

mackerel, about 2 inches long, was one day placed in an aquarium with a medusa, whose swimming-bell measured about 5 inches in diameter. The next morning Eisig found that the medusa had lost all the points of its tentacles, for the fish had eaten them. Soon after that he had an opportunity to observe another fish in the act of nibbling at the medusa, so that there can be no doubt as to these facts. But that the fish did not choose this food, because there was lack of other suitable food, is indicated by the following: A larger fish, about 6 inches long, which for some time had been in a basin where there were no medusæ, took no food at all, and finally became so weak that it looked as if it was going to die. But after a medusa had been placed in the basin the languid fish became very lively, constantly swam round the medusa, and soon began to nibble at it.

Two circumstances are remarkable in this observation. In the first place these fish can sport about unharmed among the tentacles of sea-nettles which possess the power of stinging severely, while many other fish, and frequently such as are larger than those referred to, are found dead, hanging to the points of the tentacles. In the second place these fish are able to eat a substance which acts like poison on most other fish, or which is at least refused by them. Although the observations in most of the cases referred to above seem to indicate that the fish derives the principal advantage from this companionship, there is nevertheless something mysterious about this relation. It is very evident that it is an advantage to the fish to live in a place shunned by its enemies, and where it has free access to suitable food. But on the other hand it is very remarkable, and agrees but little with what is known of similar relations between other animals, that this companionship should be maintained unless it is an advantage to both parties. The most plausible explanation seems to be that the protection enjoyed by the fish is compensated by the fact that the medusa every now and then seizes and kills a fish. But what does the medusa gain by having a fish living inside its body, as has been observed in the Indian Ocean?

115.—NEW ENGLAND FISHERIES IN JULY, 1885.

By W. A. WILCOX.

If it was not for an unusually light demand and extremely low prices for all kinds of fish, the New England fisheries would be in a prosperous condition; as it is, although fish are plentiful, and vessels arrive from short trips with good fares, prices are so low that few vessels are more than paying expenses.

During the past month squid and herring have been abundant in the weirs along the Massachusetts coast, supplying the ground fishermen with plenty of good fresh bait.

During June cod were scarce on the Grand Banks, many vessels changing from there to Banquereau; during July fish were abundant on both. The catch of cod on Brown's decreased during the month, vessels changing to George's; an average catch being made on both. The total amount of codfish received at Gloucester during July (8,220,500 pounds) was an average amount for that month, although much less than for July, 1884, when 9,030,000 pounds were landed.

The mackerel catch, always changeable and uncertain, now receives the most attention. During the past month the catch and prospects have materially changed for the better. During June no body of mackerel could be found in any direction; the amount of cured fish, in sea-packed barrels, landed by the entire fleet, amounted to only 15,328 barrels. In hopes of finding them more plentiful 40 sail went to the Gulf of Saint Lawrence, the rest of the fleet of 325 sail remained scattered from Cape Cod to the Bay of Fundy. Vessels that went to North Bay found mackerel, of small size and very inferior quality, abundant about Prince Edward Island up to the latter part of the month, when few fish were seen. These vessels mostly secured fares, some forwarding the same home by rail or steamer, and continuing in the bay in hopes of securing fares of large-sized fish. The last of the month finds most of this small fleet about ready to leave the Gulf of Saint Lawrence for home, if a fare has been secured; if not, to cruise off the New England shores. Early in the month a large body of mackerel was found off Mount Desert and in the Bay of Fundy, 145 sail fishing from Mount Desert to within 15 miles of Brier Island. Medium-sized fish of poor quality were abundant, but foggy weather prevented much fishing. Contrary to the usual custom, during July mackerel appeared to be very numerous over a large extent of territory, not being confined to any particular locality.

July 2. Mackerel abundant off Nauset light, Cape Cod. Weirs at North Truro, Cape Cod, had a good catch of mackerel.

July 1 to 5. Mackerel plentiful, and many good fares secured near the South Shoal lightship off Nantucket.

July 8. Schooner J. M. Plummer arrived at Harwichport with 400 barrels of mackerel caught off No Man's Land.

July 9. Mackerel reported plentiful on German Bank and Jones Ground, Bay of Fundy. Between July 4 and 10th, schooner Lottie Hopkins secured 230 barrels of mackerel on Cashe's Banks; during the same time other vessels secured fares off Seguin and Southport, Me.

July 10. Schooner William H. Foy took 175 barrels southeast of Monhegan; a few other vessels took fish at same time and place.

July 12. Four vessels took 100 barrels each off Damariscotta, Me.; fish in schools of from 40 to 80 barrels each.

July 14. Arrivals from Mount Desert report mackerel plentiful. Schooner Alaska arrived at Southport, Me., with 270 barrels of mackerel caught off Thatcher's Island; reports fish abundant.

July 16. Arrivals continue to report mackerel plentiful on German Bank.

July 18. Two arrivals with fares secured on southwestern part of George's Bank; schooners were the Pleiades and Eddie Davidson.

July 20. Schooner Chester R. Lawrence arrived at Boothbay, Me., for salt and barrels, having 560 barrels of mackerel on board that were caught 25 miles southeast from Monhegan; reported mackerel abundant.

July 21. One arrival at Provincetown with 370 barrels of mackerel caught off Block Island.

July 22. Schooner Mertie and Delmar arrived at Harwichport with 225 barrels of mackerel caught off Block Island. Fifteen sail were left fishing at that point; these vessels mostly secured fares during the next few days.

July 23. Mackerel were plentiful east of Cape Cod. Schooner Emma Higgins arrived at Provincetown from there with 350 barrels.

July 24. Schooner Hattie Linnell arrived at Provincetown with a full fare of 450 barrels, caught east of Cape Cod the day before.

July 25. Mackerel were abundant off Highland light.

July 27. Schooner Mystery took 120 barrels off Wood End, Provincetown harbor; and schooner Willie Jewell came in with a full fare caught off Race Point, Cape Cod.

The same date, 15 arrivals at Gloucester landed 6,390 barrels of mackerel, mostly caught off the eastern shore and in the Bay of Fundy. Only 1 of the 15 had been in North Bay.

July 28. Schooner Longwood arrived at Provincetown the 27th with 400 barrels of mackerel, caught that day in Cape Cod Bay; the fish were of good size and fine quality. Twelve sail were with her; all doing well. The mackerel were working into Barnstable Bay.

The weirs at North Truro took about 5,000 barrels of mackerel during the week.

July 30. Schooner Mystery sailed from Gloucester on July 23. Arrived back at her wharf on the 29th with 540 barrels of mackerel, caught during that time. The fish were of good quality and fair size, mostly No. 2; were caught just off Race Point, Cape Cod.

July 30. During the month 7 salmon, averaging 10 pounds each, were taken from the traps in Gloucester Harbor.

This report, with names, dates, and amount of the catch, is intended merely to show the locality and abundance of mackerel off the wide expanse of the New England coast during the month. The aggregate amounts landed at all ports during the season, up to August 1, will be found in the accompanying table. It only remains to add that the prices received during the month are the lowest ever recorded. The size of the fish is an improvement on last year, and is noticeable for the few large fish that will inspect No. 1. The fish caught in North Bay or the Gulf of Saint Lawrence have been the poorest and sold the lowest of all,

bringing from \$2 to \$2.25 a barrel. At this price vessels could not pay expenses. Fish caught in the Bay of Fundy were of an inferior quality, yet somewhat better than those from North Bay, selling for from \$2.50 to \$2.75 a barrel. Fish caught in Massachusetts and Cape Cod Bays and off the New England coast, being the next best; those caught in Barnstable Bay being very fat, nice fish, selling for from \$3 to \$3.50 a barrel. Fish from Block Island were mostly large, many of them from 15 to 18 inches long, and of good quality. Such fish sold from \$12 to \$14 a barrel.

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

From—	Fares.	Salt cod-fish.	Fresh halibut.	Salt hake.	Salt cusk.	Salt pollock.	Salt mackerel.	Fresh mackerel.	Fresh sword-fish.
		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Barrels.</i>	<i>Barrels.</i>	<i>Pounds.</i>
Brown's Bank	124	3,067,000	62,450	.....	.....	.....	.....	.....	.....
George's Bank	85	1,671,000	107,800	.....	11,000	.....	.....	.....	.....
Grand Banks	37	2,028,000	1,060,500	.....	.....	.....	.....	.....	.....
Northeast shore	19	239,500	.....	73,500	6,500	3,000	.....	.....	783
Flemish Cap	1	180,000	5,000	.....	.....	.....	.....	.....	.....
La Have Bank	1	40,000	12,000	.....	.....	.....	.....	.....	.....
Cape shore	3	108,000	.....	.....	.....	.....	.....	.....	.....
Banquereau	7	870,000	18,500	.....	.....	.....	.....	.....	.....
Northeast shore and Bay of Fundy	109	.....	.....	.....	.....	.....	32,993	.....	.....
North Bay, by vessel	6	.....	.....	.....	.....	.....	2,895	.....	.....
North Bay, by steamer to Boston .....	.....	.....	.....	.....	.....	.....	1,527	.....	.....
North Bay, by railroad .....	.....	.....	.....	.....	.....	.....	1,822	.....	.....
Off Seal Island	1	.....	.....	.....	.....	.....	400	.....	.....
From harbor traps .....	.....	.....	.....	.....	.....	.....	.....	563	.....
From small boats shore-fishing .....	.....	17,000	.....	4,000	.....	.....	.....	.....	.....
Total	393	8,220,500	1,266,250	77,500	17,500	3,000	39,637	563	783

Mackerel landed by the New England fleet, in sea-packed barrels, up to August 1.

	May.	June.	July.	Total.
Gloucester	5,579	6,626	39,637	51,842
Boston	3,255	4,593	12,399	20,154
Portland	615	1,925	19,595	22,135
Provincetown	350	1,149	4,398	5,897
Harwichport	310	390	2,325	3,025
South Chatham	200	80	1,005	1,285
Wellfleet	75	610	6,333	7,018
Boothbay .....	.....	45	2,165	2,210
Dennisport .....	.....	.....	1,030	1,030
Southport .....	.....	.....	2,330	2,330
Total	10,384	15,328	91,124	116,836

In 1884 there were 111,318 mackerel landed; and in 1883, 48,244.

This does not include the early catch south, landed at New York and Philadelphia.

The following is the position of the New England fishing fleet during the last week of July: 325 sail, mackerel, scattered as follows: 145 sail in the Bay of Fundy, between Mount Desert and 15 miles west of Brier Island; 40 sail in the Gulf of Saint Lawrence; 50 sail off Block Island and Cape Cod; 90 sail off Massachusetts and Maine coasts. Thirty-eight sail, halibut, on Grand Banks, latitude 44° 03' to 44° 12', longitude 49° 12' to 49° 25'; 232 sail, codfish, on Grand Banks and Banquereau; 165 sail, codfish, on George's and Brown's Banks, longitude 65° 30' to 69°, lati-

tude 41° to 43°; 12 sail, codfish, off Nova Scotia shore, latitude 43° to 43° 25', longitude 65°; 250 sail, ground and swordfish fishing, off the New England coast; 11 sail, halibut, off Greenland and Iceland; 6 steamers, taking whales, off the New England coast; total, 1,033 sail, 6 steamers.

Capt. J. W. Collins, assistant of United States Fish Commission, having recently returned from a month's cruise to the eastern fishing banks, on the United States Fish Commission steamer Albatross, makes the following report, of special interest to the fisheries: Upwards of 2,000 fathoms were obtained in the position where Hope Bank (with a depth of 45 fathoms) has been laid down on the chart.

Researches about the eastern part of Banquereau proved that the charts of that region are inaccurate.

A series of trials with hand-lines was made on Misaine Bank, and codfish were found there in as great abundance as on any of the adjacent fishing grounds. Heretofore this bank has not been frequented by fishing vessels.

GLOUCESTER, MASS., August 12, 1885.

116.—NOTES TAKEN DURING CRUISE OF THE ALBATROSS TO GRAND BANKS IN JUNE AND JULY, 1885.

By WILLARD NYE, Jr.

Trout.—There are two or three varieties in the clear freshwater ponds of Newfoundland. The first is remarkably brilliant colored, and is comparatively longer, with a more pointed head. On first being taken from the water its scales look as though made of silver and gold. The second is more thickset, and much like our brook-trout, except the red spots are more irregular. This variety in Newfoundland is called mud-trout, but I could see no reason for it other than its darker color. The fishermen speak of a third variety, which is still darker.

Sticklebacks.—These were taken from a spring pond at the top of Signal Hill, at an elevation of about 300 feet. These sticklebacks seem to differ from those taken from brooks at the point where they empty into the salt water.

Whales, &c.—On July 13, twenty-four swordfish were counted from the ship in four or five hours. Most of them were very large, only two being small. Later in the afternoon finback whales were seen in all directions. They seemed to be skimming up feed from the surface. On examination, the water was found full of *Copepoda*; but a little after sunset all this small life disappeared, and not one could be caught at the surface. Several clots looking like blood were seen floating, and some were obtained in the net, which, on examination, were considered excrement of finback whales, taking its color from the deep red of the *Copepoda*. A school of large porpoises was with the finbacks, and seemed to be after the same feed.

NEW BEDFORD, MASS., August 10, 1885.