

162.—BRIEF NOTES UPON FISH AND THE FISHERIES.**By CHAS. W. SMILEY.**

[Mainly extracts from the official correspondence.]

CAUSE AND CURE OF MUDDY FLAVOR IN FISH.—J. M. C., writing in *Forest and Stream*, of March 6, 1884, says that three years ago, during the months of June, July, and August, the creeks in Fillmore County, Minnesota, were teeming with brook trout, and he seldom, in a day's fishing, failed to take 50 fish, averaging half a pound each. Now, he is satisfied with half a dozen of the same average weight. The first great cause of the decrease was the breaking up of all land that could be tilled for wheat. The wash from plowing filled the streams with mud, and no suitable places were left for spawning. He says that trout caught when the streams are muddy lose all their flavor, while in from five to eight days after the water becomes clear they are as fine-flavored as before the flood. Last summer, from the middle of May to the last of June, he caught from one to five bass nearly every day. When the water was muddy the bass were contaminated; when clear, they were free from any taint of mud. The past five years grangers have paid more attention to stock-raising, and have seeded down the valleys, hence the wash is small. Plants are again growing in the running brooks, affording cover for trout, and their quality has improved.

M. P. Peirce, speaking of the edible qualities of carp, illustrates the same fact by Jersey chickens, which are raised on offal, and then fed on pure food and clean water for a short time prior to being offered for sale.

VITALITY OF CARP DEPRIVED OF WATER.—In a letter dated Charlottesville, Va., March 18, 1884, Mr. R. T. W. Duke writes:

“On Saturday evening I caught *with a hook* a carp which would weigh about 4 pounds. I put it in my bath-tub filled with water. Yesterday, about 8 o'clock a. m., I put the carp in a small box surrounding it with wet moss and forwarded to Lynchburg by express. It reached there about 4 p. m., and I learn this morning from my friend to whom it was sent that when taken out and placed in a tub it was as lively as could be. We ate a small carp Sunday morning and thought it very good.”

DANGER OF CONFUSING PURE GERMAN CARP WITH THE POOR HYBRIDS OF NATIVE WATERS.—Replying to an inquiry about the carp in the Hudson River, Professor Baird says:

“I cannot speak positively in regard to the action of Captain Robinson in connection with the carp.* I can only say that I have examined

* Reference to Capt. Henry Robinson's carp will be found on p. 25, *Bull. U. S. F. C.*, 1882; and on p. 266 of this volume.

numbers of specimens of the so-called carp of the Hudson River, and found it to be essentially a goldfish, reverted to its original condition. I think it likely that Captain Robinson's carp were the so-called Russian carp, a very inferior variety, which had hybridized with the goldfish introduced at the same time by him or some one else, and producing a combination without the virtues of either. I can at any rate say that the fish introduced by the United States Fish Commission are totally different from any previously in Eastern waters, and of much superior quality as an article of food. Some years ago, when at Sing Sing, I examined several cart-loads of so-called carp, with the result indicated. I have since examined various fish sold as carp in the New York market, and with the same results."

THE FOOD VALUE OF THE CARP.—When writing to Hon. J. G. Carlisle, Speaker of the House of Representatives, January 4, 1884, Professor Baird said: "There is naturally much difference of opinion as to the value of the carp as an article of food. No one who has at his command the choice fishes, such as salmon, trout, whitefish, mackerel, sheepshead, red snapper, &c., would be likely to attach a high value to the flesh of the carp. But in Germany and Austria it constitutes the principal article of consumption in the interior, and brings precisely the same price in the city markets as the native trout. In Berlin it brings about 25 cents per pound. Much, of course, depends upon the mode of cooking and the idiosyncrasies of the taster.

"What we claim, in patent specification parlance, is to furnish a fish which can be reared with a minimum of labor in waters of any character—warm or cold, muddy or clear, confined or extended—and one that will attain an enormous growth in a very short time, and by its readiness to live on vegetable offal, will convert such substances as corn, pumpkins, squashes, cabbages, wild rice, seeds of aquatic plants, &c., into wholesome animal food in countries where other varieties of such food cannot be obtained. It may safely be stated that a given amount of vegetable matter fed to carp will produce twice as much flesh as when given to pigs or poultry."

CARP IN SUSQUEHANNA RIVER.—Mr. A. O. Krueger, of Wrightsville, Pa., July 22, 1884, reports a carp weighing about 4 pounds, being taken in a set-net below the Columbia dam on the Susquehanna. It had doubtless escaped from some private pond, but may have been in the river some time.

CARP IN LAKE ERIE.—Mr. C. Sterling, secretary of the Michigan State Agricultural Society, writing from Monroe, Mich., December 10, 1883, reports that one of the Monroe fishermen had found in his catch of whitefish a fine specimen of German carp, which weighed $3\frac{3}{4}$ pounds. The pond from which it was taken was located in Lake Erie, about three-quarters of a mile from the mouth of the Raisin River.

PRICE-LIST OF CARP, GOLDFISH, AND SILVERFISH.—Mr. H. W. C Muth, of Mount Healthy, Hamilton County, Ohio, who received 40 carp from the United States Fish Commission December 15, 1880, is successfully rearing them for sale. His price-list for 1883 was as follows:

German carp (scale, mirror, and leather): 25 for \$3; 50 for \$5; 75 for \$7; 100 for \$8; 10 per cent off for 500 or more.

Fringe-tailed goldfish (red, pearl, and variegated): 25 for \$8; 50 for \$15; 75 for \$20; 100 for \$25; 10 per cent off for 300 or more.

Goldfish (red, pearl, and variegated): 25 for \$4; 50 for \$6; 75 for \$8; 100 for \$10; 10 per cent off for 300 or more.

Silverfish: 25 for \$1; 50 for \$1.50; 75 for \$1.75; 100 for \$2; 10 per cent off for 500 or more.

PRICES OF SCALE AND MIRROR CARP.—Charles S. Medary, Passaic Valley Carp Fisheries, Little Falls, New Jersey, submits the following price-list of carp:

“Mirror carp, ten months old, \$75 per 100; mirror carp, ten months old, selected, \$85 per 100; scale carp, ten months old, \$70 per 100; scale carp, ten months old, selected, \$80 per 100; special rates on large orders. In warm climates these fish will grow to 14 or 16 inches long by November next, and many will spawn this year. In northern climates they will grow to 8 or 10 inches by November next, and spawn next year. Orders must be accompanied by remittance. No orders filled for less than \$25. Cans for shipping, \$2 to \$3, according to size.”

THE CARP REARED BY THE UNITED STATES FISH COMMISSION IN 1878.—In a report upon the distribution of carp prior to July 1, 1881 (Report of the Commissioner for 1882, p. 943), it is stated that carp were first brought to Washington in the spring of 1878, and that they “first spawned in 1879.” It appears from the following letter by Professor Baird to an applicant, and dated December 10, 1878, that a few young were reared that season, but that none were taken from the ponds for distribution:

“The only way of securing the carp is by drawing off the water of the pond in which they are confined, and storing the fish of different grades, sizes, and species in separate reservoirs until the original ponds fill up again, when the breeding fish are restored to their place. The young fry can then be taken at any time and shipped to destination.

“As the construction of these reservoirs involved extensive excavations in a malarious part of Washington and the exposure to the air of some fifteen acres of mud and rank vegetation, it was considered inexpedient to commence the work until the occurrence of frost or even ice about Washington should give the assurance that no injury to the public health was likely to result, this feeling of course being intensified by the yellow-fever epidemic of the present year and the fear of involving the city in any evil consequence.

"It was not until early in November that the work upon the reservoirs could be commenced, and this once begun, although prosecuted with great vigor, was retarded by bad weather, the defection of workmen, the difficulty of obtaining the proper kind of cement for the brick-work, and other causes beyond our control; and it was not until the beginning of December that these reservoirs were finished and ready for use.

"By this time, however, it was ascertained that the carp had gone into winter quarters by burying themselves in the bottom of the pond, and, as the drainage of these ponds would leave the fish in the exposed mud and involve their certain death, it was considered necessary to defer further action until the coming spring. Probably in the early part of April the work will be begun and the stock of young fish available for distribution ascertained.

"It is, of course, impossible to say now in what numbers this stock exists, but we hope to be able to supply a considerable portion, at least of the applications already on file. In any event we shall have a much larger number of breeding fish in 1879 than we had in 1878, and we have every reasonable assurance that in the summer of next year a supply of fish will be available sufficient to meet the current requirements."

THE CARP TRADE IN AUSTRIA.—From one estate in Southern Bohemia from 370,500 to 492,000 pounds of carp are sent to Vienna annually.

MARSH-HENS AND NIGHT-HERONS CATCH CARP.—Under date of July 17, 1883, Dr. Rud. Hessel writes: "The other day I shot a marsh-hen with 38 young carp in the stomach and a night-heron containing the heads of 78 young carp."

CARP SENT TO THE SANDWICH ISLANDS.—Writing from Wailuka, November 17, 1882, F. H. Enders, M. D., says: "On August 27, 1882, 20 carp, recently arrived from California, and measuring from 1 to 1½ inches in length, were placed in a pond about 150 feet square by from 1 to 5 feet in depth. It is supplied with water from a spring. On November 15, 1882, the pond was drained and 15 fish found, none of which measured less than 11½ inches and some were 13 inches in length and very fat. The water of this pond contains about 1 per cent of iron and a dense growth of moss from top to bottom. It is prolific in tender buds and shoots, upon which the fish subsist, as they have never been fed since being put in the pond. These fish, I presume, will spawn in a few months, when we hope to raise at least 10,000 next year, as they have no enemies to disturb them."

CARP SENT TO CUBA.—I have received by the steamship Newport, of New York, two large cans containing twenty-six live German carp. Three of them died during the trip, and as I was obliged to keep them in the cans for a day while I found a place to put them until I could take

them to my farm, seven of them died during that day. I suppose it was on account of the heat they felt on the sudden change of climate. I have the rest in a very large fountain in the open air, and I have no doubt they will be all right.—J. N. ODVARDS.

HAVANA, CUBA, *March 17, 1883.*

CARP SENT TO BRAZIL.—It is with pleasure I report the safe arrival of thirteen beautiful specimens of the survival of the fittest out of one hundred carp which was shipped to me from New York by steamer Borghese. They were thirty-nine days at sea. The greater portion of them died before the steamer reached St. Thomas. None died during the last ten days of the voyage. Your instructions for keeping them were not carefully observed. The person who had them in charge fed them on hard-boiled eggs.—J. W. COUCHMAN.

RIO DE JANEIRO, BRAZIL,

Rua do Ouvidor, No. 130, January 6, 1883.

In a letter dated January 24 Mr. Couchman writes that, owing to an accident to the tub in which he was keeping the thirteen carp pending the completion of his pond, all but four perished. These four had been making rapid growth.

CARP, GOLDFISH, IDES, AND CATFISH HANDLED AT CENTRAL STATION.—Mr. J. E. Brown makes the following statement of the number of pond fish handled at Central Station during the season of about eight months ending June 1, 1884 :

Leather carp :	
Received	149, 500
Shipped by express and car	148, 768
Scale carp :	
Received	19, 178
Shipped by express and car	14, 341
Mirror carp :	
Received	12
Shipped by express and car	8
Goldfish :	
Received	4, 100
Shipped by express and car, or delivered to applicants...	3, 514
Golden ides :	
Received	24
Shipped	19
Catfish :	
Received	150
Shipped by car	100

Some of the fish were in very poor condition when received, particularly the scale carp, in which there was considerable loss.

WASHINGTON, D. C., *June 7, 1884.*

SHIPMENT OF ADULT CARP TO SOUTH CAROLINA.—The transportation of adult fish is very rarely attempted, especially as the Commission is not able to furnish them to applicants. Very unusual circumstances, however, made it desirable to send twenty large carp to Mr. B. J. Donaldson, Georgetown, S. C. Messenger F. L. Donnelly took charge of them at 5 p. m., April 10, 1884, and left Washington via Atlantic Coast Line Railway, reaching Georgetown at 4.40 p. m., April 11. As Mr. Donaldson's plantation is located on an island in the river several miles above Georgetown, it was necessary to keep the carp at that place overnight. Notwithstanding the close attention given them, one of the smaller died. The other nineteen were delivered safely on the following morning.

THE LARVÆ OF MOSQUITOES AS FOOD FOR CARP.—Lahaway makes the following statement in *Forest and Stream*: "Does the carp feed on the mosquito in its larval form of 'wiggler' and 'tumbler'? From a fact that came under my observation last summer I am decidedly of the opinion that they do. My carp ponds, four in number, are located in Ocean County, New Jersey, in the cranberry region, where, as is well known, mosquitoes do abound. Three years since I constructed a pond of about five-eighths of an acre but a short distance from the house, and was not mistaken in my supposition that this pond would not tend to diminish the supply of mosquitoes. But last May I placed in this pond a few carp, received from the Government the preceding autumn. In August last, when bitter complaints were uttered all over the country at the abundance of mosquitoes, we had very few, so few indeed that my attention was attracted by it. Some carpenters in my employ at the time reported that while on their way to my place they were 'nearly eaten up' by these pests, but when they got there they ceased to be annoyed by them.

"The female mosquito, as is well known, deposits her 250 or 350 eggs on the surface of quiet water. These hatch out in a few days, and are known to many country people as the 'wiggler.' In ten to fifteen days these are changed into 'tumblers', in which form they remain five to ten days, thus spending from fifteen to twenty-five days in the water before they become denizens of the air and acquire their musical and phlebotomizing capacities. The carp doubtless find their larvæ most palatable tidbits, that are greedily sought after. In one particular the chosen habitats of carp and mosquitoes are alike, both delighting in warm waters."

OCEAN COUNTY, N. J., *February 12, 1883.*

FISH BUREAU IN PORTLAND, ME.—About April 1, 1884, a fish exchange was organized in Portland, Me., with forty-two members. Mr. George Trefethen was made president and Mr. O. B. Withen, secretary.

SHAD HATCHING IN CONNECTICUT.—Last season Mr. Henry J. Fenton, by direction of the State commission, went to the fisheries of Farm-

ington River, and as the shad were caught collected the spawn, after which the fish were taken to market. From these eggs he raised 3,200,000 young, and turned them into the same river to return three or four years hence.

CALIFORNIA TROUT IN DELAWARE RIVER.—The American Angler, of April 5, 1884, announced that California trout are making their appearance in Delaware River, a boy having taken a two-pounder near Narrowsburg, N. Y., March 28, 1884.

SHEEPSHEAD ABUNDANT.—Writing from New York, June 12, 1884, Mr. E. G. Blackford reports the catch of sheepshead along the coast from North Carolina to Long Island as exceptionally large and of good quality. They sold as low as 5 cents per pound during the first week of June.

ON THE WEIGHT OF BROOK TROUT.—On page 9 of the Bulletin for 1882 of the United States Fish Commission, Livingston Stone has given some weights of *Salmo fontinalis* (*Salvelinus*). Professor Agassiz pronounced the Rangeley trout to be true *Salmo fontinalis*. The trout in question, said to have been caught by Mr. Page, but really caught by my colleague, Mr. Stanley, weighed 10 pounds, and was a true *fontinalis*. The *Salmo oquassa* never attains a greater weight than 6 or 7 ounces; it is peculiar to Rangeley and Moostocmaguntic Lakes. Mr. Stanley, some three years since, in dipping for *oquassa* or blue-back trout in October, caught in his net a *Salmo fontinalis* of the enormous weight of 12 pounds.—E. M. STILWELL.

BANGOR, ME., September 17, 1882.

A LARGE HERRING.—A herring measuring 13 inches in length, 7 inches in girth, and weighing 12 ounces, was forwarded by Mr. Wilson, fishery officer, March 28, to Prof. Cossar Ewart, Edinburgh University. The herring, which is a splendid specimen, was caught about 3 miles south of Girvan, off Ardmillan Point, by Dugald Robertson, Campbeltown, in the seine trawl-net. [Edinburgh Scotsman, March 29, 1884.]

A METHOD OF DESTROYING NOXIOUS FISHES.—The method frequently adopted by fish-culturists to destroy noxious fishes is to introduce quicklime into the pond. This for a time exerts a very destructive influence, but before long becomes inert by slaking and forming a harmless combination. If the water is drawn off after liming, of course it would be very much better, and at the end of a week carp or any other fish could be introduced.

Dr. Rud. Hessel, superintendent of the carp ponds, said, November 23, 1883: "Some four hundred eels have been killed during the last eight days in the east pond, and there are still more. One barrel of lime is required to exterminate them."

TANKS FOR TRANSFERRING FISH FROM THE MISSISSIPPI RIVER TO KANSAS.—The following is extracted from a letter of W. S. Gile, of the Kansas State fish commission: "My plants of native fish in the streams of the State this season were an entire success. In order that I might plant fish of such size as to become spawners the coming season I had some zinc tanks made and incased with wood holding about two barrels of water, laid them down, had a hole cut in the top at one end large enough to put in and let out the water and fish, filled the tank two-thirds full and set it endwise with the car to prevent too much slopping, and aerated when the cars were standing with an air pump with about 6 feet of hose attached. In this way I transported nine varieties of fish caught in the Mississippi over 500 miles with good success. Each plant contained two varieties of pike a foot long."

VENANGO, KANS., December 27, 1883.

MENHADEN, HERRING, EELS, AND LOBSTERS.—Mr. Willard Nye, jr., writing from New Bedford, Mass., November 23, 1883, says: "The latter part of October there were a good many menhadon in the Acushnet River, and the middle of this month they were quite plenty around Montauk Point, Long Island. The fishermen speak of there being considerable increase in the schools this year over last. They have caught a good many of those fall herring in the traps around here for the past month, and they are as round and fat as mackerel, if not more so. If potting for eels is not stopped soon, they will exist only in the memory of the inhabitants when they used to be plenty. I was surprised at the number of lobsters crawling around on the sand shoals—south of Gardner's Island, Long Island Sound—and there did not seem to be many fishermen to catch them—perhaps this explains it."

Inspections of marine products in the District of Columbia for eleven years ending June 30, 1883.

[From the reports of the health officer.]

Years.	Shad.	Herring.	Bluefish.	Fish (bunches).	Sturgeon.	Oysters (bushels).	Clams.	Crabs.
1873.....	852,900	3,780,800	326,200	553,761	496	448,557	524,000	336,600
1874.....	628,637	6,567,240	89,841	567,291	919	569,372	1,163,000	297,250
1875.....	464,215	1,674,465	56,430	557,203	1,240	305,737	1,110,725	446,525
1876.....	319,079	1,488,950	47,500	483,111	919	355,437	704,975	316,498
1877.....	131,199	2,572,124	5,450	361,749	635	295,997	863,470	347,415
1878.....	121,785	2,567,500	40,425	271,727	1,060	351,317	938,225	366,450
1879.....	327,537	3,497,259	70,570	219,635	952	316,377	148,079	584,661
1880.....	321,235	6,858,839	253,458	179,556	1,094	361,427	1,301,750	698,789
1881.....	462,517	9,628,683	349,483	201,444	1,124	319,702	994,300	342,344
1882.....	350,309	6,439,635	164,757	211,268	1,759	359,354	989,921	364,508
1883.....	258,711	4,960,426	61,310	296,419	1,752	353,402	1,247,064	587,335
Total ..	4,238,124	49,984,921	1,465,424	3,903,164	11,950	4,036,679	9,985,599	4,688,375

SUCCESSFUL INTRODUCTION OF LAKE TROUT, SALMO NAMAYCUSH, IN FRANCE.—C. Raveret-Wattel, writing under date of Paris, October 4, 1883, says: "You will learn, doubtless, with pleasure, that the eggs of the lake trout that you have had the kindness to forward to our society

have very successfully hatched. The fry are the most lively that I have ever seen. They thrive marvelously well, and are almost twice as large as the fry of our common trout of the same age. *Salmo namaycush* seems to be a very remarkable fish—extremely hardy. It is certainly a precious species in all regards to acclimate in our fresh waters, and we are much indebted to you for having afforded to our society the possibility of the experiment.”

THE SALMON CROP OF 1883.—Mr. Robert E. C. Stearns, of Berkeley, Cal., has forwarded the following statement, taken from the San Francisco Chronicle of Thursday, December 13, 1883.

“There were taken from the Sacramento River and tributaries for the year 1883, ending October 15, and delivered to the different packing firms 451,957 spring salmon and 160,542 fall salmon, weighing 7,349,988 pounds. The wholesale dealers have received 115,004 spring salmon and 52,902 fall salmon, making a total number of 780,405 salmon, weighing 9,585,672 pounds.”

COLUMBIA RIVER SALMON.—The run of salmon on the Columbia River has been very large. Recently the canners were obliged to throw away six thousand fish, which, with their present facilities, they were unable to take care of. The canners have been doing their utmost to keep up with the fishermen, but the supply exceeds the canners' abilities. It is thought that the season's catch will be unusually large. [From The American Field, July 26, 1884.]

SALMON CANNING IN BRITISH COLUMBIA.—The Delta Cannery is the largest in British Columbia. Commencing operations only five years ago, its business has assumed such proportions that it now employs a force of over 400 men, 280 Chinese and 160 Indians, and a fishing outfit consisting in part of 38 boats and nets, 2 seines, 1 steam-tug, and 4 scows. The cannery covers a space 160 by 120 feet, is two stories high, and in some respects is the best furnished on the Pacific coast. It is provided with a boiler 16 feet long and 4 feet in diameter, twelve tanks, two retorts of 3,360 cans capacity each, filling and soldering machines, four lacquer baths, and every convenience for the rapid and thorough performance of the various operations necessary to secure the highest degree of perfection in the preparation of this most excellent article of food. Chinamen, under the supervision of experienced white foremen, are employed for the canning process and Indians for catching the fish, receiving from \$1.25 to \$2 per day, the net tenders the latter amount. The daily catch per boat ranges from fifty to three hundred salmon, the fleet sometimes bringing in twelve or fifteen thousand. This season (1882?) the run has been so extraordinary that the Delta Cannery put up 1,280 cases in a single day, and 6,600 cases in six days. Messrs. Page & Ladner, the managing partners of the firm, showed me their product for the last month, amounting to the enormous quantity

of 25,000 cases, or 1,152,000 cans, covering every available space of the immense lower floor to the height of over 5 feet, the largest number ever packed by any one establishment during the same period of time. Two hundred and fifty barrels of salmon, or about 13,000, were also salted within the month. The company ship their goods direct to London or Liverpool through the firm of Welch, Rithet & Co., of Victoria.—[Newton H. Chittenden, in "Guide to British Columbia."]

THE SALMON CANNERIES ON FRASER RIVER.—Mr. Louis C. d'Homerque, of Brooklyn, N. Y., writing to the Daily Eagle of that city from San Francisco, Cal., in April, 1882, says: "The salmon canneries on the Fraser River are eleven in number, and these caught and shipped to England 580,000 boxes, containing each 48 cans of a pound each, while on the Columbia River, in the United States, thirty-two canneries only made 366,000 boxes of 4 dozen-cans each. In this country our resources are allowed to be drawn upon without regulation, while in the English possessions everything is well regulated. Under English laws no canneries or fish-rendering works under the new law can be established on the Mackenzie and Fraser rivers, except at a location indicated by the fishing commissioner under a yearly license of \$250 and a tonnage license for each boat employed; they can only fish for certain fish and between certain times, and then only in the districts indicated within their licenses. The number of factories at various localities is left to the discrimination of the fishing commissioner, who being appointed for life at a round yearly salary and being a man of great knowledge in such matters cannot be improperly influenced. The result of this restrictive system is that every British subject engaged in the fisheries is doing well and the fish are plentiful, while those on the Columbia are scratching every year harder, from the comparative scarcity of fish, which will, probably, in a few years disappear, as they have in the Sacramento River."

HATCHING SALMON AT DENNYVILLE, MAINE.—Mr. Benjamin Lincoln makes the following statement: The Fish Commissioners of our State sent me 40,000 salmon eggs. I succeeded in hatching out and putting into the river 36,000 young salmon in good condition, which, if nothing happens, ought to increase the run of salmon in our river.

It is stated that this river (the Dennys) is the only river in the United States in which the salmon will take an artificial fly. Do you know whether that is the case; and, if so, what can be the cause of it? We have taken three here this spring with rods. But it is so cold and wet that there are but very few in the river.

DENNYVILLE, ME., June 2, 1884.

RIPE SCULPINS IN VINEYARD SOUND.—Mr. Vinal N. Edwards, in letters to Prof. S. F. Baird, writes as follows: "Day before yesterday I found sculpins in the Sound very plentifully, and every one was a

milter. Last month I could catch none but those with eggs. Some of them had 8 rays in the dorsal fin and some 9 rays, In the anal fin there were 13 and 14 rays."

WOOD'S HOLL, MASS., *November 23, 1883.*

"I send to-day some jars of sculpin spawn that washed ashore on Nobska Point, and some white roes from the milters. November 20 I went off in the Sound fishing and found the sculpins very plenty, and all were milters. I went again yesterday and found them still very plenty and all milters. The milt was running out of some of them. Still the spawn is very small and black on the outside. There have been no sculpins caught with eggs for about a month. Then they were all females and no milters. Can it be that the spawners come along and lay their eggs, and then the males come along in three or four weeks and milt them? I have tried every fall, in October and the first of November, and never caught a milter, but every one had eggs, then they would go and I did not try again, thinking the sculpins had all gone by."

WOOD'S HOLL, MASS., *November 30, 1883.*

LARGE HALIBUT AND POMPANO.—April 24, 1884, Mr. E. G. Blackford, of Fulton Market, New York, received a halibut which with head and tail on weighed 426 pounds. It was the largest he ever handled. May 30, he received his largest pompano, weighing 35 pounds. It was caught off the coast of North Carolina.

SHARKS.—Commander J. R. Bartlett, of the Hydrographic Office, United States Navy, at Philadelphia, sent the following memorandum: June 10, 1884: "American steamship D. J. Foley, at Philadelphia, from Port Antonio, on June 6, ran through an immense school of sharks from latitude 35° 30' to latitude 36° 30' on the meridian of 75° W. The captain reports that he shot 60 of them."

THE ROCKY MOUNTAIN WHITEFISH (COREGONUS WILLIAMSONII) IN OREGON.—In forwarding a specimen of this fish for identification Mr. I. R. Moores wrote: "They are a very fine pan fish; by some claimed to be equal, if not superior, to our mountain trout—very solid and white flesh. They are found in Mill Creek, a tributary of the Willamette River at Salem, 175 miles from the ocean. They come in immense quantities with the first fall rains in October and November, hundreds and thousands being taken by seines along the creek and in ponds caused by the overflow. They are very nearly of one size and length, and when alive, having no slime whatever, they can be handled as readily as corncobs. As far as we can learn reliably these fish are only found in Mill Creek, and there only since the construction of the locks at the falls of the Willamette two years ago. Several of us who have given the subject some attention, are of the opinion that they are a salt-water or estuary fish, and have come through the locks at Oregon City in their fall migrations for spawning."

PORTLAND, OREG., *February 27, 1883.*

RECORD OF WHITEFISH EGGS RECEIVED AND HATCHED AT DRUID HILL HATCHING HOUSE, BALTIMORE, MD.

I.—*Lot of 50,000 received December 20, 1882.*

Of this lot 49,407 hatched February 12, 1883; of which 54 fish were lost in handling, making a total loss of 647. The average temperature of air during incubation was $34\frac{1}{2}^{\circ}$, of water $38\frac{1}{2}^{\circ}$. The fry were deposited as follows:

Date.	Place.	Number.
1883.		
Feb. 14	Deep Branch	10,000
15	Tuckahoe Creek.....	10,000
16	Greensborough.....	10,000
17	Third Haven.....	10,000
18	Sherwood's Mills.....	8,861
Mar. 4	Deep Branch.....	492
	Total.....	49,353

II.—*Lot of 100,000 received December 30, 1882.*

Of this lot 95,500 hatched February 5, 1883, and the fry were deposited as follows:

Date.	Place.	Number.
1883.		
Feb. 14	North East River, Cecil County, Maryland.....	15,000
14	Millington, Chester River, Kent County.....	15,000
15	Octoraria River, Cecil County, Maryland.....	11,500
15	Big Elk River, Cecil County, Maryland.....	11,500
19	Patapsco River, Howard County, Maryland.....	10,000
21	Curtis Creek, Anne Arundel County, Maryland.....	5,000
23	Mount Winans, Baltimore County, Maryland.....	5,000
27	Laurel, Patuxent River, Howard County, Maryland.....	15,000
28	Transquaking River, Dorchester County, Maryland.....	7,500
	Total.....	95,500

A NEW HATCHING BOX.—Prof. Cossar Ewart, F. R. S., has devised a new hatching box for adhesive eggs, to take the place of the "Clark" hatching box. The advantage of Prof. Ewart's box is that the glasses are arranged in a horizontal position, so that the embryos when hatched pass at once into comparatively still water, instead of having to run over and under a varying number of vertical glass plates.

TRANSFERRING FERTILIZED HERRING EGGS TO SPAWNING BEDS.—Professor Ewart has described an easy method of stocking spawning beds, capable of being readily used by the fishermen themselves. All that was required was an ordinary wooden tub and a shallow, galvanized-iron tray about 20 inches in diameter, with the bottom consisting of two portions each hinged to a central bar so as to open downwards. The object in view is to deposit stones on the spawning bed coated with fertilized ova. To do this the tray is placed in the tub, which is then

filled with sea-water. In the tray a number of flat stones are arranged; the water is then fertilized, and the stones coated with eggs. This done the tray is lowered to the bottom by means of four cords, two attached to the rim of the tray and one to each half of the bottom. When the tray has reached the sea-floor the cords attached to the false bottom are set free and the tray raised by the cords attached to its edge, the result being that the egg-coated stones are left at the bottom. By this method the fishermen, without any trouble or expense, could add two hundred or three hundred eggs for every herring they removed from the sea, and thus do their best to restore the balance of nature which their operations disturb. [From *Nature*, March 27, 1884.]

DESTRUCTION OF FISH BY DUTCH NETS.—Extract from letter of L. H. Hardy, dated Raleigh, N. C., January 19, 1883: "We have in Carteret County, North Carolina, a great many fish, and our people live by catching and selling them. For the last four years our waters, both in the sounds and ocean, have been obstructed by Dutch nets, which have proved very destructive to our fish. Thousands of fish too small to be serviceable are caught by these nets and suffered to remain in them until they are dead, and then turned out to drift upon the shore in numbers that would seem incredible to relate. Sometimes these small fish are taken and worked up for manure, and at other times they only go to feed the crabs. Thus millions of good fish are being destroyed yearly that are not worth a cent while so small. These nets do more damage on the outside, in the ocean, than they do in the sounds."

TERMINATION OF THE TREATY OF WASHINGTON IN 1885.—At a meeting of Gloucester fishing owners and masters of fishing vessels held in that city in 1882, a memorial to Congress was adopted, wherein, after citing the 33d article of the treaty, it was continued: "Now, therefore, we, the outfitters, owners, and fishermen of the United States, knowing and believing that the results of said treaty have not only been detrimental to the interests of the United States, but unjust and monstrous in the valuation by the Halifax commissioners of the British shore fisheries, do hereby pray your honorable body to cause notice to be given at the earliest practicable moment of the desire of the United States to terminate the operation of the fishery articles of said treaty, and all other treaty provisions relating to the fisheries on the shores of Canada and Newfoundland, for the following reasons: To the end that the British and American fishermen may each in their own waters enjoy the right to take fish unmolested, and have equal commercial rights in the waters of either country."

EDIBLE QUALITIES OF THE POLE FLOUNDER.—In the *New York Times*, of August 14, 1882, Mr. Barnet Phillips said: "There are many varieties of flat-fish in our waters, variously designated as the smooth flounder, the rusty flounder, the sand flounder, the four-spotted flounder,

but none of them are equal to the English sole. The dabs and flukes of the New York markets, if properly prepared, are, however, quite edible. But there is one flat fish, the pole flounder (*Glyptocephalus cynoglossus*), which, found on our coast, is quite the equal of any sole caught in European waters. It resembles in form the general appearance of the flat fish, but is more elongated, and will weigh from 2 to 3 pounds. The mouth is exceedingly small, and, strangely enough, for this reason, as the fish cannot easily take the hook, it has not as yet been caught with a line. As it lives in rather deep water, it has to be taken with a drag-net. Some years ago its presence was determined by the United States Fish Commission, and from time to time these fish have been distributed to the appreciative in order that their quality should be tested. Last week Professor Baird forwarded to Mr. E. G. Blackford some half dozen of these pole flounders, with the request that the merits of these fish should be determined. The pole flounder was found to be in every respect the equal of the sole. Its flesh was firm and white, without that muddy flavor peculiar to our flounder. One peculiarity of the fish, in which it differs from the flounder, is that the spines which surround the fish, the continuous dorsal fin, are not set into the body with hard bones, which in the flounder fill the mouth with spiculæ, recalling a pin-cushion. These bones in the pole flounder are placed in a gelatinous substance, which forms one of the most agreeably edible portions of the fish. If this fish could be caught in quantity it would become a most important addition to our catalogue of American fishes, for it would replace, if not surpass, the sole."

THE SHAD FISHERIES AT LAKE MONROE, FLORIDA.—Writing from Sanford, Fla., March 3, 1881, Mr. D. L. Way says :

"Mr. Fisher, who is conducting the shad fisheries at the head of Lake Monroe, states that shad are now ripe with roe, and that he could furnish from 50 to 75 a night that could be stripped. He says that when he takes a ripe one he either strips the eggs into the water or lets the fish go. He is deeply interested in the preservation of the roe. He further says that in about ten days, or at any time thereafter, he can furnish 200 or 300 for stripping every night. The shad spawn as far up the Saint John's and tributaries as there is running water. The bar at the head of Lake Monroe is a noted spawning-ground for shad. Owing to a large extent of shallow water there, with clean, sandy bottom, and facilities for protecting the spawn and young fish, it will be a most desirable place for a hatchery. He likewise says he has had much experience in this very line, having assisted Seth Green as early as the year 1863 in catching and stripping shad.

"After the shad-fishing season is over this year he is going to seine for catfish and gars (two fish that are specially destructive to spawn and young shad) and sell them for fertilizing purposes."

THE SHAD FISHERIES NEAR HAVRE DE GRACE, MD., 1883.—On June 20, Frank L. Donnelly proceeded to Havre de Grace, Md., to ascertain as far as practicable the catch of the different seines operated in that neighborhood, and also the statistics of the shipments of fish from that port, both to Baltimore and to northern markets, the length of seines used at the different fisheries, &c.

He visited the owners and persons in charge of the six principal fisheries in that vicinity, and from them obtained the facts compiled below:

Table of Havre de Grace shad fisheries, 1883.

Fishery.	Length of seine.	Depth of seine.	Number of men.	Number of shad taken.	Kind of power used.	
					Boat wing.	Land wing.
	<i>Fathoms.</i>	<i>Feet.</i>				
1. Western float.....	800	26	40	7,800	Engine ...	3 horses.
2. Eastern float.....	800	23	40	5,500	... do	Do.
3. The island fishery	930	30	45	8,000	... do	Do.
4. Float fishing.....	417	40	40	5,500	2 horses ..	2 horses.
5. Float fishing.....	750	20	50	13,367	Engine ...	Engine.
6. Float fishing.....	510	25	44	0,800	... do	2 horses.
Total	4,207	20 to 40	259	46,967	6 engines;	15 horses.

SALES OF FISH.—He learned from the only wholesale shippers of fish in Havre de Grace that their sales were almost exclusively in Philadelphia, and this season (1883) they had shipped to that city 16,500 shad, which had been caught by gilling or drift-net fishermen.

The Baltimore market is supplied by bay fishermen and “run-boats” from the float and shore fisheries. It was impossible to get an accurate statement of the shad shipped to Baltimore.

It will be seen from the above that 46,967 shad were caught by the six principal fisheries in the vicinity of Havre de Grace. Also 16,500 shad were caught by the gilling or drift-net fishermen on the Susquehanna, making a total of 62,967 shad. If statistics from all the floats and shore-fisheries and drift-net fishermen on the Susquehanna River and at the mouth of the Chesapeake Bay could be gathered, Mr. Donnelly thinks it would show a total catch of 100,000 shad for the season.

WASHINGTON, D. C., June 27, 1883.

SHAD HATCHING IN CONNECTICUT IN 1884.—The catching of shad, for the purpose of securing the spawn for artificial propagation on the Housatonic River, closed about July 1. Mr. Fenton, who has had charge of the hatching, gives some very interesting facts in regard to it. The total number hatched out and deposited in the rivers will exceed 3,000,000, of which one-half have been emptied into the Connecticut River, at Enfield Bridge, and the remainder into the Housatonic. Mr. Fenton estimates the average number of eggs secured from each fish at 30,000, although, at least in two cases, he has secured fish that had

over 60,000 eggs each, the eggs from the two fish filling a common-sized milk-pan. The fish were emptied into the river at the turn of the flood tide, so that as the tide goes out the young shad are carried down the river far enough so that the impurities emptied into the river from the paper-mill may not kill them. Mr. Fenton seems to think that the acids discharged in the river are not so destructive to fish as is generally supposed, and says, in support of his views, that several days since, just after the hatching of several thousand shad, the vats of the paper-mill were discharged into the river while the tide was rising, and consequently the impurities were forced up the river to the hatching-boxes, a few hundred yards above the mill, filling them with impure water, so that the young fish could not be seen; but after the tide went out and the water became pure no perceptible harm had been done the fish.

Besides the young shad placed in the river here, the United States Fish Commissioner placed 1,000,000 fish in the river at Milford, although he is doubtful if many of these live to reach the Sound, as not only do they have to run the risk of being devoured by the bass and pickerel in the lake, but the passage of the dam during the month of September, when the water is low, is doubtful, and if they take to the canal and pass through the water-wheels of the different shops, they go to sure death, as has been seen at Windsor Locks. [Forest and Stream, July 17, 1884.]

PENNING ROCKFISH AT BATTERY STATION.—Lieut. W. F. Low, U. S. N., who was in charge of the station in April, 1883, wrote: "I am informed that last June some four hundred rockfish were placed in the pool at this station. The last authentic account I have of them before the ice formed is from Mr. Mitchell, the lighthouse keeper, who tells me that he saw a great many of them on several occasions near the surface of the water and always swimming in the same manner, namely, round and round.

Since I have taken charge of the station (five weeks) four dead ones have been found, all very thin. Yesterday we made a haul in the pool and captured two live ones and a dead one. The dead one was covered with mud and had evidently been dead some time. Of the live fish one was a male and the other a female. The female measured 28 inches and the male 20. Both were in poor condition and no evidence of food was found in them. The head of the female was much bruised, as if from constant rubbing against some hard substance. The haul was not a very thorough one, as the seine hung several times, and we were obliged to lift the leads some distance from the bottom on each occasion."

BATTERY STATION,

Havre de Grace, Md., April 5, 1883.