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12.—NOTES UPON FISH AND THE FISHERIES.

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

THE EEL IN WESTPORT RIVER.—During the past few years the people along Westport River have been fishing for eels with great success, by means of trawls baited with live mulfres or mummichogs, several hooks often being set on one trawl. These eels are evidently different from those that bed in the river for the winter. I think they must be the same kind that run out of the fresh and brackish ponds along shore when we have the first severe frosts in the fall. These eels strike up the river about as soon as the ice is gone, the latter part of March or early in April, and are taken on the trawls, while river eels are still in the mud and are caught with spears. Should the river be frozen above and then break up and come down with the tide, or should snow and slush chill the water, then the trawl eels move down stream and are caught only on the lower lines of hooks, while the bedded eels are still to be caught up the river in the mud. The trawl eels are in splendid condition, while Westport River bedded eels are noted for being most always poor and thin. The catch of herring this spring in Vineyard Sound, around Buzzard's Bay and Cape Cod, has been greater than for years, which I think is owing to our having had such heavy rains as to freshen the water at the mouths of rivers and brooks for a long way out to sea, thus attracting them. [Willard Nye, jr., New Bedford, Mass., May 6, 1887.]

MACKEREL, CODFISH, HERRING, ETC., OFF NORTHEASTERN MASSACHUSETTS.—Mr. James W. Elliott, keeper of the Plum Island life-saving station, near Newburyport, Mass., in a letter dated April 28, 1887, gave the following note on the fisheries near that station:

"During 1886 mackerel were first caught near this station about July 1, and the last were taken about October 15. There were no large shoals, as usual, seen near here during the season. Only a few were taken in seines within a radius of 8 miles of this station, but small lots were taken with hooks almost every day while the season lasted.

"But few codfish were taken until November, when a large shoal came into the bay, and the fish were taken daily in large quantities up to the last of April, most vessels getting large fares. None were caught at any time within less than 3 miles of the beach.

"Herring were scarce here, and but few were taken, although our local fishermen made strong efforts to capture them. It is reported that large quantities were taken off Cape Ann (11 miles from this station) from August 1 to December 1.

"No bluefish or menhaden, so far as I know, have been seen hereabouts during the past season, nor have other marine animals been noticed, with the exception of an occasional finback whale blowing off shore."

MACKEREL ON THE COAST OF FLORIDA IN WINTER.—In a letter which I received from Capt. Silas B. Latham, of Noank, Conn., dated April 2, 1887, he mentions the fact that he had seen mackerel during the past winter while fishing for red snappers off the east coast of Florida, and he stated that there were two species, one of which he thought was the common mackerel (*Scomber scombrus*) and the other the chub mackerel (*Scomber colias*).

I was interested to learn further details relative to the occurrence of mackerel in that region, and therefore wrote to Captain Latham. I have just received from him a letter dated April 10, in which he writes as follows:

"The mackerel I saw were thrown up by large snappers, and they had not been dead long, as they were in a perfect state. They were 'spike' size. One was our common species, and the other was what is called a 'chub mackerel.' I have often seen them there, but have never seen any larger specimens than the size named. I have seen them off Saint John's River and off Mosquito Inlet, Florida. I have seen schools of small fish that I think were mackerel, but they might have been some other kind of fish." [Capt. J. W. Collins, Washington, D. C., April 12, 1887.]

RANGE OF THE RED SNAPPER.—In a letter which I received from Capt. Silas B. Latham, of Noank, Conn., dated April 10, he says there is no doubt in his mind that fish of the red snapper species can be caught inside of the western edge of the Gulf Stream as far north as Cape Lookout, and possibly even farther north. He says: "The captain of a coaster told me he was becalmed once south of Lookout, in 35 fathoms, and he caught 35 red snappers, and would have taken lots more if the current had not swept him off." [Capt. J. W. Collins, Washington, D. C., April 12, 1887.]

FATAL INJURY INFLICTED BY A STARFISH.—A fisherman at Port Discovery, named Charles Lambert, met with a singular accident which resulted in his death. A starfish got entangled on his hook, and while taking it off one of the sharp little spines or prickles pierced the skin of his left hand between the fingers. He paid no attention to it, but soon it festered, his arm began to swell, blood-poisoning ensued, and the man died in the Marine Hospital here yesterday. It is the first time I have heard of such an instance. I know that the spines of the sea-urchin will produce sores if they are broken off in one's flesh, but for a flabby starfish to injure a person in such a manner seems unaccountable. [James G. Swan, Port Townsend, Wash., April 10, 1887.]

ASSIGNMENTS OF EGGS OF BROWN TROUT AND SAIBLING, SEASON OF 1887.—To the courtesies of Herr E. von Behr, president of the Deutscher Fischerei-Verein, and Herr Max von dem Borne, of Berne-

chen, Germany, the U. S. Fish Commission is indebted for several consignments of eggs of the brown trout (*Salmo fario*) and saibling (*Salmo salvelinus*). The number received, their condition as reported on arrival, and the assignments made of the eggs are given below:

From Deutscher Fischerei-Verein in exchange.		From Herr Max von dem Borne, Berneuchen.		Summary.	
Brown trout.	Saibling.	Brown trout.	Saibling.	Brown trout.	Saibling.
50,000	20,000	8,000	20,000	*37,000	*15,000
†13,000	‡15,000	14,500	‡8,000	‡22,500	‡12,000
37,000	15,000	22,500	12,000	59,500	27,000

* Von Behr.

† Loss.

‡ Von dem Borne.

Which were distributed as follows:

	Brown trout.	Saibling.
Pennsylvania fish commission	10,000
Wytheville, Va.	10,000
F. N. Clark, Northville, Mich.	20,000	15,000
Cold Spring Harbor, N. Y.	9,500	9,000
E. B. Hodge, Plymouth, N. H.	5,000	3,000
Central station, Washington, D. C.	5,000
Total	59,500	27,000

Of the last shipment of 50,000 brown trout eggs forwarded by Von dem Borne 30,000 were dead on arrival, and the balance will probably prove a total loss. [M. McDonald, April 28, 1887.]

DESTRUCTIVE STURGEON FISHING BY CHINESE IN CALIFORNIA.—Mr. R. H. Buckingham, president of the California fish commission, in a letter to Professor Baird from Sacramento, February 12, 1887, speaks of sending a sample of Chinese sturgeon-hooks which were taken from a line 2,000 feet long, having 8,000 hooks attached. These lines were fished by the Chinese in San Pablo Bay, some 20 miles north of San Francisco. This apparatus uses no bait, but is one of the most destructive methods known to catch sturgeon, taking all sizes from 1 pound up.

STRIPED BASS IN NEW YORK BAY AND THE HUDSON RIVER.—Mr. Philip Neidlinger, writing from New York City on March 21, 1887, stated that about May 1, 1885, while walking along the North River from 86th street to about 140th street, he noticed many small striped bass (*Roccus lineatus*), from 3 to 5 inches long, which were being caught with hook and line. In autumn he saw a very few taken, running from ½ to 2 pounds, while small quantities were taken and disposed of in the markets of the city. In the fall of 1886, he took several weighing from ½ to 1½ pounds, and heard of them as being abundant in New York Bay and up the river as far as Tarrytown. He remembers seeing a few years ago striped bass in market weighing 92 pounds, but now one of

35 to 50 pounds is considered a very large fish of this kind. Some time ago there was a law passed to protect this fish during its spawning season, but the law was soon repealed.

JACK SALMON AND BLACK BASS IN THE OHIO AT WHEELING.—Mr. Alex. Q. Eoff, in a letter from Wheeling, W. Va., dated December 29, 1885, said: "During September and October of 1885 there was a much larger run of jack salmon (*Stizostedium vitreum*) and green salmon* (*Stizostedium salmoneum*) here than I ever before knew. Probably as many as 3,500 or 4,000 were taken by hook and line in the immediate vicinity of Wheeling. There seemed to be no particular place for them to gather, as in former years, but wherever a bait was thrown a fish was almost sure to be there. They did not exceed 10 inches in length. The jack salmon were the most numerous, in proportion of about 8 to 3. I have known of large numbers of these fish being caught in seines at the mouth of the Wheeling Creek during the spring season, but never before in the fall. Very few of the black bass of our river have been taken this season. I have seen only three that would weigh from 2½ to 3 pounds, the greater number being from 6 to 10 ounces in weight."

SHAD PLENTIFUL IN CALIFORNIA.—Shad are now so plentiful that they bring only 5 cents per pound in the season, and are found in our bay all the year round. The run this year will be very large, and already the markets are full of them, and fine shad from 4 to 6 pounds are selling from 40 to 50 cents each. [Charles Kaeding, San Francisco, Cal., March 2, 1887.]

SHAD FROM CEDAR KEYS.—In April, 1885, Mr. W. S. Bunting, of Cedar Keys, Fla., sent for identification a fish 15 inches long, which proved to be *Olupea sapidissima*. Several similar specimens have been obtained from Cedar Keys in previous years.

SHAD IN 1885.—The present season (1885) has been a wonderfully productive one in North Carolina, and it is a number of years since shad have been so cheap at this season of the year as they are at the present time. To-day large roe shad have sold at 25 cents each by the hundred, and buck shad at 15 cents each; and from telegrams received to-day there will be a large arrival to-morrow, so that these low prices will remain and possibly even go lower.

The first North River shad was brought to me on Saturday, April 4, and to-day (April 7) a few more have come in. From points farther south, earlier in the season, I have noticed that there has been an increased quantity sent to this market from Florida and Georgia. [E. G. Blackford, Fulton Market, New York.]

* Mr. H. B. Miller, writing from Wheeling, W. Va., March 25, 1887, says: The fish which Mr. Eoff calls "green salmon" is the white salmon or blue pike (*S. salmoneum*). This and the gray pike or sauger (*S. canadense*) are called locally "green" or "white salmon" and "jack fish." They have been getting scarce until year before last, when they were found in largely increased numbers, owing, I think, to the Ohio State commission stocking tributaries of the Ohio River with young of these varieties from their lake hatcheries.

SHAD IN THE GULF WATERS.—Dr. Wardell, of Bainbridge, Ga., informs me that an occasional shad was caught last autumn with bait in the Flint River, a branch of the Appalachicola. A few days since I was crossing the Ocklockonnee, in Florida, by means of a ferry, and was informed by the ferrymen that a new fish had made its appearance in the river swimming in shoals, which they described in such a manner as to leave no doubt on my mind that these fish were shad. These men also said that others who had seen them said that they were that fish. [Edward Jack, Tallahassee, Fla., March 7, 1887.]

A few days since a friend of mine caught several small shad at this place at the mouth of Appalachicola River. We never have heard of any such fish being caught here before. [John G. Ruge, Appalachicola, Fla., May 5, 1887.]

PROPAGATING LAKE HERRING OR CISCOS.—Mr. F. M. Baker, writing from Rome City, Ind., on February 7, 1887, said: "We have in some of our lakes in Kosciusko and Noble Counties a small whitefish, figured and described by Prof. D. S. Jordan in the Geological Survey of Indiana for 1874 under the name of *Argyrosomus sisco* Jordan,* which I think might be successfully and profitably bred and planted in all the lakes of Northern Indiana, and would probably be desirable for the lakes of the New England States and New York. They inhabit the deep waters of the lakes, living upon small crustaceans found there; they are not predaceous in their habits, but in the early stages of their growth furnish food for predaceous fishes, and when mature they are an excellent food-fish, weighing from three-quarters to 1½ pounds. Their spawning season is during the latter part of November and first of December, at which period they throng the inlets of the lakes they inhabit, and are taken in vast numbers by nets and spears. With proper appliances for hatching, great quantities of eggs might be obtained from the captured fish when they come out of the deep waters to spawn."

SALMON FORMERLY IN THE CONNECTICUT.—The following is extracted from Mr. Jabez H. Hayden's Centennial Sketch of Windsor Locks:

"There is a very common impression at the present day that shad were more esteemed as an article of diet than salmon, because of the tradition that a man could not buy shad without taking salmon with them. I once asked the late Samuel Denslow what that tradition grew out of. He said that fish were marketed at the fish-place, and that people came with their teams to get a supply of shad to salt, and they were required to take the salmon caught with them, the price of 1 pound being the same as the price of one shad. ['1781. For 50 shad at 2d.: 8s. 4d.'—Old account-book.] Salmon were so high-priced then that many felt they were a luxury they could hardly afford. As an illustration of the high value

* This seems to be the lake herring or cisco (*Coregonus artedii*) mentioned in Jordan & Gilbert's Synopsis of North American Fishes, page 301, and the quarto History of Aquatic Animals, p. 541.

put upon salmon he gave the details of the capture of the last salmon he ever knew taken in the Connecticut River; this was about 1805; Mr. Denslow had taken the place of a tardy fisherman and was to have had his share. The salmon weighed 23 pounds. It was sent by a party going to Northampton to sell. It was court week, and there were distinguished men present from Boston, for whom an entertainment was being prepared, and the salmon was sold for \$1 per pound.*

Mr. Apollos Fenn agrees with Mr. Hayden about the salting of shad, but inclines to think the salmon were abundant. "My father told me when I was a boy that he and grandfather used to come yearly to the Connecticut River for a supply of shad to salt down, which was then the custom of most farmers up in Litchfield County, and that the fishermen caught so many salmon when hauling for shad that they required every one who bought shad to take a certain number of salmon, or no sale of shad, thus showing that salmon were very plentiful at that time in the Connecticut River. This was from about 1775 to 1810."

CALIFORNIA TROUT.—In May, 1885, Seth Green received a California trout from Crooked Lake which weighed $4\frac{1}{2}$ pounds, he having planted 30,000 young in that lake four years previously. This was only one of several that had been caught.

ROCKY MOUNTAIN TROUT AND BROOK TROUT IN COLORADO.—I have lived in Colorado ten years and have noticed the common trout of that country (*Salmo virginalis*, I believe) almost disappear from all streams in or near the settlements. I believe that the eastern brook trout (*Salvelinus fontinalis*) would do better, and I have expended over \$5,000 in its introduction. The weak points in the Rocky Mountain trout are these:

(1) It spawns between May and August, and is therefore out of season in the summer time, when visitors come to the mountains expecting sport and pleasure.

(2) The eggs are deposited during the most dangerous time of year for their safety, and freshets from the sudden melting of snow rip up the spawning beds and destroy the eggs in vast numbers.

(3) The fish is so easily caught, it is so unwary and confiding, that the fish in a moderate-sized stream can be taken out in one season with a hook and line and a grasshopper. Without the modern hereditary instincts of self-preservation, apparently, it cannot hold its own against the fisherman.

(4) It is a poor table-fish at best.

In contrast to these, the brook trout has the following strong points:

(1) It spawns between November and February, and is in season in summer, when most desired.

* Fifteen years after the last salmon was caught there were eight fish-places on the west side of the river, where only shad were taken, between Hayden Station and the railroad bridge at Windsor Locks.

(2) The eggs are deposited at the time of year when freshets are unknown, when the spawning beds are protected by surface ice, and the eggs are placed out of danger.

(3) The *fontinalis* is very wary, and has learned for generations to look out for pins and fish-hooks, so that it generally requires some skill to catch this species.

(4) It is a much better table-fish than the Rocky Mountain trout.

My fish ponds are at Manitou Park, 25 miles northwest of Manitou, up the Ute Pass, where I have a large hatching house by a very fine spring, several ponds, an artificial lake of 30 acres, and 12 miles of trout stream, formerly famous for the western trout, but quite denuded of them when I commenced to preserve.

Two years in succession, 1874 and 1875, I got 100,000 eggs of the *fontinalis* from Seth Green, and hatched them without difficulty. After that we had our own fish to spawn, and have spawned them each winter. The streams running through the park are now well stocked with *fontinalis*, and also the lake, which is situated at the lower end of the stream I preserve. They live at peace with the western fish, and don't fight with them even when confined in small ponds. They are quite healthy. In watching both kinds together you always find the *fontinalis* below and the *virginalis* above, each kind keeping together and not mixing up. [William A. Bell, Colorado Springs, Colo.]

RAINBOW TROUT IN VIRGINIA.—W. O. Pendleton, clerk of the supreme court of Virginia, at Marion, Va., wrote to Col. M. McDonald, under date of April 12, 1887, as follows: "This morning a rainbow trout was caught in Staley's Creek, in the corporate limits of Marion, that measured 22 inches in length and weighed 4 pounds." This stream was first stocked with the fry of the rainbow trout in 1883. A number of others of this species have been taken in the same stream and heretofore reported.

RAINBOW TROUT IN ENGLAND.—The Journal of the National Fish Culture Association of England (January 15, 1887) contains an article on rainbow trout by W. Oldham Chambers, from which are taken the following extracts:

"We have a fair number of these fish, weighing about three-quarters of a pound each, at the establishment of the National Fish Culture Association, which are nearly two years old, and were obtained from ova forwarded by the American Government. They were incubated at South Kensington, and the fry were transferred to their present location; but, owing to the lateness of the season at which the ova were received, some difficulty was occasioned in rearing them. On being well established in suitable ponds they grew rapidly, insomuch that at the end of eighteen months they far outstripped in size the *Salvelinus fontinalis*, which, besides being a fast-growing fish, emerges from the ova three months earlier than the *Salmo irideus*. After the two years' experience I have had of the latter, I unhesitatingly pronounce them to be superior to our own spe-

cies in hardiness and rapidity of growth. The attempts made to acclimatize them to English waters, so far as restricted areas are concerned, have proved successful; and they seemed to become thoroughly naturalized therein immediately on their introduction, proving thereby that the condition of the water, climate, and food are well adapted to their wants.

* * * At Delaford Park the fish furnish signs of yielding their ova towards the middle of January. If so, the date of spawning would be about the same time as other species of trout; and thus the fear of extinction through cannibalism, experienced in the United States, need not be entertained, as the fry would be able to protect themselves in the same way as their baby cousins.

"It is not surprising to find that the rainbow trout should show signs of generating so much earlier in this country than abroad, especially at Delaford, where the water is doubtless softer than that in California. Late spawners are generally those that inhabit waters of a low temperature, but if such fish are transferred to warmer climes they alter their nature accordingly. This is precisely the case with the rainbow trout, which have evidently altered their habits and adapted themselves to the altered conditions under which they are now placed.

"The facts already adduced regarding this fish can only be applied to them under a semi-artificial state, as hitherto they have to a great extent been confined in inclosed quarters. A few were turned into the river Colne, and were caught by me in the same locality a year afterwards. This experiment, I hope, will be extended shortly, if they can be raised in sufficiently large numbers to allow of its being done, which I have no doubt about, as the U. S. Fish Commission, through Professor Baird, is willing to forward further consignments of ova. These, in addition to the stock reproduced by the fish in the possession of the Association, will enable us to plant quite a quantity in public waters.

"It is asserted that the rainbow trout is migratory in its habits. As far as I can see at present the reverse is the case. I believe it is not identical in this respect with the *Salvelinus fontinalis*, whose wandering propensities have earned it the rebuke of all men; neither are its requirements the same, the location of the one being uncongenial to the other. Migratory or non-migratory, the rainbow trout would make its mark in inclosed waters or for ornamental purposes. Regarded from a sporting point of view, it would prove an acquisition, as I have on many occasions observed it rising to a fly. I believe it is not considered a game fish in its native waters, and here again it appears to have altered its nature. There is no doubt about it, that the gameness of fish is governed by the condition of the water which they inhabit; therefore, from an angler's point of view, the interchange of species with foreign countries is a great boon, as proved by the case just cited. * * * Moreover, the rainbow trout is more delicate in its appetite than other varieties of *Salmonidae*, and therefore is not prone to the same temptations to cannibalistic attacks upon its congeners."

FOOD OF THE SALMONIDÆ AT SEA.—An article with this heading was published by Mr. W. Anderson Smith, in No. 1, Vol. I (January 15, 1887) of the *Journal of the National Fish Culture Association of England*, from which the following abstract is made:

Most fishermen and naturalists know that salmon, while coming up the rivers of Great Britain for the purpose of spawning, do not as a rule seem to take food, while it is well known that the spawned fish are very voracious and do great injury among the young salmonoids which are struggling for existence. It would seem, therefore, that for such large and strong fish to recover after their return to the sea from their period of fasting and exertion they must reach feeding grounds of exceptional richness and extent. The *Salmonidæ* cannot, as a class, be called insectivorous fish, like the herring or mackerel, and their onslaughts on the floating life of the sea of an invertebrate class are only makeshifts, in the absence of the more important food to which they must in reality mainly look. Now, careful observation and the gathering of facts indicate clearly that herring and their young are the food of salmon at sea. One of the most experienced fish-curers of Lewis (the largest island of the Hebrides) declares that in his experience salmon at sea feed upon young herring. Maclaine, of Lochbuy (Isle of Mull), says that once off Colonsay (one of the Hebrides) he came upon large fish leaping out of the water in their eagerness to seize their prey, and that these were found to be salmon chasing herring. On the west of Mull, salmon taken in the fresh water direct from the sea were found to be full to the mouth with young herring. Mr. John Anderson, of Denham Green (Edinburgh), after sixty years' experience in an extensive fish trade, says that the principal food of salmon is the herring and its fry, and that frequently several herring and a score of fry are found in a salmon's stomach along with crustaceans. These and many other observations go to corroborate the suggestion that herring are the great ocean food-supply of the salmon, and lead the *Salmonidæ* to follow them to their haunts. It is certain, however, that a voracious fish will not confine itself to any single species of food; so it seems that salmon feed on sea-mice (*Aphrodite*) and various kinds of crustaceans.

Sea-trout are somewhat different in character from the salmon. They feed voraciously, not only when coming in shore, but even in fresh water. These fish also are frequently taken with their stomachs full of young herring, while they are fond of sand-eels. It is also known that they eat cephalopods freely, as well as crustaceans and annelids.

USE OF BORACIC ACID IN THE ENGLISH FISH TRADE.—The use of boracic acid seems to be bringing about a foreign competition in the fish trade that will make itself felt in the English markets. By its use Norwegian herring can be sold with profit in the English market as Yarmouth or Scotch fish. Indeed, the tables of fish landed that the Board of Trade publish are made up to some extent by foreign fish. The present effect of Norwegian consignments has been so to reduce the price of

Scotch herring that the price they sell for in London will barely realize the carriage. A cran* of herring costs in railway carriage about 15 shillings (\$3.65) to get from most of our fishing stations to London; adding portorage and other charges, the cost to get a cran to Billingsgate is 18 shillings or even 20 shillings (\$4.38 to \$4.86). But 20 shillings per cran is a common price to sell herring at Billingsgate. How, then, are the curer and fisherman to live at these prices? Either railway rates must come down or the Norwegian will drive the English herring out of the market. This does not apply to herring alone, since cod, salmon, and other fish can be sent as well as herring. Norway is not the only place the English fishermen have to dread, as boracic acid will equally enable fish to be brought from America. [From the Journal of the National Fish Culture Association, London, England, January 15, 1887.]

ANNUAL EXPENSES OF THE LOWER COLUMBIA SALMON CANNERIES.—The importance of the salmon industry to Astoria, Clatsop County, and the Lower Columbia River region generally, is tersely illustrated by the following figures, which are a close estimate of the amount of money expended for the season of 1886:

Cost of materials.

Tin plate, 74,000 boxes, at \$5.25	\$388,500
Salmon twine.....	205,200
Cotton twine	25,000
Lines.....	26,600
Leads for lines.....	7,500
Floats	4,000
Boats, wear and tear, paint, repair, &c	38,000
Tan-bark for nets.....	1,900
Pig-tin for making solder.....	50,122
Lead for making solder	10,450
Salt, Liverpool and coarse	2,000
Lacquer	8,550
Turpentine	6,460
Cord-wood.....	19,760
Hard coal	1,862
Charcoal	15,200
Acid and zinc.....	4,000
Oils of various kinds.....	4,000
Improvements and necessary repairs.....	38,000
Copper and making up.....	2,000
Insurance	32,376
Hauling	12,540
Freight.....	5,000
Labels.....	32,400
Boxes	67,500
Taxes	11,400
Total cost of materials.....	\$1,020,320

*A Scotch measure containing a little over a barrel, holding an average of about 750 herring.

Cost of labor.

Knitting nets, 228,000 fathoms	\$128,250
Catching salmon with cannery nets	400,000
Catching salmon with private nets	300,000
Salvage and hire of detectives	5,700
White labor outside of fishing	93,956
Other labor outside of fishing	142,000
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Total cost of labor	\$1,069,906

Duty paid to the Government.

On 74,000 boxes tin plate, 7,992,000 pounds, at 1½ cents	99,900
On salmon twine	20,520
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Total paid for duty	120,420
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Total of estimated payments	2,210,646

Including every detail of the work, it is a safe estimate to say that the Lower Columbia salmon canneries expend annually \$2,500,000, the greatest part of which goes into circulation in the immediate vicinity. [From the Daily Astorian, Astoria, Oreg., January 13, 1887.]

NEW FISH-MARKET AND SALMON FISHING IN SCOTLAND.—Mr. John Anderson, writing from Denham Green, Edinburgh, on March 4, 1887, described a new fish-market. There were exhibited 150 salmon, averaging from 11 to 45 pounds each, with every kind of fine fish caught in Scotland or England. There was a salmon hatchery attached showing the salmon leaving the eggs. Also tanks with salmon two, three, and four years old, and with all kinds of trout of the same ages. The salmon fisheries extend over the Tay, Forth, Dee, and Tweed, besides numbers all along the coast. The rents are nearly \$50,000; and already there are nearly 220 salmon fishermen on daily pay at rates ranging from \$4.38 to \$9.75 per week.

Very few small salmon have been seen this season as yet; but there has been a great crop of herling—supposed to be the young of the sea-trout—weighing from 6 to 12 ounces each, but pale. The floods have cleared our rivers of kelts and dead fish, so we may expect a good fishery in the autumn. The past winter here was mild, and our salmon fisheries all over have opened successfully.

CARP SOLD IN NEW YORK MARKETS.—Mr. John H. Brakeley, writing from Bordentown, N. J., on January 15, 1887, said:

“I have sold several hundred pounds of carp during the past autumn in the New York market, the commission merchant getting 15 cents a pound for them. I am satisfied that it will pay to feed carp, and shall do considerable of it next season.”

SUCCESSFUL SHIPMENT OF CARP TO MEXICO.—Mr. Milton P. Peirce, writing from Philadelphia, Pa., on March 2, 1887, said:

“On February 12 I shipped 100 young carp—of the parti-scale variety, nearly scaleless—to the Government of Mexico. Yesterday a let-

ter received from the Mexican secretary of the interior department announced that the tank of carp had arrived in the city of Mexico with a loss of only 5, the remaining 95 being in excellent condition. The fish were sent in one of my improved transportation tanks [simply the ordinary wash-boiler, or stove-boiler, with a piece of tin around the inside near the top, and with holes punched in the lid near each end], and traversed a distance of 3,700 miles."

SNAKES AT THE CARP PONDS.—May 3 and 4, 1887, Dr. Hessel killed with a rifle 250 snakes, which were believed to have come from the Potomac flats. So large numbers have never before appeared at one time.

CARP AND TENCH FROM POTOMAC RIVER.—Under date of March 16, 1887, Mr. J. E. Brown reported that on the same day Mr. J. F. Locket had sent to Central Station the following specimens in good condition, which had been taken in the Potomac: One scale carp, weighing 4 pounds; mirror carp, over 7 pounds; leather carp, 7 pounds; and some tench, weighing over 1 pound apiece.

FISH-CULTURE IN ITALY.—Dr. D. Vinciguerra, late of the Museum of Natural History, at Genoa, has been appointed director of the aquarium at Rome. The aquarium contains a section for fish-culture, and is the center of this industry for Central Italy. The *Salmo salar* var. *sebago* is considered by him suitable for the clear, cold, and deep waters of the Latian lakes. He asks to have eggs of this species forwarded to him from the United States. [April 1, 1887.]

DELAWARE FISH COMMISSION.—Under date of May 3, 1887, Mr. Elwood R. Norny said that he had recently been appointed fish commissioner of Delaware, and that Dr. E. G. Shortlidge, of Wilmington, had been appointed assistant and superintendent of hatcheries. He proposed that the Fish Commission steamer Fish Hawk be sent to Port Penn this season to hatch sturgeon, which are taken there in abundance in seven nets. From June 5 to July 1 is the best season. Sturgeon have recently been hatched in Germany.

WHITE-BAIT.—This is a collective phrase including, for the most part, the young of the *Clupea harengus* or sea herring. It embraces the young of many other kinds, in one instance 14 species having been identified. The breeding grounds of sea herring in the United States extend from the Bay of Fundy to Block Island.

VESSELS FOR THE ICELAND HALIBUT FISHERY.—On March 25, 1887, the schooners Arthur D. Story and Annie M. Jordan sailed for Iceland. One more—the schooner Concord—is to start soon. [From Boston Fish Bureau, Boston, Mass., March 29, 1887.]

WHOLESOMENESS OF BORACIC ACID.—There are two sides to all questions. The British Medical Journal writes thus as to herring cured with boracic acid: Large quantities of herring, preserved with salt and boracic acid, being at present imported from Norway and sold in the London and Newcastle markets, and attempts having been made to pre-

vent their sale, the National Sea Fisheries Protection Association discussed the question at a recent conference at Fishmongers' Hall, but no decision as to such fish was arrived at. It may, therefore, be worth while to point out that boracic acid, being the essential ingredient of our many food preservatives—be it in the form of the acid, of boroglyceride, or of borax—has been used for years, especially to preserve milk in hot weather, and no evidence has ever been brought forward even to suggest injurious effects upon the health; it may, therefore, be taken to be perfectly harmless. The Norwegian herring, preserved with salt and boracic acid, are of exceptionally fine quality, are perfectly fresh when brought into the market, and are, of course, subject to the usual process of inspection by the market inspectors, whose power of rejection is almost absolute. If, nevertheless, an outcry is heard against this sale, it is difficult to resist the belief that it is dictated by the jealousy which is notoriously rife in Billingsgate circles.

The introduction of cheap food from new sources, welcomed, as it always is by the public, is invariably opposed by the members of the trade, who, after all, reap the advantage in the long run. One has but to recall for a moment the sneers of meat venders at American and Australian meat to value the agitation against Norway herring at its proper worth. Hitherto, happily, we have been spared the bitter discussions which have on the Continent led to legislation against certain food preservatives, such as salicylic acid, which we in England admit without hesitation. The question is mainly one of national economy: Shall good food be wasted for want of a preservative, even if certain objections may be urged against its use, or shall we put up with these objections and aim at cheapening food for the masses, provided always that nothing which could injuriously affect their health is allowed to be present? A sufficient guarantee is afforded by the vigilance of medical officers, public analysts, and market inspectors against the abuse of antiseptics and food preservatives.

On the other hand, a fish-trader writes to the Fish Trades Gazette: Hundreds of barrels of herring from Norway out of one cargo were condemned, and also that there were about 1,500 barrels unsold lying in London at that time. France will not admit the Swedish and Norwegian herring, nor any other fish cured by the process named. Many shopkeepers soon find out to their cost that once their customers have tasted herring cured with acid they don't ask for them a second time. [From the Journal of the National Fish Culture Association, London, England, April, 1887.]

OREGON FISH COMMISSION LAW.—An act to provide for the propagation and preservation of salmon and food-fishes in the public waters of the State of Oregon, including so much of the streams which form common boundaries between said State and adjacent Territories, and appropriating money therefor. Also for the appointment of a fish commission.

Be it enacted by the legislative assembly of the State of Oregon, That there shall be chosen biennially by the legislative assembly of the State of Oregon three competent persons who shall be denominated the fish commission, whose term of office shall continue two years and until their successors be chosen and qualified.

SEC. 2. Before entering upon his duties each member of said commission shall file with the secretary of state a bond with ten or more sufficient sureties and in the sum of five thousand dollars, conditional that he will discharge his duties under this act faithfully.

SEC. 3. Said commissioners shall chose one of their number as chairman, and he shall be known as president of the fish commission.

SEC. 4. It shall be the duty of the president to give his entire time and attention to the fishing interests of the State of Oregon, and, by and with the advice and direction of the fish commissioners, see that all laws for the propagation, protection, and preservation of food-fishes in the public waters of the State of Oregon, whether entirely or partially within the State boundaries, are enforced; to select and purchase suitable land, build, operate, and manage thereon a fish hatchery, on the Columbia River or on its tributaries, for the purpose of supplying said waters with young fish; to employ necessary and competent men to successfully carry on the said hatchery on the Columbia River or on its tributaries; and to examine into and report upon the results of the salmon hatchery on Rogue River.

SEC. 5. That said fish commission shall annually, on December 1, report to the governor of this State a full account of its actions under this act; also of the operations and results of the laws pertaining to the fish industry, the methods of taking fish, the number of young fish hatched and where distributed, amount of expenses incurred, and make suggestions as to the needs of further legislation, if any, and full statistics of the fishing business.

SEC. 6. The president of the fish commission shall receive an annual salary of two thousand dollars; the other members of the commission shall receive five dollars each per day for time actually employed, not exceeding fifty days each per annum.

SEC. 7. That there be and is hereby appropriated out of the general fund of the State the sum of ten thousand dollars for the maintenance of the commission herein created and the erection and support of said hatchery on the Columbia River or tributaries for the period of two years; also there is hereby appropriated out of the funds of the State two thousand dollars for the purpose of enlargement and support of the present hatchery on the Rogue River during the year 1887.

SEC. 8. That all expenses incurred under the provisions of this bill shall be audited by the secretary of state, upon bills being presented properly certified by the president as approved by the commission, and the said secretary shall from time to time draw warrants upon the State treasurer for the amount.

SEC. 9. The fish industry urging immediate action in these respects, this act shall take effect from and after its approval by the governor.

Passed by the senate February 16, 1887; J. C. Carson, president of the senate. Passed by the house February 18, 1887; J. T. Gregg, speaker of the house.

The names of the commissioners appointed under the above law are F. C. Reed, of Astoria; R. C. Campbell, of Rainier; and E. H. Thompson, of Rogue River.

An appropriation of \$10,000 was made for a salmon-hatching station on the Columbia or tributaries, and one of \$2,000 for the one on Rogue River.

There was also appointed by joint resolution a committee of two on the part of the senate and three on the part of the house, to examine the different modes of taking fish in the waters of the Columbia River, and report by bill or otherwise to the next legislature any law or restrictions that in their opinion may be necessary for the protection of salmon and other food-fishes in the waters of said river.

The committee decided to make a tour of the Columbia River during the month of June, 1887, when all the different modes of taking fish are in operation, in order to determine which, if any, need restriction.

AN ACT TO GRANT CERTAIN SEAL ROCKS TO THE CITY AND COUNTY OF SAN FRANCISCO, STATE OF CALIFORNIA, IN TRUST FOR THE PEOPLE OF THE UNITED STATES.*—*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That all the right and title of the United States in and to the rocky islets known as the Seal Rocks, and all rights to seals resorting there, situated off Point Lobos, in the city and county of San Francisco, State of California, are hereby granted, subject to the provisions named, in trust to said city and county, upon the following conditions and for the following uses, to wit: Said city and county shall hold said Seal Rocks inalienable for all time, in trust for the people of the United States, and shall commit to the commissioners of Golden Gate Park the custody and care of said Seal Rocks, and shall keep said rocks free from encroachment by man, and shall preserve from molestation the seals and other animals now accustomed to resort there, to the end that said Seal Rocks will continue to be a public preserve and resort for seals: *Provided,* That the United States may at all times control and limit or diminish the number of the seals resorting to said rocks so as to protect the fisheries and fishing industries: *And provided further,* That whenever any of said rocks, or the space occupied by said rocks, shall be required by the United States for the erection or maintenance of any public work, or for any other purpose, then as to the rocks or space so required the provisions of this act shall terminate, and the United States shall be reinvested with the full title, control, and possession thereof. Said

* This act (S. 2428) passed the Senate June 17, 1886, and passed the House of Representatives February 8, 1887. It was approved by the President February 23, 1887, and thus became a law.

city and county shall signify its acceptance of this trust, and thereupon the Commissioner of the General Land Office shall file in his office a plat showing the locus of said Seal Rocks, and said plat shall be the evidence of the extent and position of the premises hereby granted.

SEC. 2. That all acts in conflict with the provisions of this act are hereby declared inapplicable to the premises hereby granted.

LIVE CARS.—In reply to the inquiry of Messrs. Broughton & Freitas, of Portugal, Mr. A. Howard Clark, who had charge of such matters at the London Exhibition, states, under date of May 27, 1887, that the tow-cars employed by the fishermen in transporting the catch from the fishing grounds to port are usually in the shape of flat-bottomed, decked boats, sharp at both ends, with a hinged opening on top for inserting the fish. The sides are pierced with auger holes, to give free circulation of water. A common size of tow-car is 5 feet long on top, 3 feet long on bottom, 2 feet wide on top amidships, about $1\frac{1}{2}$ feet wide on bottom, and about 14 inches deep amidships, with considerable sheer fore and aft. The marketmen's cars, moored at the fish wharves, are generally of rectangular shape, about 12 feet long, 8 feet wide, and 3 feet deep. They are made of 1-inch plank, 6 inches in width, which is nailed to a rectangular frame of joist. Spaces of $1\frac{1}{2}$ to 2 inches are left between the planks. They are either with or without compartments, and are opened on top by hinged doors. At some ports these cars are made 25 feet long, 16 feet wide, and 5 feet deep, and divided into 6 compartments. Empty casks are sometimes used to buoy them. In the lobster fishery, fishermen often use leaky boats, provided with decks, in which to keep their lobsters alive.

CARP, SHAD, AND STRIPED BASS IN CALIFORNIA.—Mr. Charles Kaeding, writing from San Francisco on May 18, 1887, stated that carp are being taken in great abundance, some weighing 15 pounds. The shad are also becoming very plentiful; while striped bass have been caught this year weighing as much as 25 pounds, and appear to be doing well on this coast.

SHAD IN THE OHIO RIVER.—Mr. W. M. Birely, writing from Vanceburgh, Ky., on May 16, 1887, stated that in the spring of 1885 he bought from a net-fisherman on the Ohio River two genuine Potomac shad, one weighing 3 pounds and the other 4 pounds. He added that in the Ohio they have what is known as "hickory shad," a fish specifically different from the shad above mentioned.

WHITEFISH IN IRRIGATING DITCHES.—The irrigating ditches for the past two days have been filled with lake whitefish, and the small boy has had a good deal of sport ladling them out in tin buckets. Fish Commissioner Otto Gramm and Dr. H. J. Maynard planted altogether 150,000 whitefish in Sloan's Lake. Water is being drawn from there through pipes for irrigating purposes, and as no netting prevents their escape, the fish passed through into the ditches in great numbers. The fish planted last January are already 3 inches long. [From the Cheyenne (Wyo.) Sun, May 25, 1886.]