have been distributed for hatching as follows:

| Hatchery. | Coregonus albus. | Lake trout. |
|-------------------|------------------|-------------|
| Zurich..... | 200,000 | 10,000 |
| Zug..... | 200,000 | 10,000 |
| Geneva..... | 200,000 | 10,000 |
| Locarno..... | 125,000 | 10,000 |
| Interlaken..... | 100,000 | 10,000 |
| Lucerne..... | 100,000 | |
| Brassus..... | 25,000 | |
| Saint Moritz..... | 20,000 | |
| Stanz..... | 20,000 | |
| Chur..... | 10,000 | |
| | 1,000,000 | 50,000 |

AMERICAN FISH EGGS IN ENGLAND.—The ova with which the U. S. Fish Commission has supplied our National Fish Culture Association have hatched out well, and the fry are progressing rapidly. The fish from last year's ova are doing very well. Also I have hatched out a large number of whitefish from some of the ova sent to the Association and forwarded to me from South Kensington by Mr. Chambers. [Marquis of Exeter, Burghley House, Stamford, England, April 2, 1886.]

INCLOSURES FOR SALMON IN THE NETHERLANDS.—In the Fish Commission Bulletin for 1884, p. 170, there was printed a statement by Mr. Charles G. Atkins relating to penning salmon at Bucksport, Me. This was in response to a request of Dr. C. J. Bottemanne for information on this subject. In a pamphlet, dated at Bergen-op-Zoom, Netherlands, November, 1885, Dr. Bottemanne cites almost in full the statement by Mr. Atkins, and adds other matter substantially as follows:

For years complaints have been heard from various persons in the Netherlands that many of the salmon eggs ordered from Germany failed to hatch successfully, and that the prices were too high. As we knew that successful efforts had been made in the United States to pen salmon and then obtain the eggs from them at the spawning time, we learned the methods of doing this, with a view to applying these to salmon breeding

in the Netherlands. After careful consideration, I do not know of a single reason why we should not obtain the same or even better results than have been obtained in America.

There is but little chance for obtaining salmon in America after July, while in the Netherlands they can be obtained, and cheaply, for six weeks after this date. With us the transportation to the inclosure will be easy, as the great fisheries are carried on in the lower portions of the rivers, and the fish could quickly be transported by water to the penning places. The inclosures, also, should be made as near as possible to the sea, so that the water may be brackish if not salt. Salt water seems to have a healing influence on the wounds of salmon, and it is probable that in salt water they will remain free from parasitic growths, as experiments with young salmon seem to indicate that salt is an efficient remedy against this trouble. In an experiment made by myself I used well-water, containing considerable salt, for hatching 1,000 salmon eggs, with a remarkably small loss of young fish.

POISONOUS FISH IN CHINA.—In the Chinese Recorder of February and April, 1886, there appeared two articles by D. J. Macgowan, M. D., of Wenchow, Province of Che-Kiang, China, which furnished the material for the following abstract:

The flesh of the porpoise is highly prized for its flavor, and yet under certain circumstances it is much condemned for poisonous qualities. Animals seem more liable to be killed by it than human beings; but many instances of death among the Chinese from eating this flesh are related. Although some magistrates from time to time issue proclamations cautioning the people against the use of porpoise flesh, scarcely a spring passes without fatal cases of poisoning. The Shenpao lately reported eleven deaths that occurred at Yangchow from this cause, and five persons died at Anching in April from eating this flesh. On the sea-coast, or early in the spring, poisonous cases are very rare. In Suchow this flesh is generally eaten, and I have heard of no deaths therefrom during several decades. This is probably not that as food this is there less harmful, but that it is more thoroughly cooked. On the Che-Kiang coast dried porpoise is sold all the year round by fish-mongers, but it requires protracted boiling in order to become safe for eating. The Chinese olive or sugar-cane (*Oanarium*) is found to be an antidote for this poisoning, while long-continued boiling is considered to make the flesh wholesome.

In Chinese waters there are several kinds of fish that inflict troublesome wounds by means of their fins or tails. The tetrodon or globe-fish is rejected by coast fishermen as poisonous; but those globe-fish that ascend the rivers, when properly cleaned and dried, are fit for food. A kind of mud-fish is regarded as hurtful. So also are several kinds of eels. Oysters, in China as elsewhere, are considered unfit to eat at certain seasons. Some crustaceans, including field and ditch prawns, are thought to be poisonous.

In China fish are often killed or stupefied by using poisonous preparations made from a species of *Polygonum*, or the seeds of the *Croton tiglium*, or other vegetable substances. This practice is of very long standing, and is occasionally prohibited by the magistrates.

AMERICAN CLAMS IN ENGLAND.*—Some time ago the Marquis of Exeter undertook to acclimatize American mollusks. In the fall of 1884, Mr. George Shepard Page, of New York, sent him some quahogs or hard clams (*Mercenaria violacea*), which died before arriving at Liverpool. In February, 1885, another attempt was made, which was a great success. On March 16, 1885, Mr. Henry Wright, secretary to the Marquis of Exeter, wrote to Mr. Page that these quahogs had this time arrived in perfect condition, and that, as soon as they were deposited on the soft sand of the seashore, they dug their way into the sand with an activity which showed they had suffered nothing from the voyage. He now wishes a lot of sand clams or soft-shelled clams (*Mya arenaria*).

CODFISH IN THE PACIFIC.—Mr. James G. Swan, writing from Port Townsend, Wash., April 6, 1886, says: "I can report that true cod have made their appearance in the harbors of Port Angeles and Port Discovery in considerable numbers during the past two months, and probably they will be in Port Townsend harbor in May. Three years ago I observed young cod, from 2 to 3 inches long, in a net among herring, smelts, and other small fish. The next year cod as large as tom-cod were very plentiful here. Those taken in the summer of 1885 were from 12 to 18 inches long; and this year they are from 20 to 36 inches in length, and over. They are lean, not having attained full growth, but are of very good flavor. I have not observed any spawn in the specimens that I have examined."

SHIPMENT OF MARINE PRODUCTS FROM SAN FRANCISCO TO CHINA.—The Sacramento Record of April 6 states that the efforts of the fish commissioners in placing fry in the public waters are being utilized by the Chinamen, who fish with nets in which they gather enormous quantities of very small fishes for exportation; and the following figures are given of the amount and value of the products so exported:

| | |
|--|-----------|
| 150 tons of shrimps, at \$300..... | \$45,000 |
| 200 tons of small salmon and other fry, at \$200..... | 40,000 |
| 50 tons of shrimp shells and fish manure, at \$40..... | 2,000 |
| Total value of each shipment..... | 87,000 |
| 3 shipments per month..... | 261,000 |
| 36 shipments per year..... | 3,132,000 |

MUSSEL CULTURE IN FRANCE.—In connection with the oyster-cultural exhibition recently organized in the Palace of Industry at Paris, there has been occasion to speak of the mussel (*Mytilus edulis*), which invades the oyster-beds after they have been properly arranged, and proves very injurious to the oysters. The French oyster-culturists wage war on these mussels by means of the starfish, which is destructive to them.

* Translated from the *Moniteur de la Pisciculture*, &c., of March 13, 1886.

The mussel, which, on the French coasts, generally lives in great numbers on rocks left bare at low tide, is in the North Sea the object of an important industry, which may be compared with the French oyster-culture. Especially in the bay of Kiel (coast of Holstein, on the Baltic Sea) near Ellerbeck and Dusternbrook, where it finds conditions very favorable to its development, it is cultivated artificially and reared in parcs in a peculiar way. Its cultivators plant near the shore actual groves of trees—such as alders, oaks, or beeches—stripped of their small branches and driven 10 or 12 feet into the bottom. The mussels fasten on these branchless trees, develop there, and in winter are gathered periodically in abundance. These trees are planted in such a depth of water that they are never uncovered even by the lowest tides, while their exact position is determined by means of fixed marks on the shore. In order to gather the mussels, they haul up the trees by means of a rope attached to a capstan. This takes place from three to five years after the trees have been put down. It is only during the past few years that this cultivation has been carried on regularly in the bay of Kiel, and it has resulted in products remarkable both for size and quality. In that region a tree properly prepared costs about 25 cents, and at collection it easily yields 55 pounds of mussels, worth on the spot an average of \$2.50. On some points of the Mediterranean coast the same industry is practiced, using stakes joined in hurdles by means of bundles of sticks or by means of stout sea-weed. [Max de Nansouty, in the *Moniteur de la Pisciculture*, Paris, December 5, 1885.]

DEVELOPING THE FISHERIES OF WASHINGTON TERRITORY.—The following memorial, after passing the legislature of Washington Territory, was approved by the governor on January 29, 1886 :

To the Senate and House of Representatives of the United States in Congress assembled :

Your memorialists, the legislative assembly of the Territory of Washington, respectfully represent that the United States Fish Commission, by liberal appropriations granted by Congress, have been and still are doing a great and valuable work on the Atlantic coast of the United States in developing the food-fishes and other marine food products of the Atlantic Ocean, and have, therefore, added largely to the national wealth.

Your memorialists further represent that the waters of Puget Sound present conditions favorable to the propagation of lobsters and varieties of oysters, and contain within the deep channels and fiords new and valuable varieties of food-fishes which, although known to exist, have never been properly developed, from want of funds and requisite knowledge and experience, which knowledge and experience are possessed by the United States Fish Commission in a greater degree than by any private individuals in this Territory.

Wherefore your memorialists respectfully pray that the sum of

\$10,000 be appropriated for the purpose of developing the fisheries of Washington Territory, and that said amount of \$10,000 be expended by and under the direction of the United States Fish Commission in introducing the best varieties of food-fishes, lobsters, and oysters into the waters of this Territory wherever, in the judgment of said Fish Commission, they may best be placed to propagate, and also to develop the marine food products already existing and native to these waters.

SALMON, LAKE TROUT, AND BROWN TROUT AT GLENS FALLS.—On April 28, 1886, the fry of 30,000 lake trout, 20,000 Penobscot salmon, and 8,000 brown or European trout reached Glens Falls, N. Y., from the Cold Spring Harbor station. These fry were from $\frac{1}{2}$ to $1\frac{1}{2}$ inches in length, and had made the journey with very slight loss. The lake trout were planted in Lake George, being the first of this kind brought to this locality, at a place called the "Calf-pen," opposite Dome Island, where there is the deepest water of the lake. The brown trout fry came from spawn presented to Mr. E. G. Blackford and Mr. Fred Mather by the German Fishery Association, and are the first of their species planted in this vicinity, being put in the Clendon Brook. This species is common in suitable European trout-streams, where it has attained the weight of 16 pounds. It is said to grow faster and be more hardy than our native trout. The salmon also were planted in the Clendon Brook, from which it is hoped they will stock the Hudson River. This is the third consignment of salmon to the Clendon Brook in three consecutive years, and makes about 140,000 of this fish that have been planted there; and it is hoped that some of the earlier plantings will return this year for the purpose of spawning. [From the Glens Falls Republican, May 4, 1884.]

INCREASE OF CALIFORNIA TROUT.—The increase of so-called California trout, which are in reality the rainbow trout, has been immense. There are now 7,000 in the preserves, all from the 500 eggs presented to the South Side Sportsmen's Club by Professor Baird six years ago. The club has just sold 1,000 1-pound fish of this variety to Mr. Pierre Lorillard for the the stocking of Tuxedo Lake. The fish law admits of the rainbow trout being taken in this State between the 1st of September and the 1st of May. They are now for the first time about to be placed on the market by Fish Commissioner Blackford, who has arranged with the club for a supply. The fish weigh from 8 ounces to 2 pounds each, and will be served by Delmonico and the Hoffman House on Monday. It costs the club \$1,800 a year to feed its trout. They are fed on livers from Senator McPherson's abattoir in Jersey City. [From the New York Sun, December 19, 1885.]

RAINBOW TROUT, EELS, AND HATCHING OF CARP.—Mr. J. S. Tuttle, writing from Niles, Mich., June 4, 1886, says:

This spring I made my first attempt at taking the eggs of the rainbow trout, which hatched for me in about thirty days. The small streams in this part of the State (southwestern corner, near Lake Michigan) are being well stocked with trout.

In one pond I have yearling trout, and thinking they were disappearing rather rapidly, on June 3 I cleaned out the pond, finding two eels weighing about $2\frac{1}{2}$ pounds apiece, which I put into a can. Coming to take them out an hour afterwards I was surprised to find that they had disgorged two partly digested fish 6 or 7 inches long, which probably they had swallowed four or five hours previously.

In Hessel's pamphlet on carp it is stated that the eggs hatch in from twelve to sixteen days.* My experience this year seems to reduce this time by one-half. I have raised carp with success for three years. This year, on May 18 I filled my pond with water; on the 19th put in 24 large carp, which began spawning on the morning of the 21st; and on the 24th it became cooler and spawning ceased for the time. On the morning of May 27, six days after spawning began, there were about 10,000 young fish along the edges of the hatching pond, to which the eggs and brush had been transferred the day before; and on the 29th there were probably from 15,000 to 18,000 young carp.

LAKE TROUT IN COLORADO.—I find that the few lake trout that have been tried in the prairie lakes are a success, and if you will send me 10,000 eggs, I will put up another trough to hatch them. [John Pierce, Denver, Colo., December 3, 1885.]

SOUTH SIDE SPORTSMEN'S CLUB.—We have had a very successful winter's work in our fish hatching department, nearly a million eggs of brook trout having been hatched, and there are about 50,000 rainbow trout eggs now on the trays. We have 6,000 three-year-old trout in the ponds and streams. [Roland Redmond, March 25, 1886.]

CARP IN RIVANNA RIVER.—Anderson Brown, colored, caught out of Rivanna River [probably in the neighborhood of Charlottesville, Va.], with a hook, a German carp which weighed $6\frac{1}{2}$ pounds and measured 24 inches in length and 16 in circumference. [From the Lynchburg Advance, September 17, 1885.]

CARP IN RIVANNA RIVER.—Carp are now being caught in the Rivanna River which are supposed to be fugitives from the ponds of myself and others. Some time since one weighing $6\frac{1}{2}$ pounds was taken, and yesterday one of $8\frac{1}{2}$ pounds. [R. T. W. Duke, Charlottesville, Va., April 29, 1886.]

TO COOK CARP.—Carp may be either fried or stewed. Have them cleaned nicely, then dry them and season with salt, pepper, and a little mace, which rub in thoroughly, and let them lie in melted butter for an hour or two before cooking them. Fry them the usual way. To stew them put them into a saucepan with some chopped parsley, a whole onion, a little sweet marjoram, a teacupful of rich milk (or cream if you have it), and a lump of butter rolled in flour. Pour on this sufficient water to cover the carp and let it stew gently for about half an hour, or until the flesh leaves the bones easily. Some consider that a little port wine improves it.

* See F. C. Report, 1875-'76, p. 872.

Table of German carp planted in public waters of the United States, November 4, 1885, to January 5, 1886, inclusive, under the direction of Col. M. McDonald, Chief of the Division of Distribution, U. S. Fish Commission.*

| State. | Date. | Place at or near which. | Waters stocked. | Number of fish. |
|-------------------|---------------|----------------------------|--|-----------------|
| Alabama | Dec. 8, 1885 | On line of railroad | Lake on line of Atlanta and West Point Railroad. | 500 |
| Arkansas | Dec. 20, 1885 | Fulton | Red River | 3, 200 |
| Colorado | Dec. 20, 1885 | Granada | Arkansas River | 5, 000 |
| Delaware | Dec. 10, 1885 | Wilmington | Brandywine Creek | 500 |
| | Dec. 10, 1885 | Wilmington | Christiana Creek | 500 |
| | Dec. 10, 1885 | Wilmington | Delaware River | 500 |
| | Dec. 10, 1885 | Wilmington | Shellpot Creek | 500 |
| Florida | Dec. 5, 1885 | Jacksonville | Lakes near Jacksonville | 600 |
| Georgia | Dec. 11, 1885 | Way Cross | Satilla River | 2, 400 |
| Illinois | Jan. 2, 1886 | Aurora | Fox River | 1, 000 |
| | Dec. 30, 1885 | Carlyle | Kaskaskia River | 400 |
| | Jan. 2, 1886 | Chicago | Lakes in Lincoln Park | 1, 600 |
| | Jan. 2, 1886 | Chicago | Lakes in South Park | 1, 050 |
| | Dec. 30, 1885 | Clinton | Water-tank on Illinois Central Railroad. | 200 |
| | Jan. 1, 1886 | Dixon | Rock River | 1, 000 |
| | Dec. 30, 1885 | Equality | Saline River | 400 |
| | Jan. 2, 1886 | Kankakee | Kankakee River | 1, 000 |
| | Dec. 30, 1885 | Lanesville | Lanesville Lake | 800 |
| | Jan. 1, 1886 | La Salle | Illinois River | 3, 000 |
| | Dec. 30, 1885 | Louisville | Little Wabash River | 200 |
| | Jan. 1, 1886 | Mendota | Little Vermilion River | 1, 000 |
| | Dec. 30, 1885 | Mill Shoals | Little Wabash River | 400 |
| | Jan. 2, 1886 | Naperville | Dea Plaines River | 200 |
| | Dec. 30, 1885 | Pekin | Lake Cooper | 100 |
| | Dec. 30, 1885 | Riverton | Sangamon River | 1, 000 |
| | Dec. 30, 1885 | Vandalia | Kaskaskia River | 1, 000 |
| | Dec. 30, 1885 | Wood Lawn | Big Muddy River | 400 |
| Louisiana | Dec. 7, 1885 | La Fourche | Bayou La Fourche | 1, 000 |
| | Jan. 5, 1886 | Monroe | Washita River | 2, 000 |
| | Jan. 5, 1886 | Quebec | Tensas River | 1, 000 |
| | Jan. 5, 1886 | Rayville | Crow Lake | 1, 000 |
| | Jan. 5, 1886 | Richland County | Grassy Lake | 1, 000 |
| | Dec. 10, 1885 | Shreveport | Red River | 2, 500 |
| | Jan. 5, 1886 | Tallulah | Lake One | 1, 000 |
| Maryland | Nov. 17, 1885 | Battery Station | Susquehanna River | 20, 000 |
| Minnesota | Nov. 4, 1885 | Slayton | Lake Beauty | 500 |
| Mississippi | Jan. 5, 1886 | Jackson | Pearl River | 5, 000 |
| New Mexico | Dec. 21, 1885 | Albuquerque | Rio Grande River | 6, 000 |
| Tennessee | Nov. 28, 1885 | Dyersburgh | North fork of Forked Deer River. | 1, 000 |
| | Nov. 30, 1885 | Fowlkes | Tributary of Forked Deer River. | 1, 000 |
| Texas | Dec. 12, 1885 | San Marcos | San Marcos River | 5, 050 |
| Virginia | Dec. 4, 1885 | Brooke's Station | Acoquia Creek | 6, 250 |
| | Nov. 24, 1885 | Charlottesville | Ivy Creek | 400 |
| | Nov. 24, 1885 | Charlottesville | Rivanna River | 1, 000 |
| | Dec. 23, 1885 | Chatham | Banister River | 3, 000 |
| | Dec. 23, 1885 | Danville | Dan River | 6, 000 |
| | Nov. 28, 1885 | Junction | North Anna River | 7, 000 |
| | Dec. 23, 1885 | Lynch's Station | Staunton River | 6, 000 |
| | Nov. 27, 1885 | Milford | Mattaponi River | 8, 000 |
| | Dec. 23, 1885 | Otter River | Otter River | 5, 000 |
| | Dec. 4, 1885 | Potomac | Potomac River | 5, 500 |
| | Dec. 4, 1885 | Quantico | Quantico Creek | 6, 250 |
| | Nov. 15, 1885 | Rockfish Depot | Rockfish Creek | 200 |
| | Nov. 28, 1885 | Taylorville | Little River | 5, 000 |
| | Nov. 28, 1885 | Taylorville | South Anna River | 5, 000 |
| | Dec. 4, 1885 | Wood Bridge | Occoquan River | 7, 000 |
| | | Total number planted | | 148, 700 |

* Compiled from Colonel McDonald's report for 1885.

CATCHING CARP WITH A HOOK.—Carp can easily be caught with a hook if baited with anything they are accustomed to feed upon. A tough crust of bread or a small ball of cotton thoroughly saturated with dough can easily be fastened to a hook and will answer the purpose very well. [Amos Ebert, Ashland, N. J., May 8, 1886.]

TIME REQUIRED FOR HATCHING CARP EGGS.—Procuring a number of eggs, immediately after the fish had cast them, in June, 1885, I placed

them in an ordinary pint jar, filled with water from the pond. In searching for the eggs, I found them adhering to the stems of water-rice, and water-weed (*Anacharis*), chiefly to the latter. The jar containing them was placed in a position where it would be shaded at midday, but have the sun mornings and evenings. On the fourth morning I examined the jar, and to my surprise found several of the little fish already hatched, seemingly active and vigorous.

A few days after, while the fish were in the act of spawning, I procured eleven eggs and placed them in the same jar. These were taken from a different portion of the pond, and were found adhering to the hornwort (*Ceratophyllum*). The jar containing the eggs was nearly filled with water, and put in the pond, so placed that the surrounding water came nearly to the top. I examined it twice a day. In fifty-seven hours the outlines of the head became visible; the eyes and fins also could be distinctly seen. On the morning of the fourth day, or ninety-six hours after the eggs had been cast, the little fish had made their appearance, and showed much vigor in their movements. Three days later I emptied the jar, and found four fish as the product of the eleven eggs. Only about 36 per cent of the eggs had hatched. Probably the rest had not been fertilized. Considering the hap-hazard manner in which fertilization takes place, it would not be strange if many of the eggs were not reached by the milt. On the second day one of the eggs became surrounded by a kind of fungous growth, it evidently having not been fertilized, and very soon decay set in. A fortunate snail discovered it, and was not long in making a meal of it. [John H. Brakeley, Bordentown, N. J., April 6, 1886.]

FOOD OF CARP.—Dr. P. Brocchi says, in an article reprinted in the French *Moniteur de la Pisciculture* for January 30, 1886, that as carp are vegetable-eaters, one should not dream of feeding them on beef's blood, the offal of slaughter-houses, or even on cooked and finely hashed meat.

EELS.—In regard to eels, Dr. Brocchi says, in the same place, that they are essentially carnivorous, and that owing to their form and muscular strength they can penetrate into fissures and slight cracks, and to some extent into the banks of a pond, but that they thus do no serious damage. To keep them in a pond he suggests putting along its edges a wide strip of fine sand, but says that they are not likely to wander much if they find sufficient food in the pond.

SHAD APPEARANCE.—The shad have again made their appearance off North Truro, Mass. About 20 were received to-day. [E. G. Blackford, October 22, 1885.]

APPEARANCE OF MENHADEN.—The first appearance of menhaden coming to my notice was on the 5th of April. They were taken in a net by a fisherman in the bay upon which this station is located, about 25 miles from Chincoteague Inlet. [Adelbert Soper, keeper of North Reach life-saving station, Berlin, Md.]

A LARGE CATCH OF MACKEREL.—It was reported in the Boston papers of October 17, 1885, that Capt. Melvin McLain, of the schooner Henry Dennis, had arrived at that market with 82,500 fresh mackerel, which were sold for \$2,268.75, having been taken in less than half an hour in Barnstable Bay, 8 miles from Plymouth, Mass.

MOVEMENTS OF MACKEREL.—No mackerel have been caught in this vicinity, to my knowledge, since November 2. I have never known mackerel so large, fat, and plentiful as they were in this vicinity during the month of July. [John F. Holmes, keeper of Gurnet's life-saving station, Plymouth, Mass., November 20, 1885.]

HATCHING AND PLANTING ROCKFISH.—An instalment of young rockfish, the first hatched at the Havre de Grace station, was transferred by messenger F. L. Donnelly to Oswego, N. Y., and successfully planted in Lake Ontario, near the mouth of Oswego River, on the evening of May 15, 1886. They were transported in cans, 20,000 being assigned to each can, the water being kept at an average temperature of 50° F. J. B. McMurrich, vice-president of the Leatherstocking Club, and N. A. Wright, president of the Ontario Fishing Society, met the consignment at the depot in Oswego, and were much pleased at the fine condition of the fish after their trip of twenty-seven hours.

APPEARANCE OF WHITING OR FROST-FISH.—Whiting, or, as we call them, frost-fish, struck on in great quantities about the 1st of November, and have been around ever since. Every night the shore is lined with the lanterns of the boys and men who are spearing them. Squilla have been more plentiful in the river than I ever knew them to be before. [Willard Nye, jr., New Bedford, Mass., November 23, 1885.]

CULTIVATING CATFISH.—Some thirty years ago I owned a farm near Paris, Bourbon County, Kentucky, on which I experimented with catfish. Having drawn off the pond, I removed the turtles, gars, and other animals, and put back nearly half a barrel of young catfish, a few bass, and some sunfish. I then began to feed the fish on soft corn dough made from shorts, and occasionally on beef cut in strips. After a few weeks these fish became accustomed to coming to the edge of the pond for this food, and, as a result of gentle treatment, the large ones would often come so near that their fins would project out of the water. Within a year I had all the fine fish I could use, besides supplying six or eight families of neighbors. I raised catfish weighing six or seven pounds and measuring two feet in length. [Naman May, Arnold, Labette County, Kansas, February 3, 1886.]

STRIPED BASS.—A large striped bass (*Roccus lineatus*) was caught in a net through the ice, in the Hudson River, at or near Croton Landing, N. Y., on February 1, 1886. This is the largest fish of the kind reported this season. It weighed 55 pounds, and was displayed at Mr. E. G. Blackford's, in Fulton Market, New York City.

EARLY SHAD.—The first North River shad was taken to-day at Yonkers. [E. G. Blackford, March 23, 1886.]

LARGE WHITEFISH.—A short time ago I secured a whitefish weighing 18 pounds. [Alexander McQueen, inspector of fisheries, Winnipeg, Manitoba, April 3, 1886.]

DECREASE IN THE FISHERIES OF MALTA.—Referring to page 400 of the U. S. F. C. Bulletin for 1885, on the subject of the falling off in the fisheries of Malta, I beg to state that when stationed there, as far back as 1858 to 1862, it was the general practice for fishermen to use immense seines, requiring from twenty to forty men to haul them in, and when shot extending across the harbors. The mesh of the purses of these seines was so small that the minutest fry could not possibly escape. To this I attribute the cause of the continual annual decrease of fish in those waters. The same system is carried out in other parts of the Mediterranean. [Capt. George Pittendrigh, New Westminster, British Columbia, June 21, 1886.]

AMERICAN CATFISH IN FRANCE.—In his annual report on the doings of the French National Acclimatization Society in 1885, the secretary, C. Raveret-Wattel, stated that during the year a valuable shipment from Prof. S. F. Baird had enabled the society to attempt the acclimatization of the catfish of North America (*Amiurus nebulosus*). This fish, he said, merits special attention, in that it thrives in stagnant and even muddy waters; and that, being hardy and of great fecundity, it will be an excellent acquisition for stocking ditches and pools, where it succeeds wonderfully, while the indigenous fish scarcely amount to anything. [From the Bulletin of the Society for July, 1886, p. xlvii.]

MEDAL TO E. G. BLACKFORD.—For several years now the society has received from the United States fertilized eggs of salmonoids through the kind assistance of Mr. Blackford. In 1885 a shipment of the eggs of the rainbow trout (*Salmo irideus*) was received, owing to his excellent co-operation. The society desires to return thanks to Mr. Blackford for his services, and awards to him a medal of the first class. [From the *Bulletin de la Société Nationale d'Acclimatation de France*, Paris, July, 1886, p. lxiii.]

PLANTING LANDLOCKED SALMON IN PENNSYLVANIA.—Mr. John A. Harper writes from Pittsburgh, Pa., June 26, 1886, as follows: "I recently placed about 12,000 landlocked salmon in the streams flowing into the lake of the South Fork Fishing and Hunting Club, in Cambria County, Pennsylvania. The fish were a lively, healthy lot of little fellows, each about 1½ inches long. They were transported, owing to the special attention given to them by Mr. Buller, superintendent of the State hatchery at Corry, from the hatchery to the lake with the loss of less than a dozen fish. This seems remarkable, as the journey from Corry to the lake is about 250 miles, and to accomplish it several changes of railroad cars were made, and there was a three-mile haul over a very rough mountain road, with boat and portage, to the small streams up in the woods. The fish were hatched from eggs received from Maine early this spring, by order of Professor Baird, and in response to a request made more

than a year ago. They have been cared for by our State commission at the hatchery at Corry until delivered to me on June 22."

CANNED-SALMON TRADE.—Salmon are caught and canned, on the Sacramento River in this State, on seven rivers in Oregon, on Puget Sound and the Chehalis River in Washington Territory, on Alert Bay and the Fraser and Skeena Rivers in British Columbia, and one or more rivers in Alaska. More than one-half of the quantity packed must be credited to the Columbia River. Carefully compiled statistics by Field & Stone show the pack of 1885 to have been as follows :

| | Cases. |
|---------------------------|---------|
| California | 48,500 |
| Oregon | 592,200 |
| Washington Territory..... | 13,300 |
| Alaska..... | 74,850 |
| British Columbia | 106,865 |
| Total pack, 1885 | 835,715 |
| Total pack, 1884 | 985,295 |
| Decrease in 1885 | 149,580 |

The decrease in production and the losses by sea, amounting to 102,086 cases, have put the market on a better basis than it has been for three years. [Weekly Bulletin, San Francisco, February 24, 1886.]

A LARGE SALMON.—On January 31, 1885, an unusually large salmon was taken at Woudrichem, weighing 58½ pounds, and measuring 51 inches in length and about 29½ inches in circumference. It was sold for \$33.25. [From the Journal of the Society for the Promotion of the Fresh-water Fisheries in the Netherlands, Amsterdam, December 4, 1885.]

SALMON SOLD AT BILLINGSGATE.—The sixth annual report by the council to the members of the Scotch Fisheries Improvement Association, May, 1886, gives in an appendix the figures from which the following table is extracted. The table was compiled from returns furnished by Forbes, Stewart & Co., showing the amount of salmon sold at the Billingsgate (London) market during the ten years preceding 1886. The returns were given in boxes, and have been reduced to pounds on the basis of 100 pounds to the box.

| Years. | Pounds of salmon. | Years. | Pounds of salmon. |
|-----------|-------------------|------------|-------------------|
| 1876..... | 3,919,700 | 1882..... | 3,329,000 |
| 1877..... | 4,000,800 | 1883..... | 5,093,500 |
| 1878..... | 3,622,700 | 1884..... | 3,330,000 |
| 1879..... | 2,485,000 | 1885..... | 4,637,400 |
| 1880..... | 3,182,500 | | |
| 1881..... | 3,945,800 | Total..... | 38,147,000 |

EELS CONSUMED IN ENGLAND.—In London and vicinity over 3,250,000 pounds of eels, valued at \$650,000, were consumed last year. About 800,000 pounds additional passed through the markets. Of the total

amount about 2,000,000 pounds came from Holland, 1,000,000 pounds from Germany, 1,000,000 pounds from Ireland, 100,000 pounds from Scotland, and only a small quantity from the waters of England.

SPONGE FISHING NEAR APPALACHICOLA, FLA.—Mr. John E. Grady, collector, writing from the custom-house at Appalachicola, Fla., on July 21, 1886, states that the sponge fishing near there is all done considerably more than 3 miles from land. The value of \$1.75 per pound is about the amount the sponge buyers intend that the sponges shall cost them, as purchased from the vessels immediately on arrival. No sponges are sold here or anywhere by the sponge catchers by the lot. The spongers string their sponges on yarns or tarred strings of 6 feet in length, and on arriving at port the lot is then carefully counted and thrown into a pile. The sponge buyers are notified, and they examine the size and quality of the sponges, and also the length of the strings or yarns on which the sponges are placed. The sponge catcher guarantees only that a certain number of bunches is in the lot or pile. Each dealer then has three sealed bids, which are submitted to a disinterested party, and the highest takes the sponges, as the owners bind themselves to accept the highest bid.

SEA-LIONS ON THE COAST OF OREGON.—Mr. Zachary T. Siglin, deputy collector, writing from the custom-house at Coos Bay, Oregon, on July 8, 1886, states that there are no vessels of that district (Southern Oregon) engaged in deep-sea or outside fishing, but that the fishing of the district is carried on only in the rivers and bays, and is confined entirely to salmon. The fishing season will begin about the middle of August. However, the schooner Ruby has recently engaged in the business of killing sea-lions for their oil, and also for the purpose of destroying them, as they are a great enemy of the fish. This hunting of the sea-lion is done at the entrance of the rivers and bays, where they are found in great numbers, and if not destroyed it is generally believed that they prevent the fish from coming in.

CALIFORNIA TROUT IN HOLSTON RIVER AND IN TRIBUTARIES OF NEW RIVER.—Mr. W. C. Pendleton, of Marion, Va., who is clerk of the supreme court of appeals at Wytheville, Va., states that citizens are catching some very fine California trout out of the Holston River. He has seen six of them which averaged 18½ inches. These fish were planted in the Holston, at Marion, in March, 1884, and were yearlings when released. Tate's Run, adjacent to the Wytheville hatchery, is pretty well stocked with these fish; every few days some are being caught above here. [George A. Seagle, superintendent of Wytheville Station, Va., in letter to Col. M. McDonald, dated June 15, 1886.]

DEAD FISH IN SHALLLOTTE RIVER, NORTH CAROLINA.—Great multitudes of fish have recently been found dead in the waters of Shallotte River, Brunswick County, North Carolina. This stream empties into Tubb's Inlet from the ocean, about 30 miles southwest of Wilmington. The water is covered by an oily scum, which extends far out into the

ocean, and has been noticed 5 miles from the beach. [From the Washington Post, Washington, D. C., June 27, 1886.]

SHAD IN THE OHIO RIVER.—Shad have occasionally been caught here for three, and some say for four, years. They are generally taken near the falls or rapids of the Ohio, in nets and seines, both above and below the falls. Local experts pronounce them Potomac shad. They are caught in the spring whenever the water is low enough to fish with set-nets and seines. In weight they run from $\frac{1}{2}$ to $3\frac{1}{2}$ pounds. Several dozen have been sold in the markets here and in Louisville, Ky. (just across the river), each season for several years. [J. P. Applegate, New Albany, Ind., June 23, 1886.]

FISH AND OYSTER TRADE OF BRASHEAR, LA.—I herewith send the amount of oysters and fish shipped from this port for the period of eight months, from September 1, 1885, to April 30, 1886:

| | Number. |
|------------------------|------------|
| Oysters, open..... | 8,513,239 |
| Oysters, in shell..... | 1,799,815 |
| Total..... | 10,313,054 |

These oysters were shipped entirely by Wells, Fargo & Co.'s Express per rail to Texas and California, and in addition about 2,000,000 were shipped by steamers to Galveston, in shell and open. They are taken on the Gulf coast eastward of this port, and the business furnishes employment to a large number of owners of small luggers, most of which are under 5 tons burden.

There have also been shipped from this port, in the time mentioned, about 321,785 pounds of catfish, which are caught in the Atchafalaya River, and adjacent bayous. [William T. Carrington, Collector of customs, Brashear, La., June 21, 1886.]

CODFISH ON THE PACIFIC COAST.*—Mr. James G. Swan, writing from Port Townsend, Wash., on July 9, 1886, states as follows: "This summer there has been an abundance of true cod in Port Discovery Bay. One or two persons have pickled a few barrels, but many tons have been thrown away for want of knowing how to dispose of them. This year the cod taken here are of almost mature growth, and next year they will spawn. I have made diligent inquiry among the white fishermen and Indians, and fail to find that the cod taken this season had any spawn. One fisherman told me that he caught a large female cod last December full of spawn, but that this was the only one he noticed. The fact that they have again come upon our coast here is of much interest. They have been more plentiful this season than at any other time since 1859-'60, when they were very abundant. The next year none were taken, and the cod seemed to have disappeared from our waters, and since then until recently only an occasional one has been seen in the fish-markets of Victoria, B. C., and Port Townsend."

* See also F. C. Bulletin for 1886, p. 131.

142 BULLETIN OF THE UNITED STATES FISH COMMISSION.

List of vessels employed in the Potomac River fisheries from March 31 to May 31, 1886, and belonging in the customs district of Alexandria, Va.

[Furnished by B. H. Lambert, deputy collector, June 18, 1886.]

| Rig. | Name of vessel. | Home port. | Name of master. | Name of principal fishing place. | Number of men employed. | Tonnage, in tons and hundredths. |
|-------|--------------------|-------------------|---------------------|----------------------------------|-------------------------|----------------------------------|
| Sloop | Daniel Sheets | Alexandria, Va | J. T. Southard | The Gums | 2 | 10. 21 |
| Schr | Jeanette | do | Richard Raymond | Mattawoman | 2 | 11. 73 |
| Do | Empire | Georgetown, D. C. | — Bell | do | 2 | 9. 10 |
| Do | Discovery | Tappahannock, Va. | L. E. Headley | do | 3 | 18. 93 |
| Do | Cora L. McKenney | Alexandria, Va | Charles McKenney | Quantico | 3 | 21. 69 |
| Do | Azalia H. Peart | do | James H. Beach, jr. | do | 3 | 19. 18 |
| Sloop | Belvidere | do | Richard Johuson | do | 2 | 10. 77 |
| Schr | Annie Gibson | do | Charles Kelly | Wade's Bay | 3 | 16. 05 |
| Do | Miami | do | Webb Maddux | do | 3 | 21. 86 |
| Do | Kitty Ann | do | William Lacoek | Richland | 3 | 27. 69 |
| Do | Henry F. Adams | Crisfield, Md. | — McLaughlin | do | 2 | 8. 86 |
| Do | William L. Ellis | do | Charles M. Simpson | do | 2 | 5. 00 |
| Do | Ella L. Vetra | Crisfield, Md. | John M. Todd | do | 2 | 10. 07 |
| Do | Caroline | Alexandria, Va | Peter Frances | White Point | 3 | 14. 34 |
| Do | Flora | do | Augustus Dean | Acquia Creek | 2 | 13. 71 |
| Do | S. Chase | Crisfield, Md. | — Price | do | 3 | 15. 22 |
| Do | J. W. Brooks | Tappahannock, Va. | L. J. Beatly | Great Wicomico | 3 | 47. 74 |
| Do | Lillian Frances | do | J. T. Rowe | Deal's Island | 2 | 5. 00 |
| Do | Four Sisters | Crisfield, Md. | N. W. Todd | Wicomico | 2 | 12. 47 |
| Sloop | Emma C. Berry | New London, Conn. | William O. Chasey | St. George's Island | 3 | 15. 76 |
| Schr | Virginia | Onancock, Va. | — Simpson | do | 2 | 5. 47 |
| Do | Charles Lewis | Alexandria, Va | J. H. Beach | Hollowing Point | 3 | 22. 26 |
| Do | Margaret Ella | do | James Hall | do | 3 | 18. 19 |
| Do | Leading Breeze | Crisfield, Md. | — Savage | White House | 3 | 26. 29 |
| Do | Leona | do | John W. Todd | do | 2 | 8. 83 |
| Do | Zareta | do | William Dashield | Mattox Creek | 2 | 9. 69 |
| Do | Dove | Tappahannock, Va. | L. J. Rowe | Chapman's Point | 3 | 17. 22 |
| Do | Thomas E. Parks | do | Joe Arnold | Washington Reach | 2 | 5. 00 |
| Do | Mary Ellen | Town Creek, Md. | — Poe | St. Mary's, Md. | 3 | 13. 61 |
| Sloop | Carrie P. Gambrell | do | Benjamin Lewis | Chapman's Point | 2 | — |
| Schr | Lizzie Rogan | Alexandria, Va | Noble Smith | The Gums | 3 | 17. 74 |
| | Total | | | | 78 | 457. 70 |

Number of shad sold in Alexandria, season of 1886 34, 847
 Number of herring sold in Alexandria, season of 1886 3, 979, 324

WHERE ROCKFISH BREED.—Mr. William N. Habersham, writing from Savannah, Ga., on April 8, 1886, says: "The rockfish breed here during the spring at the heads of all our rivers. The young, 2 or 3 inches long, are caught in nets while casting for shrimps and hard-backs. In the interior, at a place where the road crosses the headwaters of a shallow stream emptying into the Ogeechee River, after a rainfall I have seen rock of 20, 30, and even 40 pounds wriggling their way through to a lagoon beyond, exposing parts of their bodies at times, and being beaten with sticks and clubbed while they were pushing their way over the road. During the summer I live near a small salt-water river—the Vernon—that empties into Ossabaw Sound, and the rock go up to its headwaters among the lagoons and swamps in the winter and spring, and their young are always found on the shores when casting for prawns."

In a later letter, dated May 22, 1886, Mr. Habersham adds: "The rockfish breed at least as far north as Canada, as in the Province of New Brunswick they abound on the North Shore from Shediac to Dalhousie, and are found in the Restigouche, Saint John, and Miramichi Rivers, where I knew them over thirty years ago. The young rock, from 4 to 6 inches long, are there taken in the smelt bag-nets, which taking is hastening their extermination. They spawn there in the rivers about the last of May, and run to sea after spawning, returning about September 1, and remaining in fresh water until after spawning again the following spring. They visit the harbor of Bathurst, on an arm of the Bay of Chaleurs, apparently in pursuit of the sand-launce, stopping only a few weeks, but not spawning there, as they prefer sluggish water. In addition to my own knowledge of the subject, what I have said about rockfish in Canada is confirmed by Mr. William H. Venning, inspector of fisheries in New Brunswick."

BILL TO PROTECT THE FREEDOM OF COMMERCIAL INTERCOURSE.*—

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That whenever the President shall be satisfied that American vessels are denied the privilege of purchasing supplies or bait, or any other commercial privilege, in any port or ports of any foreign country, he may, by proclamation, prohibit the vessels of such country, or of any designated district, port, colony, or dependency thereof, or any class of such vessels, from entering American ports, or from exercising such commercial privileges therein as he may in such proclamation define, for such period as he may prescribe; and on and after the date named in such proclamation for it to take effect, if the master, officer, or agent of any such vessel of such foreign country excluded by said proclamation from the exercise of any commercial privileges shall do any act prohibited by said proclamation, in the ports, harbors, or waters of the United States, for or on account of such vessel, such vessel and its rigging, tackle, furniture, and boats, and all the goods on board, shall be liable to seizure and to forfeiture to the United States; and any person opposing any officer of the United States in the enforcement of this act, or aiding and abetting any other person in such opposition, shall forfeit eight hundred dollars, and shall be guilty of a misdemeanor, and, upon conviction, shall be liable to imprisonment for a term not exceeding two years.

A VESSEL STRUCK FOUR TIMES BY A SWORDFISH.—Mr. W. A. Wilcox, writing from Gloucester, Mass., on August 7, 1886, says:

"The schooner Volunteer, of Gloucester, arrived on August 3 from a mackerel trip of several weeks in the neighborhood of Block Island. Capt. Robert Smith reports that on June 15 he was 2 miles west of Block Island at 4 p. m., when the vessel received a severe shock, much

* This bill (H. R. 9210) was introduced in the House of Representatives by Mr. R. T. Davis, of Massachusetts, on June 7, 1886, and referred to the Committee on Commerce. It was reported back July 17, and ordered to be printed.

as if it had struck upon a rock. At the time they were almost becalmed. On looking over the vessel's side a large swordfish was seen, which repeatedly struck the vessel with great force. A boat was quickly manned, and a harpoon soon finished the fish. On taking it on board it was found that the entire sword was gone, taking away the upper jaw and both eyes. The fish weighed 300 pounds.

"On arriving at Gloucester the Volunteer went on the marine railway, when the work of the swordfish was soon found. Six feet from the stem, near the top of the keel, within a space of 10 inches by 6, the sword had penetrated and broken off four times, even with the face of the keel, four pieces of the sword being deeply imbedded in the wood. The carpenters dug out one small piece, but the others are still imbedded in the keel. The distance between the centers of the two extreme holes is just 10 inches. That a swordfish should repeatedly run its broken sword into the keel of a vessel seems very strange, but such is the fact."

GROWTH OF CARP.—Mr. J. Luther Bowers, writing from Berryville, Va., August 13, 1886, states that he received from the U. S. Fish Commission some carp weighing about 1 ounce apiece, on March 25, last, and that on August 12 he caught six of them, which together weighed 10 pounds, being an average of $26\frac{2}{3}$ ounces to each fish. The time from being placed in the pond to being caught was one hundred and thirty-nine days, and as they averaged an increase of $25\frac{2}{3}$ ounces, each fish must have gained on the average 1 ounce in about five and one-half days. These carp on being eaten were found to be of excellent flavor.

SUCCESS WITH TROUT AND SALMON.—Dr. C. H. Barbour writes from Rutland, Vt., on September 15, 1886, saying: "The lake that I stocked with 800,000 trout and 20,000 landlocked salmon which I received from the U. S. Fish Commission, is a success. Salmon are taken there weighing $6\frac{3}{4}$ pounds."

GAFF-TOPSAIL CATFISH TAKEN IN NARRAGANSETT BAY.—Mr. George A. Lewis, writing from Wickford, R. I., August 31, 1886, says: "There have been thus far three gaff-topsail catfish caught near here this season. They were about 15 inches long, and agreed with the description and plate given in the quarto History of Aquatic Animals, by means of which they were identified."

POISONOUS EFFECTS OF SEWAGE ON FISH.—Messrs. C. Weigett, O. Sacre, and L. Schwab have investigated the effects on fisheries and fish-culture of sewage and industrial waste waters, and find them very damaging. Chloride of lime, 0.04 to 0.005 per cent chlorine, exerted an immediately deadly action upon tench, while trout and salmon perished in the presence of 0.0008 per cent of chlorine. One per cent of hydrochloric acid kills tench and trout. Iron and alum act as specific poisons upon fishes. Solution of caustic lime has an exceedingly violent effect upon them. Sodium sulphide, 0.1 per cent was endured by tench for 30 minutes. [Popular Science Monthly, September, 1886, p. 719].