PART IV.

THE SWORDFISH FISHERY.

By G. BROWN GOODE.

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PART IV.

THE SWORDFISH FISHERY.

By G. Brown Goode.

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1. THE FISHING GROUNDS.

In the natural history of the swordfish, in Section I of this report is printed a discussion of the dates of the appearance of this species in our waters and of its local movements.

Early in the season the swordfish are most abundant west of Montauk Point, and later they spread over the shoal grounds along the coast even as far north as the Nova Scotia Banks. They may be found wherever mackerel and menhaden are abundant, as may be inferred from the almost universal practice of carrying swordfish irons on board of mackerel vessels.

I quote the statements of three or four correspondents who have taken the trouble to interview the fishermen of their respective localities.

Mr. E. G. Blackford writes: "The season first opens early in June in the neighborhood of Sandy Hook, and continues along the coast as far east as Martha's Vineyard and Nantucket Shoals until about the middle of September. They are said to have been caught as far north as Cape Sable. At the first cold wind blowing in September they disappear, and are not found again on the coast that season. This information I received from an old New York swordfisherman, a man whose statements may be relied on."

Capt. Benjamin Ashby, of Noank, Conn., informs me that the swordfish vessels of Noank and New London are accustomed to leave the home port about the 6th of July, and throughout the month they find fish most abundant between Block Island and No Man's Land; in August between No Man's Land and the South Shoal light-ship. They first meet the fish twenty to twenty-five miles southeast of Montauk Point. In August and September they are found on George's Bank. There is no fishing after the snow begins to fly.

A little farther east is the New Bedford fleet. Capt. I. H. Michaux, of the schooner Yankee Bride, tells me that swordfish strike in about Block Island in the middle of June and stay in that vicinity until the 15th or 20th of August. North of Cape Cod they are taken up to the 20th of October.

Mr. John H. Thomson, of New Bedford, states that from May 25 to June they are found south of Block Island, approaching the Vineyard Sound and the neighboring waters through June and to the middle of July. A little later they are more abundant to the southeast of Crab Ledge, and after August 1 to the southeast of Cape Cod and George's Bank.

The schooner Northern Eagle, of Gloucester, Capt. George H. Martin, when engaged in swordfish fishing, is accustomed to leave Gloucester so as to be on the ground south of Block Island by the 10th of June, and the fish are followed as far east as Portland. Mr. Earll ascertained that the swordfish are mostly fished for on the coast of Maine from July 1 to September 1. Halibut vessels on La Have and Sable Island Banks occasionally take these fish upon their lines.

Mackerel vessels on the New England coast are always prepared for swordfish when cruising among mackerel schools. I am not aware that they are ever seen on the mackerel grounds of the Gulf of Saint Lawrence.

2. THE VESSELS.

The vessels engaged in swordfishing are sloops and small schooners of generally less that 50 tons. The crew is also small, consisting of two or sometimes three men besides the cook and a boy. Although many vessels are employed in this fishery for several successive years, there are many others which fit out for a single season or for a part of a season. Others, on the south coast of New England, divide their time between fishing for sea-bass and hunting for swordfish, all warm and quiet days being devoted to the latter pursuit. Six or eight vessels from New London are thus employed, as well as others from Noank and Bridgeport. On the coast of Maine, as has already been mentioned, many of the smaller fishing vessels fitted for the capture of mackerel and cod devote a part of the season to taking swordfish. Other vessels, among them occasionally a gentleman's yacht, enter the field for a cruise or two in the course of a summer. To do this is a favorite recreation for old swordfishermen engaged in other work. Numerous mackerel schooners carry the swordfish "pulpit" on their bows, and so do various coasters and packets.

It has therefore not been thought desirable to attempt to make a list of the vessels engaged in this fishery, or even an exact enumeration of them. In 1879 estimates by careful men engaged in the business fixed the number belonging in different ports as follows:

New York (hailing from New London)	2
Greenport sloops	2
New London	8
Newport	1
Fall River	2
Cuttyhunk	3
Westport	2
New Bedford	13
Dartmouth	2
South side of Cape Cod	5
Gloucester	1
Total	41

In 1874, according to Mr. Thompson, New Bedford had twelve vessels in this fishery. In 1877 the estimates of total number of vessels made by different men varied between thirty and forty.

To show how uncertain the continuance of vessels in this fishery may be I will refer to the annals of Gloucester. In 1876, one schooner, the Meteor, was engaged; in 1877, the schooner Champion; in 1878, the schooner Northern Eagle; while in 1879 and 1880 the field was abandoned by this port.

3. APPARATUS OF CAPTURE.

The apparatus ordinarily employed for the capture of the swordfish is simple in the extreme. It is a harpoon with detachable head. When the fish is struck the head of the harpoon remains in the body of the fish, and carries with it a light rope, which is either made fast or held by a man in a small boat, or is attached to some kind of a buoy, which is towed through the water by the struggling fish, and which marks its whereabouts after death.

The harpoon consists of a pole 15 or 16 feet in length, usually of hickory or some other hard wood, upon which the bark has been left, so that the harpooner may have a firmer hand-grip. This pole is from an inch and a half to two inches in diameter, and at one end is provided with an iron rod, or "shank," about 2 feet long and five-eighths of an inch in diameter. This "shank" is fastened to the pole by means of a conical or elongated cup-like expansion at one end, which fits over

the sharpened end of the pole, to which it is secured by screws or spikes. A light line extends from one end of the pole to the point where it joins the "shank," and in this line is tied a loop, by which is made fast another short line, which secures the pole to the vessel or boat, so that when it is thrown at the fish it cannot be lost.

Upon the end of the "shank" fits somewhat securely the head of the harpoon, known to the fishermen by the names "swordfish iron," "lily iron," or "Indian dart." The form of this weapon has undergone much variation, as is shown in the series of specimens in the National Museum. The fundamental idea may very possibly have been derived from the Indian fish-dart, numerous specimens of which are in the National Museum. However various the modifications may have been, the similarity of the different shapes is no less noteworthy from the fact that all are peculiarly American. In the enormous collection of fishery implements of all lands in the late exhibition at Berlin nothing of the kind could be found. What is known to whalers as a toggle-harpoon is a modification of the lily-iron, but so greatly changed by the addition of a pivot by which the head of the harpoon is fastened to the shank that it can hardly be regarded as the same weapon. The lily-iron is in principle exactly what a whalemen would describe by the word "toggle." It consists of a two-pointed piece of metal, having in the center, at one side, a ring or socket whose axis is parallel with the long diameter of the implement. In this is inserted the end of the pole shank, and to it or near it is also attached the harpoon-line. When the iron has once been thrust point first through some solid substance, such as the side of a fish, and is released upon the other side by the withdrawal of the pole from the socket, it is free, and at once turns its long axis at right angles to the direction in which the harpoon-line is pulling, and thus is absolutely prevented from withdrawal. The principle of the whale harpoon or toggle-iron is similar, except that the pole is not withdrawn, and the head, turning upon a pivot at its end, fastens the pole itself securely to the fish, the harpoon-line being attached to some part of the pole. The swordfish lily-iron head, as now ordinarily used, is about 4 inches in length, and consists of two lanceolate blades, each about an inch and a half long, connected by a central piece much thicker than they, in which, upon one side, and next to the flat side of the blade, is the socket for the insertion of the pole-shank. In this same central enlargement is forged an opening to which the harpoon-line is attached. The dart-head is usually made of steel; sometimes of iron, which is generally galvanized; sometimes of brass.

The entire weight of the harpoon-pole, shank, and head should not exceed 18 pounds.

The harpoon-line is from 50 to 150 fathoms long, and is ordinarily what is known as "fifteen-thread line." At the end is sometimes fastened a buoy, and an ordinary mackerel keg is generally used for this purpose.

In addition to the harpoon, every swordfisherman carries a lance. This implement is precisely similar to a whaleman's lance, except that it is smaller, consisting of a lanceolate blade, perhaps 1 inch wide and 2 inches long, upon the end of a shank of five-eighths inch iron, perhaps 2 or 3 feet in length, fastened in the ordinary way upon a pole 15 to 18 feet in length.

4. THE MANNER OF FITTING THE VESSEL.

The swordfish are harpooned from the end of the bowsprit of a sailing vessel. It is next to impossible to approach them in a small boat. All vessels regularly engaged in this fishery are supplied with a special apparatus for the support of the harpooner as he stands on the bowsprit, and this is almost essential to success, although it is possible for an active man to harpoon a fish from this station without the aid of the ordinary frame-work. Not only the professional swordfisherman but many mackerel schooners and packets are supplied in this manner.

An illustration of the swordfish "pulpit" is given in one of the plates. It is constructed as follows: The harpooner stands upon the tip of the bowsprit, outside of the jib-stay. At this point is fastened a square plate of iron as wide as the bowsprit. In the middle of this plate is a mortise 2 inches square and extended 3 or 4 inches down into the wood, forming a socket for an upright iron bar 2 inches square and 3 feet high. At the top of this bar is a bow of iron bent backward in semicircular form to surround the waist of the harpooner, the ends of the bow being separated by a distance of perhaps 2 feet. In the ends of the bow-iron are holes, through which are passed irons to hold the dart when not in use. Through these same holes are sometimes passed ropes, by which is suspended a swinging seat for the use of the harpooner when not in action. When not in use the dart is lashed in a horizontal position to the top of the "rest." The lance is usually allowed to rest against the jib-stay, to which it is secured by passing it through loops of rope arranged for the purpose. Upon the tip of the bowsprit, at the base of the "rest," is a platform of wood about 2 feet square, large enough to afford a firm foothold to the harpooner. The harpoon-line is coiled upon the bow of the vessel, the buoy usually resting upon the bulkhead or close at hand. A second harpoon-line, attached to the reserve or second harpoon, is coiled upon the other side.

The structure above described is usually called the "rest," or the "pulpit." I have been unable to learn when and by whom this peculiar piece of apparatus was devised.

5. MANNER OF CAPTURE.

The swordfish never comes to the surface except in moderate, smooth weather. A vessel cruising in search of them proceeds to the fishing ground and cruises hither and thither, wherever the abundance of small fish indicates that they ought to be found. Vessels which are met are hailed and asked whether any swordfish have been seen, and if tidings are thus obtained the ship's course is at once laid for the locality where they were last noticed. A man is always stationed at the masthead, where, with the keen eye which practice has given him, he can easily descry the tell-tale dorsal fins at a distance of 2 or 3 miles. When a fish has once been sighted, the watch "sings out," and the vessel is steered directly towards it. The skipper takes his place in the "pulpit," holding the pole in both hands by the small end, and directing the man at the wheel by voice and gesture how to steer. There is no difficulty in approaching the fish with a large vessel, although, as has already been remarked, they will not suffer a small boat to come near them. The vessel plows and swashes through the water, plunging its bowsprit into the waves, without exciting their fears. Noises frighten them and drive them down. Although there would be no difficulty in bringing the end of the bowsprit directly over the fish, a skillful harpooner never waits for this. When the fish is from 6 to 10 feet in front of the vessel it is struck. The harpoon is never thrown, the pole being too long. The strong arm of the harpooner punches the dart into the back of the fish, right at the side of the high dorsal fin, and the pole is withdrawn and fastened again to its place. When the dart has been fastened to the fish, the line is allowed to run out as far as the fish will carry it, and is then passed in a small boat which is towing at the stern. Two men jump into this, and pulling in upon the line until the fish is brought in alongside, it is then killed with a whale-lance or a whale-spade, which is stuck into the gills. The fish having been killed, it is lifted upon the deck by a purchase-tackle of two double blocks rigged in the shrouds.

The fishermen have a theory to the effect that the swordfish can see nothing directly in front of him, on account of the peculiar location of the eyes, and there are instances of their having been approached and killed by men in a skillfully-managed dory.

6. THE PERILS AND THE ROMANCE OF SWORDFISHING.

The pursuit of the swordfish is much more exciting than ordinary fishing, for it resembles the hunting of large animals upon the land, and partakes more of the nature of the chase. There is no slow and careful baiting and patient waiting, and no disappointment caused by the accidental capture of worthless "bait-stealers." The game is seen and followed, and outwitted by wary tactics, and killed by strength of arm and skill. The swordfish is a powerful antagonist sometimes, and sends his pursuers' vessel into harbor leaking, and almost sinking, from injuries which he has inflicted. I have known a vessel to be struck by wounded swordfish as many as twenty times in one season. There is even the spice of personal danger to give savor to the chase for the men are occasionally injured by the infuriated fish. One of Captain Ashby's crew was severely wounded by a swordfish, which thrust his beak through the oak floor of a boat on which he was standing and penetrated about two inches in his naked heel. The strange fascination draws men to this pursuit when they have once learned its charm. An old swordfisherman, who had followed the pursuit for twenty years, told me that when he was on the cruising ground he fished all night in his dreams, and that many a time he has bruised his hands and rubbed the skin off his knuckles by striking them against the ceiling of his bunk when he raised his arms to thrust the harpoon into visionary monster swordfishes.

7. LANDSMEN'S DESCRIPTIONS OF SWORDFISHING.

Mr. C. F. Holder, of New York, published in Forest and Stream February 17, 1876, the following description of a trip after swordfish in Block Island Sound:

"Lying all night in the harbor of Wood's Holl, we had ample time to prepare for sport, and at three o'clock in the morning our little sloop was swinging around, and, gathering herself together, headed for Gay Head. The vessel was a common sloop of about 60 tons, its only peculiarity being a stanchion with a curved top, to hold the harpooner, rigged on the extreme end of the bowsprit. At 9 o'clock we were out of sight of the Vineyard. The wind settling, I was informed that I could go aloft and look out for the game. We were slowly moving along, and I was scanning the horizon for miles around, when the man at the bow uttered a sound, which was a sort of a cross between a cluck and a groan, which I saw meant 'port,' and that something had been sighted. The sloop fell lazily away, and I then saw two dark forms with their razor-like fins out of the water slowly moving along ahead of us. The captain signaled at once for me to come down, and as I reached the deck the work commenced. The man waited until we were almost upon them, and as one of them turned, as if in idle curiosity, to see what the great shadow meant, he hurled a harpoon, and the next moment the huge fish sprang from the water and with a furious twist tried to shake out the iron. So great was the effort that it fell on its side with a crash, and for a moment was still, but it was only for a second. The line jumped into activity and rushed out so you could not follow it, now swaying to and fro, and making the water fly like rain. About 50 feet of line had gone out, when six of us managed to get a fair hold on the line. He would undoubtedly have dragged us all overboard if the rope had not been sure and fast. His struggles were kept up for about fifteen minutes, after which he perceptibly weakened, and the long rushes to the right and left grew feebler and feebler, until we ventured to haul in. At last we had the brute alongside. A rope was rigged from the peak and fastened around the long sword, and the monster was rolled on board the sloop. We measured our prize, which was 9 feet 6 inches long.

"We cruised about all day in the vicinity, and succeeded in capturing three more, varying in

length from 6 to nine feet, and as we returned to Wood's Holl I felt that I had well earned my experience."

A correspondent of the Philadelphia Times gives the following spirited account of spearing swordfish off Cape May:

"'Hey-o!' came from the man in the cross-trees.

"'Where away?' yelled the skipper, unhooking his booted leg from the wheel and glancing around.

"'Right off the weather bow,' sang out the mate, who had sprung into the rigging.

"'Aye, I see him,' replied the skipper. A moment later all eyes on board were watching a sharp glistening fin that was darting through the water in the same general direction as ourselves.

"The mate now took his place in the pulpit, and seizing the steel lily stood ready for the game, while the rope was carefully coiled and the keg made ready to toss at the right moment. For ten minutes the vessel and fish moved along gallantly side by side. The skipper, however, was gradually hauling the vessel on the wind, and the two approached each other until the swordfish was close alongside. Then came the supreme moment. The skipper wound away at the wheel, and the little vessel shot into the wind, laying the swordfish right across the bows, and as it rushed along amid the foam, the harpooner raised his weapon; for a moment the steel lily flashed, then, with a crushing sound, it entered the back of the fish.

"'Stand clear the line!' shouted the mate, as he sprang back upon deck and the schooner fell away again.

"The warning was well heeded, as the rope was rushing over the side like a 'streak of greased lightning,' as the skipper had it. It was soon exhausted, and as the end came the mate held aloft the keg, and as the last fathom of rope rushed away, tossed it over, and away it went, followed by a wave of foam and spray, to ultimately tire the gamey fish.

"We had now gained on the flying keg, and, as the dory was hauled alongside, two of the crew and the writer as volunteer, tumbled in, and in a few moments had the keg alongside. The oars were then pulled in, and in a moment later the bowman had seized the keg and the dory was rushing along—a swordfish express. The work of 'taking in' now commenced, one man steering the dory after the erratic steed, the other slowly hauling in on the rope. As the fish felt the strain it renewed its exertions and started off at a furious pace that threatened to leave the vessel far behind. But the spurt was of short duration, and the dory was rapidly hauled ahead, until finally the sharp fin was seen close by, and with a rush the fish was laid alongside, one man holding it while the rest got to the windward to prevent a capsize.

"Hauled partly out of water by the rope, the great fish gave a vicious cut to the left with its sharp weapon that caused all hands to drop as if sent for, and for some time this lowly position was the best, all things considered. The rope was kept taut, and the struggles of the game were terrific. If a head was raised it seemed immediately to become the object of attack. Finally, however, an oar was lifted and a violent blow upon the head placed the swordfish *hors du combat*. The schooner now came alongside, a block and tackle was rigged, and the gamey fish was hoisted aboard."

8. THE CAPTURE OF SWORDFISH BY HOOK AND LINE.

One or two instances are on record of the capture of swordfish upon an ordinary hand-line, and it is probable that this is much more common than has been usually supposed. Capt. George H. Martin, of Gloucester, informed me that he had seen seven caught in this manner in one day in the South Channel. They were caught in water 15 to 25 fathoms deep, on the old-fashioned

George's cod hook, with a 6-inch shank. Mackerel were used for bait. These were split down the tail so that the shank of the hook could be entirely hidden in the gash.

I have been told that they are also taken in this way about Block Island, and a similar method of fishing is described by Italian writers.

Within the past five years it has not been unusual for swordfish to become entangled in the long lines of the halibut fishermen on the northern banks. The manner in which this occurs has already been discussed above.

I have collected several instances. In 1877, in the month of August, Capt. Daniel O'Brien, of the schooner Ossipee, of Gloucester, fishing in 200 fathoms of water, between Le Have and Western Bank, caught, in one voyage, five swordfish.

At about the same time Capt. R. L. Morrison, of the schooner Laura Nelson, fishing in 275 fathoms, on Sable Island Bank, caught three swordfish. Another vessel, in August, 1877, fishing on La Have, in from 175 to 180 fathoms, caught twelve, as well as three or four more in September. In August, 1878, Captain Greenleaf, of the schooner Chester R. Lawrence, of Gloucester, fishing in 140 fathoms, caught thirteen in one trip. I cannot learn that this manner of capture was ever known before 1876, but it has since become so frequent that it excites no remark for a halibut-catcher to unload several swordfish among its halibut. This manner of taking the swordfish is of course purely accidental, and is rather a vexation than otherwise to the fishermen. It is probable that the fish take the bait when the line is being set and they are swimming near the surface, and they are involuntarily carried down by its great weight.

9. FINANCIAL PROFITS TO FISHERMEN.

I have before me record of a single schooner for the season of 1878, from which it appears that in the season of four months eight trips were made, averaging about twelve days in continuance. One hundred and sixty-three fish were taken between June 7 and September 20, weighing, in the aggregate, in round numbers, about 47,000 pounds, dressed. These were sold at an average price of 3 cents per pound. The gross stock of the season would amount to about $1,300. From this must be deducted the expense of living, the interest on capital invested, and the wages of the cook and the boy. The remainder would probably not exceed $800 or $900. It is not probable that many vessels stock as large a proportionate amount as did the Northern Eagle. And the profits are to be divided among the two or three men composing the crew and the owner of the vessel. The success of one New Bedford vessel in the season of 1878 was spoken of as extraordinary, the return being $311 to each of the crew's share.

The price of swordfish is low, and the success of the voyage is always somewhat precarious. A few small vessels with experienced skippers apparently succeed in making a fair living, but that the profits are not great is clearly indicated by the fact that there is no great increase in the number of vessels engaged, and that so many are constantly undertaking and abandoning the swordfishery.

10. HISTORY OF THE AMERICAN SWORDFISH FISHERY.

There are few data upon which to found conjecture as to the time when the swordfish were first regarded as sufficiently useful to be sought for by fishermen. The earliest record of its use for food is found in the Barnstable Patriot of June 30, 1841, in which it is stated that the fishermen of the island south of Cape Cod take a considerable number of these fish every year by harpooning them, and that about 200 pounds a year are pickled and salted at Martha's Vineyard.

Captain Atwood remembers seeing swordfish on the coast of Maine as early as 1826, although

up to the time of his retirement from active participation in the fisheries, in 1867, no effort was made by the fishermen north of Cape Cod to capture them.

The fishery apparently sprang into existence and importance between the years 1840 and 1855, upon the south coast of New England. Captain Ashby first engaged in it in 1859, when it was apparently a well-established industry. In 1861 it is recorded that some thirty vessels from New Bedford were profitably engaged in this business on the favorite ground, 15 to 20 miles southeast of No Man's Land.

Mr. Earll ascertained that little attention was paid by the fishermen of Portland, Me., to swordfish until within two or three years. This fishery is carried on at odd times by mackerel gill net fishermen, and by cod-trawling vessels when their regular industry is interfered with by the abundance of dogfish. The season for dogfish is also the time for swordfish, and at the present time, when the price of swordfish justifies it, smaller fishermen, when they are driven from their regular work by the dogfish, make trips for the express purpose of capturing swordfish. Mackerel-seiners are beginning to carry swordfish irons, and are often very successful in killing the fish.

At the present day, and for five or six years past, perhaps much longer, there has been very little change in the number of vessels engaged, this varying from thirty to forty, approximately, in different years.

Capt. Epes W. Merchant, of Gloucester, who has been familiar with the fisheries since 1804, tells me that the first swordfish ever brought to Gloucester within his recollection was caught on George's Bank about the year 1831, by Captain Pew, who brought it in and sold it at the rate of $8 a barrel, salted. Fishermen had before that been very much afraid of them, but afterwards a good many were caught.

11. PRODUCTS OF THE FISHERY.

As an example of the manner in which a season of swordfishing is passed, and of the yield of a very successful period of work, a record is here given of the trips of the schooner Northern Eagle, of Gloucester, Capt. George H. Martin:

Trips of schooner Northern Eagle, Capt. George H. Martin.

No. of trips.	Date of start.	Length of trip.	No. of fish taken.	Where sold.	Price.
		Days.			*Cents.*
1	June 7	10	16 (5,000 lbs.)	Boston	3
2	June 19	7	22 (6,600 lbs.)	do	4½
3	June 30	14	12 (3,760 lbs.)	Newport	2½
4	July 12	11	20 (5,800 lbs.)	Boston	3
5	July 27	18	37 (9,000 lbs.)	do	5
6	August 15	15	26 (6,500 lbs.)	do	3
7	September 1	16	16 (5,600 lbs.)	do	(2)
8	September 20	14	14 (4,500 lbs.)	do	(3)
			163 (46,700 lbs.)		

Capt. Benjamin Ashby went swordfishing in the schooner N. H. Dudley two successive years, in 1859 and 1860. In July and August, 1859, he took 108 fish; the next year 88.

The schooner Yankee Bride, of New Bedford, boarded in Provincetown Harbor, August, 1879, had already that season taken 60 fish.

Mr. Earll reached Portland in the progress of the fishery census investigation, July 29, 1879. On this day, he writes, 35 to 40 fish were brought in, and on the 1st of August 200 more were landed, 60 by one vessel.

Estimating the number of vessels regularly employed in wordfishing at forty, and putting estimating their annual catch at eighty fish each, which is only half the quantity taken by the Northern Eagle, as shown in the preceding paragraph, the aggregate number of fish taken would be 3,200.

Competent authorities estimate that each vessel in the mackerel fleet captures and brings in an average quantity of eight barrels of pickled fish, or perhaps eight fish each. The number of vessels in the mackerel fleet is at least four hundred. Allowing four fish to each, there is an aggregate of 1,600 fish. Estimating one for each vessel in the halibut fleet yearly, we add fifty more in the aggregate.

Mr. Earll judged that in 1878, as for several years previous, 2,000 swordfish had been brought into Portland, Me. Allowing 1,000 of these to the regular swordfishermen and the mackerel vessels, we have a remainder of 1,000 taken by the occasional fishermen of Portland already spoken of, and to be added to the aggregate, which now amounts to 5,850.

Add 150 more for the coasters, sea-bass fishermen, and pound-tending vessels of southern Massachusetts, Rhode Island, and Connecticut, and the sum is 6,000.

The average weight of a swordfish dressed is estimated by several persons, Captain Ashby, Mr. Earll, Mr. Thompson, and others, to be 300 pounds, and that this is not far from the truth may be seen by referring back to the records of the Northern Eagle. If the average weight is assumed to be 250 pounds, the aggregate weight of a year's catch of swordfish amounts to 1,500,000 pounds, valued at $45,000, the average price being estimated at three cents per pound.

To estimate the number of men employed is almost impossible, since the season continues only four months, and many are employed for a much shorter period. The crews of the forty vessels number from one hundred and sixty to two hundred; the number of men employed for shorter periods it seems scarcely necessary to estimate.

In 1874 the annual catch for the United States was estimated, by Mr. E. G. Blackford, at 2,000 fish, weighing 1,000,000 pounds.

In 1880 the yield of this fishery was 965,450 pounds, distributed as follows: Fisheries of Maine, 50,000 pounds; New Hampshire, 20,000; Massachusetts, 731,950; Rhode Island, 90,000; Connecticut, 73,500.

12. MARKETS AND PRICES.

Mr. Thomson remarks: "Previous to 1862 the market for fresh fish was limited to New Bedford, Fall River, Providence, and the adjoining towns, and a large proportion of the fish then taken was salted and shipped to the West Indies and the Southern States. This was especially the case with those taken about Noman's Land and Martha's Vineyard. Now nearly all are consumed fresh, and the average price is somewhat higher than formerly."

Mr. John H. Thomson writes: "At present the great bulk of the catch is sold fresh. Most of the fish are brought to this port, and a few are carried to New London. Until within a very few years nearly all were disposed of in this vicinity. About 1864 a few were sent to Boston on trial, and the consumption of swordfish in that vicinity has since rapidly increased. Still, the principal market for fresh swordfish may be said to lie between New London and the eastern end of Massachusetts. Providence, R. I., consumes a large quantity."

Mr. Earll writes: "About 2,000 swordfish, averaging in weight 300 pounds dressed, have been landed yearly in Portland for several years. Most of them are sent to Boston fresh, and the remainder are cut up and salted here."

Mr. Eugene G. Blackford informs me that swordfish are not much esteemed in New York market, and that in 1874 not more than 2,000 pounds in the aggregate were consumed.

Regarding the price of fresh fish at New Bedford, Mr. Thomson remarks: "When the first fish arrives here it is eagerly sought at 20 cents a pound, retail. In 1873, within forty-eight hours of the arrival of the first one, fifty-two were brought in, bringing the general retail price down to 8 and 10 cents. At this price, clear of bone, they are usually retailed throughout the season. The wholesale price is about 12 cents for the first catch, falling rapidly to 2 or 3 cents. This is for 'clean fish,' without head, tail, and viscera. Fish from George's Bank are sometimes brought here from Boston. They then retail at 15 and 20 cents."

According to the record of the Northern Eagle, the price in June, 1878, ranged from 2 to 4½ cents, in July from 3 to 5 cents, and in August from 2½ to 3.

In July, 1879, Mr. Earll found the price in Portland, Me., 4 cents, but the arrival of 200 fish on August 1 brought the price down to 1¼ cents. He estimates the average wholesale price at 2 cents.

In New London, according to Captain Ashby, the price has varied within his recollection from 3 to 8 cents, the latter high price being paid in 1877.

According to Captain Martin, the price of salt swordfish in Gloucester is always about the same as that of No. 3 mackerel. In July, 1878, there being no mackerel in the market, they were valued at $7 a barrel.