

NOTE BY JOHN A. RYDER.

The observations of Professor Verrill are interesting and important. I have had oysters live in the shell for two weeks where the temperature ranged from 35° to 40° F. at night to over 80° F. in the day, lying on shelves in the cases in my work-room, exposed the whole time to the air, without showing the slightest tendency to decompose, every specimen containing and holding liquid in its mantle cavity. The position of the shells I did not notice. This was about two years since, and the facts did not then seem to me to have any practical bearing, as they now appear to, as suggested by Professor Verrill.

A striking observation which I made at that time, and which I recorded, I believe, in the sketch of the life history of the oyster prepared under my direction for the annual report of the Geological Survey, was the following: The specimen which served me as my "model" from which to sketch the external anatomy of the soft parts, published in that report and also in the Fishery Report of the Census, laid open for twenty-four hours, with one valve removed and the soft parts exposed to the air for the whole time, and yet at the end of that time, when the ventricle was touched, it began to slowly pulsate, and did so under this stimulus a number of times. This instance of tenacity of life on the part of a mutilated bivalve is pretty hard to excel for incredibility; in fact, had I not witnessed the facts as stated above, I would have been disinclined to accept them as a statement of the truth.

WASHINGTON, D. C., *March 13, 1885.*

35.—NEW ENGLAND FISHERIES FROM JANUARY 1 TO MARCH 31, 1885.

By W. A. WILCOX.

The winter fishing by the New England fleets is confined to the George's Bank cod, haddock, and halibut fleets, the frozen-herring catch of Grand Manan, Bay of Fundy, and Fortune Bay, Newfoundland. With the exception of vessels engaged in supplying the large fresh-fish markets of Boston and New York, and a few sail from the Provinces, the winter fishing is confined to vessels from Gloucester. A large part of the catch sold at the leading fresh-fish markets is also made by vessels from that port. The catch of codfish and mackerel during 1884 having been exceptionally large and prices lower than for years, not much encouragement was felt to engage in the dangerous winter fishing. The report for January shows few sail and light receipts.

SHORE COD-FISHERY.—Thirty-two sail from Gloucester have followed the near-home shore fishery for ground fish, the catch being made in Ipswich Bay and landed at Portsmouth, Rockport, and Gloucester. During the past winter, up to the middle of March, the entire catch was

made by gill-nets; after that date nets and trawls were both used. The history of the introduction of the gill-nets by the United States Fish Commission has been published, and it only remains to add that yearly they seem to grow in favor, and well they may, the catch by them being larger and better fish than by trawls when used side by side, and the saving of thousands of dollars for bait. It would be an interesting item to know just how much has been saved in the purchase of bait since the first use of gill-nets. We must be content by saying it is a large sum.

The catch of the past winter shows a gain over that of the previous year. During March the amount landed at this port by 32 sail was 101,000 pounds of cod caught in gill-nets and 116,000 pounds of cod caught by trawlers. Vessels averaged 6,000 pounds to a trip.

The amount landed at Portsmouth and Rockport during March, all made by gill-nets, was as follows:

For the week ending—	Pounds.
March 7	84,000
March 14	245 000
March 21	230 000
March 28	82,000
Total.....	641,000

MACKEREL-FISHERY OF 1885.—Of late years, each spring the mackerel fleet starts south for the spring catch at an earlier date than the previous year. This year the first vessel to sail, the *Mollie Adams*, left Gloucester March 4; others soon followed. April 1 finds 83 sail on the ground from that port, and, including all other ports, 125 sail.

The first to arrive with fish were schooners *Nellie N. Rowe* and *Emma Brown*. They arrived at New York March 30, with 200 and 125 barrels of fresh mackerel of mixed sizes, mostly small, caught on March 26 and 27, 30 miles south of Cape Henry. Numerous other vessels arrived the following week, mostly with small fares of from 50 to 150 barrels each of fresh mackerel, of small size and inferior quality.

The first fresh mackerel landed at New York in 1884 was on March 24, and in 1883 on March 31.

As the season advances, the fleet will be increased to its usual size; a number of new vessels being added, and by those at present engaged in other branches of the fisheries.

FROZEN HERRING.—This branch of the fishery business is of value as furnishing a cheap food to the masses, as well as supplying the winter fleets engaged in the cod, haddock, and halibut fisheries with the best of fresh bait. Bulletin Volume 4 of the United States Fish Commission dates the first venture of a frozen-herring trip as the winter of 1853. Since that time it has grown to large size and importance; each year finds more vessels engaged and receipts proportionately larger.

The Bay of Fundy and Fortune Bay, Newfoundland, are the great centers of the catch, which is made by the native fishermen living in

the vicinity, and by them sold to the vessels, mostly from Gloucester, that visit the fishing sections for cargoes.

FORTUNE BAY, NEWFOUNDLAND.—During the past winter all the vessels from the United States that engaged in the Newfoundland herring-fishery belonged to the port of Gloucester, the first to sail leaving that port November 24; the fleet numbered 22 sail. One vessel went ashore and returned in ballast. Three cargoes arrived at Gloucester and one at New York in vessels owned in Nova Scotia, making 26 sail engaged in the business. One vessel made two trips, all others only one, making 25 cargoes that reported at Gloucester and one at New York direct.

The first to return arrived at Gloucester January 3; the last cargo arrived March 16.

Herring were reported fully as plenty as in past years, but having struck earlier than usual, they were the most abundant before the arrival of the fleet to buy them. Most of the fleet secured full cargoes, a few of them only partial fares. All were bought of the native fishermen, vessels from the United States not trying to catch any. Total amount reported arriving at Gloucester, 25 cargoes by 24 sail, aggregating 8,995,000 fish. The cargo direct to New York had 420,000 fish, and comprises the total receipts from Fortune Bay.

Of the vessels reporting at Gloucester, 16 sail disposed of their cargoes at Boston, New York, and Philadelphia.

BAY OF FUNDY.—Twenty-four vessels from Gloucester and 10 from Maine reported at the former port with cargoes of frozen herring purchased at Grand Manan and vicinity. These 34 sail landed 42 cargoes, aggregating 10,888,000 fish. Quite an amount also arrived at Boston by rail and steamer. One vessel from that port also landed a cargo, but the bulk of the business is covered by the amount mentioned.

This large amount of frozen fresh fish was taken by the fresh-fish trade, and by them distributed all over the country, as well as supplying the market-boats and fleets engaged in the winter fisheries with fresh bait. During the season herring were found in average abundance.

GEORGE'S BANK FISHERIES.—The large fresh-fish markets look to this bank for most of their winter supply of cod, haddock, and halibut. The reputation for George's boneless or prepared salt codfish is well known as the best, always commanding extra prices over all other salt codfish, and calling for a large amount.

The general depression in trade and much lower prices than usual account for a much smaller fleet during January than usual. Only 22 vessels from Gloucester were engaged during that month; in February, 60 sail; and March found the fleet increased to 103 sail.

During February cod and haddock were very plenty, halibut an average catch. During March the catch of cod fell off nearly one-half,

and halibut seemed to have almost entirely disappeared, very few being caught.

NEW VESSELS AND PROSPECTS.—The record of the past year may be given as anything but favorable or encouraging for the future. It may appear strange and certainly unfortunate that a year of unusual abundance and large productions should financially be one of very little, if any, profit, and in many cases of losses. This is accounted for from many causes—a general depression in trade and consequent shrinkage in values, large productions of the leading fisheries, inferior size and quality of the mackerel catch, and the importation of foreign fish free of duty. With all of these drawbacks and discouragements, a ray of light is seen in the near termination of the Washington treaty and hopes of some protection in the future, as well as of better prices and quality in the catch of 1885.

The number of vessels fishing on the Grand Banks will be less than last year; the near-home and mackerel fleets will probably be somewhat larger.

Quite an addition of new vessels will be added to the fleet. Essex, Mass., has launched four, and now has ten more on the stocks that will soon be engaged in the fisheries. Other eastern ports will also furnish a number of new vessels for the fisheries.

The number of vessels from Gloucester engaged in the fisheries March 31, 1885, is as follows:

	Sail.
George's Bank, cod and halibut.....	103
Shore, cod.....	32
Bank, cod and halibut.....	47
Bank, halibut.....	30
Mackerel.....	83
Total.....	295

All of the above are actively engaged, the bank fleet fishing on the Grand and Western Banks.

April will find large additions to the above and the full fleets in operation, courageously looking forward for better times and a more prosperous season.

TABLE I.—Fish receipts at Gloucester during January, February, and March.

Year.	Codfish.	Halibut.	Number of frozen herring.
	<i>Pounds.</i>	<i>Pounds.</i>	
1885.....	5,684,000	1,180,700	19,883,000
1884.....	5,610,000	1,209,100	14,730,000
1883.....	4,318,000	1,207,803	16,540,000
1882.....	5,220,000	1,620,100	18,084,000
1881.....	7,381,000	2,377,900	11,520,000
1880.....	7,654,000	1,881,000	8,500,000
1879.....	4,254,000	3,280,000	6,290,000

TABLE II.—Receipts of frozen herring at Gloucester.

Date.	From Grand Manan.		From Fortune Bay, Newfoundland.	
	Cargoes.	Number of fish.	Cargoes.	Number of fish.
1885.				
January	5	1, 100, 000	2	775, 000
February	19	5, 183, 000	15	5, 000, 000
March	18	4, 605, 000	8	2, 260, 000
Total	42	10, 888, 000	25	8, 095, 000

Total from Grand Manan and Newfoundland, 67 cargoes, with 10,883,000 herring.

The number of vessels engaged from Newfoundland was 25 sail; from Grand Manan, 32 sail; total, 57 sail.

One vessel made two trips to Fortune Bay; 1 returned in ballast, all others with one cargo each; 23 made one trip, 8 two trips, and 1 three trips to Grand Manan.

TABLE III.—Receipts of ground fish at Gloucester, Mass.

Date.	Fares.	From—	Codfish.	Halibut.	Haddock.
			<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1885.					
January	11	George's Banks	270, 000	18, 500	.....
	1	La Have Banks	35, 000	5, 000	.....
	5	Shore, Ipswich Bay	20, 000	.....	.....
	6	The Banks .....	.....	153, 000	.....
	23		325, 000	176, 500	.....
February	47	George's Banks	1, 017, 000	37, 900	132, 000
	2	La Have Banks	50, 000	14, 000	.....
	15	Shore, Ipswich Bay	26, 900	.....	84, 000
	13	The Banks .....	.....	198, 800	.....
	77		1, 093, 900	310, 700	216, 000
March	121	George's Banks	4, 019, 000	85, 500	60, 000
	36	Shore, Ipswich Bay	217, 000	.....	.....
	2	La Have Banks	25, 000	24, 000	.....
	20	Fishing Banks	5, 000	584, 000	.....
	179		4, 260, 000	693, 500	60, 000
Total	270	.....	5, 684, 900	1, 180, 700	276, 000

36.—NEW ENGLAND FISHERIES IN APRIL, 1885.

By W. A. WILCOX.

April is usually one of the dullest months in the year with the fish trade, and also one of the busiest with the producer, the past month proving no exception.

The demand for all kinds of fish has been very light and prices unprecedentedly low. The producers have been busy in preparing for the season's work, large additions have been made to the fleets, and the close of the month finds the larger part of the vessels actively engaged or nearly ready to sail. The Grand Banks cod fleet is leaving later than usual; will not number as many sail; most of them will make only

one trip. The mackerel fleet now numbers 184 vessels, of which 102 are from Gloucester; during the next two months it will be largely increased. The fleet has worked north slowly, the result being very unsatisfactory.

MACKEREL.—From the taking of the first mackerel, on March 26, to the latter part of April, the catch was confined to a few vessels, the fish of medium and small size, quality poor, and marketed fresh at low prices. On April 23 and 24, in longitude 74° to 75° , latitude 37° to 38° , the fleet found mackerel in great abundance, and over 100 sail secured fares. On April 25, 26, and 27, 93 sail arrived at New York and 14 at Philadelphia, with from 100 to 300 barrels each, the aggregate amount landed at New York from Saturday to Monday noon being estimated at 11,000,000 fresh mackerel and 500 barrels of sea-packed. This is by far the largest amount of fresh mackerel on record as having been landed at any one port in so short a time. This immense amount, arriving at once, overstocked the market; prices quickly fell from \$2 to \$6 a hundred, to 50 cents to \$2 a thousand fish; large quantities were given and thrown away. The salt mackerel, being of poor quality, sold at from \$2.25 to \$2.75 a barrel, in all cases the fishermen realizing very little from the catch.

The fish averaged 90 per cent. from 10 to 12 inches in length, the remainder from $12\frac{1}{2}$ to 14 inches, and give promise of good fish later in the season, a decided improvement in size over that of last year. The mackerel were quite well filled with the fine red food called by the fishermen "cayenne."

The following from the Fishing Gazette, of New York, gives some interesting items connected with the great catch:

"A sight was witnessed in our market on Monday morning last that is without a parallel in the history of the fishing business. One hundred sail of mackerel vessels were in port, either unloading or waiting for an opportunity to do so. The slip at Fulton Market has a capacity for only forty sail, and the vessels of the fleet were obliged to seek wharfage wherever it could be obtained, and all along the East River docks, around Washington Market and the docks of the North River, at docks in Brooklyn, the vessels were unloading. A close estimate made from the actual catch of a number of vessels warrants the statement that there were from eight to ten millions of fish either in process of unloading or waiting to unload. The greater portion of these fish were caught about 120 miles southwest of Barnegat, and were supposed to have formed one immense school. So numerous were the fish that in several instances single hauls of the seine netted 250 barrels; the Mollie Adams, Captain Jacobs, brought in 400 barrels taken in four hauls. This enormous supply of course ran prices down to almost nothing, the fish being sold at from 50 cents to a dollar per thousand; it also affected the price of all kinds of fish, and the cry was 'Down, down.'

"The Elizabeth M. Smith, Captain Black, in making a haul for mack-

erel, got a large number of tunny fish (also called horse mackerel and albicores) into the seine. These fish tore the seine very badly, but they succeeded in taking about 500, of an average weight of 35 pounds each, and brought them into market and sold them at from 10 to 25 cents each. The Mollie Adams also brought in about 8 barrels of this fish. The tunny is not a popular fish; the flesh, however, resembles lean pork, with a fine mackerel taste, and the time will probably come when it will form a more important feature of marketable fish.

“The inevitable results of such an excessive oversupply of fish began to be manifested on Tuesday night and Wednesday morning. The fish began to spoil before they could be disposed of, and Inspector Hamilton was kept busy in condemning such as were unfit to sell. Over 300,000 were dumped on the pier, their ultimate destination being Barren Island, where they will be converted into fertilizers.”

After disposing of this large amount of fish, the fleet, on going to sea, encountered a severe gale on April 29. Some twenty seine boats were lost. As yet only one vessel has reported loss of life. The schooner Neponset, of Boston, lost her seine boat and four men.

COD AND HALIBUT.—The George's Bank cod and halibut fleet have found fish abundant, landing good fares as compared with the corresponding month of last year. The catch of codfish was a little more than double; of halibut, three times the quantity.

SHORE FISHERIES.—The shore catch of codfish, almost entirely from Ipswich Bay, was taken by gill nets and trawls. The fish were mostly caught from 2 to 8 miles from the shore, between Newburyport and Portsmouth. The amount landed was as follows: At Gloucester, from gill-nets, 144,000 pounds, and from trawls, 211,000 pounds; at Rockport and Portsmouth, from trawls, 175,000 pounds, and from gill-nets, 525,000 pounds.

With the exception of a few scattering sail, the Ipswich Bay codfishery closes from the last of April until late in the fall. A few sail from Provincetown have fished for cod and halibut on Nantucket Shoals. Ten miles southeast of the fishing rips they found halibut more plentiful than for many years; three sail landed at Gloucester 17,000 pounds. These fish were noticed as being exceptionally fine, large, and thick; would average something over 100 pounds each, some weighing near 300 pounds; were over two-thirds white.

THE BANK HALIBUT FLEET.—These vessels fished during January, February, and March on the southern edge of the Grand Banks. During the past month the catch was mostly made in what the fishermen call the “gully,” lying between Banquereau and Grand Banks, in 175 to 225 fathoms of water, landing 612,000 pounds, the catch on Grand Banks alone being 131,000 pounds. Vessels mostly arrived with good fares, which brought them fair prices.

WEIRS AND TRAPS.—The close of the month finds this branch of the business just getting under way. Provincetown Harbor, between that

port and North Truro, is lined with sixteen weirs put down the past month, \$80,000 being invested. They are of value in supplying the fishing fleets with plenty of fresh bait.

THE OUTLOOK.—Prospects for the season now indicate another year of large production. Although the migratory fish have been late in arriving, they seem to have come in unusual abundance. The catch of alewives in the Susquehanna and Potomac has been the largest for years. Very little preparation is made for the cure of these fish caught in that section; in consequence the price dropped from the customary one of 25 to 50 cents a hundred fish to the same price per thousand; during the last week in April even lower prices were taken.

THE WHALE FISHERY.—Whale-fishing off the New England coast by small steamers is getting to be quite a business. During the past two months four steamers have been engaged in this work, viz, Fannie Sprague, Mabel Bird, Hurricane, and Josephine.

They cruise off the Maine and Massachusetts shores as far south as Cape Cod. A bomb-lance, fired from a gun held at the shoulder, is used for killing the whales. Up to date about 40 whales have been captured.

As the men become expert in the manner of capture, the whales become shy and keep more in deep water. After being killed they usually sink, and it is doubtful if the business, as at present conducted, will last if the whales are driven off from near shore, it being difficult to recover them in over 40 fathoms of water.

The whales captured the past few weeks average 60 feet long and weigh about 25 tons each; they yield about 20 barrels of oil, 2 barrels of meat, 5 tons of dry chum, and 2 tons of bone, about \$400 being realized from each whale, on the average.

THE SEAL-FISHERY.—During the past month the steamers from provincial ports engaged in the seal-fishery have been returning home, having had one of the most successful seasons ever made in that business. Full returns will be given later.

The following from the *Island Press* is of interest:

“The seal-fishery has been unusually successful this year. Many steamers have returned from the sealing grounds loaded down almost to the water's edge. Steamer *Ranger*, with over 200 men on board, returned to St. John's with 35,600 prime young harp seals, the largest catch for her tonnage ever taken into any port in the world, every nook and corner of the ship being jammed full. She was compelled to steam slowly from the time of leaving the ice, to prevent upsetting, and had to creep home inch by inch. Fortunately the sea was calm all the way. Her deck, covered to the top of the rails with 7,100 seals, was a sight never before seen in St. John's. The companion-way was covered in, only room enough being left for a man to squeeze himself into the doorway. The lazaret contained 720, and 250 were stowed under the bunks in which the men slept. Eight puncheons were filled with oil, and the rest was stowed in the hold.”

Receipts of fish at Gloucester, Mass., April, 1885.

From—	Fares.	Codfish.	Halibut.	Haddock.
George's Bank	181	<i>Pounds.</i> 3, 822, 000	<i>Pounds.</i> 155, 710	<i>Pounds.</i> 185, 000
Western Bank	9	570, 000	63, 000	.....
Shore	38	355, 000	17, 000	.....
La Have Bank	2	45, 000	.....	.....
Grand Banks	4	.....	131, 000	.....
Fishing Banks	16	.....	612, 000	.....
Total	250	4, 592, 000	978, 710	185, 000

Gloucester vessels fishing or en route to the fishing grounds April 30, 1885.

	Sail.
Mackerel fleet, south	102
Halibut fleet, Grand and Western Banks	36
Halibut and cod, Grand and Western Banks	49
Shore cod, Grand Banks	40
George's Bank, cod and halibut	115
Haddock fleet	20
Greenland halibut fleet	6
Iceland halibut fleet	5
Total	373

37.—NEW ENGLAND FISHERIES IN MAY, 1885.**By W. A. WILCOX.**

The close of the month finds nearly all of the fishing vessels away on the various banks and fishing grounds, the total number reported being 943 sail and 7 steamers.

Mackerel have worked north slowly. The first of the month the fleet were taking them off the Delaware Breakwater, at the close off Block Island and No Man's Land, a few sail being off the Nova Scotia shore. On April 29 a severe gale caused the loss of 18 seine-boats, and the schooner Neponset, of Boston, lost 4 men. This was followed on the 14th of May by another heavy blow, in which 4 seine-boats were lost. During most of the month fish were found abundant. The larger part of the vessels brought their fish to market fresh; it caused an oversupply, and very little was realized for them. Prices ranged from 50 cents to \$5 a thousand fish. The fish were mostly of medium size, about one-tenth being of large size. Those that were salted were also sold at very low prices; uncured, in fishermen's order, \$2.25 to \$3 a barrel. From a general depressed trade, an oversupply of fresh mackerel, inferior size and quality of salt mackerel, with severe losses by gales and rough weather, the mackerel catch this year, to date, has financially been a failure to nearly all engaged.

The first mackerel was taken in the weirs at Sandy Point, Cape Cod, on May 4. A large catch of fine fish is yearly expected at this point.

During the entire month the catch has been the smallest for years—only 30 to 40 barrels a day at the most, at the close of the month only 5 to 10 barrels daily.

May 18 the first mackerel was taken in traps at Gloucester Harbor, very few being taken during the month. May 18 the first mackerel were taken on the Nova Scotia shore, in traps, at Sanford, 6 miles from Yarmouth. May 22 the first taken in traps at Lunenburg, Nova Scotia. Drag-nets for mackerel will be used by 10 small vessels, averaging 15 nets to a vessel. The first set of the nets was made May 29, on Middle Bank, one vessel taking 600, one 700, mackerel of large size on the same day.

Codfish have been found plentiful on all the usual banks and fishing grounds. In Ipswich Bay both trawl and gill-net fishermen have done well. The latter took up their nets May 12, part of them going for mackerel, and others hand-line fishing on other grounds.

George's Bank furnished abundance of codfish the first part of the month, the catch falling off the latter part, being an average for the month. Only a small amount of halibut was taken.

Brown's Bank has yielded a heavy catch of codfish, with a few halibut. All the month the fish have been abundant, vessels making quick trips and full fares. Capt. Jeffrey Gerrior, of schooner *Finance*, one of the last arrivals, with a crew of 10 men, reports that he has made 7 trips to Brown's Bank between November 25 and May 30, landing 296,000 pounds of codfish. On his last trip fished in 35 fathoms, in latitude 42° 42', longitude 65° 50'. He counted 52 sail fishing to the northeast and northwest of him, all within a radius of 3 miles. The fish were all taken over the side of the vessel by hand-lines.

Halibut receipts at Gloucester the first of the month were quite large, the price dropping as low as 2½ cents a pound. The larger part of the catch was made on Banquereau. Fish were found very plentiful off Burgeo, Newfoundland, only 4 miles from shore; but heavy bodies of ice prevented much fishing, destroyed the trawls, and sent the fishermen to the south. The latter part of the month the receipts fell off and prices were advanced.

Western Banks: Of late years, during May, the catch of cod and halibut on these banks shows a decrease, the past month being no exception, there being few vessels and in the aggregate light receipts from there during the month.

Pollock have been abundant off the south side of Cape Cod; 693,000 pounds were landed at Gloucester. They were all taken in purse-seines. In keeping with all other fish, they sold very low—50 cents a hundred for split fish.

Kingfish, from off Key West, are to a limited extent found in the fresh-fish markets of the large cities during the winter, and thought much of as a fresh fish. The U. S. Fish Commission steamer *Albatross* having brought a few back from her late trip south, they were for-

warded to Gloucester, to be smoked, as an experiment. Although the samples were caught during spawning time, and the fish in poor condition, they proved an excellent smoked fish, being tested by many experts, who pronounced them equal, and by some to be superior, to smoked halibut or salmon. As these fish are said to be very abundant, a new and valuable addition of food-fish may arise from the experiment in smoked kingfish.

The prospect continues favorable for a large catch of all kinds of fish during the season, as indicated in the report for April. The following extract from the Boston Globe of June 2 touches on the abundance of fish throughout the United States:

“PLENTY OF FISH.—The efforts of the Fish Commissioners are at last beginning to bear fruit, and Professor Baird and his associates are to be congratulated on their success, which has been attended with many difficulties and much unfavorable criticism during the ten or dozen years of untiring labor. Ten years ago salmon were not at all numerous in our Eastern rivers, and shad were so scarce that the man who found twenty of them in a single weir during the season was considered fortunate. In the early part of the last decade shad were almost unknown in the markets. Old fishermen who used to ‘drift’ for them nights shook their heads gravely as they told of the boat-loads they had caught, and said our fishes were all leaving, never to come back.

“All this time the Fish Commissioners were at work. They went around to the weirs, buying the live fish from the owners, and took them to the breeding establishments, where the eggs were hatched and the young were cared for. After a few years of this work the business was enlarged and eggs and young fish were ‘planted’ in the headwaters of streams that had none. A few more years passed and the young fish, now grown to maturity, returned to their birthplaces to deposit their eggs, and found good fishways where there had been impassable dams. Laws were passed and enforced that protected the infant enterprise, and the finny tribes came by millions, filling the streams and ponds and adding wealth to the nation.

“This year shad are so abundant and cheap as to be almost a drug in the market, and many a poor family has partaken of that grand old luxury, ‘baked shad,’ that never tasted it before. With salmon the success has not been so marked, but enough has been accomplished to promise success in the near future, and the gentlemen do not relax in their labors. In addition to these, many ponds, public and private, have been stocked with black bass and German carp, both of which are thriving gloriously. If the work continues ten years longer, there will be more edible fish in the inland waters of the United States than in any other country on earth.

“This means cheap and wholesome food for the people. It also means lots and lots of healthful sport with the rod and reel, just such as we all like, during the warm months that are coming.”

That an abundance of fish this year is not confined to this side of the Atlantic will be noticed by the following extract from the Gloucester News of June 2:

“THE NORWEGIAN FISHERIES.—At the Loffoden Islands, on the 4th of April, the yield had been 25,000,000 codfish and 24,000 barrels of cod livers, and 5,500 barrels of medicinal cod-liver oil, steam refined. Last year, at the same time, the yield at Loffoden had been 16,500,000 codfish, 14,700 barrels of cod livers, and 3,450 barrels of medicinal cod oil, steam refined. At other places on Nordland, about 10,500,000 codfish, as against 14,500,000 in the preceding season. Of the total quantity of 35,500,000 codfish caught up to this time, 10,600,000 fish will be prepared as klipfish (dry split fish) and 24,900,000 fish will be prepared as stockfish (dried round fish).”

Number and location of New England fishing fleets on June 1, 1885.

Sail:	
For cod and halibut, on George's and Brown's Banks, in latitude 41° to 43°, longitude 65° 30' to 69°	180
For cod and halibut, on the Grand Banks of Newfoundland, in latitude 43° 15' to 46° 35', longitude 49° to 54° 25'	175
On Banguereau, for cod and halibut, in latitude 44° to 45°, longitude 57° 12' to 60°	52
On the Western Banks, for cod and halibut, in latitude 42° 55' to 44° 30', longitude 49° 25' to 62° 30'	60
Off the Eastern New England coast, ground fishing	225
Off Greenland and Iceland coast, on halibut trips	11
Fishing for mackerel between Sandy Hook and No Man's Land	240
Total sail	943
Steamers:	
Fishing for mackerel	1
Taking whales off the New England coast	6
Total steamers	7

The number and location of the menhaden steamers will appear later, full returns not having been received.

Catch of codfish at Ipswich Bay, by gill-nets, during May, and landed at—

	Pounds.
Gloucester	31,400
Rockport	98,000
Portsmouth	22,000
Total	151,400

About 300,000 pounds were taken on trawls and landed at Boston, fresh, the nets having been taken up May 12.

Vessels belonging to the port of Gloucester engaged in fishing June 1, 1885.

On the banks, for fresh halibut.....	41
On George's and Brown's, for halibut and cod.....	155
On Grand Banks, for codfish.....	33
On Western and Banquereau, for cod and halibut.....	51
On fishing grounds off the New England coast, ground fishing.....	34
On fishing grounds off the New England coast, lobster fishing.....	6
On halibut trips to Greenland and Iceland.....	11
On mackerel voyages, mostly now between Sandy Hook and No Man's Land....	140
Steamer, mackerel fishing.....	1
Total.....	472

Receipts of fish at Gloucester, Mass., in May, 1885.

From—	Fares.	Codfish.	Halibut.	Pollock.	Hako.	Cusk.	Haddock.	Mackerel.
		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Barrels.</i>
George's Bank.....	135	2,452,000	92,450					
Northeast Shore.....	51	516,000		693,000			1,000	
Brown's Bank.....	39	1,256,000	33,600					
Western Bank.....	8	282,000	88,000					
Banquereau.....	16	3,600	428,000					
La Have Bank.....	4	49,000	16,000					
Grand Banks.....	2		58,000					
Nova Scotia, Cape shore.....	1	65,000						
Off Newfoundland*.....	1		65,000					
Banks†.....	5		127,000					
Mackerel trips south.....	21							5,579
Total.....	283	4,623,000	908,050	693,000	4,000	4,000	1,000	5,579

* Off Burgeo, 4 miles from shore.

† Off Sambro, and between La Have and Western Banks, on La Have Ridges.

Other receipts: From nets and traps in the harbor, 419 barrels of herring, from small boats fishing near shore, 14,000 pounds of codfish and 1 halibut. The latter weighed 193 pounds; was caught 5 miles from Eastern Point Light, Gloucester Harbor. Received from Grand Manan, 500 boxes smoked herring.

38.—ON THE RATE OF GROWTH OF THE COMMON CLAM, AND ON A MODE OF OBTAINING THE YOUNG OF THE GIANT CLAMS OF THE PACIFIC COAST FOR THE PURPOSE OF TRANSPLANTING.

By JOHN A. RYDER.

During the season of 1880 I made some observations on the development of the common clam (*Mya arenaria*, L.). These* were published in the report of T. B. Ferguson, a commissioner of fisheries of Maryland for 1881. It was there shown that (1) the spawning season extends from about the 10th of September to about the middle of October; (2) that the eggs and milt may be extracted from the surface of the visceral mass of the adults in the same way as from the oyster, and artificially impregnated; (3) that the early development was very similar to that

* Notes on some of the early stages of development of the clam, or mananose (*Mya arenaria*, L.). In Appendix A of the above-cited report, pp. 83-91, 11 figs.