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PART I.

THE HALIBUT FISHERIES.

1.—THE FRESH-HALIBUT FISHERY.

By G. Brown Goode and J. W. Collins.

1. GENERAL REVIEW.

In the year 1879 there were forty vessels, of 3,168 tons, from Gloucester, Mass., employed exclusively in the fresh-halibut fishery. Vessels hailing from New London and the eastern end of Long Island were also employed, except during the winter months, in the capture of halibut, which they carried to New York; these vessels, however, take a considerable quantity of codfish. In addition to the Gloucester vessels already mentioned, which fish for halibut throughout the year, there were eight vessels, of 647 tons, which fished for halibut in the winter season and engaged in other fisheries, generally the cod fishery, from May to November.*

The vessels of the George's fleet, though their chief object is the capture of cod, catch considerable quantities of halibut, which are brought to Gloucester fresh; a few also are sometimes taken by the Western Bank cod fleet, and a still smaller quantity by the Boston Market fleet. In 1879, and probably in 1880, there were a few small vessels on the coast of Maine which engaged in the fresh-halibut fishery for three or four months in the summer, carrying their fish chiefly to Portland. The total catch of halibut on the New England coast for 1879 was estimated at 14,637,000 pounds, distributed as follows:

	Pounds.
Gloucester halibut fleet	8,300,000
Gloucester vessels fishing in winter only	1,000,000
New York halibut catchers	3,000,000
Gloucester, George's fleet (incidental)	2,000,000
Western Bank cod vessels (incidental)	37,000
Small vessels on the coast of Maine and Massachusetts	300,000
Total	14,637,000

In this chapter it is proposed to discuss in detail only the operations of the schooners engaged exclusively in the capture of halibut.

* Since 1879, at which time the fresh-halibut fishery was at its greatest activity, there has been a very marked decline in the quantity of fish taken if not in the number of vessels employed. The product of this fishery has seldom been larger than it was in the above-named year, but since that time halibut have gradually become scarcer on all of the old and well known grounds, until now a "big trip"—of 70,000 or 80,000 pounds of fish—is seldom made, and 40,000 to 45,000 pounds of halibut constitute a "good fare." In 1885, at the time this paper is being printed, the fresh-halibut fleet does not probably include more than 40 vessels, and the total catch is estimated not to exceed 5,000,000 pounds; for the first three months of the year the Bank fleet landed only 612,000 pounds.

2. THE FISHING GROUNDS.

The fishing grounds frequented in 1879–'80 by the Gloucester fleet were (*a*) upon the outer slope of Banquereau, in 100 to 400 fathoms of water; (*b*) on the slope to the south and west of the Grand Bank, Green Bank, and Saint Peter's Bank, in 75 to 350 fathoms of water; (*c*) upon the southern and eastern slopes of Western or Sable Island Bank, and in the "Gully" between this and Banquereau, in 70 to 350 fathoms of water; (*d*) on the southern slope of La Have Ridges, in 100 to 400 fathoms of water; (*e*) in the deep water to the south of the western part of Newfoundland, in 150 to 250 fathoms of water; (*f*) north of Saint Peter's Bank, in 130 fathoms of water; (*g*) on the west coast of Newfoundland, in the vicinity of Green Point, near Bonne Bay, in 10 to 15 fathoms of water; (*h*) on the eastern slope of George's Bank and on the southern slope of Brown's Bank, in 200 to 275 fathoms of water.*

On the grounds mentioned under the letters *f*, *g*, and *h*, the fisheries are, comparatively, of much less importance than in the other localities.

The New York halibut vessels fish on George's Bank and on Nantucket Shoals, in 25 to 100 fathoms; also on Brown's Bank, Seal Island Ground, La Have, and occasionally, though rarely, on the Western Bank, but in much shallower water than that frequented by the Gloucester schooners, seldom as deep as 150 fathoms.

Since the culmination of the halibut fishery on George's Bank, in 1848 to 1850, the halibut vessels have been constantly changing their fishing grounds. At first they caught the halibut on the shoaler parts of the several grounds visited, seeking the fish first upon the banks which were nearest home, then upon those which were remoter, something in the following order: (1) The Seal Island Ground, (2) Brown's Bank, (3) La Have Bank and La Have Ridges, (4) Western Bank, (5) Grand Bank, (6) Saint Peter's Bank and the "Gully," (between Banquereau and Sable Island Bank), the grounds off Flint Island and Scatari, Cape Breton, the Miquelon Beach, Pass Island, Saint George's Bay, Red Island, and other points on the south and west coasts of Newfoundland, the coast of Southern Labrador, and Anticosti Island. At times in the past halibut have also been taken about Cape North.†

In 1873 and one or two succeeding years a few fares of halibut were obtained in the vicinity of the Magdalen Islands. The following notice of the first trip taken in that locality was thus referred to in the Cape Ann Advertiser of August 15, 1873:

"*New halibut grounds.*—Schooner Notice, of this port, arrived here on Saturday, August 9, with a fare of halibut caught off Bird Rocks, near the Magdalen Islands, Bay of Saint Lawrence. The halibut were of good quality, and weighed off 32,000 pounds, her stock amounting to $2,400. Not a bad four weeks' work."

A few good trips have also been obtained on various shoals between Western Bank and the Nova Scotia shore; occasionally in the vicinity of Bryer's Island, which was for some time a favorite fishing ground for the Connecticut vessels, and also at one or two points on the southern coast of Nova Scotia, in the vicinity of Liscomb Harbor; but fishing on these grounds is now and for several years past has been abandoned by large vessels.

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* Since the above was written, new halibut grounds have been discovered on the eastern slope of the Grand Bank, between the parallels of 43° 30′ and 44° 30′ N. latitude. In the summer of 1885 this locality was the one chiefly resorted to by the fresh-halibut catchers, since fish were very scarce on other grounds. A full account of this discovery is given in succeeding paragraphs.

† Some big halibut came from Cape North on Sunday. Three of these weighed 540 pounds.—*Cape Ann Advertiser*, May 31, 1861.

Considerable quantities of halibut were also taken in the vicinity of Cape North, Cape Breton, as previously mentioned, chiefly, however, by the cod fishermen, who flitched and salted them.

Prior to 1874 the fresh-halibut fishery was, as a rule, carried on in water from 20 to 75 fathoms deep, though the fish taken off Pass Island, Newfoundland, were caught in 160 fathoms.

In 1873 Capt. John Dago, while on a "salt trip," caught a large number of halibut on the extreme southern part of the Grand Bank, in 160 fathoms of water. His vessel was anchored in 130 fathoms, in latitude 42° 57′ north, and longitude 50° 28′ west. He had previously taken halibut on the Flemish Cap, while fishing for cod, in a depth of 100 to 120 fathoms. He claims to have been the first to fish for halibut in deep water on the Grand Bank.

In 1874 the schooner G. G. Kidder, as well as a number of vessels engaged in the salt-halibut fishery, being anchored in about 70 or 80 fathoms on the western slope of the Grand Bank, found that the halibut shifted their position slowly, going in a westerly direction, and that, after a day or two, the best fishing was obtained on the trawls which were set in the deepest water. This, therefore, induced the captains to change their positions, so they moved out into 90 or 100 fathoms. This was the beginning of a change in the method of fishing on the Banks. In the spring of 1875 the fresh halibut vessels were driven from the shoal water of the bank by drifting field-ice, and one of them having anchored in a depth of 83 fathoms, found good fishing on trawls which were set still farther out, and as a result the vessels in that vicinity anchored in a depth of water varying from 110 to 140 fathoms and made excellent catches.

Although fares of fresh halibut had been previously taken at a depth of 160 fathoms near Pass Island, in Fortune Bay, Newfoundland, and Captain Dago had, during the previous season, obtained part of a fare of flitches in a similar depth on the southern extremity of the Grand Bank, this was practically the beginning of the deep-water fishing for this species on the banks, and since that time the halibut fishermen have been setting their trawls farther and farther down upon the edge of the continental slope, and fares have been caught in waters as deep as 400 fathoms, the vessels being anchored in depths varying from 200 to 275 fathoms, and, in one instance, in no less than 315 fathoms. There is no other food-fish fishery in the world in which fish are sought at so great a depth, and for no other purpose are vessels habitually anchored in such deep water. An extraordinary instance of deep-water fishing may be cited here, the case of the schooner Davy Crockett, of Gloucester, which, it is said, on one occasion, in the winter of 1878, set trawls in 600 or 700 fathoms of water on the western slope of the Grand Bank, in latitude 43° 30′, and caught many halibut.

Prior to the extensive halibut fishery on George's Bank, which was carried on from 1830 to 1850, the species were very abundant in Massachusetts Bay and off Cape Cod, so much so as to be sometimes regarded as a decided nuisance by cod fishermen, and before 1830 those who wished to catch halibut had no difficulty in finding an abundant supply within a few miles of shore. They were gradually exterminated in the bay, the history of which, together with an account of the vessels betaking themselves to George's Bank for the capture of halibut, will be presented later, in the paragraph upon the history of the early halibut fisheries.

Though a fleet of Connecticut vessels have long pursued the halibut fishery, they rarely have gone to the distant grounds, north and east of La Have Bank, but for many years they have engaged in fishing along the southern and western coasts of Nova Scotia.

3. THE FISHERMEN.

The fishermen employed upon the halibut schooners are chosen men, and a man is seldom shipped on board of one of these vessels who is not well known or at least recommended as a good

fisherman and a reliable man. It is not a rare occurrence to find among the crew of a halibut schooner several men who have been masters of vessels. In the Gloucester fleet were employed, in the census year, 646 men, a large percentage (187) of whom were of New England birth, with a still larger percentage (393) of Provincials, a considerable number (103) of Scandinavians, and a very few Portuguese, French, and Irish. Some vessels are commanded by Swedes and Norwegians and manned almost entirely by men of the same nationality, men of these countries seeming to take very kindly to this branch of the fisheries. A number of the most enterprising skippers are natives of Maine. There is no branch of the fisheries which demands of the men employed in it more skill, endurance, and courage than the halibut fishery.

The crews of the Connecticut and Long Island vessels are made up, in large part, of men from the ports to which the vessels belong, especially the three or four men who are sharesmen. The remainder of the men are hired, and are less responsible, and, as a rule, less efficient and daring than those employed in the Gloucester fleet.

4. THE HALIBUT VESSELS.

The schooners which are employed in the fresh-halibut business have always been chosen from among the stanchest and swiftest in the Gloucester fleet. Their average tonnage is from 75 to 80 tons, and they are, as a rule, better vessels than even those now employed in the George's fishery. The smallest vessel employed in the fresh-halibut fishery in 1880 was the Alice G. Wonson, of 64 tons, while others registered nearly 100 tons. A writer in the Barnstable Patriot of March 25, 1856, says: "The Gloucester vessels now engaged in the halibut fishery on the Banks number forty-six. They are generally fine vessels of about 80 tons, and are manned by hardy, experienced, and bold crews of about twelve men each."

A vessel engaging in this fishery is fitted out in a somewhat peculiar manner. To enable her to anchor in great depths of water and to ride out furious gales, which she is sure to encounter in the winter, she is provided with a cable of great size and strength. This cable is of manila, 8½ to 9 inches in circumference, and from 375 to 425 fathoms in length, spliced together in "strings," each of which is usually 50 to 100 fathoms long. Most of the cable is coiled upon the port side, forward, where it fills the entire space between the forecastle companion-way and the rail, the coil being 6 to 7 feet in width, 9 to 10 feet in length, and having a height of about 3½ or 4½ feet. This mass of rope seems immense, and would weigh, when wet, probably about 4 tons. A new cable (dry) of 400 fathoms weighs 6,266 pounds. As a rule, 50 or 75 fathoms of this cable are coiled on the starboard side of the companion-way, in order that it may be ready to bend on the starboard anchor, which is rarely or never kept bent at sea.

The anchors are, of course, unusually heavy. They are the ordinary long-shanked anchors carried by fishing schooners, with a wooden stock which passes through an eye in the end of the shank. These anchors weigh from 525 to 725 pounds, according to the size of the vessel. A vessel of 80 tons would carry three anchors averaging about 675 or 680 pounds in weight. One of the three, which is taken for a "spare anchor," is kept ready for emergencies, being stowed upon the deck. Some of the halibut vessels are provided with unusually large and powerful windlasses, for use in very deep water.

The hold is fitted up in a peculiar manner, as shown in the accompanying diagram of the port side of a halibut schooner, of which the following is an explanation:

DESCRIPTION OF SECTIONAL DRAWING OF HALIBUT SCHOONER, SHOWING PORT SIDE OF SCHOONER.

(1) Hawse-hole; C, knight-heads. (2) Inside part or "heel" of bowsprit. (3) End view of the middle part of the windlass, between the patent and windlass-bit on starboard side, showing position of the whelps on windlass. (4) Pawl-bit. (5) Position of the windlass beam. (6) Position of jib-sheet traveler. (7) Foremast. (8) Forward companion-way. (9) Fore-hatch; this is used for the purpose of hoisting in and out water and provision barrels; in moderate weather it is covered with a grating and serves the purpose of ventilating the forehold and forecastle. (10) The forehold, where the stores and water are kept; the water (28 to 30 barrels) is stowed in different ways to suit the ideas of the cook or skipper, but generally on the starboard side—oftentimes two large casks are carried amidships—and a pantry is built on the port side, where the "heavy stores" (flour, beef, &c.) are stowed on the head, that is, such as are open and being used, while the "small stores" (butter, lard, sugar, &c.) are kept in firkins, half-barrels, &c., and secured from being upset by setting in places built for them as shown in the drawing. A coal-pen is built between the pantry and forward bulkhead to the ice-house. The coal-pen is sometimes built on the starboard side next to the forecastle bulkhead. (11) Forecastle steps. (12) Cupboard, from deck to locker; there is another of the same size on the starboard side, just forward of the foremast. (13) After section of the table with the leaf turned up; this also turns back against the mast, the leaves folding alongside of the mast. (14) Locker on port side. (15) Forecastle floor. (16) Forward section of table; this is stationary, the forward end fastening to the pawl-bit, and the after end supported by an upright standard. (17, 18, 19, 20, 21, and 22) Positions of the upper and lower berths on port side; No. 22, being in the fore-peak, is small, and is not used for sleeping purposes, but is used for the storage of lanterns, kerosene-cans, &c.; there are only two rows of sleeping bunks on the starboard side; the berths abreast of the after row are used by the cook as lockers for putting his cooking utensils, &c., in. (23) The position in which the cook-stove stands on the starbord side (the stove is always carried on starboard side). (24) Pawl bit, under deck. (25) Forward pen in the ice-house, with pen-boards up, or shipped in place. (26) Forward bulkhead to ice-house, built of double boards, with tarred paper between, from side to side of vessel. (27) Stanchion and partition between the forward and second pen. (28) Second pen, showing how the ice is stowed. (29) Shows how halibut are iced in a pen, always white side up, and lying upon each other, so that they are slanting instead of flat in the pen; one-half of the tier is stowed head towards the side of the vessel, and the other half out, as shown in the drawing, both forming what is called a tier. (30) After pen in forward ice-house. (31) Bulkhead between the forward and after ice-house, built same as the forward one. (32) Pumps. (33) Ballast under the plank floor of the ice-house; this plank floor is laid on sleepers, which extend from side to side of the hold; these sleepers are, or ought to be, supported by stanchions under them. (34) Forward pen in after ice-house. (35) After pen. (36) Salt-pen; it is larger than this in some vessels. (37) Checker-plank. (38) Main hatch. (39) Checker-plank. (40) Break of the quarter deck. (41) Mainmast. (42) After hatch; (*a*) skylight on fop of house; (*b*) stovepipe. (43) After, or cabin, companion-way. (44) Wheel. (45) Wheel-box. (46) Taffrail. (47) Vacant place aft of cabin, under deck; used for the storage of gear, rope, &c. (48) Cabin stairs, called "steps" by fishermen. (49) After berth. (50) Partition between the berths. (51) Forward berth. (52) Locker, or seat, going around the cabin. (53) Stove. (54) Position of trap-door in the cabin floor, by which the coal is reached.

The above is the general arrangement, though in the matter of the ice-house a few vessels may have some slight differences of construction that are of minor importance.

The ballast, of which a vessel of 80 tons would carry 28 to 40 tons, is usually stone or shingle, though some vessels are partly ballasted with iron. In all cases it is covered with a plank floor (2 to 2½ inches thick) laid on sleepers, and firmly secured by stanchions, which extend from the deck-beams to the ice-house floor, forming the frame-work of the pens. In the forward part of the hold, and communicating with the forecastle by a door, is arranged the store-room for provisions, fuel, and water (as shown in the diagram), and this is separated from the ice-house by a double bulkhead of unplaned boards, having tarred paper between them. The store-room, which is also the cook's pantry, usually has a floor just high enough to cover a tier of water-barrels stowed each side the keelson, when larger casks are not used. In most, if not in all, halibut schooners the ice-house is divided into two sections by a bulkhead running across it aft of the mainmast. By this arrangement one portion of the ice-house can be kept closed while the other is being filled.

It is still further subdivided into "pens," a series of five or six of which are constructed on each side of a passage-way in the center of the ice-house, which is called the "slaughter-house," though this specific name generally applies more directly to those portions of the passage-way immediately beneath the hatch-ways. This "slaughter-house" is so arranged that it can be divided into pens, five or six in number, corresponding to those on each side, and these are called "slaughter-house" pens. This ice-house, with its compartments, fifteen to eighteen in number, will hold from 35 to 50 tons of ice in a vessel of 80 tons register, and from 75,000 to 115,000 pounds of halibut packed in ice. While fishing is being carried on, the pens are, in succession, emptied of the ice, its place being supplied by layers of halibut packed in ice, as will be described further on. The order in which the pens are emptied of ice and filled with halibut varies upon different vessels, but as a general rule the side pens are first occupied, beginning with the after ones in the forward section of the ice-house. It should be stated that the slaughter-house is not often completely filled with ice except on rare occasions in summer, since this is the passage-way by which access is gained to the pens, on either side. By the arrangement which has just been described, the vessel is provided essentially with two distinct ice-houses, called the forward and after ice-houses—the former reached through the main hatch, the latter through the after hatch. The forward ice-house is usually filled first, the after one being kept closed, and, when the forward ice-house is full, it is closed and the after ice-house is opened. In many cases, however, it may be necessary to pack some of the halibut in the after ice-house before the forward one is filled, in order to keep the vessel in proper trim.

In common with the vessels engaged in the salt-halibut fishery and those trawling for cod on the Banks, the halibut vessels have their main deck fitted up with an arrangement of planks called the checker-boards, dividing the deck into small pens or bins by planks crossing each other at right angles. The space occupied by this construction, which is called the checker-board or "Checkers," is the whole width of the vessel, from 21 to 23 feet, and a length of about 20 to 25 feet forward of the quarter deck, extending from the break of the quarter nearly to the fore-hatch. These compartments are divided by 2-inch plank set on edge. These planks are generally 8 to 10 inches wide. There are also nailed to the top of the planks extending fore and aft (and on some vessels on the athwartship planks also) other planks in a horizontal position 8 to 12 inches wide, forming covers over the lateral edges of the bins. The object of these compartments is to prevent the fish sliding from side to side as the vessel rolls in a sea way.

The top of the house is fitted up with bait planks. These planks are 2 inches thick and 10 to 12 inches wide, nailed round the sides and ends of the top of the house. The object of this is to provide a place where the men can cut up bait without marring the wood work of the vessel.

The accompanying diagram, which shows a deck plan of a halibut schooner, will assist the reader in a better understanding of the peculiar arrangement just described. The following is

an explanation of the diagram: (1) Bowsprit. (2) Pawl-bit. (3) Starboard windlass bit. (4) Port windlass bit. (5) Windlass. (6) Jib-sheet traveler. (7) Foremast. (8) Port cable tier. (9) Starboard cable tier. (10) Forecastle companion slide. (11) Stove-pipe funnel, usually of cast iron, firmly secured to the deck, with sheet-iron cap. (12) Fore hatch, showing grating. (13) Main hatch. (14) "Break" of quarter deck, or grub beam. (15) Mainmast. (16) Starboard pump. (17) Port pump. (18) After hatch. (19) Trunk or cabin house. (20) Stove funnel. (21) Skylight. (22) Companion slide. (23, 24, 25, and 26) Bait planks around top of house. (27) Wheel-box. (28) Wheel. (29 and 30) Bit-heads for belaying mainsheet, &c., to. (31) Taffrail. (A, A, A, A, *a*, *a*, &c.) Checker planks. (*b*, *b*, &c.) Checkers. (*c*, *c*) Dotted lines showing position of dories when on deck.

The halibut vessels, like other trawlers, are provided with a "reefing plank," which is lashed across the ends of the davits upon the stern. This is used by the fishermen to stand upon in reefing the mainsail. When not in use the riding sail is tied up snugly, and generally lashed on top of the reefing plank.

Like all vessels which carry dories upon deck, they are provided with dory tackles on both sides, these being simple whip-purchases, with two single blocks, attached to the fore and main rigging on each side. They almost invariably carry a jib-boom, excepting in the winter season, and are always provided, like all other bankers, with a riding sail. A few of them, in the summer, carry a fore topmast with foregaff-topsail and "balloon jib."

In the chapter on fishing vessels the general features of the fishing schooner are fully discussed, therefore such description is omitted here.

These vessels are usually provided with more complete outfits of nautical instruments than those in other branches of the fisheries, this being necessary from the fact that halibut are often sought on small and isolated patches of ground, and that it is of special importance for the men engaged in this fishery to make good land-falls when running for home. In other respects these schooners are always fitted out as thoroughly as fishing vessels of any other class.

The Connecticut and New York halibut vessels used to have their ice-houses arranged in a somewhat different manner from that just described.

The walls of the compartments of these were often sheathed with zinc, the fishermen of that section claiming that the halibut would keep longer than on the Gloucester vessels. In former years many welled sloops from Noank, New London, and Greenport were engaged in the halibut fishery, but at the present time only schooners are employed in this industry from those ports, these being of a larger size than the other vessels of the New York fleet, though smaller than those of Gloucester. The schooner Scotia, of New London, the largest of the Connecticut halibut fleet, registers about 65 tons, while her companions average about 45 tons.

Mr. Charles P. Tripland tells us that previous to 1858 halibut were caught by the Connecticut vessels wholly on hand-lines and only welled smacks were employed, the fish being taken to New York alive. But with the introduction of the method of trawling, the practice of keeping the fish in ice began, and tight-bottomed crafts were used, many of the old smacks having their wells removed and their bottoms plugged up. For several years, he says, after the fishermen of the ports on Long Island Sound began to ice halibut, they resorted to many schemes to keep the fish fresh a long time. One method was to sheathe the ice-pens with zinc; another to line the sides of the pens with straw, packed in about two inches thick, this being held in place by laths nailed over it. Some vessels also had a false ceiling beneath the beams for the purpose, as supposed, of preventing the heat striking through the deck upon the fish. None of these methods, however, proved satisfactory, and after having been thoroughly tested they have all been abandoned. One of the latest experiments, and one which seemingly has much merit, is to build the ice-house—plat-

form and all—of planed hard pine. The pitchy nature of this wood prevents it from becoming water-soaked, as either white pine or spruce will, and consequently it does not absorb the bad odors that come from stale fish, and which, carried on from trip to trip, doubtless aid very much in causing the rapid deterioration of fish packed in pens made of spruce or white pine. In other respects the ice-houses of the Long Island halibut schooners do not, at the present time, differ materially from those of the Gloucester fleet, though, of course, as they are smaller vessels than the latter, they have a less number of pens and smaller space for cargo.

5. APPARATUS AND METHODS OF FISHING.

THE APPARATUS.

BOATS AND THEIR FITTINGS.—Every Gloucester halibut-catcher, with perhaps one or two exceptions, carries six dories. Most of them are of Salisbury build, and are 15 feet in length on the bottom. They are now sometimes made with an extra set of timbers and stouter gunwales than those ordinarily used in the cod fishery. They are stowed in the usual manner, being "nested" three on a side, on the main deck. When the vessel is making a passage they are usually turned bottom up and lashed, and this is frequently done in heavy weather when the schooner is at anchor on the Bank to insure the greater safety of the boats. In addition to the trawl-lines, each dory, when it leaves the vessel on the banks to set a trawl, is supplied with the following articles: Painter, stern-becket, stern-painter, two or three pairs of woolen nippers, "hurdy-gurdy" or trawl-winch, trawl-roller, sail (a sail is not always taken), compass, water-jug, thole-pins, two pairs 9-foot ash oars, iron gaff, dory knife, one or two halibut killers, bailing scoop, dory plug, two anchors, two buoy-lines, and two buoys. A sail is rarely carried except in summer; not always then. Some dories are not provided with a compass or a water-jug, though most halibut fishermen carry one.

For description of articles which form the equipment of a dory, such as nippers, hurdy-gurdy, trawl roller, &c., see chapter on fishing apparatus, where also may be found descriptions of the various apparatus used on the vessel which have not been mentioned here.

The New York halibut catchers formerly carried no dories, but instead three open, square-sterned, clinker-built, round-bottomed, keel boats of the yawl pattern, about 15 or 16 feet in length. The term "yawl pattern," as used here, applies to the ordinary form of yawl boat carried at the stern davits of coasting and fishing vessels. It is quite distinct from the "yawl" of British writers, which is always a sharp-sterned boat. Two of these were stowed on the deck, one on each side, and one was swung on the davits at the stern. Their construction renders it impossible to nest them. The practice of carrying dories was adopted, however, in 1874, according to Tripland, and at this time he says they are exclusively used, each vessel carrying two or three of these boats.

TRAWL-LINES.—A trawl is composed of several parts: (1) the "ground-line," which is anchored at each end and lies on the bottom; (2) the "gangings" (pronounced ganjings), which are about 5 feet long, have the hooks attached to one end of them, while the other end is bent into the "beckets" on the ground-line; (3) the beckets, made of short pieces of manila line, and are fastened to the ground-line; (4) to mark the position of each end of the trawl when it is set, a line, called the "buoy-line," extends from the anchor at the end of the ground-line to a buoy at the surface of the water.

The ground-lines are commonly tarred cotton, weighing from 28 to 32 pounds to the dozen. The ganging-lines weigh from 14 to 16 pounds to the dozen. A section of line 25 fathoms in length is called a "line." Fishing-lines are generally arranged in packages containing twelve of these, or their equivalent, six "double lines," each of which is 50 fathoms long. Such a package is

called "a dozen lines," and the standard of size is determined by the weight. Manila lines, however, such as the buoy and becket lines, are exceptions to this rule.

The buoy-lines are 6-thread tarred manila, and are somewhat larger than the ground-lines. The becket-line is manila and about the size of the ganging-line.

The ground-line is made up of several parts or lines, each of which is either 25 or 50 fathoms long. A wall-knot is tied in one end of these lines, so that they will not unlay, and an eye-splice is taken in the other end. The knotted ends are then bent into the looped ends of the other lines. By bending a greater or less number of these sections together the trawl can be made of any desired length, but the rule is generally to "rig" the trawl in sections, each of which is composed of seven and a half double lines, or their equivalent, fifteen single ones.

The becket-lines are cut in lengths of a foot each. These are placed at intervals of 15 feet apart on the ground-line by tucking their ends through the line and then hitching around, leaving a bight or becket of 3 to 5 inches projecting from the ground-line. Into each of these one end of a ganging is bent, while the hook is fastened to the other end of the ganging with tarred twine. Each skate of trawl has one hundred and fifty hooks attached to it. A full-length trawl is composed of four of these sections, which are called "tubs of trawl," or "skates of trawl," these names being derived from the receptacles in which the lines are coiled. The phrases "tub of trawl" and "skate of trawl" are synonymous. Formerly halibut trawls were placed in tubs made of a section of a flour barrel, but at present an article constructed of canvas and rope and called a "skate" is used for this purpose. A skate is a piece of canvas about 15 to 18 inches square, when it is hemmed, with two small ropes each 9 or 10 feet long, crossed at right angles on the canvas and fastened at each corner and in the center. The trawl is coiled on this, and is tied up with the ropes.

The buoys are either common half-barrels or kegs, of uniform size, and made for the purpose, sometimes of soft wood, at others of hard wood, and iron bound. A hole is first bored through the center of the keg, large enough to admit the staff, which is 1 inch in diameter and about 6 feet long. This must be driven in as tight as possible to secure the buoy from leaking, leaving about 18 inches projecting on the lower side of the buoy, the remainder going through and above the upper side, to which a flag is attached, so that it can be seen at a distance. On the buoys farthest from the vessel (commonly called the outer buoys) there is generally a supplementary staff shipped, like a topmast, to the larger staff. On the top of this there is a circular black flag, called a black ball, which has attached to it a wooden or metal swivel to allow it to revolve with the wind around the staff. This flag can be seen for a considerable distance, and enables the fishermen to find their buoys in a rough sea, when it would otherwise be almost hopeless to look for them. Two parts of the buoy-line are next made fast to the staff—after it has been driven through the keg and tightened—close to the buoy on the upper side, and are then brought down around on each side and secured to the lower end of the staff, where a swivel is also fastened for the buoy-line to bend into. This swivel allows the buoy to turn in the tide and sea-way without kinking the buoy-line. The buoy-lines are generally cut in 50-fathom sections, bent together in the same manner as the ground-lines, and as many of these are used as the depth of the water may require.

The anchors need very little preparation—merely a strap in the ring with two bights, into which the buoy-line and trawl are bent.

The trawls used by the New York halibut vessels are each provided with about 380 hooks, placed 25 feet or more apart, with gangings 4 or 5 feet in length. When trawling was first introduced manila ground-lines and snoods were used, according to Tripland, and a line having

180 to 200 hooks was called a "big trawl"; now each dory has from 350 to 380 hooks. At first the hooks were put 15 feet apart on the ground-line by the Long Island Sound fishermen, but at present they are placed 25 feet apart. All of the ground-line is stowed in one tub made for the purpose, instead of being divided into sections and coiled in skates. Lager-beer kegs were formerly used to some extent by the sound fishermen for buoys, but now iron-bound, hard-wood kegs specially designed for the purpose are made for buoys.

BAIT.—A vessel starting on a fresh-halibut trip to the Banks generally carries a few barrels of herring, mackerel, or menhaden, and occasionally, instead of these, 2,000 or 3,000 pounds of cod, haddock, and hake. This is for bait to begin the trip with, and may be obtained at the home port, or at some point on the Nova Scotia coast. Sometimes bait, especially mackerel, is bought from vessels at sea. After fishing is begun such material as is caught on the trawls—cod, haddock, hake, &c., and occasionally even halibut are used instead of herring, being cut into strips 5 or 6 inches in length and about 2 inches wide. This is called "gurry bait," and is preferred for Bank fishing, although it cannot be used advantageously when fishing in shallow water near the land, fresh herring being considered indispensable for that purpose.

Halibut, when in-shore, are generally much more difficult to please in the matter of bait than when they are on the outer banks. They will not touch herring that are the least bit stale, and some captains claim that the fish can discriminate between bait which has been caught in different localities. The skipper of the Willie M. Stevens told us that it was his opinion, from what he saw while on a northern trip, that halibut on the northwest coast of Newfoundland would not bite nearly as well at herring caught in any other place besides Bay of Islands and Boone Bay. He avers that he experimented repeatedly on the same ground with the trawls set side by side and across each other, and saw others try it, and every time those trawls with the bay herring on them got fair fishing, and the others, baited with herring from distant localities, got nothing or next to it.

In winter, the bait taken from home is usually frozen herring which are packed in straw in one of the ice-house pens, this method of packing being adopted to keep the frost in the fish. In summer, however, the first installment of bait is generally obtained at some port in Nova Scotia or on the coast of Maine, and this is carefully iced in one or more of the pens. It is never eviscerated by the Gloucester fishermen. Formerly, the fishermen about Long Island Sound generally dressed and sometimes soaked the "bony fish" (menhaden) before icing it for bait. Prepared in this way the fish would keep hard and sweet much longer than if iced round with the viscera in them. The Cape Ann men were frequently ridiculed for icing bait before it was dressed, but experience proved that the latter is the best method, for bait that is iced round is by far the most attractive to either cod or halibut, due, so the fishermen think, to the blood being retained in it, and the retention of the natural flavor which is lost when the fish are eviscerated.

The bait is cut up on the top of the cabin, with large, heavy knives. Thick planks are nailed on the top of the cabin for this purpose, as has been explained, and the men who go in each dory have their places for chopping chosen by lot. After enough bait is cut for the occasion the fisherman lifts a skate of trawl upon the cabin and, after untying the ropes, the skate is taken away from the coil and spread out on the deck below. The fisherman then begins at the top of the coil, and, baiting the hooks as he proceeds, recoils the trawl on the skate. The baited hooks are thrown into the center of the coil. The trawls when baited and tied up are ready for the water, and, if the set is to be made immediately, they are at once placed in the dories. Great expertness is shown by the fishermen in baiting their trawls, but there is, however, a limit to the speed with which this

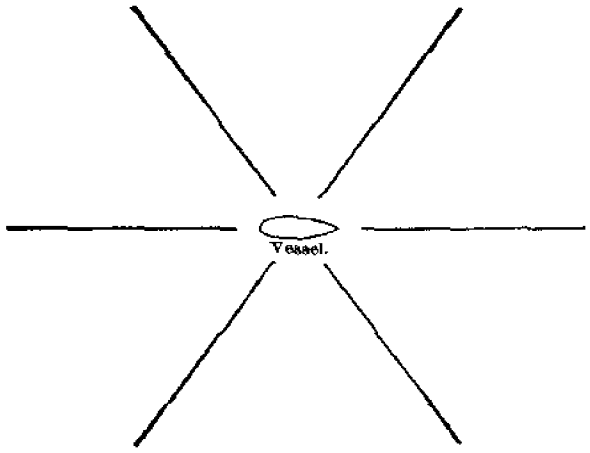
can be done well, and, as a rule, many of those who accomplish the task quickest are not always the best fishermen, as they are apt to do their work in an incomplete manner.

METHODS OF FISHING.

SETTING TRAWLS.—The ordinary manner of setting a trawl is in a straight line, and is performed by two men, though in special emergencies three men may be required. When a set is to be made the buoys, buoy-lines, and anchors are put in their proper places in the dories before the boats are hoisted off deck. When the dory is in the water, one man gets into her, and another reaches him the trawls that have previously been baited (and may be two, three, or four skates, according to circumstances). When, however, the dories are out, and at the stern, as is usually the case in the day-time, when a vessel is at anchor on the bank, the performance varies somewhat from the foregoing, and is accomplished in the following manner:

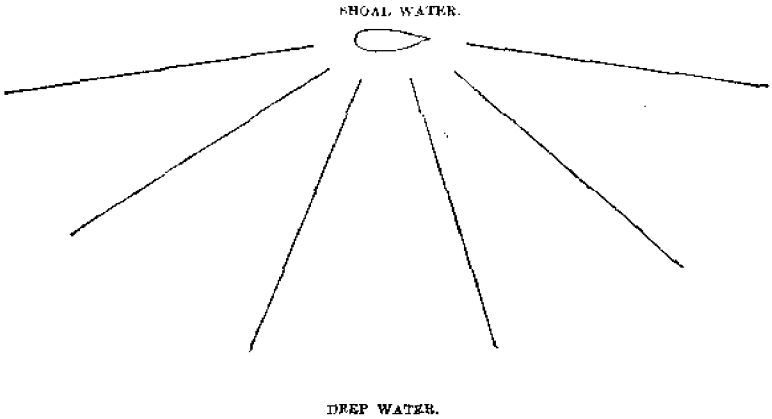
First, the dory is hauled alongside on the quarter, and one man jumps into her, while his dory-mate lifts the trawls upon the rail, and, watching the proper chance, lets them drop into the middle of the boat. After the trawls are in, one man takes the oars and pulls, while, as soon as the proper position is reached, the one aft throws out the buoy, then pays out the buoy-line, and when he gets it all out, lifts a skate of trawl upon the thwart in front of him, unties the skate-ropes, makes the end of the trawl fast to the anchor (the buoy-line is always, on the bank, made fast to the anchor), which he heaves overboard, and then throws out hook after hook of the trawl as he comes to them. When one skate is out another is lifted into its place, the ends of the line are tied together, and the performance goes on until all of the trawl is out, when the end of it is made fast to the second anchor, which is let go, the buoy-line is paid out, and lastly the buoy is thrown overboard, which completes the operation of setting. If the trawl must be set to windward of the vessel, the method differs in this respect: both men sit down to their oars as soon as they leave the schooner, and row until they reach a position about the length of their trawl to windward, where they begin to set.

When trawls are set for the first time in a berth they are usually spread around the vessel in the form of a star, as illustrated by the following diagram:

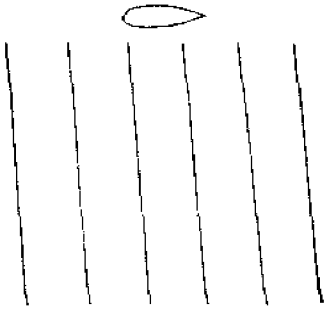


Since each of these lines is from 1 to 2 miles or more in length, it will readily be perceived that a large area of sea bottom, more or less nearly approximating to the form of a circle, of which the vessel is the center, is covered by the gear; and one set of the trawls made in this manner usually determines whether or not there are any halibut of importance within 1½ to 3 miles on either side of where the schooner is lying at anchor. This method is varied in seasons when halibut are only found in deep water and the schooner is lying at anchor on the edge of a bank, perhaps in 150 fathoms. (There can be no general rule laid down about the depth, as it varies in different localities, from less than 100 to 250 fathoms, where the vessels anchor.)

The manner of setting trawls in such cases is commonly as follows: It is well known to be of little use to try on the shoal-water side of the vessel, so they are set in the form of a fan, as in the figure.



These methods of setting trawls "try the ground," and it often happens that a good catch is obtained on one or more of them, while only a few fish are taken on the others. In that case, the next time all of the trawls are set for the "spot," in parallel lines as shown by the figure.



If the "spot" is sufficiently large, and there is a favorable opportunity to set the gear, it generally happens that good fishing is obtained on all or nearly all of the trawls, though in some cases the ground occupied by the halibut is so small that it is very difficult to set all the apparatus fairly upon it.

It frequently happens that when a vessel has just arrived on the bank, or is about to try for fish on a part of the ground where the results to be obtained are doubtful, a "flying-set," or "set under sail," is made. This method of setting, which obviates the necessity of anchoring, may be described as follows: As the dories sit nested on deck, when under way, the trawls, buoys, and anchors are all put in the top boats, that being the most convenient place for them, as they are off from the deck and out of the way. As the vessel nears the place where the skipper intends to set under sail, he shouts the order, "Get the top dories ready." This sets all hands on the alert, especially the crews of the top dories, who quickly take the surplus buoys and anchors out of their boats, and, having rigged their "black ball" and arranged their buoy-line for running, they hook on the tackles and hoist the top dories out over the rail, letting them hang on the tackles with the bow and stern made fast and their bottoms just below the top of the vessel's rail. They are generally left hanging in this way until the middle dories are ready, when, if the vessel is quite near the ground, they are dropped into the water (the vessel being luffed to, to deaden her way, if there be a fresh breeze), and as they drop aft on the quarter they are held there for a few minutes while one man jumps into each dory and another hands him the trawls. When haddock fishing, the trawls are usually put in the dories before the latter are hoisted out (when setting under sail), but halibut-gear is so heavy when baited that it is rarely if ever put in the boats until after they are in the water. As soon as the trawls are in, the other man jumps in and the dory is dropped astern, the painter being made fast to the davit. Meanwhile the middle or second dories have been hoisted out, and while the men are getting their gear in, the two bottom dories are being made ready to hoist out. These two last are usually left hanging on the tackles until some of the others have begun to set. When the proper time arrives, and the dories are ready, the skipper shouts to one of the men in

the first dory, who are towing astern, "Heave out your buoy." He has previously told them on which end of the trawl to put the "black ball." The vessel is now steered on a course parallel with the edge of the bank (if the set is being made in very deep water), and as the buoy-line is being run out the skipper shouts again to the men and points out to them how they must pull while setting the trawl. This is generally to leeward and in a direction abeam of or nearly at right angles to the course steered by the vessel.

As soon as the buoy-line of the first dory is run out, her painter is cast off and the men begin to set, while the men in the next dory get the order to "Heave out your buoy," and their buoy-line is run out in the same way as the others. Sometimes, however, when it is desirable to set the trawls close together, the dories are cast off before all of the buoy-line is towed out. Finally, the last dories are dropped into the water, and, the men having put their gear in, they take their places astern, the cook standing by to cast off the painters at the right moment, and the skipper steering the vessel and watching the boats to see when the men shall throw over the buoys, and when they are far enough apart to begin to set, which is usually from 200 to 400 fathoms. Spread along the edge of a bank in this way, a "gang of trawls" will generally cover 6 or 8 square miles, and sometimes much more. As soon as the last dory is let go the course of the vessel is changed, and she runs for the first dory that began to set, and, having picked her up, takes them in rotation, picking them up in turn. After they are all aboard she generally works back to the weather-buoys (the first ones put out), and lays to with her jib to windward, first on one tack and then on the other, keeping the buoys always in sight until it is time to haul them, when the vessel is run along from buoy to buoy, dropping each dory at or near her own trawl. After the dories are all out, and while the men are hauling the trawls, the vessel lays by with her jib to windward, filling away occasionally and running by all of the dories to see how they are finding fish and whether they need assistance. When the boats get loaded, or have finished hauling their trawls, the men stick up an oar as a signal for the vessel to come for them. When the oar is seen the vessel runs for the dory, and shoots to or tacks close to the boat, lying with her jib to the windward until the gear is out and the halibut discharged. If a dory has finished hauling, she is either taken in on deck or dropped astern and towed until the rest are picked up; but if she has more trawl to haul, she is towed to her buoy and dropped, while the vessel goes off to assist others that may need it.

As a rule, trawls are set under sail only during the day, but it is by no means uncommon for the halibut fishermen in summer to put out their gear in this manner just before night, if the weather is fine and promises to be clear. In this case a lantern is hung on a dory, which is fastened to one of the trawl buoys and left out all night as a guide for the vessel to lay by until morning. The lantern is elevated 7 or 8 feet above the dory on a set of shears made by lashing the ends of two oars together—the lower ends being braced against the sides of the boat—and which *are stayed by guy-lines on either side from the bow and stern of the craft. When setting under* sail over night great care is required on the part of the watch on board the schooner to prevent the latter from getting too far from the dory upon which hangs the lantern. For, should the lantern by some accident become extinguished, or should the weather grow thick, the whole apparatus might be lost if the exact position of the boat could not be determined. But so hard is the labor of heaving up an anchor in deep water, and so great is the loss of time in doing it, that many skippers choose to take considerable risks in setting under sail rather than anchor where they have little knowledge of the abundance of halibut.

When halibut fishing used to be carried on along the coast of Southern Labrador, and the vessels frequently had to search over large areas to find the fish (though fishing operations were always carried on in shallow water near the land), they very often set under sail. In some cases, we are

credibly informed, a schooner would sail along, dropping her dories 2 or 3 miles apart, and in that way a single set of the trawl-lines, set parallel with the shore, would stretch along 12 or 15 miles of the coast. In this case the dories were provided with sails, and their crews, after hauling their gear, would set sail and steer for the vessel, thus shortening the time of their arrival on board.

The fishermen from the ports on Long Island Sound have adopted somewhat different methods from those just described, which apply more particularly to the Gloucester fishermen, who, par excellence, are *the* halibut fishermen of New England. The former usually fish on George's Bank, Brown's Bank, and the Seal Island Ground, where the tide is strong and the water not of extraordinary depth. In these localities it has been found desirable for the boats, after setting their gear, to remain at its outer end until the tide slacks, which is the time for hauling. This practice, according to Tripland, still continues.

HAULING TRAWLS.—The length of time which a trawl is allowed to remain out before being hauled varies from two to fifteen or eighteen hours, in fine weather. In rough weather several days may elapse before a fitting opportunity offers to perform this operation. If the chances are equally favorable it is customary to begin hauling at the outer end of the trawl, although the direction of the wind or current influences the fishermen in making their choice. The dories may sail or row to the outer ends of the trawls, as circumstances may permit. If the wind is ahead, of course the oars must be depended upon, and, as previously stated, sails are seldom carried in winter. But in summer it is often a lively scene to witness the dories leaving the vessel's side under sail, with a leading breeze, and all starting off on a race for their outer buoys. When the buoy is reached the oars are "shipped" in and placed where they will be least in the way, or on the side opposite to that on which the trawl is to be hauled; sometimes the blades are tucked through the stern becket and the handles shoved well aft.

The hurdy-gurdy or crank-winch for heaving up the trawls is then rigged in its place on the bow of the dory, and the "roller" is placed in position on one side of the bow. A turn is taken with the buoy-line around the barrel of the hurdy-gurdy by the man in the bow of the dory, who reaches the buoy (to which the end of the buoy-line is fastened) to his dory mate in the stern. The latter now takes his place in the after compartment, holding on the buoy-line, hauling and coiling it at the same time, while the man at the bow kneels down, and grasping the handle of the winch, turns it around, over and over, in a laborious manner, until all the buoy line (frequently 350 to 500 fathoms) is hove in, and the anchor is at the bow. The turns are then taken off the hurdy-gurdy, and the anchor pulled in over the boat's bow, and when a few fathoms of trawl are in, the latter is unbent and the anchor placed on the side of the dory, with one arm over the boat's gunwale and the stock resting against her side. The man standing aft now spreads a skate in the bottom of the dory, between his feet, and the trawl, as fast as it is pulled in, is coiled on this skate. Unless there is a very heavy strain on the trawl, it is hauled over the roller, though it often is necessary to employ the hurdy-gurdy to heave in the line, which in many instances becomes so firmly attached to the bottom that it breaks and is lost. No little skill is required in the use of the trawl-winch in rough weather to prevent the dory from being capsized. When the boat has no fish in and sits lightly on the water, she is rather crank, and at such times if she rises quickly on the slope of a wave, with a heavy strain on the line, she is liable to turn over. The man who is holding the line must watch every motion very carefully, for should he fail to slack the line at the right instant, over goes his dory, gunwale under, and he and his companion are thrown into the sea. It is altogether possible that lives have been lost in this manner, as well as by reckless overloading of dories, though it may fairly be assumed that such accidents are rare.

What has been said of setting and hauling trawls (especially the latter) applies more particu-

larly to the deep-water fishing along the outer slopes of the great fishing banks where halibut are now chiefly sought.

The method of hauling in shallow water near the land, where halibut are sometimes found in summer, is quite different. The halibut, following in after the schools of capelin which visit the shores of Western Newfoundland, Southern Labrador, and the islands of Anticosti and Miquelon to spawn, have often been found in great abundance in very shallow water, say not above 5 to 10 fathoms. Here it is frequently possible to notice the fish biting at the hooks, and, of course, no hurdy-gurdy is required, and even the patent roller is little needed. There is comparatively little work in hauling the trawl unless there may be a considerable number of fish on it, in which case the fishermen have a lively time. Halibut that are caught in shallow water are exceedingly active, and frequently make a hard fight. When a fish of 100 to 200 pounds weight is raised from the bottom on a trawl, he will usually start off at great speed, making the dory spin around in his effort to escape. Of course he cannot run far in one direction, for the weight of the gear is too much for him to drag over the bottom. After awhile he is sufficiently tired out to be hauled alongside of the dory, and if the fisherman is expert enough to hit his fish two or three smart raps over the nose with a "killer," the halibut succumbs and is pulled into the boat. It is often the case, however, that considerable difficulty is experienced in effecting the capture of a large fish, and it is by no means an unusual circumstance for one to escape. One of the authors recalls such an episode, which he witnessed in the shallow water near Miquelon Beach.

Two men were out hauling a trawl in about seven fathoms of water, a short distance from the vessel. They worked along quietly for awhile, when suddenly the dory started off at a tremendous speed, towed by a big halibut, which had been started from the bottom, and which, in his efforts to escape, darted about wildly, pulling the boat after him, and careening her at a considerable angle. By dexterous management he was, after awhile, brought to the surface; the man aft quietly pulled up on the ganging until the fish broke water, when an iron gaff was driven into its head. The doryman had made the mistake of gaffing his fish before it was stunned, and as a result no sooner was the gaff in the halibut than the latter made a tremendous splurge, twisted the implement out of the fisherman's hand, and, getting a fair start, made a run to the bottom. Another quarter of an hour was required to again get him alongside of the dory. This time there was no gaff, and to serve in its place the doryman had cast off the trawl anchor from the buoy-line. When he got the halibut's head above water, he drove the flue of the 16-pound anchor into the fish, which he made sure he would hold that time. But he was mistaken. The halibut, as before, escaped, taking with him the anchor, almost pulling the man out of the boat, which was nearly capsized, and carrying away the hook, which this time he tore from the trawl.

Fishermen who have watched halibut near the land, being able to see them perfectly well in the clear, shallow water, state that these fish exhibit marked peculiarities in biting at baited hooks on a trawl. The halibut will advance to the bait, apparently smell of it, and then retreat 4 or 5 feet from it, always lying on the bottom, head toward the bait, as if watching it. After repeating this performance several times—generally three or four—the fish seems to make up its mind to eat the bait, and, suddenly darting toward it, swallows it down with a gulp.

The George's hand-line fishermen believe that halibut often strike the baited hooks with their tails. It is not uncommon on board a George's-man to hear a fisherman remark, "There's a halibut around; I felt him strike my gear." When a halibut has announced his presence in this way it is scarcely necessary to say that every effort is put forth by the fisherman to attract the fish to his hooks, and if the man is sufficiently skillful he generally succeeds in capturing the fish.

UNLOADING THE DORIES.—When a load of fish is brought alongside of the vessel, two of the

crew, who are generally the captain and the cook, hold the stern and bow painters. The man in the bow of the boat jumps on deck, while the other hooks the fish with a gaff and hands them up to his dorymate standing ready to haul them in over the vessel's rail.

The operation of pulling halibut from the dory over the schooner's rail is much facilitated by the rolling of the vessel; the man who hauls in the fish watches the motion, and by a sudden exertion of strength at the right moment is able to take a fish on deck which a novice, unacquainted with the "knack," could not raise at all. Should there be some heavy fish in the boat, the skipper generally assists to pull them on deck. Sometimes the skipper chooses to haul the whole, or nearly all, of the fish over the rail, and we have heard of a cook who made a practice of doing this work.

The methods adopted by the hand-line George's fishermen are, of course, radically different from those just described. It may be remarked incidentally that the George's fishermen are paid in accordance with the amount of fish which each catches, while the trawlers all share equally in the proceeds. It naturally follows that, when halibut are bringing a high price, the hand-line fisherman who catches a considerable quantity of these fish makes much more money than his shipmates. Consequently there is much rivalry in a vessel's crew when it is known that halibut are on the ground where she is lying, and every known device is adopted to entice the fish to bite at the hooks. Strips of newly-caught haddock, with the fresh blood still on them, are considered the best bait. These are usually about 6 to 8 inches long, an inch or so wide at one end, and tapering to a point at the other. Two, three, or more of these pieces are put on a hook, the latter being passed through the thickest ends of the strips, while the pointed ends of the bait are left to float about in the water. Where there is a tide running these closely resemble the movements of small fish. The hooks are usually "pointed" with herring bait. After the bait is on the hooks, many fishermen add (as they believe) to its attractiveness by mopping it in the slime of a halibut, if one has been previously caught. This is done by rubbing the baited hook back and forth over the fish. The lure thus prepared the fisherman lowers his apparatus to the bottom, and by a skillful manipulation tries to induce the fish to bite. Sometimes he will let the tide sweep his "gear" along the bottom, and again he will endeavor to give his baits the appearance of life by slowly pulling them up a short distance from the ground. If he finally succeeds in hooking a halibut, all his art is required to bring the fish to the surface and land it safely on deck. If it be a large fish it almost invariably makes a desperate fight to escape. It may, perhaps, come up easily for 10 or 15 fathoms, when it suddenly takes a plunge downward. Surge! surge! goes the line through the hands of the fisherman, who knows very well that he must "play" his fish or else his line will be snapped like pack thread. This operation may be repeated several times, and it is not uncommon for a large and particularly "wild" halibut to go almost to the bottom after having been hauled nearly to the surface of the water. At last the fish is alongside, and the shout of "Gaffs! gaffs here!" brings two or three of the nearest men to the side, armed with long-handled gaffs. If the fish is exhausted the gaffs are quickly hooked into his head and he is dragged unceremoniously over the rail and falls with a heavy thud on deck, which usually resounds with the strokes of his powerful tail until he is stunned by repeated blows with a killer. On the other hand, if the halibut is still active when he comes alongside, much dexterity is required to gaff him. He makes desperate attempts to escape, and thrashes the water into foam with his tail. Sometimes, but not often, halibut escape after being brought alongside.

When the fish is on deck and killed, his captor cuts his mark in a conspicuous manner, generally on the white surface of the halibut, which is the under portion when the fish is in the water, but is invariably turned upward after it is taken on deck; this method being adopted to prevent the blood from settling on that side and thus making the fish look dark colored or gray.

The George's fishermen frequently bleed their halibut by making a cut across the tail. This is also done to make the fish look white, but we have not known of this method ever having been adopted by the trawlers. The halibut are dressed and iced in the same manner as elsewhere; the separation of the fish caught by each man takes place after the vessel reaches port, those belonging to each "lot" being selected by their respective marks. The above methods of capture by hand-lines, which are common to the George's cod-fishermen, who only catch halibut incidentally, have been adopted by the handliners, which, about 1876–'77, engaged exclusively in the halibut fishery off the eastern slope of George's Bank.

6. THE MANNER OF DRESSING AND ICING THE HALIBUT ON THE VESSEL.

THE GLOUCESTER METHOD.—A crew of men engaged in "dressing down" a deck of halibut are always clothed in "oil-skins" or rubber jacket and trousers. Five of the men—the two "cutters," the two "blooders," and the "icer"—tie their oil or rubber jacket sleeves tight around their wrists *with rope yarns to keep their other clothing free from the gurry and slime. And in rough weather* (occasionally at other times) the oil-trousers' legs are tied tightly around the boots to prevent the water with which the deck is often filled from wetting the feet and legs of the fishermen. Two of them, with sharp knives, begin to cut. Grasping the halibut by the gills with the left hand, they haul the fish's head up from the deck; one quick stroke of the knife separates the gills from the head at the throat; another stroke severs the gills from the napes; another rips the fish down the belly, and two more cuts and a quick yank with the left hand take the gills and entrails out. Now the "blooder" grabs the halibut, and, sitting or kneeling on deck, hauls the fish toward him with his left hand, while with his right, which is bare, he pulls the ovaries or spermaries from their cavities and the blood from the back-bone with a quickness that would surprise a novice. Then the "scrub gang" takes the fish in charge. There are two gangs and three men in each. One man armed with two iron gaffs hooks one of these into the head of the fish and the other into its nape, and holds it up and open while the scrubber, with a broom specially prepared for this purpose, scrubs off any loose blood, slime, &c., which may be left on the backbone and in the spawn cavities by the blooder. One man stands by with a draw-bucket full of water, and when the "scrubber" sings out "water" he souses it into the fish and completely rinses him out. Now the halibut is clean and ready to go into the hold, and directly the cry comes up from the ice-house crowd, "Heave down your halibut!" In obedience to this order one of the deck gang, who is generally known as the "idler," takes a gaff, and hooking one fish in the head and another in the tail, as the case may be, hauls them over the hatch, letting them fall down. They strike with a dull thud on the floor of the ice-house, where they are taken in charge by the men below and finally disposed of. In the ice-house there are three men hard at work. One is pounding ice with a wooden beetle or mallet; another, the "icer," is in one of the pens placing the halibut in tiers and filling the cavities, where the entrails, gills, &c., were taken out, with fine ice. When he gets a tier prepared in this manner he throws some ice, with a shovel, around their heads and the sides of the pen, but none on top of the fish, and then begins another tier. The third man reaches him the halibut and ice until the pen is full enough, when the fish are covered with from 6 to 12 inches of ice, according to the season. A layer of pounded ice is put under the bottom tier of fish in each pen, the thickness of this layer depending somewhat on the season, more ice, of course, being required in summer than when the weather is cold.

THE NEW LONDON METHOD.—The New London halibut catchers have a somewhat different method. "In the first place," said one of them, "we leave one tier of block ice in the bottom of the pen, if the ice does not exceed 8 inches in thickness. The first tier of fish is laid on

this, and every layer of halibut is covered with 4 inches of fine ice, previous to which the bellies and heads are also filled with the finest ice. The fish are packed in the pens in the same manner as by Gloucester fishermen—half a tier heads out, the other half heads in toward the vessel's side, and overlapping each other; but on these vessels more care is observed to prevent the tails or any other portion of them coming in contact with the wood of the sides of the pens or the ceiling of the vessels. After the pens are filled the fish are covered with ice varying from 6 to 12 inches in thickness. All, or at least most, of the sound fishermen pack their halibut square, next to the side of the vessel, and not to conform to the shape of the bilge, filling in behind the fish with ice."

It is claimed that halibut packed in this manner can be kept in good condition from three to five weeks, and the New London men think there is considerable advantage in cleaning the fish with scrubbing-brushes or brooms that are made of coir, which they believe is far better for this work than the hickory and oak brooms in common use by the Gloucester fishermen. The advantages that might be derived from having different scrubbing-brooms, and in adopting the method (in summer) of putting a layer of unbroken ice in the bottom of a pen, is worthy of the careful consideration of all interested in this business; but the experience of the Gloucester fishermen has taught them that no beneficial results can be obtained by putting ice between tiers of fish; indeed, it is believed that halibut so iced will soon grow "sour."

EARLY METHODS.—The fishermen who first went to George's for halibut did not "blood" the fish or scrub them, thinking it would be an injury instead of a benefit. Instances have occurred where a full fare has been caught in one day on that bank, and a fair and strong breeze springing up about the time the day's fishing was completed, the halibut were thrown into the hold and taken to market (either Boston or Gloucester) before they were dressed. At such times the passage was usually made in less than twenty hours, and the weather was too rough to take the fish on deck. In the beginning of the George's fishery the halibut were simply eviscerated and thrown in the hold, on the stone ballast; but as it was found that those underneath, when treated in this manner, had a "jammed up" appearance the fishermen next resorted to the expedient of driving spikes and ring-bolts on the side of the hold, just under the deck, and to these the first fish were hung up by their tails. The next expedient tried was to keep them alive in well-smacks, after which came the ice and the present system of keeping fish by refrigeration. At first, however, no attempt was made to ice halibut, as that term is now understood, they being simply thrown down on the platform of the hold, the fishermen of that day believing that a small amount of ice stored in one part of the ice-house, to "keep the fish cool," was all that was necessary for their preservation. They were firmly convinced that halibut would soon spoil if packed in ice in the style of the present day.

7. THE RUN FOR THE MARKET.

In the chapter on the dangers to which the fishermen and their vessels are exposed considerable space was devoted to describing the peculiar risks taken by the halibut fishermen in running from the fishing grounds to the market, and in the logs of two voyages, which are appended to this chapter, are mentioned a series of experiences such as are ordinarily met with every winter by the crew of every Gloucester halibut vessel.

As has already been remarked, no class of fishermen take greater risks than those of whom we are now writing. The vessel once loaded with fish everything is made subordinate to the desire to reach home in as short time as possible. There is a strong emulation between the crews of the different vessels, each desiring to get the biggest trip of fish in the shortest time; the professional reputation of the skipper and the crew as well as their profits depend upon accomplishments of this kind. In addition to this motive there is the still stronger one of getting to market in advance of

other vessels which may be on the bank at the same time, and thus be able to dispose of the cargo of fish at a higher price than could be realized if several vessels arrived together. The average length of a run from the Grand Bank to Gloucester, a distance of 800 miles, is, in the winter, about eight days, excepting under specially unfavorable circumstances. Some winters there is a constant succession of heavy northerly and westerly gales, in which case a vessel will take a longer time to make the run. On one occasion, in the winter of 1875, the schooners Howard, J. S. Presson, and William H. Foye, were from fifteen to seventeen days making the passage, and many others were fully as long in getting home; one vessel, the schooner S. H. Putnam, of Beverly, engaged in the fresh halibut fishery that winter, took forty-two days to complete her homeward passage. One of the shortest runs home from the Grand Bank, which is on record, occupied five days only, although the passage to the bank from Gloucester has been frequently made in a little over four days, the prevalence of strong westerly winds in winter favoring an eastern run, but retarding a vessel bound home from the bank.

In summer, a few of the vessels carry two topmasts, and light sails to correspond. When there is a leading wind all sail is crowded on, and there are few finer nautical scenes than that of a full-rigged halibut schooner running for market in a brisk breeze.

8. DISPOSITION OF THE CATCH.

UNLOADING AND PACKING FOR SHIPMENT.—On the arrival of a halibut vessel at Gloucester, she is anchored in the harbor, and the skipper, having gone ashore, visits the offices of the several halibut companies, taking offers for his fish at so much per pound for white, so much for gray, and so much for sour. It often happens, though, that the fish are sold "right through," that is, for a fixed price for all sweet fish, and occasionally the halibut are bought so that the dealers take all at one price per pound, and assume the risk of any being unfit for market. Sometimes there is a competition between the buyers, and then the cargo is sold to the highest bidder. At other times, however, the companies pool their interests and fix a price which the fishermen must accept, since, in such cases, nothing can be done but to submit to the dictation of the combination. Formerly, the "hawkers," as the halibut buyers are called, when anxious to buy a vessel's cargo, were accustomed to go off in boats and meet the schooners as they came in the harbor; at present this is rarely done. The cargo having been sold the vessel is hauled up to the wharf.

The unlading of a halibut vessel is a very interesting operation to any one to whom it is novel. The schooner having been hauled up to the wharf of one of the halibut companies, the hatches are opened and a strong tackle is attached to the fore and main staysail-halyards and adjusted over one of the hatches. Two or three men are stationed in the hold. The fish are "broken out of the pens" and dragged beneath the hatch, and each one has a "strap" of buoy line fastened around the slender part of its tail. This strap is about 3 feet long, with the ends spliced together to form a ring. This is dexterously fastened to the tail in a kind of slip-noose; by passing one bight through the other and into the loose part a hook from the hoisting tackle is easily caught. Three or four, or even more, fish are thus attached to the same hook, and then the pendant, slimy group is hoisted. Now a similar hook attached to another rope on the wharf, called an "outhauler," is thrown down and fastened into the eye of one of the fishes, which are both hoisted and hauled on to the wharf at the same time. As the fish are lifted and pulled to the wharf the hoisters suddenly let go and the halibut fall sprawling over the floor of the fish-house. Here a sturdy gang armed with gaff-hooks are waiting. The fish are culled into grades, and either the white or gray ones, as the case may be, are tossed into a tray pendant from a pair of large steelyards. Their weight ascertained, they are dumped again on the floor, their heads cut off, and then they are ready for pack-

ing. Other men with gaffs seize them and drag them over the slippery floor to the end of the building. Here a stout spruce or pine box is waiting, standing on platform scales. One by one the fish are lifted into the box, and a shovelful of ice is poured into the abdominal cavity. The box is filled, its weight noted and marked in large figures in one corner, and then it is transferred to wooden rollers and handed over to the carpenter, who nails the cover on, using a peculiar instrument, very appropriately called a "devil's claw," if we accept the idea that the devil has an unyielding clutch.

If, as frequently happens, the fish are taken from the vessel, weighed, and beheaded faster than they can be boxed, they are dragged aside and thrown in heaps according to the several grades. It is not an uncommon thing to see 30,000 to 40,000 pounds of halibut piled up on the floor of a large packing establishment, and in some instances a much larger quantity is heaped together.

When taking out halibut the average rate of progress is from 7,000 to 10,000 pounds an hour; the speed depends somewhat on the height of the tide. "The best time we ever made," says Mr. John F. Bickford, foreman of the Atlantic Halibut Company, "was in the summer of 1878 when we took a trip of 103,000 pounds of halibut out of the schooner William Thompson in 9 hours and 15 minutes, and had an hour's nooning out of the time. The actual time at work was a little more than 8 hours." These fish were bought "right through," and, being in good order, needed no culling, and consequently could be handled very rapidly.

A full working gang in the building is eleven men, all told. These are divided as follows, namely: A weigher (who is usually the foreman), the culler and assistant at the scale, the header, a man to haul the fish away, three men boxing and weighing the fish, two men nailing the boxes and wheeling them away, and one man grinding ice. One of the "boxers" assists the "ice-grinder" in dragging away the baskets of ice, &c. With a gang like this at work boxing, the fish can be put up ready for shipment nearly as fast as they are usually taken out of a vessel. The boxes hold an average of 425 pounds of halibut.

Mr. B. W. Griffin, culler at the New England Halibut Company's establishment, and Mr. Thomas Tarr, foreman of the same, gave the following information:

"We take out anywhere from 8,000 to 10,000 pounds of halibut an hour, under ordinary circumstances; generally more if the chance is favorable. The best we ever did was in 1878, when we took a trip of 42,000 pounds out of the George P. Whitman in an hour and three-quarters. With a full gang at boxing, which includes six men—three boxers, two nailers, and one ice-grinder—we can box, ready for shipment, 40,000 pounds of halibut in four hours, but in some instances we do even better than this. Some years ago the schooner Wm. T. Merchant came in with a trip of halibut that had been sold to arrive, at a high price, and we were anxious to get the fish on the market. She hauled alongside of the wharf at 5 o'clock p. m., and at 9 p. m. we had her trip of 50,000 pounds boxed and all on the steamboat wharf, ready for shipment."

It seems appropriate in this place to allude to the system of "culling fish" which is in practice among the merchants of Gloucester who buy fresh halibut from the fishermen. They have established three grades of halibut, known as "white," "gray," and "sour"; the white halibut are those which have their under sides immaculate, the gray halibut are those whose under sides are more or less tinged with gray or drab, while the sour halibut are those which are slightly tainted in the vicinity of the abdominal cavity. The largest halibut are almost invariably gray. The price allowed to the fishermen for gray halibut is considerably less than that for "white," frequently not more than one-half. The price of sour halibut, again, is considerably less than that of gray. For instance, when white halibut sell for 5 cents per pound, gray will sell for from 3 to 3½ cents per pound,

and sour for from 1½ to 2 cents per pound. The distinction between sour halibut and that which is not sour is doubtless a valid one, but that between white and gray is of little importance, since, in the hands of the retail dealers, there is seldom, if ever, any difference in price. There is no reason why the gray halibut, as they are called, should not be exactly as firm in flesh and delicate in flavor as the white. The distinction was first made by the Gloucester Halibut Company, established in 1848, in order to avoid the carrying out to the letter of their contracts with the fishermen, and since that time it has uniformly been made use of, to the disadvantage of the fishermen. It is not our intention to criticise the motives of the halibut merchants in this respect, but simply to call attention to the fact that the existence of an arbitrary distinction of this sort is extremely unfortunate, since it gives to the capitalists the opportunity of treating the fishermen with great injustice. The callings are made entirely by the purchaser and the fishermen have no right to criticise their judgment, and no right to appeal. The manner of culling is varied arbitrarily, from time to time, in accordance with the necessities of the buyers. At times a very large percentage of the catch of a vessel will be counted as gray, or even as sour, and paid for at reduced rates. If the terms of the bargain previously made with the fishermen were justly carried out, the value would be very much greater than that which was actually paid for the fish. We do not deny that the buyers feel some necessity for some such safety-valve as this in the present condition of the halibut fishery, since sometimes eight or ten large cargoes of fish are brought in at one time, glutting the market to an uncontrollable extent;* at the same time some more equitable means of regulating the price in accordance with the supply is very much to be desired. Under existing circumstances, perhaps the most desirable remedy would be the appointment of some inspector who would cull the fish in accordance with some uniform rule, thus doing away with the feeling of injustice which is constantly felt by the fishermen. In the winter of 1878 the feeling against this system of culling was so strong among the owners and masters of the Massachusetts halibut vessels in Gloucester, that an attempt was made to organize a company of fishing firms, which should take the matter of handling the fresh halibut into its own hands. This, however, was unsuccessful, owing to the lack of unanimity among the fishing capitalists. The manner of weighing the halibut is also open to objection of the same kind. Fish are bought from the vessels with their heads on and weighed, and 14 per cent. of the total weight is deducted, this being supposed to represent the weight of the heads. This percentage, however, is considerably too large; then, too, the weighing is done by the purchaser with beam scales, and the fishermen complain that undue advantage is taken by the weighers. The employment of some impartial person as weigher would do much to allay the dissatisfaction felt and expressed by the halibut fishermen.

9. FINANCIAL PROFITS AND EXTENT OF THE FISHERY.

THE LAY.—The "lay," or division of the proceeds of the voyage, is given in detail in the chapter on "Lays and Outfits." Briefly stated it is as follows: From the gross receipts of money obtained from the sale of the fish are deducted certain "stock" charges, these embracing expense for ice, bait, towing by steam-tug, woolen nippers, &c. The balance is called the "net" stock, and this is equally divided, the vessel receiving one-half, while the other half, after charges for splitting wood, filling water, medicine chest, tarring rigging, painting spars, and one-half of 1 per cent. for widows' and orphans' fund, are deducted, is divided equally between the members of the crew, the captain and cook included. In addition to his share obtained by this division the captain receives a percentage on the net stock, this being usually 4 per cent., though in some cases a

* This statement applies more particularly to the fishery previous to 1881, at which time a larger fleet was employed and more fish were taken than at present (1885); nevertheless what is said of the method of culling and weighing halibut applies equally well now, and it is not less objectionable now than in former years.

higher rate is paid to favorite skippers. The cook also generally makes extra pay, since he is entitled to half of any fish he may catch on a hand-line, or short trawl set from the vessel, and also, in some instances, has been permitted to save and sell for his own benefit the swim-bladders of the hake (*Phycis*) captured on the trawl-lines set for halibut. This latter privilege is now, however, rarely accorded.

The owners of the vessel must fit her with all material for the proper prosecution of the voyage, including food, gear, &c., their profit being the difference between the expense so incurred and their half of the proceeds of the voyage.

THE "STOCK" OF THE GLOUCESTER HALIBUT FLEET IN 1880.—The following list shows the net stock of the vessels composing the fresh-halibut fleet of Gloucester in 1880:

Vessels in the Gloucester halibut fleet in 1880, with a statement of the net stock of each.

Name of vessel.	Net stock.	Name of vessel.	Net stock.
Augusta H. Johnson	$14, 650 00	Laura Nelson	$19, 700 00
Alice M. Williams	16, 600 00	Lizzie	11, 300 00
Bessie Somes	16, 116 38	Mary F. Chisholm	11, 033 78
Chester R. Lawrence	11, 413 76	Nathaniel Webster	12, 000 00
David A. Story	13, 708 84	Notice	10, 000 00
Epes Tarr	13, 800 50	Plymouth Rock	10, 900 00
Frederic Gerring	14, 487 24	Polar Wave	14, 322 00
Gatherer	17, 234 00	Procter Brothers	9, 821 14
G. P. Whitman	10, 003 84	Thresher	8, 126 73
Grace L. Fears	12, 155 26	Wachusett	15, 110 23
Guy Cunningham	16, 500 00	Willie M. Stevens *	20, 959 06
Isaac A. Chapman	19, 846 45		

* The gross stock of the last-named vessel, the amount her fish sold for, was $22,107.25; the crew shared to each man $706.06. As will be seen, the Gloucester halibut fleet was much smaller in 1880 than in 1879, numbering only twenty-three vessels against forty-eight schooners in the latter year.

An addition of about $1,000 to $1,200 to the net stocks given will show approximately the amount obtained for each vessel's catch. The Procter Brothers and Thresher made only six trips each for halibut, being employed elsewhere or hauled up the remainder of the year. The stock given is that realized from the sale of halibut.

RECEIPTS OF HALIBUT IN 1878.—The following detailed statement of the amount of fresh halibut landed at Gloucester, Mass., for the year 1878, by vessels engaged in the fishery from that place, will give a fair idea of the catch and value of halibut during the several months of the year:

Month.	Gross weight.	Net or market weight.	Average value per pound.	Total value.
	Pounds.	*Pounds.*		
January	347, 694	299, 617	$. 0905	$27, 166 05
February	1, 353, 030	1, 168, 766	. 0226	26, 475 82
March	1, 531, 258	1, 316, 882	. 0287	37, 820 08
April	1, 817, 916	1, 563, 408	. 0201	31, 474 82
May	817, 075	702, 685	. 0323	22, 687 36
June	1, 081, 022	929, 679	. 0285	26, 505 32
July	1, 261, 330	1, 064, 744	. 0228	24, 685 24
August	821, 902	706, 836	. 0257	18, 173 08
September	894, 080	768, 900	. 0261	20, 047 53
October	718, 186	617, 640	. 0317	19, 582 48
November	273, 872	235, 530	. 0648	15, 266 46
December	318, 852	274, 213	. 0526	14, 418 10
Total	11, 242, 218	9, 668, 307	. 0294	284, 302 13

Add to the above quantity the halibut landed at Boston by Gloucester vessels, estimated at 1,125,000 pounds gross weight, and valued at about $28,500, and we have the total catch of the

Gloucester fleet 12,367,218 pounds, gross, valued at $312,802.13. The market weight is found by deducting 14 per cent. for the heads.

HALIBUT PURCHASED BY THE NEW ENGLAND FISH COMPANY, 1873 TO 1878.—The following statement of the amount of fresh halibut bought, during a series of years, at Gloucester, Mass., by one firm, the New England Fish Company, from vessels engaged in the fishery from that place, is of interest in this connection:

Year.	Gross weight.	Net weight, after deducting 14 per cent. for heads.	Average value per pound.	Total value.
	Pounds.	*Pounds.*		
1873	3, 647, 142	3, 136, 542	.0612	$192, 141 94
1874	3, 473, 995	2, 987, 636	.059	176, 226 19
1875	3, 368, 696	2, 897, 670	.0512	148, 519 59
1876	3, 988, 811	3, 430, 378	.044	152, 148 27
1877	3, 302, 112	2, 839, 817	.0415	117, 906 70
1878	6, 216, 492	5, 346, 184	.0302	161, 514 60

Each year ends March 1. This firm represented seventeen wholesale Boston firms and seven at New York in the year ending March 1, 1878; previously Boston firms alone. Seventy-five per cent. of the above shipments from Gloucester in 1877–'78 were to Boston and 25 per cent. to New York. The shipments in the preceding year were mostly to Boston. In 1878, 2,112,581 pounds of fresh halibut were sold by the New England Company to "cutters" in Gloucester for smoking.

LARGEST STOCK.—The Cape Ann Advertiser of March 24, 1882, contains the following account of the largest halibut trip ever made, so far as financial results are concerned. It says: "The best halibut fare received at this port for several years was landed Wednesday (March 22) by schooner Grace L. Fears, Capt. Nathaniel Greenleaf. Her fare was taken by the Atlantic Halibut Company, and she weighed off 98,825 pounds halibut and 3,000 pounds codfish, 101,825 pounds in all, stocking $6,016.60. Her crew shared $206.30. The cook's share was $253.94. She was gone five weeks and one day, during which time she was frozen up for eight days at Canso. This is the largest stock ever made on a halibut trip, although larger fares have been received several years ago."

SUCCESSFUL TRIPS IN 1874–'75.—We are indebted to Messrs. Clark & Somes, of Gloucester, for the following detailed account of some of the most successful years' work accomplished by schooners employed by them in the Bank halibut fishery:

SCHOONER F. W. HOMANS.

1874.	Gross weight.	Gross stock.	1874.	Gross weight.	Gross stock.
	Pounds.	*Dollars.*		*Pounds.*	*Dollars.*
January 21	20, 954	1, 845 60	September 23	21, 982	1, 456 94
March 2	51, 859	2, 846 90	November 6	50, 908	2, 539 19
March 27	73, 820	2, 856 82	December 12	22, 475	1, 802 37
April 30	55, 023	2, 836 72	*Total*	399, 224	18, 792 89
May 28	62, 500	1, 225 06			
August 10	89, 603	1, 293 28			

SCHOONER LIZZIE K. CLARK.

January 22	23, 551	1, 963 13	August 10	41, 786	1, 137 91
February 27	55, 087	3, 493 74	September 15	40, 199	3, 340 26
March 25	85, 810	4, 726 50	November 3	26, 363	1, 414 70
April 21	53, 733	2, 259 95	November 28	11, 809	979 93
May 20	29, 409	644 70	Total	418, 111	19, 088 82
June 30	50, 364	1, 623 99			

SCHOONER JOHN S. PRESSON.

1875.	Gross weight.	Gross stock.	1875.	Gross weight.	Gross stock.
	Pounds.	*Dollars.*		*Pounds.*	*Dollars.*
February 29	62, 219	4, 144 99	August 27	*191, 296	5, 814 90
March 19	97, 313	3, 138 58	November 22	*141, 113	3, 735 67
April 28	74, 189	2, 703 89	Total	651, 731	21, 785 99
May 25	85, 700	2, 247 95			

SCHOONER LIZZIE K. CLARK.

January 17	24, 178	1, 709 56	August —	43, 348	3, 481 98
February 17	18, 135	1, 573 70	September 27	43, 606	4, 469 49
March 21	40, 957	2, 953 64	November 5	7, 970	703 47
April 29	20, 418	1, 022 43	Total	260, 316	18, 186 48
June 23	19, 514	561 27			
July 22	42, 190	2, 410 94			

SCHOONER GERTIE E. FOSTER.

February 8	38, 110	3, 363 18	September 10	86, 051	2, 912 37
March 14	113, 646	3, 937 66	October 7	102, 906	3, 496 59
April 20	39, 965	1, 667 40	November 16	29, 326	1, 331 03
May 19	64, 626	2, 241 06	December 9	24, 036	2, 860 36
June 15	83, 614	2, 883 78	Total	666, 168	27, 470 53
August 11	83, 868	2, 767 10			

SCHOONER CHESTER R. LAWRENCE.

February 5	21, 722	2, 239 96	November 5	96, 556	3, 094 66
March 16	136, 046	4, 708 29	December 11	24, 090	1, 893 12
May 6	129, 688	3, 933 71	Total	634, 990	24, 124 16
June 19	*133, 887	3, 824 97			
September 24	*170, 144*	*4, 738 45*			

*Cod.

HALIBUT FARES FROM 1831 TO 1877.—The following items are quoted from Cape Ann newspapers of various issues during the last half century:

1831.—"*Good Luck.*—The schooner Nautilus, Wonson, of this port, in one week caught and sold 136 halibut. Time occupied in taking them, twelve hours."—(Gloucester Telegraph, March 12, 1831.)

1839.—"The schooner Majestic, Edgar, of this port, returned on Saturday evening from a cruise to the George's with upwards of 100 halibut. This is believed to be the first successful trip ever made to the Banks, within the month of February, by any vessel belonging to Gloucester. Since Sunday some dozen or more vessels have sailed and others are ready and actively preparing for the spring business. Owing to the poor success which has attended the mackerel fishery for several years past, it is probable that fewer vessels will be engaged in that pursuit the coming season than Gloucester has had employed in it for the last quarter of a century."—(Gloucester Telegraph, February 27, 1839.)

1846.—"Three vessels, schooners Mount Vernon, Oregon, and Clarissa Story, sailed on Thursday for George's Bank after halibut. They are the first this season."—(Gloucester Telegraph, January 17, 1846.)

1848.—"*Fresh Halibut.*—The first trip of halibut this season arrived on Monday from George's Bank in the schooner Centurion, Captain Bailey. Captain B. was absent ten days, and obtained about 100 halibut and a quantity of fish (codfish). No vessel has ever been after halibut at so early a period previous to this."—(Gloucester Telegraph, January 5, 1848.)

The remarkable increase in the importance of this fishery during the past eighteen years may perhaps best be illustrated by quoting the following paragraph from the Cape Ann Advertiser of January 16, 1863, and comparing it with what follows:

"*The schooner Marengo, from Western Banks, arrived at Gloucester with 17,000 pounds of* halibut, which sold for $1,300. The schooner William Parkman, with 11,000 pounds, selling for $900, and the Madame Rolland, with a trip amounting to $600, making a gross amount of $2,800 for the three trips. This," remarks the editor, "is what we call doing the thing up brown."

We will now compare the big trips above mentioned with the following references to other large fares during the last twelve years, as recorded in the Cape Ann Advertiser:

"The schooner Daniel McFee arrived at Gloucester May 4, 1860, with 45,000 pounds of halibut, which sold for $1,125.

"The schooner Cyniska arrived May 10, 1860, from Western Banks, with 40,000 pounds.

"The schooner Mohenie arrived February 3, 1860, from George's Bank with 13,000 pounds of halibut, which sold for $1,240."

In April, 1867, schooner Aphrodite arrived at Gloucester from Western Bank and landed one of the most profitable trips ever made by a Gloucester vessel. She was absent twenty days, and brought in 41,000 pounds of halibut and 2,000 pounds of codfish, the gross stock amounting to *$4,246.37. Net stock, $4,126.72. The crew shared $171.51 apiece. There had been larger fares* brought in up to this time, but never so large an amount of money realized from the sales, halibut *then being very scarce and commanding a good price.*

A trip of 80,000 pounds of halibut was brought to Gloucester in May, 1867, by schooner Flying Fish.

The schooner James G. Tarr arrived at Gloucester in July, 1867, from the Grand Bank with 140,000 weight of halibut and codfish. There were upward of 100,000 pounds of halibut weighed off, the largest amount up to that time ever landed from a single fare. The vessel stocked about $4,000.

The Cape Ann Advertiser of May 29, 1868, says: "Schooner Mary G. Dennis, which arrived from Western Banks last week, brought in 75,395 pounds of halibut, and 9,950 pounds of codfish. Her net stock amounted to $3,604.85, and the crew shared $143.85 each. Time absent, four weeks."

The same paper for June 19, 1868, says: "Schooner Montana, Welsh, arrived from a four weeks' cruise to the Grand Banks last week, with 95,773 pounds of halibut and 2,250 pounds of codfish, the net stock amounting to $3,265. The Montana, in her two trips to the Grand Banks, has stocked $6,000." And the Advertiser of July 24, in the same year, says: "Schooner *Montana* arrived from her third trip to the Grand Banks on Friday last, with 65,227 pounds of halibut and 2,100 pounds of codfish, her net stock amounting to $2,329.02. The Montana has stocked in her *five trips $10,311.02, which is the highest net stock made this season by any Gloucester vessel.*"

The Cape Ann Advertiser of September 24, 1869, says: "Schooner C. B. Manning, of this port, which arrived from the Grand Banks on Sunday, brought in 49,000 pounds of halibut and 14,000 *pounds of codfish, having been absent but four weeks. The halibut were sold for $12* and $8 per hundred-weight, her net stock amounting to $4,033.44. Crew shared $116.06 each.

In 1869, the schooner Sarah P. Ayer, Captain Thurlow, owned by Dennis & Ayre, stocked $4,251 from a trip of thirty-five days. This was one of the biggest trips of that time. In five trips that year she stocked $12,000. In 1871 the schooner Mary G. Dennis, owned by Dennis & Ayre, brought in 116,000 pounds of halibut, which sold for $2,400.

The schooner Lizzie K. Clark, of Gloucester, Capt. Edwin Morris, arrived in March, 1874,

with 85,810 pounds of halibut, and stocked $4,676. The time of the trip was seventeen days, the shortest ever made to the Grand Bank.

The schooner Ossipee, Captain O'Brien, arrived at Gloucester from the Grand Bank April 6, 1874, with 90,628 pounds of halibut, the largest cargo of the season. Prices were low, and the stock, which amounted to $2,533, was not so large as some made during the previous months.

Schooner Gertie E. Foster, Captain Morris, which arrived from her first trip to the Grand Banks on Monday, September 14, 1874, brought 40,199 pounds of halibut, and sold for 12½ cents; stocked $3,340.20.

The Cape Ann Advertiser, December 4, 1874, states that Capt. Edward Morris, who has followed the Grand Bank halibut fishery in the Lizzie K. Clark and Gertie E. Foster, has stocked $20,000, the largest stock but one ever made from this port. The largest was made by the Racer, Capt. Walter M. Falt, who in 1866 stocked $22,000. In the three years 1873 to 1875, inclusive, Captain Morris stocked $64,996.78 in the halibut fishery.

The Forest and Stream, March 18, 1875, prints the following:

"Schooner Edward Grover, Captain Wheeler, arrived from the Grand Banks on Wednesday with 45,000 pounds halibut, having made the trip in three weeks, a remarkably short time considering the rough weather."

The Forest and Stream, March 25, 1875, states as follows:

"Schooner Chester R. Lawrence, Capt. Thomas F. Hodgdon, which arrived at Gloucester from the Grand Banks on Monday, weighed off 126,566 pounds of halibut and 5,480 pounds of codfish, the largest fresh fare ever landed up to that time at this port, and stocked $4,708.20, the fish selling for $6⅜ and $3 per hundred-weight for white and gray. On both trips he has brought in 147,946 pounds of halibut and stocked $6,892.22."

The record of the Centennial while under the command of Captain Murphy is a very remarkable one. She sailed from Gloucester on her first trip February 15, 1876, and between that time and August 28 made six voyages to the Grand Bank, bringing home about 600,000 pounds of fish, caught in from 60 to 150 fathoms of water. She then stopped halibut fishing and went with a load of herring to Gottenberg, Sweden. February 25, 1877, she again started halibut fishing, and between that time and October made four trips, with the average fares of 100,000 pounds.

The Cape Ann Advertiser of March 3, 1876, thus records the largest halibut trip from George's Bank:

"Schooner Pioneer, Captain Osier, from George's on Monday, February 27, 1876, weighed off 65,000 pounds of halibut, stocking $2,960.12, which is the largest trip of halibut ever landed from George's. On her former trip she landed 30,000 pounds, stocking $1,107, making an aggregate of $4,067.12 for the two trips. These halibut were caught on hand-lines in what is known as deep-water George's fishing, which is from 100 to 150 fathoms in depth, and this is the first season in which this kind of fishing has been pursued with any marked success. The cook's share was $167; high-line, $181. Time absent, three weeks."

The Advertiser of April 28, 1876, says: "Schooner Epes Tarr, Robert Grant master, left Gloucester, March 28, 1876, put into Halifax, March 31, and sailed April 1 for the Grand Banks. She returned Wednesday, April 19, and landed 54,500 pounds of white halibut and 24,442 pounds gray, the stock aggregating $3,161. The crew will clear $120 to a man. All her fish were caught in four days, and had it not been for the moderate wind on her homeward voyage, which occupied nine days, she would have made the quickest trip on record."

The same paper of March 28, 1876, records the following: "Week ending April 28, 1876,

halibut trips from the Banks: Carrie P. Morton, 114,540 pounds; Davy Crockett, 99,980 pounds; Edwin C. Dolliver, 95,000 pounds; Notice, 70,000 pounds; Howard, 95,000 pounds."

May 22, 1877, the schooner G. P. Whitman, Capt. Jerome McDonald, of Gloucester, arrived from the "Gully," after four weeks' absence, with 137,510 pounds of halibut, which sold for $3,254.54.

With the exception of the above, the largest cargo of fresh halibut ever brought into Gloucester, and without doubt the largest ever taken, was that brought in by the schooner Centennial, Capt. D. C. Murphy, in 1877. The fare amounted to 137,000 pounds, over 100,000 pounds of which were white halibut. These fish were taken on the Grand Bank in latitude 43° 30′ north, longitude 52° 04′ west, at a depth of 87 fathoms.

In 1868, schooner William T. Merchant, Capt. Nelson A. McKenney, stocked $4,200 on a fare of 48,310 pounds of halibut, caught on a trip of twenty-six days. The same year the Merchant caught a fare at Miquelon Beach of 103,450 pounds of halibut, being absent from home twenty-five days.

The schooner Mary Carlisle, Capt. William Thompson, made nine trips to the Banks in 1871. Her catch was 350,188 pounds of halibut and 58,759 pounds of codfish; her net stock amounted to $17,275.53 for about eleven months' work, from December 27, 1870, to November 21, 1871. On one trip in the spring she brought in 58,553 pounds of halibut and 6,900 pounds of codfish, her net stock reaching the sum of $4,738.75, and her crew sharing $236.25 each from a voyage of thirty-four days. She had ten men in her crew, each of whom during the season shared $858.62. In three years this vessel stocked a total of $46,871.53, divided as follows: 1869, $17,549; 1870, $12,047; 1871, $17,275.53.

The highest stock ever made from a single trip of fresh halibut, until recently, was that of schooner N. H. Phillips, Capt. William McDonald, in the fall of 1871. She secured a fare of 47,650 pounds of halibut and 9,370 pounds of codfish. The gross stock amounted to $5,361. She was absent five weeks, and the crew shared $213.42 each. In two trips, both occupying nine weeks, she stocked a total of $9,142, and the men shared $363.42 each.

"The largest amount of halibut ever received in Gloucester in a single week was for the week ending February 10, 1881, when the receipts were 740,000 pounds from the Banks and 122,509 pounds from George's, 862,500 pounds."*

10. HISTORY OF THE FRESH-HALIBUT FISHERY.

THE EARLY HALIBUT FISHERY ON GEORGE'S.—In the early part of the present century halibut were exceedingly abundant in Massachusetts Bay, and were considered by the fishermen *to be troublesome pests, as are dogfish at the present time. Their abundance, even as late as* 1837, may be judged from the following account of a fishing trip in the bay quoted from the Newburyport Herald by the Gloucester Telegraph of June 3, 1837: "Four men went out fishing from Marblehead a few days since, and returned, after an absence of two days, with four hundred halibut, for which they obtained $1.50 each, or nearly $600." The Gloucester Telegraph of March 22, 1837, contains the following, which is additional evidence of the occasional abundance of halibut near the coast: "Our hardy fishermen," says the account, "have been unusually successful in their pursuit of this noble fish [halibut] within the past week or two. One boat, we are informed, during an absence of only two days, took 15,000 weight."

The fishing vessels of Cape Ann at that period were mostly pinkies, or "jiggers," and chebacco boats, or "dog-bodies," as they were then called; and it was the practice of the fishermen, when

* Fisherman's Own Book, p. 30.

halibut were troublesome, to string them on a line and hang them over the stern of the vessel. Halibut were occasionally brought home, but they were generally thrown away. Before 1825, however, a considerable demand for halibut sprang up in Boston, and small vessels were accustomed to carry cargoes to that market. The supply of fish on the inshore grounds slowly diminished, and about 1830 the announcement that halibut were abundant on George's Bank led several vessels to make trips thither in their pursuit. The present George's cod fishery sprang up in connection with the halibut fishery, the latter being the original inducement for vessels to visit that region; and in early days, at the season when halibut occurred on the Bank, it is stated that it was often impossible to catch many codfish, if desired, on account of the great abundance and voracity of the halibut. The following account of the inception of the halibut fishery on George's is taken from the Fisherman's Record Book, pages 77 and 78:

"It is claimed by a large majority of those interested in the fisheries that the schooner Nautilus was the first vessel which ever ventured to George's on a halibut trip. There are others who assert that the schooner Romeo is entitled to the claim of being the pioneer schooner in this branch of the fisheries. We have made the most careful inquiries, and from one of the crew of the Nautilus we obtain the date of her sailing, and several interesting particulars of the trip. We could not obtain any date of the sailing of the Romeo, although we interviewed one of her crew. He felt confident that there was not many days' difference in their time of sailing, and was rather inclined to the opinion that the Nautilus was the first. Our informant is positive that he is correct in his dates, and as he is a man of undoubted veracity, and in the absence of any contradictory statements, we publish his narrative. The vessel was commanded by Capt. John Fletcher Wonson, recently deceased, one of the most able and careful skippers among those of the olden time.

"In 1828, while coming home in the Nautilus from Wilmington, N. C., he noticed on the chart used on board the vessel a picture of a halibut, under which were printed the words, 'Good halibut grounds here.' This he remembered, and two years after concluded to give the halibut catching a trial. On the 5th of March, 1830, the vessel started out of the harbor on her trip for halibut. Among her crew were the following persons, all of whom but the last named are now living: John W. Wonson, Nathan F. Wonson, Samuel G. Wonson, Daniel Douglass, and Benjamin Marble. The result of this trip was twenty halibut, which were landed, but met with a dull sale. The schooner Romeo, Capt. Henry Pew, sailed soon after, and brought in a trip of upwards of 3,000 pounds, which were sold for 3 cents per pound. Other vessels soon followed, but the business did not amount to much until it had been prosecuted five or six years, when it began to assume considerable importance and became established as a regular branch of the fisheries.

"This first trip of the Nautilus came very near being the last of one of her crew, Mr. Marble, and gave a little foretaste of the dangers accompanying the vocation. The vessel was lying to, the crew having succeeded in finding some halibut, when Mr. Marble launched the dory, and, throwing over his anchor, commenced fishing by himself. It was quite moderate, and the vessel, drifting with the current, was soon some distance off. This was thought nothing of in the excitement attending fishing, until one of the crew remarked that Marble was about out of sight, and he thought it queer that he didn't row for the vessel, especially as night was coming on and there were indications of a storm. All hands then began to talk it over, and thought that something must have happened to him. A man was sent aloft to keep the dory in sight, and a little breeze springing up, the vessel was got under way, and they succeeded in reaching him just before the darkness and storm came on. It seems that in the hurry of launching the dory he forgot the oars, and this accounted for his not attempting to regain the vessel. There lay the oars on the vessel's deck, and not one on board had observed them. If they had, the mystery of Marble's not

attempting to regain the vessel would soon have been solved. Soon after he had been picked up, the storm came on in all its fury, a regular George's blow, with all the accompaniments, which would have proved certain death to any one exposed to its fury in a dory."

The above paragraphs are supplemented by the following reminiscences of Mr. Samuel G. Wonson: "Before this time (1830) a good many halibut were taken between Gloucester and Cape Cod, especially on the southeastern part of Middle Bank. They were taken to Charlestown, Mass., and traded off to the farmers for produce. Mr. George Wonson, father of Samuel G. Wonson, used to take a good many in those early times. During the first of the season, before it was time for the herring to come in, all fresh fish (halibut were sold fresh then) were taken to Charlestown and traded off, alewives being brought back for bait; but later, when herring were plenty and they were not obliged to go to Charlestown for alewives, the halibut were cut away, not being landed at all, as there was no market nearer than Charlestown. After the first trip of the Nautilus to George's, finding halibut scarce, she made two or three trips off Nausett (Cape Cod), and at times found halibut plenty, the fish being sold, as before, to Mr. John Hareling, of Charlestown. Went to George's again in June for cod, but found halibut so plenty that they took a trip of about 130 fish and run into Salem, where they disposed of part; another portion was sold to parties to take to Marblehead, and the remainder thrown overboard, as they could not sell them. They fished in from 20 to 50 fathoms, generally on bottom, but at times could take them up in the water.

"The first smack for bringing in halibut alive was owned by John F. Wonson, and went first about 1835 or 1836. These smacks used to carry seven men and average a round trip a week, a trip being what the vessel would carry alive, or about 12,000 pounds." The quickest time of taking a trip that he recalls was by anchoring at 10 a. m., and getting under way at sundown with 14,000 pounds (about 300 fish in number).

"About 1838," according to Mr. Wonson, "a little ice was taken by the smack Mount Vernon to put in the napes of such fish as might be accidentally killed."

The following additional facts concerning the early George's fisheries have been obtained from interviews with Captains William Tarr and John Pew, of Gloucester. These gentlemen, who were formerly actively employed as fishermen, were two of the crew of the pinkey Romeo on her first trip to George's Bank in the spring of 1830. This trip of the Romeo was the second made to George's for halibut by a Gloucester vessel, that of the Nautilus being the first. While going out of the harbor the former met the latter vessel coming in, having on board only a few halibut. The Romeo caught a good fare, and may therefore be given the credit of making the first successful voyage to George's for halibut.

During the first five or six years of the George's halibut fishery, that is to say, previous to 1836, the vessels never anchored on the Bank, but "fished at a drift," the men fearing the tide would run them under if they should be unwise enough to anchor. When halibut were found abundant, as was generally the case at that time, it was a common occurrence for a vessel's crew to catch a full fare—12,000 to 15,000 pounds—in one day's fishing. In some cases, when the fish could be caught "pair and pair," a part of the men would not put out any lines, finding enough to do in assisting their shipmates to gaff in the halibut which were hauled up. It often happened, too, that halibut which were free would follow those which were hooked to the surface of the water, and the fishermen with their gaffs frequently succeeded in catching them. Indeed, it is stated by some of the old fishermen that it was not unusual for one-half of the fish to be taken in this manner. After the day's fishing was over the halibut were eviscerated, washed out, but not blooded or scrubbed. They were then thrown into the hold on top of the stone ballast, where they remained until the vessel reached a market. Sometimes, owing to bad weather, the fishermen

were unable to dress their catch, but had to throw the fish in the hold just as they came from the water. Mr. Pew relates an instance of this kind that happened on board of the pinkey Paul Pry, which he commanded, in the spring of 1837. The vessel lay at anchor on George's Bank. Early in the morning halibut were found to be very abundant, and, notwithstanding the prevalence of a strong easterly wind and a thick snow storm, the men kept on fishing. The weather was so rough that the fish were thrown in the hold as fast as they were caught. After the day's fishing was over, a full fare having been secured, the vessel started for the land. The wind was free for the little pinkey, and she was driven along at her utmost speed. Since it continued, however, to blow nearly a gale while the passage was being made, the fishermen were unable to take the halibut on deck, and consequently carried the fish into Boston without being dressed.

From 1828, for a period of twenty years, the halibut fishery was carried on almost exclusively upon George's Bank, but after the immense captures of 1847 and 1848, which resulted in the establishment of the Gloucester Fishing Company, and its collapse on account of the great oversupply of fish, the quantity of halibut on George's began to fall off rapidly, and after 1850 or 1852 the fishery ceased to be remunerative. From this time to 1861 the fisheries were prosecuted chiefly on the shallow parts of the Seal Island Ground, Brown's Bank, and Western Bank. More or less halibut have, however, always been taken on George's by the hand-line cod fishermen from Gloucester, even up to the present time, and this bank has been resorted to in the spring by the halibut trawlers from the ports on Long Island Sound.

The general character of the fishery upon George's Bank during the first decade of its existence may be appreciated from the following account of what was at the time considered a very remarkable trip, as well as from others previously quoted:

"In March, 1833, Capt. Chester Marr went to George's Bank in the schooner Clarion. He left Gloucester Harbor on Friday at 1 p. m., and on Sunday at 1 p. m. was again at anchor in the harbor, with a fare of 17,000 pounds of fish. From this trip he realized about $500. Two years later he brought in a cargo consisting of 17,000 pounds of fresh halibut and 5,000 weight of salted flitches, which he sold for $38. Captain Marr began halibut fishing on George's in 1832.

"We have succeeded," writes Mr. George H. Procter in 1873, "in obtaining a carefully compiled statement of the doings of the winter fishing fleet on George's during the season of 1846. There is such a contrast between the business then and now that we feel assured the details will be of interest to the reader.

"The entire fleet which followed winter fishing at that time comprised twenty-nine vessels, as follows: Schooners Mount Vernon, Clarissa Story, Oregon, Hosea Ballou, Huntress, Columbia, Adeline, Champion, Union, William Wallace, Hannibal, Clarion, Alabama, Concordia, H. A. Holbrook, Canton, Centurion, Constitution, Clinton, Pilot, Richmond, Sarah, Napoleon, Zanoni, William Penn, Emerald, Revenue, Cinderella, and Science. Their average measurement was 62 tons [old measurement]; average value, $2,800, and were considered the staunchest vessels belonging to the port. The greater number of these vessels have either been lost or sold from this district. The first ten of the above list left for George's January 5, and averaged five trips each during the season. Their net stock amounted to [a total of] $11,870, and the average net earnings of the vessels were $151.50. The largest fares brought in were the first two trips of the William Wallace, Capt. James Pattillo, amounting, respectively, to $500 and $610. The arrival of these trips produced quite a sensation, and was the theme of conversation in the stores, on the wharves, and on the street. The William Wallace was the lucky craft, and to her captain and crew was accorded the honor of being high liners of the Georgesmen. She stocked $2,135 for her season's work.

"The next eleven vessels of the list did not go so early in the season, but deferred their departure

till February 6. Their stock was $8,844, and each vessel averaged $128.36 net earnings. The remaining eight started March 2 and netted $110 each. The total stock of the fleet to April 15 amounted to $25,106, and the average share of each man was $62.16.

"In those days halibut comprised the principal fish caught on George's, and the amount of codfish caught was small. Now it is reversed, and codfish are the most plentiful." *

The following additional notes on the early halibut fishery may be of interest: "The schooner Alabama, of Gloucester, arrived at this port this morning from George's Bank, with 140 *live* halibut. —(Gloucester Telegraph, June 16, 1841.)

"*A quick halibut trip.*—A subscriber informs us that in 1848 the schooner Huntress, Capt. Arthur Cain, made a much quicker trip than the one reported in our last issue. She left port on Thursday at 11 o'clock, arriving in Boston on the following Monday morning, with 330 halibut, having accomplished the trip in less than four days."—(Cape Ann Advertiser, July 6, 1866.)

HALIBUT FISHING IN MASSACHUSETTS BAY.—The following notes on halibut fishing in Massachusetts Bay were obtained from Captain N. E. Atwood, of Provincetown:

Captain Atwood was the first to undertake fishing for halibut in the gully between Race Point and the Middle Bank. This was in 1840, and many very large fish were taken there. On the first trip there were ten fishermen on the schooner. It was not good fishing weather, but they tried for a short time, one man getting three, one getting two and several getting one fish apiece. Altogether, in an hour they took 13 halibut, and finding they could fish no longer bore up and went to Boston, where they found they had 2,043 pounds of the largest ever seen. In 1843 they began setting trawls. These were 60 fathoms long and had only about a dozen hooks. The "scrawl-body," or ground line, was of 6-thread manila line, such as is called worm line, not much larger than cod line, and the hooks were placed 4 or 5 fathoms apart on snoods 4 or 5 feet long. One anchor was used at the farthest end of the trawl, while the end nearest at hand was kept down by a heavy stone. In 1843 and 1844 Captain Atwood went in his little sloop-smack, the Mars, on Nantucket Shoals after halibut. There were many New London smacks there at that time. The New London fishermen were very careful to keep the halibut alive and handled them with the greatest delicacy. When they had pulled them on deck they would throw a canvas over them, and, lying down on them to hold them still, would carefully work the hooks out from their mouths and then throw them into the well. When they were fishing in a skiff they would carefully reeve a rope through the gill of each fish they caught and tow them astern of the vessel until they were placed alive in the well. It was not convenient to do this way, so Captain Atwood and his men killed the halibut, as they supposed, with their clubs and threw them into the well, and when they came to dress them they were all alive. Always after that, when fishing in a well-smack, they were in the habit of stunning the fish so that they were apparently limp, and dead, but found that they never failed to come to life after they had remained for a time in the water.

Capt. Epes W. Merchant tells us that at the time of his first acquaintance with the fisheries of Massachusetts Bay, from 1810 to 1830, halibut were so plenty that they were considered to be an annoyance. Vessels lying in the bay or on the Middle Bank, fishing for codfish, would often string up on a rope, at the stern, all the halibut caught on hooks and keep them there until they were ready to go home, in order to prevent them from annoying the fishermen again. They were never carried home except as a favor to friends on shore who wanted them.† They first came into

* Fisherman's Memorial and Record Book, 1873, p. 69.

† At the present time, and, indeed, for many years past, halibut have generally been so scarce on the New England coast, more particularly in Massachusetts Bay, that the capture of one or two has been considered a sufficient novelty for the fact to be chronicled in the newspapers.

demand about 1830. Capt. Harry Pew, in the pinkey Romeo, and Capt. John F. Wonson, in the Nautilus, went in the same year (1830), but he is uncertain which went first. At that time halibut were beginning to be scarce in Massachusetts Bay, and as there was always a small demand for them in the Boston markets, vessels began to go to George's after them. The first adventurers went in March, but others soon began to go in January. Quite a fleet grew up after two or three years, and in 1848 there were sixty-five vessels which brought halibut to the Gloucester Halibut Company, which was started in January of that year, and continued in business until the last of April, when it suspended operations, the supply exceeding the demand a hundred fold. Sometimes there would be twenty vessels, each with 30,000 or 60,000 pounds of halibut in its hold lying at the halibut company's wharf, waiting to unload, while there was no possible sale for any. In warm weather the whole fleet went after mackerel, starting about the 4th of July for the Gulf of Saint Lawrence. There were certain favorite grounds for the halibut fishing. They used first to make the shoals of George's and then run southeast until they struck the southern slope of the Bank sounding, and "trying" as they went.

Captain Marr is of the opinion that the first trips to George's after halibut were made in 1828. Capt. John F. Wonson, he says, went in March of that year, and Capt. Harry Pew went at about the same time.

Captain Marr first went in March and April, 1832. As early as 1834, vessels were accustomed to make their first trips to the Banks after halibut about the 1st of January. For bait they used herring, which they caught in gill-nets on the Banks.

EARLY HALIBUT FISHING BY NEW LONDON VESSELS.—Many New London vessels came to George's as early as 1840. These were small sloops, each with a crew of four men. The following statements relative to the early history of the halibut fishery pursued by the New London vessels have been obtained from Mr. Tripland. He says that when well-smacks were first employed in the halibut fishery from the sound ports the fish were caught with hand-lines from the decks of the vessels and immediately put in the well. The halibut were gaffed carefully in the under jaw so that they would not be injured enough to cause their death. A stout iron gaff (½-inch iron) 2½ to 3 feet long, with an eye at the top, was used to gaff wild or large halibut, which were hoisted on board by a tackle hooked into the eye of the gaff. Shovel-handled gaffs, he says, were also used for pulling in halibut, as well as a few with long handles made of saplings.

The few halibut that died were iced, but little money was, however, realized from the sale of these. While live fish brought 6 or 7 cents a pound in the market, those which were dead were not worth more than 1 cent to 1½ cents a pound, and it frequently happened that a whole fish sold for a very insignificant sum.

Twenty-five to thirty years ago a full fare of halibut could often be taken on George's in two or three slack tides with a crew of five men, all told. A fare for the New London vessels of that date would be about 150 to 200 fish, of an average weight of 80 pounds. Halibut were then also abundant about Nantucket shoals in spring and early summer, say from March to July, in from 7 to 35 fathoms of water. On George's the sound vessels generally fished in 45 to 50 fathoms, except when they tried about the Great Southwest Shoal and the Cultivator Shoal, when they generally fished in 10 to 15 fathoms. The halibut taken about the shoals were not so large as those caught in deeper water, therefore the smackmen did not like to fish there, more particularly as more or less danger was attached to being in too close proximity to those shoals.

When trawling began, about 1858, tight-bottomed vessels were substituted for the well smacks. The smack George Moon was the last welled vessel employed in halibut fishing from the sound ports and on her last trips her well was plugged up. But though the vessels exclusively employed

in the halibut fishery are tight bottoms, it not infrequently happens that a welled smack fishing for cod off Nantucket may sometimes catch a number of halibut, which are taken to New York alive, and, of course, bring a high price.

MR. JOHN FLETCHER WONSON'S RECOLLECTIONS.—Mr. John Fletcher Wonson tells us that the Gloucester vessels frequently went to New York with fares of halibut in early times, and that this practice was kept up as late as 1849 to 1850. Speaking of the abundance of halibut, he also tells us that at one time he saw ten of them follow the deep-sea lead to the surface, biting at it. He remembers to have taken an ice-bird out of the stomach of a halibut, and at another time some mackerel.

The New London vessels, according to Mr. Wonson, began catching halibut for the New York market on George's somewhere between 1840 and 1845. The New London fishermen cared nothing for cod, and the Wonsons often exchanged with them a few halibut for a boat-load of cod. The New London fleet was first composed entirely of sloops. Mr. Wonson remembers to have counted forty at one time in 1845 or 1846. In 1846 several schooners made their appearance.

In 1845, and until 1850, Mr. Wonson fished chiefly on the northwest part of the Bank in about 28 fathoms, though sometimes in 15 or 16 fathoms. One fare of fish was caught inside of the breakers on the shoals. For bait, the early halibut fishermen used chiefly herring, caught on the Banks.

RECOLLECTIONS OF W. H. WONSON.—Mr. William H. Wonson, of Gloucester, who was engaged in the halibut fishery from 1838 to 1850, and has since been extensively interested in halibut smoking, communicated to us the following facts regarding this fishery:

At that time the fleet was composed of vessels of 50 or 60 tons, many of them with pink sterns. The favorite fishing ground was on the northern edge of the Bank in 30 fathoms of water. The usual length of the trip was ten days. Mr. Wonson has been out and back in forty-eight hours. Leaving Gloucester at 2 o'clock in the afternoon on Saturday, he was back on Monday p. m. with 30,000 pounds of fish caught within 1 or 2 miles of the north shoal.

The year before the halibut gave out, fishermen used to find great pieces of halibut in the throats of the cod; nearly all the cod taken the last year had pieces of halibut in them.

Previous to 1848, when the vessels struck the southern part of the Bank, cod would last one day, then the halibut would gather around and haul the codfish off the hooks. It was not unusual for a vessel to anchor on the Bank at 11 o'clock in the forenoon and at evening heave up anchor with 7,000 pounds halibut on board.

In 1838 10,000 or 15,000 pounds was a fair trip; never more than 20,000 pounds were taken. At that time the fleet of fifteen or twenty sail used to start halibuting in February, run till April, and then go codfishing until July, and after the 4th of July go mackereling. In the beginning the practice was to catch the fish and heave them into the hold. The crew would clean them on the way in. As early as 1840 or 1842 there were one or two well smacks in the business, afterwards half a dozen. After icing was introduced some halibuters ran all summer. At first haddock were always used for bait, thirty or forty of them being taken from home. Subsequently herring nets were carried, and there never was any trouble in getting an abundance of herring in the winter on the Banks.

RECOLLECTIONS OF CAPT. W. H. OAKES.—Capt. W. H. Oakes, of Gloucester, Mass., first went halibut fishing in 1838. Halibut at that time were caught only on George's Bank. In the words of Captain Oakes, "they were like sand on the beach, the more you catched the more there was." He believes that at that time they were accustomed to strike the north side of the Bank at 75 fathoms and "follow it up" till 30 fathoms were reached.

Captain Oakes has laid to on George's Bank and caught 700 halibut in one place, while there were twenty-two sail of vessels fishing around him, the least successful of which caught 22,000 pounds of fish.

In those days prices ranged low. In April, 1852, Captain Oakes sold 10,000 pounds of halibut at the rate of $6 per hundred; this was an unusually high price. At that time no distinction was made between gray and white halibut, only the "loggy fish" were thrown out. All the halibut, he says, were in those days taken at a depth of from 35 to 45 fathoms. No cod were found on the shoal portion of the Bank. The ground was pre-occupied by the halibut. Cod were sufficiently abundant at the depth of 75 fathoms, and very few halibut were found in company with them.

In the early days of halibut fishing on George's the only bait he used was haddock. This was found to be very good and continued in favor until 1841, when the vessels began to catch herring on the Banks, and these were found to be better bait than haddock.

WELL SMACKS.—The early halibut vessels, according to Captain Merchant, were accustomed to carry their fish in bulk, in the hold on top of the ballast. Well smacks had come into use as early as 1845. In this year Mr. Merchant had the schooner Clinton, built in 1837, changed into a welled smack, and for several seasons ran her to Boston market.

TRADE IN HALIBUT.—In or about the year 1849 Capt. A. W. Dodd began the business of buying halibut from the George's cod fishermen and carrying them to Boston, where they were sold in a fresh state; his schooner was called the Neptune. In 1853 Capt. W. H. Oakes entered the same business with the schooner Sarah. The average fare of halibut for George's cod fishermen was about 3,000 pounds. The Sarah sometimes carried 20,000 pounds to Boston at one trip, and never went with less than 8,000 pounds. The price realized at that time was about 2½ cents per pound.

THE HALIBUT SEASON.—The George's halibut fleet was accustomed to begin operations in March and continued until April or May. In 1838 they continued to the 10th of June. After the close of the halibut season the vessels all went mackereling or to the Grand Bank after cod. Captain Oakes once went to George's after halibut in February.

SALT HALIBUT TRIPS.—The practice of salting halibut on the Banks was initiated as early as 1850. Captain Oakes, who at that time was in the schooner Tremont, tells us that he salted a fare of fish in May, 1850. They were "sold to arrive," to Henry Merchant. The schooner lay at anchor for three days and caught a large quantity of enormous halibut, ranging in weight from 100 to 300 pounds. One of them weighed 347 pounds. The results of the trip were as follows: 19,000 pounds of flitched halibut, at $1.25 per 100 pounds; 22 barrels of salted fins, at $5 per barrel; 8,000 pounds of fresh fish, at 75 cents per hundred pounds. Many other trips were quite as successful as this.

HALIBUT FOOD.—Only once during his long experience did Captain Oakes see halibut swimming at the surface. One day in April, 1845, he was on deck early in the morning and saw a large school of halibut playing at the surface. He supposed that they were in pursuit of herring, which were present in large schools at that time.

ABUNDANCE OF HALIBUT.—Captain Marr, of Gloucester, states that when, in the schooner Scarlet Feather, he made the first trip to George's Bank after cod, he caught in 33 fathoms of water, south and east of the north shoals, 10,000 pounds of halibut, besides 75 tubs (about 40,000 pounds) of codfish. This was in February. Before that time no vessel had caught any considerable quantity of cod in this locality because of the abundance of halibut. Some vessels had before this time gone to George's for halibut in February, but none for cod.

Captain Marr also states that no large fares of halibut have been taken on George's since 1848. He thinks that the halibut at that time "shifted off" into deep water.

The following statement, communicated by H. A. S. Dearbon to the secretary of the State of Massachusetts, was printed in the Boston Courier, and again appeared in the Gloucester Telegraph of March 9, 1839:

"Before the construction of the Providence and Stonington Railroad the whole number of halibut annually caught and brought into Cape Ann did not exceed 2,500, which were nearly all sold fresh, for immediate consumption; for not having been in demand when cured in any manner by salt for the domestic or foreign markets, but few were prepared for that purpose; in fact, so worthless were they considered as salted fish that the owners of the vessels employed in the fisheries generally instructed the crews to cut adrift all halibut which were drawn up, and every year many thousands had been thus turned back to the deep with a fatal wound. But such was now the facility for transporting them fresh to the New York market, at least 16,000 were taken and a large portion of them sent to that city by the railroads and steamboats. The average weight of each being 50 pounds, the whole quantity amounts to 800,000 pounds, and as the common price paid to fishermen is 2 cents per pound, this new source of revenue yields an income of $16,000.

"Formerly the halibut was only caught late in the spring and during the summer and autumnal months, on the south shoals of Nantucket, along the coast of Cape Cod, in Barnstable Bay, on Cashe's Ledge, and some other places, where they were most abundant at certain seasons of the year, and always in deep water, being considered, as it is termed, a bottom fish. But since the demand for this American turbot, as it may with propriety be called (for it much resembles that delicious fish in form and flavor), has so vastly increased, the fishermen have made explorations in search of other haunts, and, to their great astonishment, found them in immense quantities on George's Bank, early in March; and what was still more surprising, and a fact wholly unknown to them, they appeared in extensive shoals on the surface of the water like mackerel, and were taken with 3 or 4 fathoms of line, instead of from 26 to 70, which they had been accustomed to use time out of mind in the bottom fishing. The Cape Ann vessels take from 290 to 500 each trip, weighing from 20 to 100 pounds."

In 1848, according to Capt. Epes W. Merchant, halibut were so abundant on George's Bank, east of the Cultivator Shoal, in 25 to 40 fathoms, that they followed the hooks of the fishermen to the surface. Persons on the deck of the vessel could touch them with their hands as they swam about and could gaff them from the surface without difficulty. Vessels could easily catch a fare of 50,000 pounds of fish in two days. Captain Merchant had a vessel which caught a fare in forty-eight hours.

Capt Israel Friend, of Gloucester, tells us that in 1848 he was one of the crew of the schooner Baltic, in which he sailed for George's in March. They fished with hand-lines, but found halibut so plenty that four of the crew kept their lines on deck and did not fish, but employed themselves in assisting to gaff in the halibut that were hauled up by the others. In this way they caught a full fare—240 halibut in number—in one day. The fish were then dressed and iced, and taken to Boston for a market.

Captain Marr thinks that in early days halibut were exceedingly abundant on George's Bank. He has seen a "solid school of them as thick as a school of porpoises" feeding on "lant." At another time "the whole surface of the water as far as you could see was alive with halibut; we fished all night and we did not catch a single codfish. The halibut would not let the hooks touch the bottom; we caught 250 in three hours; the crews of some vessels would go and cut the fins off the fish and let their bodies go. No wonder that they were broken up. We thought they were always going to be so. Never made no calculations that we were going to break them up. The

southern side of George's was a kind of 'mother-place' for fishing halibut. All the halibut there were large 'pea-halibut' of 200 pounds or so. On the north side there were small 'school halibut' of 25 to 80 pounds." There was no great abundance of halibut on George's after 1848.

Captain Marr speaks of some remarkable halibut trips. On a patch of rocky bottom they anchored at sundown in a little smack and the next day caught 570 halibut. He himself caught 80 that day. At another time (as has been mentioned elsewhere), when he was commanding the schooner Clarion, Captain Marr left Gloucester on Friday at 1 p. m., and on Sunday, at 1 p. m., was back in port with a fare of fish. He got to the Bank at daylight Saturday morning and left on the return trip at 8 o'clock in the evening. This cargo he sold in Boston for $500 to Mr. Rogers, of New York, who shipped them in ice to the New York market.

FISHERMEN AFRAID TO ANCHOR ON GEORGE'S.—The first vessels which went to George's Bank never anchored. The fishermen had an idea that it was not safe to do so, for when the tide began to run the eddies were as great as those of another maelstrom. One man came into port with a story that he had come to anchor on the shoal ground of George's and the tide ran so fast that the water began rushing into both hawse-pipes of his vessel, which frightened him so that he cut his cable and came home. The halibut vessels began to anchor in 1835 to 1837.

FIRST USE OF PATENT WINDLASS.—Captain Marr was the first man to carry a patent windlass to George's. This was about the year 1850, when he was skipper of the schooner Julia. The old captain tells the story with a great deal of glee. Before then the vessels all used hand-spikes for heaving up anchor. He had stood five hours at a time, hand-spike in hand, getting up anchor. The patent windlass took his fancy and he determined to try one. His fellow-skippers laughed at him, and said that it would be impossible to heave up anchor in rough weather with such a machine. He was not to be discouraged and started for the Bank with his new apparatus. When he had filled his vessel with fish and was ready to start home he instructed his men to work deliberately and not to convey the impression that they were in a hurry. They began, and, to his dismay, the cable slipped on the barrel of the windlass and the anchor refused to yield. They worked for awhile, and it finally occurred to him that if he put ashes on the barrel it would overcome the tendency to slip, so he sent one of the men to the forecastle for ashes and then the anchor came up merrily, and within half an hour was swung upon the bow, one-tenth of the time usually occupied. His fellow-skippers were very curious when they saw the preparations for a homeward start, and dozens of them came around him to see him heave up his anchor. His triumph was complete, however, and before many months every vessel from the port was fitted with a patent windlass. The skipper would stipulate for them, and fishermen coming down to ship on board a schooner would always first inquire whether there was a patent windlass on board, for the saving of labor to the crew was immense. At one time there were twenty-seven vessels lying at the wharf of the agent waiting to take their windlasses on board.

HALIBUT FISHING FROM MAINE PORTS.—In early days there was also a limited halibut fishery from Southport, Maine, concerning which Mr. Earll has obtained the following information:

The first vessel from Southport to engage in the halibut fisheries was the schooner Pearl, Capt. O. Harris, in 1844. The Pearl was a small square-sterned vessel of about 50 tons (old measurement), carrying four or five men. They went in the fall and fished with hand-lines from the vessel's deck, catching their fish usually in from 30 to 90 fathoms on the northeast edge of George's Bank, generally hanging them up in the hold and spreading them loosely on the floor. They usually could get a trip in from one to three days, when they would start for Portland to sell what they could at from 2 to 3 cents per pound. It frequently happened that they brought in more than they could sell, in which case they threw the balance away. They generally went during the

winter and spring, until time for mackerel hooking on the coast of Maine. Thus with halibuting and mackereling a greater part of the season would be used up. The Pearl was soon joined by schooner Fair Play, Capt. William Harris, and they continued in the business about five or six years.

A third vessel, the schooner Nelson, engaged in the same business as early as 1850, going for three years, after which she gave it up, owing largely to the want of a market for her fish.

No Southport vessels have fished wholly for halibut since that time, and no other towns from this section have ever sent any, except the schooner Columbus, of Booth Bay Harbor, a few years later, for a few trips.

The schooner Queen of the West went for halibut from Georgetown, Me., during the winter of 1857–'58, fishing with hand-lines and selling to Mr. Little, of Portland. She fished on Brown's Bank and Banquereau mostly, in 60 to 90 fathoms.

FIRST ATTEMPTS TO CATCH HALIBUT ON TRAWL-LINES.—As early as 1843, as previously mentioned, Capt. N. E. Atwood, of Provincetown, set trawls for halibut in Massachusetts Bay, and even before that time had been accustomed to make use of a simple form of the apparatus arranged by fastening two or three hooks at intervals along the "rode-line" of his dory close to his anchor, and thus occasionally catching a fish or two when the anchor was pulled in. In 1843 he was in the habit of setting a regular trawl-line 60 fathoms long, with snoods of 4 or 5 feet fastened to it at intervals of 4 or 5 fathoms. According to Capt. Sylvanus Smith, of Gloucester, the dory-fishermen of Cape Ann were also accustomed to fasten two or three hooks to the "rode-lines" of their dories as early as 1839 or 1840, thus occasionally securing a halibut or two in addition to the fish taken on hand-lines. This method of putting hooks on the anchor line was for the express purpose of catching halibut (generally for home use at that period), which could commonly be more surely captured in that manner than by hand-lines, while it was usually desirable to avoid getting a halibut on the hand-lines, which might be broken, and considerable time and labor would, of course, be wasted in securing a fish of less value than cod. The accompanying sketch shows this method of halibut fishing.

Concerning the introduction of the trawl-line into the halibut fishery, which appears to have been nearly at the same time as the introduction of the trawl into the cod-fisheries of the United States, the following information has been obtained in interviews with Capt. Peter Sinclair, of Gloucester:

Captain Sinclair was born in Scotland, and, in his boyhood, engaged in the fisheries from his native place. There, he says, he learned to rig and handle a set-line, or, as it is known to American fishermen, a trawl. While still a young man he came to this country and engaged in the fisheries, sailing from Gloucester. In May, 1849, he was in command of the schooner Brant, of 30 tons, old measurement. He concluded to try trawl fishing as he had seen it done in the "old country." He therefore rigged a small halibut trawl, having only thirty-seven hooks, and set it for the first time a short distance outside of Kettle Island, just off the mouth of Gloucester Harbor, in 7 fathoms of water. Five halibut were caught on the first set. Captain Sinclair continued fishing on the shore grounds of Massachusetts Bay and vicinity during the summer, and, he says, it was a common occurrence to catch halibut any day during the month of May.

Mr. Samuel Atwood, of Provincetown, who was one of the crew of the Brant in the spring of 1849,* conceived the idea that trawls could be profitably employed on George's Bank, and, according to Captain Sinclair, he shipped in the schooner Grace Darling the following year, making an agreement with the skipper that he (Atwood) should have the privilege of using a trawl while on

* This was probably 1850, a year later than Captain Sinclair has put it, for according to his statement Atwood was lost two years later in the Golden Fleece which foundered in 1852. This gives us a point from which to reckon.

the bank. Atwood went two trips in the Grace Darling, setting his trawl when the weather was suitable, and fishing with a hand-line at other times. He did well, making twice as much money as his shipmates.

The good success of Atwood stimulated others to try trawling, and the following spring three of the fleet, one of which was the Grace Darling, fitted out with trawls. These were employed in the same manner as Atwood had used his, being set only in fine weather, while hand-lines were depended on when it was rough or stormy.

In February, 1852, Atwood sailed in the schooner Golden Fleece, taking with him a trawl and dory of his own. His intention was to stay on George's all the spring, changing with his boat and trawl from one vessel to another as fast as they were filled with fish and left the bank for home. This daring and enterprising project was never carried out, for soon after the Golden Fleece reached the bank she encountered a furious gale in which she was lost with all on board.

On the same day that the Golden Fleece sailed on her ill-fated trip the schooner Anna, commanded by Captain Sinclair, also started for George's, having on board two dories and two halibut trawls. Each of the trawls had 100 hooks, placed, as now, 15 feet apart on the ground line. These were managed in the same way as has already been described, being set only while the weather was moderate. The fishermen of that period, according to Captain Sinclair, were not inclined to run much risk in dories, and, compared with the trawlers of the present day, might be called timid about venturing out in rough weather. Nevertheless, a much larger number of halibut were caught on the trawls than on the hand-lines.

In May of the same year the Anna made a trip to the Seal Island Ground for halibut, carrying three trawls and three dories; the trawls were double the size of those used on George's. She was absent from home two weeks and caught a fare of 15,000 pounds of halibut, taking them on a spot of ground about 3 miles northeast of the Lurcher Ledge, which lies off the western part of Nova Scotia. At that time the trawls were stowed in tubs made of flour barrels sawed off above the upper quarter hoops. Later, however, some of the halibut fishermen adopted another method. When they wished to bait their trawls they hoisted the dories, trawls and all, on deck. They then proceeded to bait the gear, coiling the lines in the boat, and when everything was ready the dories were hoisted out again. As may readily be supposed, this way of handling the boats and gear necessitated a vast deal of hard work, and was never practiced to any great extent.

To go back to the Anna again: We are told by Captain Sinclair that, after the trip mentioned above, she went to the Western Bank in June. She brought home 25,000 pounds of halibut, besides a considerable quantity of codfish. She was absent three weeks. This fare of fish was caught on two spots of ground, one of which bears west southwest a distance of 35 miles, and the other northwest 40 to 45 miles from Sable Island. The depth of water in the latter place was 40 fathoms. The halibut were of large size, and mostly gray. That year, says Captain Sinclair, there were five New London halibut schooners on the Western Bank. He can remember the name of only one of these, the R. B. Colman.

This statement seems to conflict with that of Captain Ashby, of New London, who says that the Connecticut vessels did not visit the Western Bank until a much later date.

The following year, 1853, there were three schooners from Gloucester and ten from New London engaged in the fresh-halibut fishery on the Western Bank. Captain Sinclair claims to be the first Gloucester fisherman to visit the Western Bank in pursuit of fresh halibut, though several other skippers also make the same claim. There is no doubt of the sincerity of all these men, and the only reason that can be assigned for so many claiming the same thing is that no one of them knew about the others' going. The second year Captain Sinclair went there he began to fish off the

northeast bar of Sable Island; anchoring in 60 to 90 fathoms on both sides of the bar. He usually went there in June for several years, but, at that time, it was thought to be exceedingly hard and difficult to use trawls in such deep water. Notwithstanding the fact that good catches of halibut were generally obtained, the crews were dissatisfied with the locality as a fishing ground. Patent line-rollers had not come into general use then, and hauling a trawl across the gunwale of a dory, even in a depth of 90 fathoms, was a difficult task, involving much hard labor and fatigue.

CARE OF THE FISH.—As to the care of the fish at that time, we are told that the same methods were employed as at present, though the work was not performed with so much skill and quickness. A few years earlier, however, the process was quite different. Captain Sinclair remembers that as late as 1845–'46 many of the George's halibut schooners (such as were not well smacks) had no platform over their ballast, but were provided with ring-bolts and spikes, which were fastened alongside of the vessel's hold just under deck, these being so arranged for the purpose of "hanging up" the halibut. The fish were suspended by their tails to the spikes and bolts, but in case more were caught than could be hung up, the remainder were thrown on the ballast. In the latter case many of the halibut came out in bad condition. Those which lay next to the rough stone ballast would, of course, have the stones pressed into their under sides, and, if kept in the hold a few days, they had a bad appearance by the time they reached the market. This method was soon followed by the introduction of ice-houses, which quickly superseded all other expedients for the preservation of halibut. The first ice-house that Captain Sinclair knew of being built in a fishing schooner was one which was made on the William Wallace, Capt. James Pattillo, in the spring of 1846. This had double bulkheads, separated 2 or 3 inches, the cavity between them being filled with tan-bark.

Other parties agree in placing the introduction of the ice-house on fishing schooners at an earlier date, and giving the credit of the invention, or rather the conception of the idea, to Capt. George Blatchford.

Among others, Capt. William Pulcifer, of Gloucester, states that the first ice-house used on a Gloucester vessel was built in the pinkey Laurel, of which Capt. George Blatchford was master. This ice-house consisted of a platform over the ballast, and three "shifting planks" running fore and aft in the hold, one of these being in the center and one on each side. A small amount of ice was carried. This was not broken up and put on the fish as at present, but was simply carried to keep the ice-house and fish cool. The fishermen did not at that time know that halibut would keep longer by putting ice in and among them, but thought it would injure instead of preserving the fish.

Captain Marr also remembers that the Laurel was the first Gloucester vessel to have an ice-house. He tells us that the first ice-house he had himself was in the schooner Emblem. This was built forward of the mainmast, was only 14 feet long, and had no divisions other than those made by the shifting planks; pens were not built in the ice-houses until they had been used two or three years. At first Captain Marr carried only about 1,400 pounds of ice. He agrees with Captain Pulcifer in the statement that at first ice was carried solely for the purpose of cooling the ice-house, the impression being general among the fishermen that no good purpose could be gained by putting it among the fish. Captain Marr says: "We put the ice in one corner of the ice-house, away from where the fish were stowed."

In regard to the smacks that were used just previous to the introduction of ice-houses, Captain Marr says: "We used to build our wells about 4 feet deep, extending from just forward of the main hatch nearly to the mainmast. The keelson and ceiling were taken out and about three hundred holes bored in the bottom of the vessel. These wells would hold from 16,000 to 18,000 pounds

of live halibut, if the weather was cold, but not more than half that amount could be kept alive in warm weather."

THE BAIT USED IN THE EARLY HALIBUT FISHERY.—In regard to the bait used by the George's-men and halibut trawlers we have obtained the following statements: "Capt. Ben. Rumby," says Sinclair, "was the first to carry pogie bait in ice to George's Bank. This was in 1847. He bought 1,000 of these fish (an amount then considered a large baiting) from two boats, each of which had one net 14 fathoms long. I and William Gardner were in one of the boats which caught and sold the pogies, and William Rowe and his young son in the other."

Captain Sinclair, while in the schooner Anna, usually carried several pogie gill-nets as part of the outfit in summer. When starting out on a summer trip he would, with these nets, "sweep" pogies for bait, rarely failing to get a full supply either off Cape Ann or along the coast of Maine. For a halibut trip he generally carried about 7,000 pogies in number, and, while using them for bait, caught nearly equal quantities of cod and halibut.

HALIBUT AT SAN FRANCISCO.—The following record of an attempt to prosecute the fresh-halibut fisheries from that port was clipped from a San Francisco paper:

"When the large and abundant supply of this fish is considered, it is a matter of wonder that so small a quantity is smoked or canned for market. There is a prejudice in favor of Eastern halibut, which doubtless to some extent hinders the development of this branch of business. The North Pacific Canning Company can some halibut at Klawack, Prince of Wales Island, and it is said to be of good quality.

"The endeavor to bring fresh halibut to San Francisco from Puget Sound does not appear to have been financially successful. A schooner load suddenly brought into market already fully stocked with fish caused the price to fall to about ten cents per pound, and much of it could not be disposed of at that price."

The Gloucester Telegraph of July 30, 1853, says: "Halibut, in California, is just double the price of salmon—a pound of the sea fish exchanging for two pounds of the river fish. Halibut in the San Francisco market are brought from the Russian settlements, and are similar to those on our coast."

RECOLLECTIONS OF CAPTAIN MARKUSON.—The following statements of Capt. Knud M. Markuson, a veteran halibut fisherman, contain many facts interesting in this connection:

"I began halibut fishing," he says, "in 1861, at which time I was in command of the schooner Silver Spring. I followed the fishery continuously in summer until 1864. I used to go to George's for cod in the winter, but in the spring we would fit out for halibut trawling, and go to La Have Bank, Brown's Bank, or the Seal Island Ground. In 1861 we carried only three dories; the trawls had only 150 hooks each, these being placed 3 fathoms apart on the ground line. We used to catch an average of about 15,000 pounds of halibut each trip, which was considered a good take for the times.

"During the seasons of 1865, '66, and '67 I did not engage in the halibut fishery. In 1868 I took command of the new schooner Notice and went on a halibut trip to Saint Peter's Bank. The schooners Scotland, Isaac Patch, James G. Tarr, and several others had fished for halibut the previous year on Saint Peter's Bank, generally on the northern part, and had met with great success.

"I succeeded in discovering a new halibut fishing ground on the southeast end of Saint Peter's Bank, where fish were generally abundant. This particular locality has somewhat less depth than the other portions of the Bank immediately surrounding it, and is known among the fishermen as the 'Southern Shoal Water.' [This locality is of comparatively small extent, being a ridge about 20 miles long. The bottom is chiefly composed of coarse sand, gravel, and pebbles, among which

are more or less rocks, covered with reddish bryozoans. On most parts of this bank the bottom is generally rocky, the stones being invariably covered, to a greater or less extent, with bryozoans.]

"For four years I used to visit Saint Peter's bank regularly, usually going there between May and September of each year. During this period (1868 to 1872) I generally made three trips to the Shoal Water each season, and one summer I made five trips. Occasionally it would take some time for us to search out the position of the halibut, but when we once found a school of fish we had no difficulty in getting a fare, and rarely fished longer than a week. We averaged about 30,000 pounds of halibut to each trip, though, of course, there was considerable variation in the amount taken on different voyages. We carried twelve men, all told, including myself, and five dories; had three hundred hooks to a trawl.

"During the four seasons I have spoken of no other halibut catchers learned of the abundance of fish on the 'Southern Shoal Water,' or at least did not discover it until 1872. I therefore practically had had the field to myself during this time, and did exceedingly well. After the ground was found out by others, and the halibut fleet began to go there, the schools of fish were soon broken up. One season's fishing reduced the halibut from abundance to such scarcity that the 'Shoal Water' rarely afterwards proved a profitable fishing ground.

"In the meantime I generally used to fish on La Have Bank and the Western Bank in the winter, and commonly made a trip or two each fall to the 'Eastern Shoal Water' of the Grand Bank. In the summer of 1868 I made my first halibut trip to the Magdalen Islands. I made two trips each summer, for that and the two succeeding years, generally visiting the islands in July and August. I went there the fourth summer (1872), but could catch no halibut, or, at best, so few I was compelled to go elsewhere for fish. During the first three years I fished chiefly around Byron Island and on the shoal between Byron Island and the Bird Rocks, the depths varying from 14 to 24 fathoms. The halibut we caught there were nearly all white fish, and as we obtained fares ranging from 25,000 to 35,000 pounds, we made profitable trips."

As will be seen by a perusal of the notes which follow, the grounds visited by Captain Markuson from 1868 to 1872, namely, La Have Bank, Western Bank, the "Eastern Shoal Water" of the Grand Bank, and the grounds around the Magdalen Islands, soon became exhausted, and in place of halibut being in great abundance in those localities, they are now so extremely scarce that their occurrence, even in limited numbers, is looked upon as rather a remarkable event.

11. HISTORICAL NOTES AND INCIDENTS OF THE FRESH-HALIBUT FISHERY.*

By J. W. Collins.

This chapter is based upon observations made in the course of several years' experience in the Gloucester halibut fishery. I have necessarily been obliged to refer to my personal experiences, and this part of it should be read in connection with the appended logs of two actual voyages made in the years 1878 and 1879, which have been selected to show the difficulties which often are met with on a halibut trip, and which frequently prevent its successful issue. While the list of "big trips" which has been given will show one side of the business, these notes are intended not only to give an idea of the reverse, but to enable the reader to comprehend under what difficult conditions this fishery is generally conducted in winter.

I shall endeavor to give as briefly as possible an outline history of the halibut fishery (so far as I can do so from personal recollections and interviews with fishermen and skippers) since vessels first went to the Grand Bank for fresh halibut. It is my opinion that halibut are being reduced in numbers

* All the vessels mentioned in these notes and in the logs of two trips which follow, belong to Gloucester, unless it is otherwise stated.

very fast, and if the present style of fishing is pursued will in a few years become extremely scarce, if not almost extinct. Of course, in the present stage of investigation there may be a doubt whether *the fish are driven from their old haunts by the fishing-gear, or whether their abundance is so far* affected by overfishing as to offer no inducement to fishermen to resort to the "old grounds" in pursuit of them. I incline to the opinion that both causes have their influence, but I think that the latter has emphatically the greater. The inshore grounds, George's Bank, Brown's Bank, Seal Island Ground, La Have, and Western Bank having been fished over, about in the order named, and the halibut on them reduced from plenty to comparative scarcity, the fishermen, who were not then acquainted with the deep-water fisheries, had to resort to other fishing grounds. In the mean time Capt. John McKenzie made a successful trip to Scatari. His vessel lay in Menadon Harbor, and he set his trawls in the narrow strait that divides Scatari Island from the mainland. *In this manner he obtained about 60,000 pounds of halibut. This trip I have not the exact date* of, but think it was in July, 1861. Since that time there have been a few fares taken in the summer at Flint Island and about Scatari, but as the appearance of halibut in that locality is somewhat uncertain, it has never been a favorite fishing ground for large numbers of vessels. Many of the fishermen doubted the practicability of bringing fresh halibut from the Grand Bank in good condition, even after they were aware that those fish could be obtained there in large quantities. To Capt. George Miner, of the schooner Hattie M. Lyons, belongs the honor of being the pioneer of the fresh-halibut fisheries to the Grand Bank.*

At first the vessels resorted to the "Eastern Shoal Water," between the parallels of 44° and 45° N. latitude and the meridians of 49° 30′ to 50° 30′ W. longitude, where they found halibut in large numbers, but after one or two years' fishing in this locality there was a marked decrease in the abundance of these fish, in some cases amounting even to extreme scarcity, and the result was that the fishermen were obliged to seek for new fields. Some new grounds were found by accident or, at least, their discovery was owing to peculiar circumstances, in which there was a certain amount of chance, while the finding of others was due solely to the enterprise of the fishermen. *Among the latter were Saint Peter's Bank, Miquelon Beach, and Pass Island, in* Fortune Bay, Newfoundland. Halibut were never, to my knowledge, found on Saint Peter's Bank so numerous as at many other places, but as they were of superior quality and the fisheries on that bank held out better than on many others, it was resorted to for several years, but finally had to succumb to the fate of other fishing grounds. Halibut followed the capelin in on Miquelon Beach about the 1st of June, and at first were found there in immense numbers close to the shore, and in water so shallow that frequently they could be seen biting the hooks. On one occasion, in 1868, the schooner William T. Merchant, Capt. Nelson A. McKenney, of Gloucester, caught 40,000 pounds there at one set of her trawls. She got a full fare (103,450 pounds of halibut) in a few *days, and several other vessels, among which was the Carrie S. Dagle, met with good success.* Halibut were not nearly so plenty at the Beach the next summer, and after the second season it has not been profitable to fish there, although occasionally a vessel has got one or two fair catches,

* *First fresh-halibut trip from the Grand Bank; the biggest trip yet.*—We have recorded some pretty big trips the present season, but the schooner Hattie M. Lyons, Capt. George Miner, which arrived from the Grand Bank on Tuesday, eclipses all others in this respect. She was absent but four weeks, and brought in about 75,000 pounds of halibut and 6,000 weight of codfish, and will stock some $4,600. The crew will make from $175 to $200 apiece. The fish were caught on the eastern part of the Bank, and are the first fresh halibut ever brought from that locality. She was a fortnight on her outward passage, and was but five days catching the trip. The Hattie M. Lyons is owned by D. C. Babson & Co. and Captain Miner, who has the honor of making the biggest trip ever brought into this port.—(Cape Ann Advertiser, June 15, 1866.)

The gross stock of the H. M. Lyons, whose arrival we reported last week, was $3,624.—(Cape Ann Advertiser, June 22, 1866.)

but I have never known of one getting a full fare in the locality. In the early part of the summer of 1879 the Alice M. Williams caught nearly 10,000 pounds of halibut at one set on the Beach, but afterwards could get only a few, and was obliged to leave Miquelon and go elsewhere.

The fishing ground off Pass Island was about 8 miles southwest and southwest-by-west from the island, in 160 fathoms. It was only a small "spot," not more than 2 or 3 miles in extent each way, if so large. After two seasons this also was worthless as a halibut fishing ground; though frequently visited since, I have never heard of a large catch being made there.

I will return to the Grand Bank and show what I think was, in a measure, the accidental discovery of new fishing grounds. From the first it had been the general way for the halibut fishermen to run direct for the Eastern Shoal Water, never dreaming that they were passing over much better grounds than any they had ever yet fished on. In March of 1870 the schooner C. B. Manning, Capt. Charles Nute, the schooner N. H. Phillips, Capt. William McDonald, and the schooner John Corliss, Capt. George Brown, all left Gloucester at or about the same time. I have positive information that the two former were in company. These vessels had a fine run down as far as the western edge of the Grand Bank, striking it north of 44° N. latitude. About the time they reached the western edge of the Bank the wind sprang up easterly and blew heavy. Captain McDonald, whose vessel was new and the cable stiff and wiry, thought he would anchor and get the kinks out of it, so that it would be in working order when there was a return of fine weather. He was in 60 fathoms, and had not the remotest idea, it is said, of finding halibut in that depth of water, but after the vessel was anchored, and while some of the men were stradding the cable, &c., one of the crew threw out a hand-line and caught a pair of halibut. The rough weather lasted two days, but after it was over a fare was soon caught. Captain Brown, in the Corliss, anchored in about 50 fathoms on the western edge of the Bank to hold on until the easterly was over. After the gale moderated, the trawls were set to get some bait and "try the ground." On the first set only 4,000 pounds of halibut were caught, which was then thought to be poor fishing, but the skipper determined to set again, although some of the crew opposed it. On the second set between 45,000 and 50,000 pounds of fish were taken, and it was nearly two days' work to haul the trawls and dress the halibut caught on them. On the third set the majority of the fish were gone, so that not more than 3,000 pounds were taken. Captain Brown then started for home, realizing about $4,000 from the sale of the fish. The facts of the catch were obtained from Captain Brown, who is now dead. The schooners N. H. Phillips and John Corliss both got in about the same time and stocked nearly the same amount. The C. B. Manning, instead of anchoring as the other vessels did, kept on and carried sail to get to the eastward. She tried over the old grounds, but when she had been from home three weeks she had only 5,000 pounds of halibut, and taking a heavy gale about this time her dories were stove, and the prospect for a successful trip looked discouraging. However, the dories having been repaired as well as the circumstances permitted, the vessel worked to the westward and struck halibut on the western part of the Bank in about 51° 20′ W. longitude and 44° 10′ N. latitude (my informant, one of her crew that spring, thinks the above is the right position, and probably he is correct), and soon made up a fare of 86,000 pounds. After the first two seasons fishing for halibut on the western part of the Bank, these fish, though plenty in the winter and spring, grew scarce in summer, but in the fall good trips were got for several years on the Eastern Shoal Water. The scarcity of halibut on the Grand Bank in summer obliged the fishermen to look elsewhere, and as they knew very well that these fish were more or less migratory, but did not know that the species went into deep water, many places were visited where, in former years, halibut had been reported plenty by people who had caught them while in pursuit of other fish. In this manner the west coast of

Newfoundland, the southern coast of Labrador, island of Anticosti, Magdalen Islands, Virgin Rocks on the Grand Bank, and other localities heretofore mentioned, were visited. More or less halibut were found at all these places. Captain Johnson, in the schooner Ocean Belle (now in the Augusta H. Johnson), caught a fare in the bay of Saint George, and another of 70,000 pounds at Red Island, on the west coast of Newfoundland. Only a few fares have been caught at the Magdalen Islands, and those were mostly taken on the shoal between the Bird Rocks and Byron Island. Captain Markuson, in the schooner Notice, got the best fare there that I have heard of; he had about 40,000 pounds. The date of this trip was about 1869. The halibut were pursued with more or less success on the shores of Newfoundland, Labrador, and Anticosti in summer, until 1875, when the deep-water fisheries being discovered, and several vessels making unsuccessful trips on the northern coasts, the fishermen became convinced that the schools were broken up, and those fisheries were abandoned until last year, 1878, when the schooner Chester R. Lawrence got two good fares, 80,000 pounds the first and 60,000 pounds the second, and the schooner G. P. Whitman, one trip of 80,000 pounds, at Green Point, about 10 miles northerly from Bonne Bay, northwest coast of Newfoundland. In the spring of 1861, while on a "salt trip" to Cape North, Cape Breton Island, we found halibut plenty 10 miles northerly from the Cape in 75 to 90 fathoms, but since then the catch in that region has been small, and recently it is a rare occurrence to get halibut there. I have never known of a full fare of fresh halibut being taken there, though it is possible such may have been the case. My brother, Capt. D. E. Collins, was there codfishing in the spring of 1877 and 1878, and he tells me that he got very few halibut. Meanwhile, as early as 1869 or 1870, if not earlier, some of the halibut catchers resorted to the Gully between Banquereau and Sable Island, generally about the first of April, and many good fares were taken there. But as the fishermen seldom, if ever, ventured beyond a depth of 70 fathoms, they generally "lost the run of the fish" after May.

Captain Nute, in the C. B. Manning, was probably the first to visit the Virgin Rocks on a "fresh trip," going there about the 1st of July, 1870. He caught a fare of 83,000 pounds in a week on the westerly side of the "main shoal." These fish, as well as those which visit Miquelon Beach, Newfoundland, and other northern coasts, were in pursuit of capelin, which at that season are abundant about the Virgin Rocks, and which is a favorite food for both halibut and cod. The schooners Frank Butler, N. H. Phillips, and Eastern Queen all obtained good fares there after the Manning left for home. The Manning got another fare of 46,000 pounds at the Rocks in August; but when the Eastern Queen went there on her return to the Bank, about the last of August, the fish had left, or were broken up, and she was obliged to go farther south, and then secured only a small fare. In 1871 I was in the Alice G. Wonson, and about the 20th of June we baited in Fortune Bay, after which we tried off Pass Island, in company with the schooner Lizzie A. Tarr, at Miquelon Beach, with a fleet of six or seven other vessels, and also on the northern part of Saint Peter's Bank. At all of these places we found halibut very scarce, notwithstanding that they had been abundant in these localities one or two years earlier. Failing to catch fish enough to warrant our going home, we returned to Fortune Bay, and baited the second time on July 4. As soon as we got our bait we proceeded direct to the Virgin Rocks, arriving there about the 6th or 7th of July. The schooners Mary G. Dennis, Capt. Randall McDonald, and Varuna, Capt. B. A. Williams, arrived there one or two days previous. They caught a few halibut on their first sets, but the school was soon broken up, and by the time we arrived at the Rocks fish were so scarce that, after making a thorough trial, all of the vessels left and proceeded farther south. Thus ended the halibut fishing at the Virgin Rocks, for none of any amount have been taken there since.

For several years that part of the Grand Bank between 44° and 44° 40′ N. latitude, and 51° and 51° 30′ W. longitude, was a favorite resort for halibut catchers. At first, as has been stated, the halibut were found abundant all the season, but after a few years they could be caught in large numbers only in winter and spring, when migrating across the Bank from east to west. On this ground Capt. William Thompson, in the Mary Carlisle, in March of 1871, caught the trip which gave the largest share to each one of the crew that has ever been made in the fresh-halibut business. The schooner White Fawn caught a fare of 44,000 pounds a few days later (starting from home March 31) in 43° 30′ N. latitude and 50° 30′ W. longitude.

The vessels continued to fish on the Western Bank and Grand Bank in winter and spring, changing to Saint Peter's Bank and the inshore ground about Newfoundland, Labrador, and Anticosti in summer, and back to the Grand Bank in autumn, until 1875, when the deep-water fisheries along the borders of the outer banks became for the first time generally understood by the fishermen. In April of 1874 the schooner G. G. Kidder caught a good fare in 90 fathoms, about 44° 30′ N. latitude, on the western edge of the Grand Bank. The schooner Sarah H. Cressy was fishing near her on a flitching trip, and found halibut very plenty for a few days; but when they grew scarce, the vessels were not prepared with sufficient cable to follow the fish into deeper water, even had it been known they were there, which may be doubted, for it was generally believed then that when halibut passed beyond a certain depth they left the Bank.

I went on a fresh-halibut trip to the Grand Bank in the schooner Ocean Belle in March, 1864, while the Howard was building. On that occasion we caught our trip of 55,000 pounds from 44° 08′ to 44° 16′ N. latitude and from 51° 10′ to 51° 20′ W. longitude. We were absent from home four weeks, and each man shared within a few cents of $100.

In the latter part of January, 1875, while in the Howard, I caught a good fare, for the season, on the same ground. The weather was very boisterous while we were on the Bank and on our passage home. A large part of our fare was caught by setting and hauling trawls at night. We were seventeen days on the home passage, which was the longest, hardest, and most fatiguing I ever made. We encountered on our way home a succession of westerly gales, which, with the severe cold of that winter, made it extremely difficult to get to the westward. As an instance of the great severity of the weather, it is only necessary to say that a first-class Beverly vessel, the schooner Sarah H. Putnam, which went to the Grand Bank that winter on a "fresh trip," was forty-two days making the passage home. That is the only instance of a Beverly vessel being engaged in the fresh-halibut fishery of which I have any knowledge, and she made only one trip. We were detained from sailing on our second cruise that winter by easterly winds for two weeks or more, and when we reached the Grand Bank, about the 15th of March, the whole of it to the northward of 44° 25′ N. latitude was covered with heavy masses of field-ice.

Two or three weeks previous to our arrival on the Bank halibut were very plenty in latitude 44° 20′ to 44° 25′, in 50 to 55 fathoms on the western part of the Bank. They were moving quite fast to the westward, but nevertheless a number of the vessels got large fares in a very few days. When we arrived in this locality the fish had left, probably being driven by the ice-floes which slowly drifted to the southward, reaching at one time as far south as latitude 43° 40′, in the middle of the Bank, and causing the fishermen much anxiety and more or less loss of gear by unexpectedly drifting on their vessels in the night. On one occasion a number of vessels tried to skirt the ice and get around it so as to reach the northwest part of the Bank, but toward night of the day on which the attempt was made a northeast gale and heavy snow-storm came on, and we all lay to under the lee of the ice, which made the sea very smooth. The next day we found the floe had been driven so far south by the gale that we did not again attempt to get by to the northwest of

it, but a little fleet of eight vessels having met together at the southern edge of the ice, all of the skippers went on board of the schooner Augusta H. Johnson to talk over the situation. After deliberating a while, each returned to his own vessel, and while some of us ran to the southward others lay by waiting for the ice to recede to the northward. Just after this, the schooner Noonday, which was one of the fleet referred to, caught 30,000 pounds of halibut in 60 fathoms of water on the western edge of the Bank in latitude 43° 40′. The ice did not drift so far south on the western edge as in the middle of the Bank, and she was not troubled by it. After the consultation referred to above, we ran down to latitude 43° 30′ N. and longitude 50° 30′ W., but could find no fish. We were there some days before the weather permitted us to try, and after we hauled our gear and found no fish on it we got under way, with a southerly wind, and ran for the western edge of the Bank, intending to strike it north of latitude 44° N. A careful lookout for ice was kept. That evening we spoke the schooner Edwin C. Dolliver, at anchor in 70 fathoms, and lay by her for the night. The next morning we made sail, spoke the Dolliver again, and also the schooners Chester R. Lawrence and Restless. The first two were lying at anchor in 60 to 70 fathoms of water and the Restless lay in 49 fathoms. Neither of them caught any halibut.

The ice, driven by the southerly wind, had at this time drifted back to about 45° N. latitude, and we worked to the westward, in company with several other schooners, among which were the Restless, Edwin C. Dolliver, Alfred Walen, N. H. Phillips, and John S. Presson, all of them setting trawls under sail in the day and anchoring and setting their gear at night. In this manner the fleet beat slowly to the westward against a moderate breeze for several days, trying for halibut in water varying from 48 to 70 fathoms in depth, but catching nothing. The water was so intensely cold that the frozen baits on the trawls would scarcely thaw when set in 50 fathoms of water, or less, and we were almost compelled to believe that the fish had been driven entirely off the Bank by the great ice-field and straggling icebergs. The latter were occasionally seen in the deep water off the edge of the Bank.

One day we passed by a large berg, about one-third of a mile distant from us. On one end of it a sharp pinnacle, resembling the spire of a church, ran up to a height of 75 or 80 feet; the middle was quite low, but the other end rose in a bunch or hummock about 20 feet above the water. The sunlight, playing on this huge mass of ice, throwing lights and shadows here and there, causing the peaks to glitter and gleam for a moment, then darken to a greenish tint, and its constantly changing aspect, as we sailed by it, made it an interesting and impressive sight. But the thought that it or some of its fellows might drive down on us some foggy and windy night, when we were at anchor, caused us to look upon it with a sense of dread and apprehension instead of the admiration we might have felt in watching such an object under different circumstances.

On the last day of March we all set our trawls as usual—some of the vessels being at anchor and others under sail—but no fish were caught by any of the fleet, and before dark all of the schooners which had been at anchor got under way. The wind was north-northeast, blowing a fresh breeze, and knowing the ice was not far off in a northerly direction no one would have cared to remain anchored, even had there been greater inducement to do so. We were then on nearly the extreme northwest peak of the Grand Bank, and the question was where to go next, for I do not think it occurred to any one then to try in deeper water than we had previously set in. The schooner Edwin C. Dolliver went back to the eastward again, but others of the fleet lay by speaking with each other, the skippers evidently uncertain in what direction to steer.

Having spoken the schooner Carrie P. Morton, which came driving along from the eastward just at dark, and learned that no fish had been caught by the vessels farther east, I decided to "hold our ground" till morning. We accordingly hove to alongside of the Alfred Walen, which

was also lying to. As day broke on the following morning we saw a schooner at anchor and ran down to her in company with the Walen. Finding the anchored vessel was the Restless, we hove to, and Captain Thompson (from the Walen) and I, each of us accompanied by three or four men of our respective crews, went aboard of the Restless for a chat with the skipper and crew. She was anchored in 83 fathoms of water, and her crew were just setting their trawls when we ran down to her. The skipper of the Restless said he broke out his anchor the evening before and let his vessel drift until the latter part of the night, when, finding deep water, he let it go again. We stayed on board of the Restless until some of her dories returned from hauling, about 10 a. m., when, seeing that they were getting fair fishing on the gear that was in the deepest water, we both returned to our own vessels and set under sail outside of the Restless.

We were in 115 fathoms, which was then thought to be a great depth to fish in, but the Walen went still farther out, in 135 fathoms. We caught about 4,000 pounds of halibut on a short set, and anchored; and the Walen, as I afterward learned, got 8,000 pounds or more, and also came to anchor. In the mean time the schooners John S. Presson, William T. Merchant, Lizzie K. Clark, of Gloucester, and the George Peabody, of Salem, made their appearance on the scene of action, and anchored at no great distance to the northwest and southeast of us. The Lizzie K. Clark anchored a fair berth, about 2 miles, to the north-northwest. The afternoon was fine, with a moderate and decreasing northeast wind, and current setting to the northwest or north-northwest. Knowing full well that the first vessel arriving home with a fare of halibut would be likely to strike a "high market," and, of course, wishing to be first, we set twenty skates of trawl, the whole string, in the evening, not for a moment suspecting that there was any ice in a southerly direction from us.

The next morning was fine and calm, but cool. We had our breakfast before daylight, and just as day was breaking an "ice glim" was noticed in the southern board; and when it grew lighter an immense field of ice could be seen drifting toward us with the current, which still ran north-northwest. Of course, the first thing to be thought of was to get our gear, if possible, or, at least, as much of it as we could. We hoisted the dories out and started at once. One of the crew, who had a fainting fit the evening before, was very ill, and I was therefore obliged to go in a dory in his stead. Before leaving the vessel I gave the men orders to get all the gear they could, and if the ice came on them to cut and go aboard. The trawl that we went to haul was off the starboard quarter, four points abaft the beam. We pulled for the outer end, and on reaching it began to haul as though our lives depended on our efforts.

We succeeded in getting a skate and a half of our trawl, about 500 fathoms, in the boat, when we saw the flag in the rigging of our schooner, which we knew to be a signal for us to return to the vessel, as the ice was nearing her fast. We instantly cut the trawl, put out our oars, and pulled with all our might to reach the vessel before the ice did. Another dory, which was near us, started about the same time, and we both met the ice about 600 feet astern of our schooner. When the ice passed the vessel the men on board had the presence of mind to throw a buoy, to which a line was fastened, on one of the leeward cakes of the floe. This buoy we got hold of and made it fast to the bow of the dory, securing the bow of the other boat close to the stern of the front one. The current was running at least 2 knots, and the buoy line being under the ice near the buoy, we had a hard struggle for some time to make any progress toward the vessel and to get the line on top of the ice. The men on the vessel held the line as taut as they dared to, not to risk parting it, while we jumped out of the head dory upon the ice, sometimes hauling the boats over the large cakes and again shoving the smaller pieces clear of the dories and line. The ice was broken into sections of all sizes, from a piece of a few pounds weight to one of 50 feet in

diameter and 6 to 10 feet thick. In this manner we worked, tugged, and pulled, never resting for a moment, until at last we had the line clear and above the ice, when it became a comparatively easy matter to reach the vessel.

After getting on deck we found one of the George Peabody's and one of the William T. Merchant's dories aboard of our vessel, while one of our own boats, which had held on to her trawl too long, had to seek a refuge on board of the Lizzie K. Clark. After our dories were taken in, we had a better chance to view the scene, which certainly had a decidedly arctic appearance. As far as the eye could extend from aloft, in a southern and eastern direction, an almost unbroken mass of drifting field ice was all that could be seen. Here and there, however, a small streak or pond of water added a little diversity to the otherwise monotonous appearance of the frozen ocean.

All of the forenoon and the first hours of the afternoon the ice kept drifting by us, being carried along with the current. But our anchor held fast, though the strain was great on our cable as the heavy masses of ice came up against the bows and went grinding, gritting, and groaning along the vessel's side. After a while a moderately sized open space was seen ahead, and as it approached us the men belonging to the Peabody and Merchant anxiously watched it, being very desirous to reach their respective vessels, which were not far off; in this they succeeded.

A moderate breeze sprang up in the afternoon and the Lizzie K. Clark, getting into one of the clear streaks, got underway and worked up abreast of us, when she forced her way through the ice, passing close alongside, dropping our dory, which came aboard.

Meanwhile we had hove short on our cable, and seeing an open place to windward, were all ready to break out our anchor as soon as the opening came near enough to us. We waited only a short time before we got under way, after which we stood back and forth along the weather edge of the ice, watching for the trawl buoys to make their appearance, and as fast as they did, sent a dory to haul the trawl.

This area of clear water was of considerable extent, and, since the current did not run so swiftly as before, we had a very good chance to work. However, the ice was down on us again before we got all the gear, but the men stuck to their work without flinching, and since there was a fine sailing breeze the vessel could force her way through the floe very well. It was nine o'clock in the evening when the last dory came aboard; the others had finished hauling their gear before dark. The ice was all around this boat during the evening, but we kept near her, though it required close calculation to keep track of her in the darkness. The men in her got the whole of their gear, and, notwithstanding the unfavorable appearance of things in the morning, we lost only one skate of trawl. When, at last, all hands were safe on board and we were seated at the supper table, the incidents and anxieties of the day became the subject of an animated conversation, and each one had a yarn to spin in relation to his experience during the day.

In the mean time the crews of the other vessels had not been idle; for, taking advantage of any favorable circumstances, they had endeavored, like ourselves, to haul their trawls. Three of the Alfred Walen's crew had a narrow escape from what promised much suffering if not death. The work was so difficult that the three men went in one boat. When the area of clear water, which I have before alluded to, came along they started out to get their trawl, the vessel still remaining at anchor. They were caught in the ice, and although they held on to the trawl, which was the only thing they could do, the floe carried them adrift, and their chances to reach their vessel again were looking slim, when, late in the afternoon, the Lizzie K. Clark spoke the Walen, and the skipper of the latter requested Captain Murphy, as his (Murphy's) vessel was under sail, to go to their assistance. The Clark immediately kept off, but as she had to force her way through the ice, it was just growing dark when she reached the drifting boat, and past 9 o'clock when she got

back to the Walen. The dory was nearly three miles from the Walen when picked up, and such a timely rescue must have been gratefully appreciated by men fatigued, hungry, and chilled to the marrow.

After the Clark reached the Walen she made fast to the stern of the latter with a long warp for the night; the only instance of one vessel lying fast to another on the Grand Bank I ever knew of, and I think the only one on record.

We kept under sail during the night succeeding the day of which I have been writing, and held our position by observing the riding lights of the other vessels. The following morning we anchored. We had foggy weather after this for the three days we staid there, which made trawling somewhat dangerous; for, although the main floe had passed by, detached pieces and long narrow streaks of ice kept coming along, and, oftentimes, when the dories were caught to leeward of these the men had great difficulty in working their way through or over them. Frequently the boats had to be hauled over the ice for a distance of one or two hundred yards. This trouble was increased by the denseness of the fog, which shut out from view all but the nearest objects, and the fisherman leaving the side of his vessel felt that the thick mist, which hung like a pall over the face of the sea, rendered his task more perilous and uncertain than ever before, hiding as it might a vast floe of ice which would carry him away with it to drift helplessly until he succumbed to cold and hunger. Fortunately, however, no more serious adventure occurred than that already mentioned, though the men comprising the crews of the entire fleet did not hesitate to brave the perils incident to the occasion.

All of the vessels secured good fares of halibut and some made large stocks. The rough experience of some of the fleet in the ice was apparent on their return home, when it could be seen that the planking at the water's edge was badly chafed and cut, in some cases necessitating repairs. The ground-lines of our trawls, being only 24 pounds to the dozen, were too small to stand the severe strain of this deep-water fishing, especially where so many vessels were lying close together, and setting their gear afoul of each other. We lost so much of our gear that, after fishing four days, we could not muster enough for a set, and, all things considered, I thought best to start for home with a fare of 22,000 pounds of halibut. As I had anticipated, few halibut had arrived in Gloucester for the two weeks previous, and for ours we got 8 and 14⅛ cents per pound for gray and white. The "hawkers" were so anxious to obtain our halibut that they came aboard while we were sailing into the harbor, and after our anchor was down they bid on the fish, the highest bidder taking the trip. We shared between $79 and $80 to each man.

We did not go after halibut any more that year; but the trip of which I have given such a long account may be said to have been the beginning of deep-water fishing for halibut, for it was the first time, to my knowledge, that fresh-halibut vessels tried in more than 90 fathoms, on the Banks. All of the spring and summer of 1875 halibut were found very plenty along the edge of the ground between Grand Bank and Green Bank in 60 to 200 fathoms. Capt. Nathaniel Greenleaf got 18,000 pounds from one set as late as October, but the fish were evidently moving fast, for when he set again they had left.

In January, 1876, I was again engaged in fresh-halibut fishing on the Grand Bank, and tried from 51° 35′ to 51° 5′ W. longitude and in about 44° 10′ to 44° 15′ N. latitude for the first week on the Bank; made several sets, but found few halibut, and finally started in company with the schooner Edwin C. Dolliver, Capt. Nathaniel Greenleaf, and worked southward to 43° 41′ N. latitude and 50° 52′ W. longitude. The wind was southeast and breezing up smart when we anchored and set our trawls, and the weather was so rough that they were out four days before we had a chance to get them. We lost two trawls and set again in hopes to recover them, but another gale

came on in a few hours and the gear was out that time three days before we could haul. In the mean time halibut struck, and were very abundant in the vicinity of the vessel. The afternoon before we hauled the trawls the second time, we caught 16 halibut on a "bull-tow"—a short section of trawl-line with a dozen to twenty hooks, which is set from the vessel's stern, left out for an hour or two and then hauled. There were few fish on the trawls, however, when we hauled them, for they had been out before the halibut came along, but on our next set we got 10,000 pounds and soon completed our fare, and went home.

We reached the Grand Bank on our second trip some time in the latter part of February, running on in latitude 44° 25′, where we found a number of halibut vessels that had been doing fairly well in 55 fathoms on the western edge. We made a set under sail when we first got on the Bank, in 55 fathoms of water, quite near some of the anchored vessels. When we set I saw a large floe of field ice to the north of us which was drifting to the southward, and before we hauled our gear was quite close. We did well on this set, and, as the wind had in the mean time changed to the southward, and the ice began to drift northerly, we anchored where the best fishing was, and set our gear out again. But when we hauled the lines, some three hours later, we got only 2 halibut, proving that the ice, or some other agency, made the fish move very suddenly. We now had several days of heavy weather, during which we shifted out into 90 fathoms of water. The next day after doing this it blew strong north-northeast so that we could not set any gear, but we ascertained by setting a "bull-tow" that there were plenty of halibut where we lay. The second day we lay there the wind was not so heavy, but the ice came down on us early in the morning. We lay still, however, and getting into a clear place, set four skates of trawl in four strings, but got no fish of any kind. By the time we had the trawls on board, the wind had changed and begun to breeze up from southeast. We got under way and beat down to about 44° 6′ N. latitude, where we anchored in 70 fathoms, and rode out the southeast gale, as well as one that followed it from the northwest. After the northwest wind began to moderate we got under way and worked to the southwest about two miles, where the schooner Chester R. Lawrence lay at anchor in 110 fathoms. Her men had just gone out to haul their trawls when we spoke her, so we lay by, jogging around, until I saw that her crew were getting good fishing on the deep-water side of the vessel. We gave her a berth on that side, anchoring in 142 fathoms, just at dark, and set our gear that night. We fished there four days, and got enough to make us up a fare of nearly 60,000 pounds of halibut. As there was a fleet of 8 or 10 vessels fishing in company with us I decided not to wait to catch a full fare, since we were liable to obtain more money for 60,000 pounds of halibut, if we arrived home first, than for a much larger amount if we reached port with the fleet. We therefore got under way for home in the night, notwithstanding it was nearly calm at the time. It was fortunate that we started when we did, for a gale that sprang up a day or two later drove many of the vessels adrift, and interfered with the successful issue of their voyages.

On our passage home we fell in with ice while running in a northeast gale, and our vessel was "sprawled out" by heavy seas twice in one day, being knocked down so that her sails were in the water, and the leeside completely buried. The night preceding the day on which we were knocked down we had a tussle with the ice, immense floes of which, in the spring of 1876, were driven by a succession of northerly winds nearly to the edge of the Gulf Stream. We were running under a double-reefed mainsail, whole foresail, and jib with the bonnet out—all the sail we could stagger under—when, a little after midnight, the watch shouted down the companion-way: "Hear the news there below! rouse out; here's ice close aboard!" It needed no second call to bring us out, for all realized the danger of meeting with ice while running at such a rate; for if the vessel should strike a heavy piece her bows would be crushed in like an egg shell. As for myself I hurried on deck in my

shirt-sleeves, and jumping into the rigging, climbed far enough above deck to get a good view, and clung there for nearly two hours, directing the wheelsman how to steer to avoid coming in contact either with the floe or straggling pieces of ice. The latter, which were of various sizes, were really the most dangerous, since they could not be seen so quickly. It was bright moonlight, however, which was much in our favor, and by taking in the foresail we reduced the speed of the vessel, so that we passed safely by hundreds of isolated pieces of ice, any one of which would have knocked in our vessel's bow had she struck it. With the wind blowing a northeast gale and sweeping down from such a vast body of ice as lay to windward, the air was keen and biting, as may be easily surmised, and when at last we had cleared all of the fine "lolly-ice," which strung out to leeward of the main floe, and the increasing motion of the vessel gave evidence of open water to windward, I crawled down out of the rigging, but was so thoroughly chilled that I could scarcely stand.

Since there was still possible danger of meeting more ice, and the wind had increased somewhat, I concluded not to set the foresail before daylight. When we cleared the ice we were nearly a hundred miles south of the latitude of Sable Island, and were therefore obliged to steer west-northwest, which brought us almost in the trough of the sea. Having warmed myself and ordered the watch to call me if there were any indications of ice or increase of wind, I turned in. The sea increased very much toward morning, and a little after daybreak we were tripped and knocked down. The mainboom went under nearly to the mast, parting the boom-tackle; one man in the forecastle was thrown from a weather into a lee bunk, and another, who was lying in a berth on the lee side, was scalded by the contents of the coffee-pot, which came tumbling on top of him from the stove on the opposite side. Altogether there was quite a mixing up of things; but almost before we had a chance to realize the situation, the vessel was back on her bottom and tearing along on her course again. Not caring, however, to repeat the performance if we could avoid it, we set a double-reefed foresail, took in the mainsail, and bent the riding-sail in its stead. Under this canvas we kept along on our course, though such was the danger of being knocked down again that I staid on deck all day directing the man at the wheel how to steer to escape the ugly cross-seas that very frequently came along. It was anything but pleasant, to be sure, to run a vessel under such circumstances, but nevertheless we kept her going, swinging off almost before it sometimes, and hauling to on our course again, or a little to windward of it, when a chance offered. In this way we went along safely until about sundown, when, being very hungry, I went below for a lunch, first giving the man at the wheel the order to "watch her sharp; swing her off quick if you see a bad one coming, and let her take it stern-to." I had scarcely seated myself on the weather side of the forecastle table, with a piece of bread in one hand and a mug of tea in the other, when the vessel was thrown completely on her beam ends. Dropping whatever I held, I sprang for the companion-way the instant I felt her going over. But the water, rushing over the top of the companion doors, met me as I gained the top of the steps, and as the vessel was at that time lying flat on her side, the prospect of her righting again before she filled looked rather dubious. There was a strong probability, too, that the man at the wheel had been washed overboard or injured, and if such was the case the vessel, should she right, would be in danger of broaching-to and having another sea sweep over her. Fortunately, as in the morning, she soon straightened up again, and I jumped out on deck and ran for the wheel. By the time I reached the main hatch, though it took scarcely an instant, the wind struck into the sails, and the vessel, starting ahead with a rush, drew herself out from beneath the water under which she was buried from the mainmast aft, and which went dashing and splashing out over the stern and both rails as she once more rose buoyant on top of the waves. So far under water had she been that the wheelsman (a six-footer) was entirely submerged when the vessel righted, though he stood on his feet, still retaining his grip of the wheel. The men

in the cabin were nearly smothered by the steam and gas which was driven from the cabin stove by a stream of water that ran down the stovepipe upon the burning coal. Barefooted, bareheaded, and panting for breath, they were glad to get out on top of the house where they could breathe the fresh air.

Although we had met with little or no damage from being "sprawled" out twice, it was, nevertheless, too unpleasant an experience for us to encounter again, so we hove to for a few hours until the moon rose, when, the sea having gone down somewhat, we started again on our course.

We struck the Grand Bank on our third trip that year in 44° 23′ N. latitude, where we found several vessels at anchor in 70 and 80 fathoms. They had been getting good fishing, but the halibut were growing scarcer when we arrived there. We had a couple of sets, but not meeting with much success ran to the northwest, near where we were the spring before. We made two sets in that locality, but did not strike halibut. We therefore ran back to the southeast one night to learn if the vessels were catching any fish along the western edge of the bank. The following morning we spoke two or three schooners lying at anchor, after which we had a set under sail. We caught only a few halibut, and when the dories were all aboard from hauling, the wind was blowing smart from the southward; we kept off and ran 60 or 70 miles northwesterly again, in company with several other vessels, to latitude 44° 56′, where we anchored in 80 fathoms at 9 o'clock in the evening. It was blowing a smart breeze, when we anchored, with a sharp choppy sea. Nevertheless, we hoisted out the top dories and set four skates of trawl, in two strings, to try the ground, although I did not expect to get any halibut, for I thought the bottom was too muddy.

The next morning it blew too hard to go out, but at 11 a. m. the wind moderated and the men went to haul their gear. Before the men in either one of the dories had hauled a skate of trawl they stuck up an oar for some one to come and take their fish.

We now had a busy time; some of us going to assist those who were hauling and others starting off to set the trawls which were baited. We had but five dories then, and could set only six more skates of gear, and on the ten skates of trawl, the four which we set at night and six in the day, we got 20,000 pounds of halibut. We were hauling and setting gear all the afternoon and evening. The last dory to come aboard arrived alongside with a load at 10 p. m., and it was several hours after midnight before we got the fish dressed and iced.

The halibut were moving slowly to the northward and westward, and we had to shift our position twice before we completed our fare.

We fished five days in that vicinity and got enough, with the 12,000 pounds we had before, to weigh off 92,000 pounds, besides 4,000 pounds of "logy," or thin halibut. The schooners Polar Wave, Carrie P. Morton, Davy Crockett, and Elisha Crowell, fresh fishermen, were in company, and the schooners Mary E., Ocean Belle, and Wachusett, on salt or flitching trips. All of them did remarkably well.

On our fourth trip we went to Green Bank, about 25 miles farther to the westward, where we got the last fish on the previous cruise, of which an account has been given. The fog was very dense for several days after we arrived on the Bank, which undoubtedly was the reason that we missed getting a good fare. We found few halibut, and I thought perhaps that they had not worked so far to the westward, but had staid where they did the year before. I also heard the sound of a vessel's cannon, fired as a signal for her dories, which I thought was to the eastward, but in that I was mistaken. There was no indication of the fog clearing, so we got under way and kept shifting to the eastward, trying the ground as we went.

When we were between Green Bank and Grand Bank, the schooner Hereward came along one

evening from the westward, and Nathaniel Greenleaf said that he had been farther in that direction than we had, between Saint Peter's and Green Bank, but got no fish, neither did he see any vessels. But as the weather had not at any time been clear enough to see more than three or four miles, he, like myself, missed seeing the vessels which, as I afterwards learned, were on a large school of halibut only a few miles farther to the westward than we had been. He ran to the south-southeast down to 44° 20′ north latitude, and in about 48 fathoms. We went the same way the following day, and cruised up and down the Bank, seeing several vessels in the same predicament as we were, seeking for halibut and getting few or none. Finding halibut very scarce, and intending to go after codfish on the next trip, I concluded to go home and not lose any time looking for them. We made a short trip and obtained only a small fare of 17,000 pounds. Some of the halibut catchers found good fishing that winter and spring (1876) on almost the extreme southern part of the Grand Bank, from about latitude 43° N. and longitude 50° 40′ W. up to latitude 43° 30′ N. and longitude 51° 52′ W. The best fishing in that region was during March and the first of April.

Late in the spring or early in the summer of the same year, Capt. Thomas F. Hodgdon, in the Lizzie K. Clark, got becalmed on the Southwest Prong of Banquereau. He sounded, and having got bottom in less than 100 fathoms, determined to anchor and have a set. He found halibut very abundant in that locality all summer and autumn, and continued to fish at or near the same place with uninterrupted success. After he had made a couple of successful cruises, however, other skippers found out where he got the halibut, and the remainder of the year that ground was the most generally resorted to of any. Excellent halibut fishing was also found that summer by Capt. Thomas Goodwin, in the schooner Polar Wave, to the southward of Sable Island, in 150 fathoms, and near the longitude of 60° W. Captain Anderson, in the schooner William T. Merchant (and who was lost in the great gale of December 9 and 10, 1876), caught some very fair trips to the eastward of Sable Island, in latitude 44° 4′ and longitude 59° 6′, on the fall-off of the Western Bank, in about 150 fathoms. Halibut were also found in deep water on the northeast part of George's Bank, and many of the hand-liners brought in good fares from that locality. One, I think, got 60,000 pounds. There were also a few good fares of halibut taken on the eastern part of Banquereau.

Previous to this, in 1875, and possibly the year before, Capt. Edward Morris, in the schooner Gertie Foster, got one or more good fares on some small ridges or "spots" off Liscomb, Nova Scotia. These grounds, which are about 20 or 25 miles from the land, are so small that they have never been generally resorted to for halibut, and, with the exception of two years at the most, the species has not been found abundant there.

After I returned from cod fishing, in the autumn of 1876, I went on a fresh-halibut trip. We tried at first in company with the schooners Augusta H. Johnson and Chester R. Lawrence, on the Western Bank, to the southward of Sable Island, in about longitude 60° 20′ W. We did not find enough fish to induce us to stay, and as soon as the weather, which was very rough, permitted us to do so, we ran to the eastward; the Johnson went with us as far as the Southwest Prong of Banquereau. We afterwards learned that the Chester R. Lawrence shifted a few miles farther to the eastward on the Western Bank, and found excellent fishing—much better than was obtained on Banquereau. We found the schooner Edward Grover on the prong when we got there, and before the weather was fine enough to fish, the schooners Andrew Leighton and Daniel A. Burnham came also. The weather was exceedingly bad and fish scarce; besides, we did not have cable enough to ride out a gale in the depth of water where halibut could be taken, and consequently had to work at a disadvantage, setting almost wholly under sail, being able to fish only in the

day-time. While there we had the heaviest gale that I have ever encountered, and as an account of it may possibly prove interesting, I will insert it here as an incident of the halibut fishery. We set under sail at noon of December 8, in 150 fathoms, in latitude 44° and longitude 58° 30′ by dead reckoning. We had eight skates of trawl out, set in four strings, three men going in a dory. As the weather looked threatening, we left the gear out only about two hours before we began to haul. The wind blew so strong, just as the men finished hauling, that the vessel could not carry her three lower sails, and I had to heave her to under mainsail and foresail. The dories came aboard safely, however, bringing a good catch of fish (about 5,000 pounds), but it blew so hard that I knew it would be of no use to attempt to anchor in deep water. We therefore took in the mainsail and jib, and lay to for the night close by the Andrew Leighton, which was at anchor. The schooners Augusta H. Johnson and Edward Grover, each of which had secured small fares of about 20,000 to 30,000 pounds of halibut, started for home that evening.

The wind, which was westerly in the evening, died out during the night, and on the morning of the 9th began to breeze up from the southeast. We made sail (that is, set mainsail and jib) before daylight, and got all ready to set our trawls, but before it was light it blew up smart from the southeast and began to snow. We lay by for awhile around the Andrew Leighton and her dories, some of which were out. After an hour or two, finding the wind increasing fast, we ran in on the Bank until we reached a depth of 60 fathoms, where we anchored and got all ready for a gale. The southeaster blew heavy, but was of short duration, being about what many winter southeasters generally are.

The night of the 9th the wind jumped into WNW., and toward morning of the 10th blew very heavy; so hard, indeed, that, fearing the riding-sail would go to pieces, we hauled it down. The riding-sail, which belonged to another vessel, and which we had taken temporarily, was a new one which had no reef in it, as did our own. The latter had been left ashore, as it was too old for a winter trip.

The gale increased in fury, and after daylight blew extremely hard, while, to make matters worse, the tide set out to run to the southward, hawsing the vessel up in such a manner that she lay almost in the trough of the waves. There was a heavy sea going, too, I think the worst I ever saw, but we did not ship any heavy water before 8 o'clock a. m. Just before that hour I went up in the companion-way and spoke to the man who had the watch, and who was busy aft by the wheel-box clearing the log-line, or some other small gear which had been fouled by the water washing it about. He was standing with his back to the sea, totally unmindful of his danger. As I went below I said to him, "Keep a good lookout for yourself, George; keep your eye to wind'ard, for there are some nasty seas coming along." "All right, skipper, I'll look out for myself," he replied in a cheerful tone. His watch was just out, and the man who succeeded him was nearly ready to go on deck as I went below.

I had not been in the cabin more than a minute, when a tremendous wave broke on board, abaft, or about the main rigging, swept aft with resistless force, knocking the companion-way slide to as though it was struck with a trip-hammer, ripping two boards off of it; also the bait planks off the house; and last, and most appalling of all, sweeping the unsuspecting man, George Miller, into the foaming and seething waters astern, so far away as to be beyond the reach of all human aid. A feeling of horror, like an electric shock, passed through me as I heard the roar of the breaking wave and the peculiar swishing sound of the waters rushing across the deck, and I exclaimed to the man who was standing by the steps ready to go on deck, "My God! Silas, I'm afraid that sea has washed George overboard." Reaching up, he shoved the slide back, and we both sprang on deck. But what a sight met our eyes! More than a hundred feet astern and drifting

with the current, every moment still farther away, we saw the poor fellow rise to the surface, struggle for a few seconds, and then, buried beneath a huge wave, disappear forever from mortal sight. Sad, indeed, were the faces of our crew when it became known that we had lost a man.

However, we had but little time to indulge in regrets or sorrow, for the gale, which had then increased to a furious hurricane, compelled us to make extra endeavors for the safety of the vessel and our own lives. She hawsed up so badly soon after the event just described that we were compelled to set the riding-sail to keep her more nearly head to the sea. We reduced the size of the sail as much as was practicable, by making a "bag reef" in it. This was done by tying up the clew and lashing the bottom hoops together, which being done we hoisted it up a little before 9 o'clock a. m.

Shortly after the riding-sail was set we had a succession of tremendously heavy snow squalls, which blew with a fury I never before saw equaled or even approached during an experience of thirty years' battling with the Atlantic storms, while the snow was so dense that, when we were in the hollow of a sea, the top of it could scarcely be seen. The vessel quivered and trembled like a stricken dolphin, as she struggled with great apparent effort up the steep sides of the mountainous waves, which threatened to bury her beneath their curling crests. Even with the small sail which we had set, a mere rag in size, and lying almost head to the wind, she buried her lee side nearly to the hatches. To walk against the blast was out of the question, and all one could do was to haul himself along by the life-lines or cling to the rigging for safety. She plunged so heavily into the waves that the jib was soon washed loose from the bowsprit. While I was in the cabin after a rope to secure the jib, a second heavy sea boarded us, breaking over the port bow, covering our little vessel nearly out of sight beneath a deluge of rushing water and flying spray. When the men on deck saw it coming they sprang for the rigging. Two of them, who got upon the fore-gaff, held on to the peak halyards, clinging to the ropes with their hands and legs. The sea broke so high that both of these men were nearly washed clear of their hold, although they were eight or ten feet above the deck, which was filled with water nearly to the top of the rails, compelling us to knock off some waist boards so that the vessel would clear herself.

Between the squalls we managed to secure the jib, though it was extremely hazardous going out on a bowsprit in such a gale. The squalls had the most terrifying appearance that I ever witnessed, as they came tearing down from to windward. Black as night and driving a line of white foam before them, they were an awful sight, and enough to strike terror to the hearts of those who never before had felt a sense of fear, and who, even then, when death was imminent, bravely faced the storm, disdaining to flinch from the peril which duty and self-preservation called them to meet.

Fearing the cable would part, and feeling sure that the vessel would be knocked down on her beam ends if she fell off with the least bit of sail set, I stationed myself at the mainmast, whenever the squalls came along, ready to let the riding-sail run down if necessary. When the fourth squall was coming I took my usual position, standing on the bitt-head of the fife-rail with my right foot, and grasping the riding-sail halyards with my right hand. While I was standing in this position, and in the midst of a flurry of flying snow, a lightning bolt burst between the masts. I was struck by it and knocked insensible to the deck. Others of the crew were slightly shocked. As soon as they could, the men who were on deck picked me up, thinking I was dead, and carried me below.

I would not speak of the intense suffering which I endured for four hours—hours of dreadful agony—while I was being resuscitated, were it not to mention the conduct of my men, all of whom showed great devotion and nobleness of spirit. Though in almost momentary expectation of death

themselves, they continued their efforts for my relief with extraordinary zeal and coolness. Fortunately I could speak soon after being taken into the cabin, and was thus able to direct what should be done both for myself and for the safety of the vessel.

We had only three more squalls after I was struck by lightning; those were not so heavy as the previous ones, and after they were past, the wind soon subsided to an ordinary gale.

After recovering sufficiently to examine my injuries, I found that the lightning had plowed along my right arm from the wrist to above the elbow, scorching it severely, while five smaller burns were on my right leg below the knee, and mostly about the ankle. My right side was paralyzed, and I could not stand on my feet for several days.

We started for home as soon as the gale was over, but had a long, hard passage. My burns were so painful that when we got as far as Liverpool, Nova Scotia, we went in there for medical assistance, and arrived home on the 23d of December. The Augusta H. Johnson got in the same day. We had only 17,000 pounds of halibut, but as we obtained a high price for them we made a fair trip.

The Daniel A. Burnham was lost in this gale, being knocked down and dismasted. She was abandoned after the gale, her crew being taken to St. John's, Newfoundland. The Andrew Leighton was knocked on her beam ends and came near foundering, and the William T. Merchant was lost. This alludes only to the vessels in our immediate vicinity when the gale came on. Several other Gloucester vessels were lost or abandoned; the total loss of life reached 100.

One of the men who had been with me for nearly two years now took charge of the Howard for a trip, while I remained at home to recruit from the effects of the lightning-stroke.

Halibut were found extremely abundant in the winter of 1877, between the parallels of 43° and 44° north latitude, in 60 to 90 fathoms, on the western edge of the Grand Bank. They were taken from the middle of January until nearly the last of March, 1877, but were most numerous during the last days of February and first half of March.

I took charge of the Howard again on her return, and went to the Grand Bank. We got a trip of 70,000 pounds of halibut to the northward of latitude 44°, in 55 to 90 fathoms, on the western edge of the Grand Bank. In latitude 44° 23′ and longitude 52° 30′, in 55 fathoms, we caught more than 20,000 pounds of fish at one set with 15 skates of trawl. The next set we got only 5,000 pounds, which indicated that the fish were moving fast. This was the trip before I began my daily journal, in which it is recorded that the following winter very few, if any, halibut were caught in less than 140 fathoms on the Grand Bank.

Large quantities of halibut were found all along the southern edge of the Western Bank, La Have Ridges, and Brown's Bank, and, in fact, as far west as George's, in the deep water, when first resorted to by the fishermen; but in a short time the fish appeared to be considerably reduced in abundance, and in the summer of 1879 I do not know of any vessel finding halibut plenty on La Have Ridges or vicinity.

Ever since deep-water fisheries have been pursued, halibut have been found, just previous to and during their spawning season, in July, August, and September, in large numbers on rough or rocky bottom, most generally on rocky spots or patches of small extent which occur along the slopes of the outer banks. From my own observations, I believe that bottom where the rocks are supplemented with a growth of corals is peculiarly attractive to halibut. The fish which frequent these localities are generally large gravid halibut, called "mother fish," but among them are always found more or less male halibut, invariably smaller, averaging about one-third the size of the females. The males are called the "little bulls" by fishermen.

Halibut have a remarkable habit of remaining on the spot which they have selected for their spawning ground, and the natural result is that, when once a breeding-school is found, fare after fare is caught at the same place, until the fish are so much reduced in numbers as to no longer offer sufficient inducement to the fishermen to visit the locality. Sometimes, however, the fishermen lose so much gear on these spots, on account of the roughness of the bottom and other causes, that after a few trips are made the area becomes so completely covered with old lines that it is almost useless to set trawls, since there is small chance of getting them back. This liability to loss, especially after the fish have been broken up and no longer can be caught in large quantities, compels the fishermen to resort to other localities.

Where so many trawls are lost, of course the halibut that are on the hooks finally die and decay, thus being destroyed without benefiting any one, but instead, it is believed that they become, temporarily, an injury to the fishing grounds.

As previously mentioned, these spots are almost always small, and the boundaries of the schools of fish found in such places are so sharply defined that, although sometimes, as the fishermen express it, "the fish are four tier deep on the spot," 100 fathoms either side of it few if any halibut can be caught.

It does not follow, as a matter of course, that halibut are found abundant in the same place two seasons in succession, but the reverse is, perhaps, the rule, especially if many trips are caught in any given locality the first season that it is resorted to.

The following is a brief account of the results obtained on a few of these small areas, and which will serve to illustrate what has been written above:

In the summer of 1876, Captain Markuson, in the schooner Notice, found one of these places on the Southwest Prong of Banquereau. It was so small that he could get only two trawls on it, and those had to be set very close to each other.

But the halibut were so abundant, according to two men who were with him at the time and have sailed with me since, that on each of the two trawls which were on the right spot they used to get six and seven dory-loads of fish (about 1,500 pounds to a load) every time the gear was hauled, while on the other lines not more than two or three halibut, at most, were taken. After making a few sets they marked the spot by anchoring buoys, thereafter running only two or three trawls, instead of six (the full complement), and in this manner they caught a full fare.

About July 22, in the summer of 1877, the schooners Sultana and Fitz J. Babson struck a large school of halibut on the Southwest Prong of Banquereau, in latitude 43° 55′ and longitude 58° 45′. The captain of the Sultana told me that the area covered by these fish was not more than three-fourths of a mile in diameter, either way. Each of the above-named vessels caught a fare of 80,000 pounds of halibut at that place, and when they left their positions were taken by other vessels—the Chester R. Lawrence, Augusta H. Johnson, and another, the name of which I cannot now recall. There were probably more than 300,000 pounds of halibut taken from this place.

In the summer of 1878 halibut were found very plenty on the western side of the Southwest Prong of Banquereau, in latitude from 43° 56′ to 43° 57′, and longitude 58° 55′, dead reckoning. The schooner Magic got a trip of 50,000 pounds there in July; returned again in August, but failed to secure a full fare on account of her windlass breaking, which compelled her to go home. She also got 45,000 or 50,000 pounds there in September. We caught part of a trip (18,000 pounds) there in July. The schooner William Thompson got 98,000 pounds there in August, and the schooner Lizzie also caught part of a fare, about 40,000 pounds. On the same spot, and nearly at the same time, the Davy Crockett got part of a trip there also, and several other vessels took more or less halibut at the same place; but at last there was so much lost gear on the bottom that it did not pay to set trawls

there. Probably there was as much as 400,000 pounds of halibut taken from this ground, besides large numbers that remained on the lost trawls.

In the summer of 1879 there were comparatively very few halibut found at the above locality, though the ground was very thoroughly tried over on several occasions. However, another breeding-ground was found on the eastern part of the middle prong of Banquereau, in latitude, by observation, 44° 14′ N., longitude, by dead reckoning, 58° 04′ W., in from 230 to 380 fathoms, on pebbly, rocky, and coral bottom. It was of small extent, not much more than a mile in diameter either way, when we were there.

The following vessels all got good fares on this small piece of ground. From the best information obtainable, I think the fish were first found about the 10th of July:

The Andrew Leighton had 80,000 pounds; the Herbert M. Rogers, 50,000 pounds; the Bessie W. Somes, 60,000 pounds; the David A. Story, 70,000 pounds; the Conductor, 55,000 pounds; the Bellerophon, 55,000 pounds. We also caught about 55,000 pounds on my last halibut trip, and when we left for home two vessels, the Addison Center and Thresher, took our berth and each of them secured fair catches.*

Thus it will be seen that more than 400,000 pounds of halibut had already been caught at this point, which, added to those retained on the lost gear, which must at least equal 100,000 pounds more, makes a total of more than 500,000 pounds. That so many fish should be taken from such a small area of sea-bottom seems almost incredible, but the facts admit of so much proof that they are indisputable.

Only one result can be obtained by this system of fishing, and that is this: The halibut must soon become reduced to scarcity, even if they were "four tier deep" at the beginning. But, notwithstanding all this, the men feel obliged to catch as many fish as possible when they go after them, and whatever the result may be on the abundance of halibut in future years, the present time must be improved to the best advantage.

The schooner David A. Story arrived in Gloucester July, 1881, with a trip of 25,000 pounds of halibut, which were caught off the southeast point of Anticosti Island in the month of June. Nearly all of the fish were taken in two days, after which little or nothing could be done, owing to the lack of the proper kind of bait. The trawls were set three or four times a day, being run along parallel with the shore in depths of water varying from 5 to 10 fathoms.

Other vessels which were at Anticosti at the same time found halibut quite plenty for a few days, but failed to secure full fares on account of having only a small supply of good bait.

In June and July, 1881, the best fares of fresh halibut that were brought into Gloucester were caught on the southern part of the Grand Bank in 150 to 250 fathoms of water. The best locality was in about latitude 43° 12′ N., though good catches were obtained a few miles north and south of that point. The fish were two-thirds white and of a superior quality. The Alice G. Wonson, the only vessel fishing off the eastern part of George's Bank, found halibut in considerable abundance. On all the other "deep-water" grounds, namely, the southern edge of La Have Ridges, and the Western Bank, along the south and east borders of Banquereau, and also off Saint Peter's Bank, the catch of halibut was very small, and over a large portion of these grounds, once so prolific, very few halibut can now be caught. The Josie M. Calderwood, while fishing for cod in 50 to 60 fathoms, in the northwest part of the Gully, during the month of June, 1881, caught 17,000 pounds of halibut, which were brought in fresh. Captain White, who commanded her, states that the halibut were fairly plentiful and evidently many were lost from the trawls, owing

* The quantity of fish taken by each of the various vessels is given in round numbers, but in no instance will it vary much from exactness.

to the gear being too small to hold them. The Mystic also found fair halibut fishing near the same place, but in shoal water. The fish were of excellent quality, but evidently their occurrence there was accidental, or at least very temporary. Had their presence in this locality been permanent in the least degree, the region would have soon been covered by the trawl-lines of the halibut fleet.

Two events of a remarkable character, and which seem worthy of particular mention, occurred during the seasons of 1881–'82. These were (1) the discovery of a new fishing ground, and (2) the occurrence, at a season when it was least to be expected, of halibut in almost unequaled numbers in a well-known and long-frequented region.

During most of the season of 1881, and particularly in the fall, halibut were scarce on most of the fishing grounds along the edge of the outer banks. Consequently, the inducement was great for the skippers to seek new and untried fields, where perhaps fish might be found in undisturbed abundance. With this end in view, Capt. George A. Johnson, of the schooner Augusta H. Johnson, in the autumn of 1881, crossed the Grand Bank and fished in the deep water on its eastern slope, where, so far as I know, no systematic research had previously been made. I was told by an acquaintance several years ago that a vessel had sought for halibut along the eastern edge of the Grand Bank as early as 1877, but had failed to find any, the skipper reporting that the bottom declined so suddenly that it was useless to attempt to anchor or set trawls. The recent researches in this region have shown that the statement was entirely wrong, and give reason to doubt the probability of the vessel having visited the deep water on the east side of the Bank. Anchoring in 110 fathoms, latitude 43° 55′ N., longitude 49° 8′ W., Capt. Johnson found halibut plenty, and made large catches on trawls set to the eastward of his vessel and in somewhat deeper water. In six days' fishing he secured a fare of between 50,000 and 60,000 pounds of halibut, most of which were large "gray" fish. It is somewhat remarkable that when halibut are found on grounds not previously fished on a large percentage of the catch are generally "gray" fish, and with rare exceptions these are above the average size. Instances are somewhat uncommon where medium-sized "white" halibut have predominated on newly-tried fields, but occasionally such cases have occurred. After several years' fishing in one locality the quality of the halibut generally improves, the fish being of smaller size and in finer condition.

The same schooner on her next trip—this time commanded by another man—revisited the new ground, but the winter season had then so far advanced that there was a constant succession of furious gales. The prevalence of strong northerly winds caused an unusually rapid flow of the polar current, which often sweeps down by the eastern side of the Grand Bank with such velocity as to render fishing nearly impracticable, and in consequence of this combination of unfavorable circumstances very little was accomplished. In the spring of 1882 Captain Johnson went to this place again and had remarkable success. His good fortune was soon noised abroad, whereupon many of the other halibut schooners made similar ventures, the result being that the eastern side of the Grand Bank was pretty thoroughly tried over from latitude 43° 15′ to 44° 30′ north, in depths varying from 100 to 300 fathoms. At many points along this stretch halibut were abundant, but a strong polar current caused the fishermen much loss of gear, while the prevalence of dense fogs, together with the proximity of numerous icebergs, rendered fishing in that locality so hazardous that the majority of the skippers were glad to resort to other grounds, even where, perhaps, the prospect of finding large numbers of fish was not so good. Several of the vessels lost most of their trawls before they had secured a full fare, and few that fished on the eastern side of the Bank returned to port without having met with some damage to their gear. Where strong currents prevail in deep water the buoys which mark the position of the trawl-lines are dragged

beneath the surface of the water by the great strain on the buoy-line. These buoys, being generally soft-wood kegs, are broken by the pressure of the water when they have been submerged to any considerable depth, and the result is that there being nothing to support the buoy-line, the only means by which the trawl can be recovered, the apparatus is lost.

The icebergs sweeping down from the north, borne along by the swiftly-running currents, were a source of great danger to the vessels lying at anchor. Huge mountains of ice would often appear suddenly out of a dense fog, so close to the schooners that the startled crews were frequently almost compelled to cut their cables to prevent collision. Captain Johnson told me that on one occasion he counted twenty-eight bergs within sight of his vessel, and one of the number lay grounded for nearly a week—all the time he remained at anchor—not more than a mile distant, in water probably not less than 125 fathoms deep. It is scarcely necessary to say that in a rough sea one blow from such a monster would crush a fishing schooner as though it were an egg-shell.*

The fact, however, of halibut having been found in abundance off the eastern, or rather, perhaps, the southeastern side of the Grand Bank, is a matter of more interest than would appear at first glance, since it permits us to form a better idea of the winter habitat of certain schools of this species, and also to judge more intelligently concerning the spring and fall migrations, about which heretofore only indefinite and uncertain ideas could be formed. For several years previous to the discovery of the deep-water fishing grounds it was noticed by the fishermen that during the winter and early spring—from about the middle of January to the last of April—the schools of halibut met with on the body of the Grand Bank, between 43° 30′ and 45° north latitude, appeared to come from the east or southeast side of the Bank, and almost invariably moved steadily, but slowly, across the ground in a westerly or northwesterly direction. A vessel might obtain remarkably good fishing for two or three days, perhaps for a shorter time, but the halibut would suddenly disappear, and none could be taken. It frequently happened that on such occasions a change of position—the schooner moving 5 or 6 miles in the direction which the fish were known to be going—might result in the school being overtaken again and the capture of a full fare. In some instances a skipper might be able to "keep run" of the fish for several days, and while they were passing over a distance of 20 to 30 miles, and many statements could be cited of a character to verify this assertion. As it may be a source of wonder to many how any intelligent idea could be formed by the fishermen of the direction in which the halibut were moving, the following explanation should be offered. The custom is for the Grand Bank halibut schooners to fish with trawls, each about 2 miles long. As has been explained elsewhere, these are set out from the vessel, from which as a center they radiate in the form of a star. A school of halibut approaching from the east would first be caught in great abundance on the lines set in that direction, while the trawls on the west side of the vessel would get comparatively few fish. On the next set the catch might be pretty equally divided, while succeeding hauls would show that the fish had moved so far that only the "tail end" of the school could be reached by the farthest ends of the western trawls. As soon as this occurred any intelligent skipper, understanding the habits of the species, could form a tolerably definite theory as to how fast the halibut were moving, and also the course they were pursuing.

Notwithstanding it was apparently well known that the halibut were migrating at such times, only the most vague and indefinite ideas were formed as to the place from which they came or whither they went. No one seems to have entertained the thought that they "hung around" the edges of the Bank, in deep water, after leaving the body or shoaler portions of the ground. That

* During the summer of 1885, while this is being printed, the majority of the Gloucester halibut vessels are fishing on the eastern side of the Grand Bank.

the halibut came from some undiscovered bank to the eastward and passed across the Grand Bank on their way north and west toward Newfoundland, the Gulf of Saint Lawrence, Labrador, &c., was, I think, the general belief of the fishermen, at least of such as took the trouble to formulate any theory. The discovery of halibut along the east side of the Grand Bank seemingly settles this question, and it is undoubtedly a fact that the great schools of this species which for many years have been known to migrate northwesterly in the spring make their winter residence on the eastern slope, in depths varying from 100 to probably 400 fathoms.

Fortunately, halibut were discovered in remarkable abundance in the early summer of 1882 on another and well-known fishing ground, thus rendering it unnecessary for the fishermen to be longer exposed to so many losses and perils as they had experienced on the east side of the Grand Bank.

On the deeply-submerged plateau which extends in a northwesterly direction from the northwest prong of the Grand Bank to Saint Peter's Bank, forming a sort of border to the southern end of Green Bank—by which name this area of bottom is usually called by the fisherman—in depths varying from 112 to 250 fathoms, halibut of the finest quality and in extraordinary numbers were found. This locality has been famous for the abundance of halibut in the spring of the year since the discovery of the deep-water fishery in 1875. Since then, however, notwithstanding the fact that large schools of this species have been found off Green Bank almost every spring, it has appeared from the movements of the fish that they were migrating to more northern regions, and that they were only passing over these grounds, pausing slightly, perhaps, in their course, or, at least, moving slowly. On several occasions the movements of these fish have been pretty definitely traced along the southwestern side of Saint Peter's Bank, and into the deep water between this Bank and the shores of Newfoundland.

For a period of four to six weeks, generally in March and April, large fares were obtained between the northwest prong of the Grand Bank and Saint Peter's Bank. After that interval, however, the fish became scarce, and rarely did it happen that they were sufficiently plenty during the summer for vessels to obtain good fares there. In this connection it may be well to mention that in the summer of 1878 the schooner Gwendolen found a new fishing ground some twenty miles to the southwest of Saint Peter's Bank in a depth of about 200 fathoms, where no soundings are laid down on the charts. She succeeded in taking several large fares, but other schooners learning of her good fortune resorted in such numbers to the same grounds that in September of that year the school had been broken up, nor was any large catch of halibut made on that ground afterward. Allusion is made to this fact because the locality is not far from that region off Green Bank now under discussion, and also because, with this exception, halibut were rarely found abundant in the summer in its immediate vicinity from 1875 until 1882. That year was, however, a marked exception to the general rule, and the fact of halibut being abundant at that point is all the more remarkable, inasmuch as when the schools have been broken up on other fishing grounds, or the fish forced to leave their favorite resorts during a portion of the year, they rarely return to stay in such plentifulness. From early in June until late in October of 1882 the species occurred in almost unprecedented numbers off the southern part of Green Bank in depths ranging from 100 to 250 fathoms; whereas, in former years, even when halibut have been most plentiful, a dearth has usually occurred on all the fishing grounds in the latter part of September and in October and November. During those months, however, of 1882, wonderful catches were made, several fares of from 40,000 to 75,000 pounds having arrived at Gloucester. The following are a few of the many instances of large captures made on Green Bank during that season. One of the first fares to arrive from that locality—possibly the first—was brought in by the schooner Isaac A. Chapman,

which reached Gloucester on June 25, 1882. She had on board above 80,000 pounds, four-fifths of which were "white." The following detailed account of the amount and value of her fare appeared in the Cape Ann Advertiser of June 30, 1882:

"Schooner Isaac A. Chapman, Capt. Augustus G. Hall, arrived from a Grand Bank trip on Sunday, bringing in 81,000 pounds of halibut and 5,000 pounds of codfish, stocking $4,303.66, the crew sharing $145.30. She was absent nineteen days, of which time two days were spent in Nova Scotia ports waiting for bait."

Captain Hall told me that these fish were caught at a depth of 112 fathoms in latitude 45° 04′ N., longitude 54° 59′ W. He fished for eight days altogether, during the first two of which he was in shoaler water and caught only 4,500 pounds of halibut, so that 76,000 pounds were taken in six days.

September 11 the schooner Gertie E. Foster arrived home from Green Bank, bringing in a fare of 78,625 pounds of halibut. Captain Olsen, who commanded her, told me that he had made several unsuccessful attempts to catch halibut on the Western Bank and Banquereau during that summer.

On the 4th of October the schooner Willie M. Stevens arrived with about 80,000 pounds of halibut caught near Green Bank at a depth of 250 fathoms. The vessel, however, lay anchored in 220 fathoms, her position, according to Captain McInnis, being latitude 44° 58′ N., longitude 54° 33′ W.

A few days later the schooner Grace L. Fears arrived with a "big trip" caught near the same locality, the following notice of which was published in the Cape Ann Advertiser of October 13, 1882: "Schooner Grace L. Fears arrived from a Bank trip on Monday, October 9, with 70,220 pounds of fresh halibut, which were sold to the Atlantic Halibut Company for $3,606.61, her crew sharing $119.39."

On October 28 the Augusta H. Johnson arrived in Gloucester from Green Bank with a fare reported to be between 50,000 and 60,000 pounds of fresh halibut.

In conversation with the captains of several halibut schooners, I learned that many attempts were made during that summer and fall to catch halibut along the southern edge of the Western Bank and the Southwest Prong and eastern edge of Banquereau, but these were rarely successful. The captains of these schooners were induced to make these trials because the greater portion of the fleet had resorted to the vicinity of Green Bank, where the vessels lay close together, fishing on a small area of sea-bottom. As a result of this crowding, there was much loss of gear, which rendered the trips far less profitable than they otherwise would have been. With scarcely an exception, however, so far as I have been able to learn, the vessels, after making the attempts already alluded to, were obliged to go to Green Bank in order to complete their fares. It may be interesting to note that, whereas in former years the halibut taken in the region under discussion were nearly always of large size, the "gray" predominating, this year the reverse is the case, for the fish caught there have nearly all been of medium size and of much finer quality, averaging from two-thirds to seven-eighths "white."

Mention should be made here of the capture of halibut along the southwest part of the Grand Bank during the first part of 1882. Several fine fares were obtained on the western slope of that Bank, in depths ranging from 150 to 300 fathoms, between the extreme southern point of the Bank and 44° north latitude. Much difficulty was experienced in fishing off the southern peak, as well as on the eastern side of the Bank, from the strong polar current, though this is not generally a source of trouble on the western side of the Bank north of latitude 43° 20′. It appears, however, that halibut were scarce along the southwest slope of the Bank during the summer months, though

occasional fares were possibly taken in that locality. From information derived from the most reliable sources, however, it appears that nearly all the vessels engaged in halibut fishing resorted to Green Bank after July. It is undoubtedly true that the small number of vessels engaged in this fishery was favorable to their obtaining large fares throughout the season. Had the fleet, as in 1878 and 1879, been composed of forty or forty-five instead of only fourteen or fifteen sail, there is no doubt but that the school of halibut on Green Bank would have been broken up after two or three months' fishing; and if not, it is certain that the accumulation of lost gear on the fishing grounds would have rendered profitable fishing in that locality a practical impossibility.

12. JOURNAL OF FRESH-HALIBUT TRIPS TO THE GRAND BANK IN 1878 AND 1879, IN THE SCHOONER MARION, OF GLOUCESTER, MASS.*

By J. W. Collins, *Master.*

Friday, February 15, 1878.—There was a moderate breeze N. by W. in the morning and during the forenoon. This was a fair wind to start with. We had completed our preparations for the trip on the previous day; everything was ready with the exception of a supply of frozen herring for bait. As soon as the crew mustered in the morning—between 8 and 9 o'clock—two men were sent off to the "baiter," a vessel loaded with frozen herring lying in the harbor, with her flag flying, and they returned with some 5,000 stiffly frozen herring, which were hastily packed in one of the ice-house pens, under straw to prevent their thawing. This having been done, and some other minor matters attended to, we hoisted our sails, and as the city clock rang out the hour of ten we cast off our lines and once more filled away for the Banks.

After passing Eastern Point, and getting the light sails set and sheets trimmed to the best advantage, the ordinary routine of setting the watch, lashing dories, cables, securing hatches, putting out the log, &c., was gone through with.

The wind died away in the afternoon, and finally fell calm in the latter part of the day. At 7 p. m., however, a breeze sprang up from the southwest. With this wind we could run along on an E. by S. course—which we were steering—with all sails drawing on the starboard tack, and sheets well off.

Saturday, February 16, 1878.—The morning was fine and clear, with a light westerly breeze, which continued with very little change throughout the day. As soon as breakfast had been eaten, about 7 a. m., the hatches were taken off, the gear was passed on deck, and all hands were soon busily engaged in preparing their trawls, buoy-lines, buoys, dories, and the various other apparatus which they may need for use as soon as we arrive on the fishing ground. Moderate, pleasant days are the exception in these latitudes in winter, and every one is eager to improve to the utmost the opportunity thus afforded of doing work which must otherwise be carried on under much less favorable conditions.

Longitude, by observation at 9 a. m., 69° 25′ W. Latitude at noon by meridian observation of the sun, 42° 42′ N.

Sunday, February 17, 1878.—There was a very light northwest wind and clear weather in the early morning. It was calm for a while in the forenoon, but at 10 o'clock it breezed up again.

*The accounts of halibut trips given here are selected from a series contained in a journal from April, 1877, to August, 1879, during which time the writer was constantly engaged in the fresh halibut fishery. In other chapters are given the arrangement of the vessel, incidents connected with sailing, obtaining bait at home or in other ports, and many other matters which give an insight into the daily life of the fishermen, and the manner in which this fishery is prosecuted. The notes referred to may, at some future time, be published together.

Latitude at noon 42° 45′ N., longitude 68° 05′ W. At 3 p. m. there was a light southwest breeze. We saw a fisherman bound to the westward. It began to snow in the evening.

Monday, February 18, 1878.—The snow fell thick during the past night. The wind, however, continued moderate, but veered around until at 8 a. m. it was NNE. The weather began to clear at this time. Barometer 29.65. The wind steadily increased during the day until it blew heavy in the afternoon. At 10 a. m. the main-staysail sheet parted and we hauled the sail down and did not set it again. At 2.30 p. m. we clewed up the gaff-topsail. At 4 p. m. double-reefed mainsail and took the bonnet out of the jib, and at 5 o'clock we double-reefed the foresail. We saw a vessel at anchor at 4.30 p. m. The air grew cold in the afternoon, and the sky had a wild wintry look. At 7 p. m. it blew a strong gale and there was a very sharp sea running. We took the mainsail in, and furled it, and let the vessel run under her reefed foresail and jib. At 8 p. m. shipped a sea which stove one of the dories.

Tuesday, February 19, 1878.—At 1 o'clock a. m. we took in the jib and furled it, and ran under a double-reefed foresail. It was blowing a smart gale at this time. The cold had increased and the vessel was making considerable ice. At 8 a. m. the wind had moderated, but still the temperature was lower than it had been during the night. I think it was colder than I have seen it before this winter. We set the jib and riding-sail at 8.30 a. m. At 2.30 p. m. the wind and sea had decreased very considerably, though it still blew hard and was so cold that where any spray struck it froze. We began beating the ice off the foresail at this time, and at 3 o'clock we shook the reef out. After we got the foresail up, we pounded some of the ice off the rigging, sails, &c. At 9 p. m. we set the mainsail, shot to, and sounded in 56 fathoms on the Western Bank.

Wednesday, February 20, 1878.—This morning there was a fine northerly breeze. We began to beat off the ice at daylight, and at 8 a. m. set the light sails. Our latitude at noon was 42° 13′ N., longitude 60° 14′ W. Longitude, by observation at 4 p. m., 59° 34′ W. The wind in the afternoon and evening backed to NW. and, toward midnight, was light and puffy.

Thursday, February 21, 1878.—There was a light WSW. breeze during the first half of this day, and the air was much warmer than it had been, so that the ice began to melt and fall off the rigging and rails. The wind kept backing gradually until at 6 p. m. it was south. It began to snow soon after noon and was quite thick all the rest of the day. We took in the gaff-topsail and furled it at 5 p. m. The wind still continued to back against the sun, until 11 p. m. when it was NNE., fresh and puffy.

Friday, February 22, 1878.—The wind in the first of the morning backed to north and blew up heavy. We took in the mainsail and furled it at 4, and reefed the foresail at 5 a. m. At 8.30 a. m it blew a strong gale. We took in the jib and furled it and hove to. The barometer at this time was on 30.15, which is higher than I ever saw it before when it blew a gale like this. At 3.30 p. m. the gale moderated some and veered to NNE. We loosed the jib and set it, and bent the riding-sail, so that we could keep on our course. The barometer at this time had risen to 30.40. The wind blew very heavy, and there was a bad sea, in the latter part of this p. m.

Saturday, February 23, 1878.—At 6 a. m. it was still blowing a strong breeze, though considerably less than during last night. The Marion behaved splendidly under her short sail, and made an average of 4 knots, which is very good in such a gale, considering that we had to keep close to the wind. At noon we shook the reef out of the foresail. At 3 p. m. we came to anchor in 100 fathoms on the western edge of the Grand Bank. It was rough, and still blowing strong, and the weather was hazy and drizzly when we anchored. We repaired the dory which was stove on the passage. I noticed that we came into white water 25 or 30 miles westward of the Bank, which is

rather unusual; I think this discoloration so far from shallow water must somehow have been caused by the late gale.

Sunday, February 24, 1878.—There was a light southeast breeze in the morning. We hove in "slack cable," but did not set any gear, as I do not feel disposed to begin a trip on Sunday. I got an observation in the forenoon and one at noon. Our latitude is 43° 32′ N., longitude 51° 57′ W. I saw a vessel at anchor to the SE. At noon I saw a schooner working up from to leeward, which proved to be the Ada K. Damon, which vessel sails from the same firm that we do. The skipper came aboard, and we exchanged our budgets of news. He reports halibut very scarce on the Bank. It is ten days since he anchored on the Bank and he has taken only 2,000 pounds of fish. He went adrift in the last breeze,* and has not anchored since. He says it blew nearly a hurricane where he was. After he returned to his vessel he kept off and ran to the NW. We set four trawls this afternoon, chiefly to catch some fish for bait. At 5.30 p. m. the Andrew Leighton spoke us. She was working to the SE., and kept on in that direction. The wind blew up strong from the south east in the evening, and we had to stick out some more cable.

Monday, February 25, 1878.—It was moderate, and very thick fog this morning and forenoon, with indications of a sudden change of wind. We hove in our cable to a short scope. After dinner the weather cleared up and our men went to haul the gear. They got only two of the trawls; the other two I expect the tide, which runs very strong, has carried adrift. We spent all the afternoon looking after them. The wind breezed up NW., and I concluded to wait till morning and have a hunt for the missing gear in the vessel.

Tuesday, February 26, 1878.—The morning was dark and gloomy-looking, and there was a light northerly breeze. The barometer was low and falling slowly. We began to heave up the anchor before daylight. After the vessel was under way we made short tacks to windward in the direction I thought the trawls had drifted, and, fortunately, we soon found them. There were only a few codfish on them, and no halibut, so we kept off and ran to the SE., spoke the Andrew Leighton, and still continued our course for about 18 miles farther, when we anchored in 70 fathoms and set 12 skates of trawl. Last year at this time halibut were very plenty in this vicinity. Although the barometer is down to 29, the weather still continues fine, with a light WNW. breeze in the afternoon.

Wednesday, February 27, 1878.—This morning the clouds had a wild, unsettled look, and as the barometer was on 29.10, I expected it would blow before night. We hauled our gear, and as we got no halibut on the trawls we hove up the anchor, set all sail, and stood to the NNE. The wind was about NW. by N., a smart staysail breeze.† The Leighton, which was anchored about 5 miles from us, got under way at the same time, and was on our weather bow, standing the same course. Latitude at noon, 43° 31′ N. We tacked in the afternoon and stood to the westward a while, and at 5 p. m. we anchored in 47 fathoms and set 12 skates of trawl. The Andrew Leighton anchored at the same time about 5 miles WSW. of us. Weather still fine and barometer rising—now on 29.30.

Thursday, February 28, 1878.—In the morning there was a fresh northwest breeze and cloudy sky. We got nothing on our gear, hove up the anchor, set all sail, and began to beat to windward. The Leighton hove up at the same time. We beat to windward all day until 3 p. m., when we fell in with the Alice M. Williams and I went on board. Captain Murphy reports having found halibut very scarce. He has been on the Banks about five weeks, and has about 30,000

* Gloucester fishermen generally speak of a gale as a "breeze." The average fisherman seldom dignifies the most furious tempest or storm by any other name than a breeze. "Were you out in the breeze?" is equivalent to asking if you were exposed to some unusually heavy gale.

† This means all the wind a fishing schooner could carry a staysail with, close hauled. This method of ganging the force of the wind is very much in use. For instance, a "double-reefed breeze" signifies that a vessel can carry only double-reefed sails, while a "whole sail breeze" is one in which the three lower sails can be carried, and no more.

pounds; nearly all of these fish he has caught quite recently. He said that the City of Gloucester, which lays a berth south of him, has got a fair trip, and will probably go home to-morrow. We gave the Williams a dory-load of ice, then we went a berth northward of her and anchored in 56 fathoms, and set twelve tubs of trawl after dark. The barometer has risen to 29.90, and the weather is fine; wind W. by N.

Friday, March 1, 1878.—It was calm in the first part of the day. We got 3,000 pounds of halibut on the morning haul, and a large part of them were white. We baited up our trawls, and as it still remained calm we set them again at 10 a. m. The Mary F. Chisholm lays a berth WSW. and the Bessie W. Somes a berth to the NW. of us. The City of Gloucester got underway at noon and shifted to the westward into deeper water. At 2 p. m. there was a moderate breeze from the westward. The Williams was under way at this time, standing to the northward under whole sail. While our men were out hauling this afternoon we had a smart and very sudden squall. Some of our dories were to leeward, and for a while I was afraid they would not get aboard; but fortunately the tide set strong to windward, which assisted them very much, and after a hard pull they all succeeded in reaching the vessel. The Williams was under whole sail when the squall struck, and I think she went down pretty low before her crew lowered the mainsail. She was not far from us at the time, and Captain Murphy, seeing that some of our men were to leeward, ran down and kindly offered to assist them. In his quiet way he said to them, "Well, boys, do you think you can pull up?" "Yes, I guess so," they replied. "I'll keep watch of you, and if you need it will give you a tow," he shouted out as he passed by the dories. We got all our trawls but one. That one parted on the outside end, and just as the men began to haul the inside end the squall struck. We got only 1,000 pounds of halibut. The Williams kept on for home. Our position is latitude 43° 52′ N., longitude 52° 25′ W.

Saturday, March 2, 1878.—This day began with a fresh and cold northerly gale, so that some ice was making on deck. We set the dories amidships and cleared the decks, putting the gear below and securing everything which was liable to be washed overboard. We had a smart gale all day, with frequent heavy snow squalls. The barometer was on 30.10 at 8 p. m.

Sunday, March 3, 1878.—There was not more than a moderate whole sail breeze at daylight this morning, so, while one dory went to haul the trawl that was out, the rest of us hove short and beat the ice off the deck, rigging, and sails. We lost one trawl-anchor, buoy, buoy-line, and two lines of trawl, and got about 500 pounds of halibut. The northwest wind died away in the forenoon, and in the afternoon the wind breezed up from the southward. We hove up our anchor and ran to the NNW., where we fell in with and I went aboard of the Ada K. Damon. Afterwards we ran 4 or 5 miles NNW. of her and anchored in 65 fathoms, and set eighteen skates of trawl. The Damon broke her anchor out and ran this way, and anchored a short berth ESE. of us. The Bessie W. Somes spoke us at 4 p. m., and ran to the NNW. a long berth,* where she anchored.

Monday, March 4, 1878.—At 2 p. m. I began to write the record of this day, which has been a rather eventful and exciting one for us, and which came very near having a tragical ending for two of our crew, James Abbott and George Mathews. The day began with a strong SSW. breeze, and the sky had a "smurry," windy look. I did not intend to send our dories out, *but as we soon saw the Ada K. Damon's boats out our men thought it was rather daring them,* and they declared that they could go if the Damon's crowd could. The competition in this busi-

*A "long berth" in halibut trawl-line fishing is between 3 and 4 miles. The distance between two vessels is generally spoken of as a "short berth," which may be anywhere from three-fourths of a mile to double that distance; a "fair berth," generally 2 to 2½ miles, and a "long berth," 3 to 4 miles. The position where a vessel lies fishing is called a berth, and though she may drift some distance, as in mackereling, she is said to be in her berth. Also if a vessel moves from one place to another it is called "making a berth."

ness—and especially between vessels from the same firm—is so sharp that skippers and men both dare all dangers rather than be outdone. Our men were soon ready, and we hoisted out our dories, and, jumping into them, away the men pulled for their trawls. Abbott and Mathews had to pull nearly at right angles to the sea and wind, and when they were about half way to their outer buoy a sea cockled up, and, catching the dory on the broadside, nearly threw her bottom-up. All that saved her was that both men jumped, and threw themselves on the weather gunwale. As it was, the dory was almost filled with water, and oars, thwarts, and kid-boards were washed out of her. It fortunately happened that there was another dory near enough to the scene of the accident for the men in her to notice the mishap and see the signals for help. The crew of this boat pulled up to those who had so nearly capsized, picked up their oars for them and placed them in a situation once more to battle with the elements. But for this timely aid they must have drifted helplessly to leeward, and doubtless to death. After they got their dory bailed out they started for their outer buoy again, reaching which they began to haul the trawl, but, unluckily, it soon parted, and, as a result, they had a very hard pull to reach the vessel. All of the dories were several times nearly filled by breaking waves, and, since the wind kept increasing while they were out, it was certainly rough enough before they got aboard again. We had two dories astern, riding on long painters, while we were waiting for the others to come on board, and a sea hove one of them across the other's bow, so that the weather one had a hole knocked through her side. When this occurred the order was, "Hurry up, boys, and let's get the dories in before they fill." This was successfully accomplished. We hauled four and a half trawls—fourteen skates—and got about 2,500 pounds of halibut. The dories were all aboard at 11 a. m., by which time it blew so hard that we had to pay out some more cable. After that we got our dinner and then dressed the fish. At 5 p. m. the wind had increased to a heavy gale. We cleared the deck, reefed the foresail and ridingsail, and set the dories amidships before dark. When a gale is coming on, the foresail is carefully reefed (though it is afterwards furled), so that it may be ready for any emergency which may arise, such as going adrift or having to cut the cable to escape collision with a drifting vessel, which may drive down on one at anchor. The dories are moved amidships, so that they may be less liable to injury from a sea breaking over the vessel's side. Since the successful issue of the trip depends on keeping them whole, much care is taken of them.

Tuesday, March 5, 1878.—At 1 a. m. an "unwelcome visitor," in the shape of two or three barrels of water—the top of a comber—came into the cabin. There was a general scramble to snatch up the boots that lay on the floor, to keep them from being filled with water. Some of the men were not quick enough, and their boots got wet, causing considerable growling, as a matter of course. I said to the watch, "Haul that slide over when you see a bad one coming." Everything was soon quiet again, and the men who were turned in all hauled the quilts over themselves and rolled over and once more went to sleep, indifferent alike to the roar of the gale and the swish-swash of the water on deck. At 5 a. m. the wind had moderated, so we turned out and hove in the cable to a short scope. After breakfast—which we always have at daylight or before—we began baiting up our trawls, but the wind, which was light at this time, increased so rapidly that in less than half an hour it blew a gale and was raining and thick. We had to stick out cable again, and thus our hopes of improving this day were utterly foiled. At noon it blew a heavy gale SSW., but at 6 p. m. there was less wind, and it was veering to the westward. The weather was still thick and raining. At 9 p. m. we hove in some cable.

Wednesday, March 6, 1878.—There was a smart northerly breeze this morning. The sky was overcast and the scud was flying fast to leeward, as though it might blow hard again. We set 8 skates of trawl in the morning, but the weather looked so threatening that we did not attempt to

get those we had out. The wind blew strong all day, so we did not put our dories out again. I never before have seen such a succession of strong winds and gales with the barometer so high. It has not been below 29.70, in the open air, in any of the late gales.

Thursday, March 7, 1878.—Blow! Blow! At daylight it was still blowing strong, and I felt utterly disgusted with the state of things in general, and the weather in particular. At 8 a. m. the wind moderated a little, and we put out our dories, and the men went to haul the trawls. We got 3,000 pounds of halibut, baited up and set again. Capt. Peter Mathewson, of the Solomon Poole, came aboard in the afternoon; he has been on the Bank but a few days. He said that while he was at home the Howard came in from the Western Bank with a good trip. She was gone only thirteen days from home. The Ada K. Damon hove up this afternoon and stood to the northward. We got no halibut on our trawls in the afternoon, so we hove up and stood to the NNE. 4 or 5 miles, and anchored in 58 fathoms, and set eighteen tubs of trawl at 10 p. m.

Friday, March 8, 1878.—There was a moderate southerly breeze in the morning. We got 5,000 pounds of halibut on the morning haul; baited up, and set again. Three of the dories caught nearly all of the halibut, so all of them set at 10 a. m. in the direction where the fish appeared to be most abundant. The sun was out to-day, so that I got observations—latitude 44° 4′ N., longitude 52° 30′ W. Capt. Peter Dolliver, of the Lizzie, came aboard in the afternoon. He has not been long out from Halifax, where he has been to refit, having lost cable, anchor, &c., in the heavy gale that swept the Grand Bank the 4th, 5th, and 6th ultimo. He said he had himself tried, and had spoken several others who had been fishing 18 miles northward of us, and the halibut were very scarce in that region. We got only 2,000 pounds of halibut in the afternoon haul. Just as our dories were getting aboard, the Ada K. Damon spoke us. She was running to the northward, towing her anchor. It was then 5 p. m. We took in our dories, broke out the anchor, and shifted a long berth, after dark, towing the anchor. We baited 12 skates of trawl and set them after we anchored again.

Saturday, March 9, 1878.—There was a fresh whole sail southerly breeze in the morning, and it looked like rain. We got very few halibut on the morning haul, and as soon as the dories were aboard we began to heave up the anchor. The Carl Schurz spoke us at 7 a. m. She was running to the NNW. While we were heaving up, the wind died away calm. We set only bank sail at first, but at 2 p. m. the wind began to breeze up NW., and we hoisted the mainsail, and beat to windward about 7 miles, where we anchored in 57 fathoms at 5.30 p. m., and set several skates of trawl. It was foggy for a while at midday, but cleared in the afternoon and there was a fine NNW. breeze, sky dark and overcast. Barometer 30 at 6 p. m. Every vessel in sight but one was under way, so I conclude that they all find fish scarce, as we do.

Sunday, March 10, 1878.—This morning there was a light NNW. breeze, falling barometer, and dark and cloudy sky. At 7 a. m., while our men were hauling, the barometer stood on 29.70.

Capt. Daniel McKinnon, of the Mary F. Chisholm, came aboard. He had set, under sail, a berth WSW. of us. He staid till our dories came alongside, and then he went back to his own vessel. He thinks he will start for home to-day.

We got only 3,000 pounds of halibut. We hove up the anchor and worked to the NNW. under whole mainsail and jib. The wind had been breezing up since morning, and at this time, 2 p. m., it blew too strong for two men to pull a dory to windward. Therefore, after we got 3 or 4 miles from our last berth, we hoisted the dories out and set 18 skates of trawl to leeward; I ran to leeward in the vessel, and having picked up the boats we anchored at the lee ends of the trawls. After McKinnon got his gear he started for home. There was a strong breeze and frequent snow squalls in the latter part of this p. m. The barometer remains steady. I turned in at 8 p. m., after

giving the watch the usual order for the night: "Pass the word along to fleet the cable at 12 o'clock, and if the wind blows any harder, give me a call."

Monday, March 11, 1878.—At 2 a. m. the watch called me and said that "Old Boreas was tuning his harp again." We called all hands and paid out some more cable, set the dories amidships, &c. There were frequent heavy snow squalls from the NNW. and rapidly falling barometer at this time. At 7 a. m. it blew a gale. Barometer 29.30. At 2 p. m. it blew a heavy gale. Barometer 29.15. The gale continued without abatement during the remainder of this p. m.

Tuesday, March 12, 1878.—At 7 a. m. the gale still continued. Barometer 29.70. At noon barometer 29.90, and no change in the gale. We hove in the strad, and shifted it. Saw a topsail schooner to windward lying to. I cannot help feeling disgusted and dissatisfied at the way things have worked with us this trip. The wind has blown a gale most of the time, and when we have had good weather we have found fish scarce. At 5 p. m. the wind had lulled a little, though it still blew heavy and was as rough as ever. Later, the wind increased, and the latter part of this p. m. blew a heavy gale, with a very bad sea running.

Wednesday, March 13, 1878.—At 2 a. m. our vessel shipped a sea over the bow that broke some of the checker-planks and washed aft what cable we had on deck. At 6 a. m. there was less wind. Barometer 30.25. We hove in some cable and repaired the checker-planks in the forenoon, and hauled the trawls in the afternoon. We got only eight or ten small halibut, and I felt so disheartened, so tired and disgusted with constantly trying and getting next to nothing, that I determined to start to the westward, and if we have a chance we will try on the Western Bank, and if not we will go home with what few fish we have caught, rub out the old score, and begin again. It will be better for us than to stay here any longer as the prospect now is. We hove up and set all sail. At 7 p. m. it was nearly calm, but at 10 o'clock a light air sprang up from the southward and we set the stay-sail and headed on our course W. by N. half N.

Thursday, March 14, 1878.—In the early part of this a. m. the wind backed to SE., and at 3 o'clock a. m. was blowing fresh and puffy. Called all hands and took in the stay-sail, turned the dories over, and lashed them securely. We got through at 4 o'clock and all of the men went below but the watch. I staid on deck myself, for these winter southeasters cannot be safely trusted, though, at the same time, sail must be carried to the last extremity. It was raining lightly, and the night, which was moonless and starless, was one of the blackest I have ever seen. All that could be seen was the sparkle of the spray as it flew from the bow, and the luminous phosphorescent wake of the vessel, as, with the sheets well off, she rushed through the water and darkness like a wild horse flying from a pursuer. Every sheet and halyard fairly hummed with the strain upon them. I called all hands. "Get on your oil-clothes and stand by the halyards," was the order. Hardly had I begun to pace the deck again, when a squall struck into our sails with a force which strained every thread of the bellying canvas, and threatened to carry away the spars or drive our little schooner beneath the sea. Feeling the vessel settling I shouted to the man at the wheel, "Let her come to!" and to his watch-mate, who was standing by the weather dories, looking out, "Let go the mainpeak halyards, Jerry!" At the same time I sprang to the main throat-halyards and tried to get them clear, but they were made fast in some unusual way, and in the darkness I could not tell how. In the mean time our little craft came near going to the bottom. She was under water from her cat-head to her taffrail on the lee side. The man at the wheel had to get upon the wheel-box, the water was so high where he stood. When he first heard my order he put the wheel down, but finding the vessel was going so low he became frightened, and kept her off before it again, thinking that the safest thing to do. The man I sent to the peak-halyards, though he was floated off his feet by the rush of water on the lee side of the mainmast,

managed to get the halyards clear and let them go by the run. This reduced the sail considerably, and the first fury of the squall being past the schooner shook some of the water off her deck, and though she was still running at an appalling rate she kept afloat until we could shorten sail still more.

While all this was happening, which took but a few moments, finding I could not clear the throat-halyards and, execrating the "peddler" who had made them fast, I jumped to the companion-way and sung out to the men below, "Jump up here, boys! Jump for your lives, and let's get the sail off of her!" Up they rushed, and we soon had the mainsail and jib down, and, under her foresail, the Marion once more rose buoyantly over the waves. We double reefed the mainsail and took the bonnet out of the jib and put them on her again, determined, of course, to make all we could out of the fair wind. It was foggy at 8 a. m. At 10 o'clock the wind had hauled so far to the westward that we could not head our course. At 11.30 a. m. the fog cleared off and the sun came out, so that I got a meridian observation. Our latitude was 44° 13′ N. At 12.30 p. m. there was a moderate breeze W. and we turned out the reefs and set all sail. At 5 p. m. the wind was backing to the SW., and the barometer, which had been falling slowly since morning, then stood on 29.50. At 6 p. m. there was a smart southerly breeze. At 8 o'clock the wind changed very suddenly to W., and blew so heavily that we reefed fore and aft. Feeling very much fatigued I turned in after everything was set in proper shape, having first told the watch to pass along the word for the men who came on watch later to keep their eyes peeled and if there was any change in the wind, either in force or direction, or if it looked squally, to give me a call. "Ay, ay, sir," was the answer down the companion-way; and taking off my oil-clothes but leaving my boots on and my sou'wester within reach of my hand, ready for a quick jump on deck, I crawled wearily into my bunk to get the rest I so much stood in need of, as I had got only one hour's sleep in the previous thirty-nine.

Friday, March 15, 1878.—"*Say, skip! it looks wild and squally, too, to wind'ard,*" *was the* call that awoke me at 1 a. m. I sprang out, all standing, and grabbing my sou'wester in one hand as I went, I started for the companion-way to take a look at the weather. The watch had already gone on deck, and was standing on the quarter, waiting for my decision. To windward were heavy masses of dark, inky clouds, that appeared to be driven and whirled around by the wind. "Rouse 'em out forward; and then stand by the foresheet!" I shouted to the watch, while I dodged below to call the after crowd, and to get my oil-clothes on. The squall was not so bad as it looked, but it blew strong, though we took in no sail, since the men were stationed at the sheets and halyards ready to let them run if necessary. The wind at this time was W. by N., blowing heavy, but towards morning it backed to W. and moderated some. At daylight we shook the reefs out of the mainsail and foresail. During the forenoon the wind was quite moderate, and we set the staysail. At noon the sky was overcast, as it had been all the first part of the day, precluding the possibility of getting any observations. Our position at noon by dead reckoning was 45° north latitude and 57° west longitude. We tacked at noon and stood to the southwest. The wind at this time still continued moderate, notwithstanding the barometer was down to 29.55. At 2.30 p. m. the wind hauled to about north. It was moderate at first, but later it blew up fresh. We sounded on the eastern part of Banquereau at 7 p. m. We took in the staysail at 8, and reefed the mainsail at 11.30 p. m. The air at this time was growing cold, and the wind backing westerly, blowing heavy with strong puffs. In the squalls the Marion had all she could do to stand up under her canvas and she went surging along, through the choppy head sea, with her lee side buried, and showers of spray flying over her bow almost to the top of her reefed mainsail.

***Saturday, March* 16, 1878.—At 5 a. m. the puffs came so heavy that we double reefed the**

foresail and took the bonnet out of the jib. We sounded at this hour on the southwest part of Banquereau in 70 fathoms. After the jib and reefed foresail were set, we steered W. by S., and at 9 a. m. sounded on the Western Bank in 52 fathoms. It has been cold during the past night and this morning, and the vessel has made considerable ice. At 10 o'clock a. m. we saw two vessels at anchor to leeward. At noon we shook the reef out of the foresail. At 2.30 p. m. turned the reef out of the mainsail and put the bonnet in the jib. The sky at this time was dark and overcast; barometer 30. At 5 p. m. I sent a man aloft to lash the backstay outriggers to the after cross-trees, and then we set the staysail. An hour later we sprung the topmast, at the mast-hole below the cap, and took the stay-sail in. At 7.30 it was moderate and we set the gaff-topsail. It still continued cold. If I had thought, when we passed those vessels, that it would have moderated so soon, I should have stopped and had a try for halibut; it is now too late to repent.

Sunday, March 17, 1878.—This morning was fine and clear, with a moderate breeze, which was gradually backing to the westward, and with some indications of a southerly wind. At 9 a. m. we tacked to the northwest, and having previously put a lashing around our topmast, where it was sprung, we set the staysail. Our position at noon by observation was 42° 40′ north latitude, and 61° 39′ west longitude. Longitude at 4 p. m., 62° 05′ W. There was a light breeze WSW. in the afternoon, and St. Patrick's day has been the only fine one that we have seen since March came in.

Monday, March 18, 1878.—At 4 a. m. the wind was SE. by E., breezing up fast and accompanied by rain. We took in the light sails. At 7 a. m. the wind was ESE., blowing heavy in the rain-squalls. We took in the mainsail, reefed and furled it. At 11.30 a. m. there was less wind, and we set the whole mainsail. At noon the wind veered some to the southward, but soon died away almost calm, leaving the sea all up in heaps. All we could do was to keep right before the sea. Fortunately we could do this and still be on our course. After 2 o'clock the sun came out bright and clear. I got a set of altitudes of the sun and worked them out by "Sumner's method." At 4 p. m. latitude 42° 42′ N., longitude 65° 22′ W. In the last part of this p. m. there was a brisk southwest breeze.

Tuesday, March 19, 1878.—At 3.30 a m. the wind came from the northward and there were indications of a strong breeze. We clewed up the gaff-topsail. There was a good whole sail breeze all the forenoon, but about noon it moderated and began to back to the westward. We set the gaff-topsail at noon. Latitude by meridian observation, 42° 56′ N. At 2 p. m. the wind was W. and we tacked and stood to the northward. At 2.30 p. m. there was a moderate breeze W. by S., and we set the staysail. Barometer at this time 29.70. At 4 p. m. I got an observation and found our longitude to be 68° 12′ W. During the latter part of this p. m. the wind was light and variable.

Wednesday, March 20, 1878.—At 3 a. m. we made Matinicus Rock lights, and a few minutes later we saw Monhegan light. At 6.40 we tacked between Matinicus and Monhegan. There was a fresh breeze NW. by W. at this time, and I noticed that the barometer had fallen considerably since last night. At 9 a. m. we passed to the northward of Monhegan. There was a strong whole sail breeze from NW. at this time. From Monhegan to Cape Elizabeth, which we passed 12 miles to leeward of, the Marion had all she could "smother to," as some of our men remarked. Sometimes in the flaws we had to "light her up," for a minute or two, to shake off the water, and then we would give it to her again. At 3.30 p. m. we could carry it no longer, so we hauled down the mainsail and double-reefed it, and at 4 o'clock, when just to the westward of Cape Elizabeth, we had a very heavy white squall. There was a large coasting schooner to windward, and seeing her douse her canvas gave us a good warning. From the top of the house I saw it coming over the water, rolling up a feather white sheet of foam and spray before it. "Haul down the foresail and put a double reef in it," I shouted out to the men who were waiting for the order. We had,

besides the reefed mainsail, the whole jib set, and I thought it would burst when the squall struck into it. So I sang out at the top of my voice, "Leave the foresail and man the jib-downhaul, and let's get the jib down before it goes to pieces." All being ready, the halyards were let go, but it was a hard job to haul the sail down. The force of wind striking in the sail would send it surging up and down the stay, as though it would tear itself clear off the hanks. After it was down we took both bonnets out, and setting that and the reefed foresail, we let the vessel go to the westward again under her double reefs, which were quite enough, for she frequently buried her lee rail and filled the lee side with water. We passed Thatcher's Island at 9.30 p. m. Just before midnight we came to anchor off the steamboat wharf, in Gloucester harbor, and having furled the sails, &c., we hoisted out a dory, and all the married men went home.

Thursday, March 21, 1878.—After breakfast, I went down to the fresh-halibut establishments and tried to sell our fish. Halibut were very low, and the gentlemen who composed the halibut firms did not seem inclined to make any offer, so I determined to go to Boston for a market. The Howard, which got in this a. m., was going with us, but when the "hawkers" found we were about to start, they came down and made us a more liberal offer, and we sold to the Atlantic Company for 3½ cents per pound right through for white and gray. We hove up our anchor and dropped into the halibut wharf, but did not take any fish out to-day.

Friday, March 22, 1878.—We took our fish out this forenoon and hauled to our own wharf at noon. We weighed out 20,000 pounds. Our net stock was $334.40, and share $11.44. It is quite needless to make any comments on these two last trips. Let it suffice to say that we are not the only ones who have made poor fares; even moderately good trips, being an exception rather than a rule this winter. Even with large fares of fish, as we had on our last trip before this, little could be made owing to the low price.*

Friday, January 24, 1879.—It being understood that we should sail to-day, the boys all put in an appearance at the wharf between 8 and 9 a. m., many of them bringing under their arms a small calico bag containing a supply of clean clothes for the trip, and nearly all getting a quantity of tobacco and pipes at the store; the order to the clerk generally being as follows: "Say, Archie, give us two pound terbaccer and a half dozen T. D.'s" (the common clay pipes with "T. D." marked on the bowl.)

A noticeable absence of shore clothes, the hasty running for this and that article forgotten until the last moment, and the pulling here and hauling there, gave evidence that a "start" was contemplated.

In the mean time the cook built a fire in his cooking stove and began making preparations for dinner.

All were ready at last, and just before noon the sails were hoisted and we filled away from the wharf. As the city clock struck twelve we passed the "fort," beating out of the harbor with a moderate southwest breeze.

After passing Eastern Point, at the harbor's mouth, we set the staysail and shaped our course E. by S. for the Banks, and so as to pass several miles to the southward of Cape Sable, Nova Scotia.

In the mean time the ropes were coiled, dories turned bottom up and securely lashed, and the vessel pumped out; while our ears, as we turned the "Point," were pleasantly greeted by the

*The two trips made in the beginning of 1878, the second of which has been described in the foregoing pages, were the most unremunerative I ever made. The one alluded to above will serve as an example of the extreme of poor fares, not so much in the quantity of fish taken (for profitable voyages have often been made with no more) but as showing both a limited catch and a low price. On the previous trip, though a large quantity of halibut was taken, the financial results were even worse than those given above, the men sharing only a little more than $8 apiece.

clang of the cook's dinner bell, calling us away from "straightening up things on deck." The crew is divided into two gangs for meals, the table in the forecastle not being large enough to accommodate all. One of the second gang now came aft saying, "I'll keep her along, skipper, while you get dinner;" whereupon I gave up the wheel, which I had held since starting, and went with the first gang down to dinner. For dinner we had the usual first meal at sea, which, hastily prepared, generally consists of boiled salt beef and potatoes, with biscuits, pilot-bread and butter, strong tea, and fried beefsteak. This bill of fare is very much changed as soon as the "doctor" (cook) has time to prepare a greater variety, and, though beefsteak or other fresh meat is rarely seen after the first few days out, the table is well provided with plenty of good raised bread, cakes, pies, duff, &c., and last, though not least, the finest fish are served up in a manner rarely equaled elsewhere.

After dinner the patent log was put out, a note made of the bearing and distance of the land, and then everybody was called aft to "thumb the hat," in order that the watch might be set. All hands stand around an inverted hat, taking hold of it so that their thumbs are on top of the rim. The skipper then turns away his head, and, reaching over, touches one of the thumbs, and then counts around from left to right any number previously decided upon. The first one that the count reaches has the first watch. The counting then begins at the next thumb with "one," and so on until each man knows his watch, and with the injunction, "Remember now, whom you call," the performance ends, and the one having the first watch takes the wheel.

On board of trawling vessels it is very common for dorymates to stand watch together on a passage, and in this case only half of the crew "thumb the hat," they choosing their mates to stand with them. After the watch was set most of the men turned in and took a nap, while one or two busied themselves ganging hooks, &c.

At 3 p. m., the wind having increased to a smart breeze, we took in the staysail and gaff-topsail. At 5 p. m., barometer 30.15; smurry-looking under the sun. The wind increased some after 5, and the sea made up sharp.

A little before 7 o'clock p. m. our vessel took a heavy lurch to leeward, sending her lee rail so far under that, when she straightened up, the deck was nearly full, and several bucketsful came down the companion-way over the lower cabin door, which sets about 18 inches above the deck, wetting the bed-clothes in the lee-bunks, and also the boots lying on the floor. This episode called forth exclamations more forcible than polite from the occupants of the lee bunks, and shouts of laughter from their companions who could see only the ludicrous side of the accident. The sea by this time had risen sharp and choppy, and so frequent were the lurches—the main-boom often going under to the slings—that we soon after double reefed the mainsail. This done, I went below for the night, giving the usual order to "call me if there is any change in the force or direction of the wind."

After the reefed mainsail was set we hauled the log and found that we had made an average of 10 knots since we passed Thatcher's Island. Barometer at 8 p. m., 30.05. Strong breeze all the latter part of this p. m.

Saturday, January 25, 1879.—The wind had moderated some at 7 a. m., and hauled to WSW. Barometer at this hour, 29.70; sky overcast. We shook the reef out of the mainsail and set the light sails.

Soon after breakfast the hatches were taken off and the men took the trawls on deck and began rigging them up by bending the gangings, that had been unbent on the last passage home, into the beckets on the ground line. Each hook before being attached to the trawl undergoes a critical examination, and if dull must be touched up with a file, if crooked, straightened into

proper shape, or, if the hook cannot be fixed so that it will serve all purposes, it is condemned and thrown aside; if a ganging is poor, the hook attached to it is also thrown aside to be reganged. The trawls are marked in various ways with the number of the boat they belong to, and as they are passed on deck each dory's crew stand by to select or claim their own gear. When the marks happen to be indistinct on a good trawl, considerable discussion about the ownership frequently takes place; as all who have to rig new trawls or have some that are nearly worn out are eager to get it, and several will declare it is theirs and point out some peculiarity in the rig which they claim no one else has but themselves. Some put in a claim, just for fun, to make the other claimants talk more earnestly; and considerable amusement is occasioned in this way, the non-contestants always urging on the others and laughing.

At last, all differences being satisfactorily settled, the men take up their stations on different parts of the deck, and the work of "fixing up" the trawls goes briskly on, many of the workers singing some ballad of the sea or telling their chums long stories of experiences which they met with while last on shore.

At 9 a. m. the wind hauled so far to the westward that we took in the staysail and winged the foresail. At 10 o'clock we jibed the mainsail, bringing the main-boom on the starboard side. The wind was quite light after 10, and weather hazy. At 2 p. m. we made Seal Island, Nova Scotia, bearing NE. by N., 8 miles distant. The work on the gear was completed at 4 p. m., and the trawls were stowed below. At 7 p. m. barometer 29.40; wind WSW., and breezing up; sky overcast. The barometer continued to fall, and at 8.30 stood on 29.30 and vibrating very much. The night was intensely dark, with "spitting" snow in the air. I considered the danger of being struck with a squall so imminent that, notwithstanding the wind was light, we took in the gaff-topsail and mainsail at 9 p. m. and furled them up.

Sunday, January 26, 1879.—This day began with a strong breeze WNW., and the barometer, which was on 29.15, indicated still more wind. The night or early morning was exceedingly dark, and having previously taken in and furled the mainsail and gaff-topsail, we double-reefed the foresail at 1.20 a. m., and took the bonnet out of the jib. At this time the wind was increasing rapidly, blowing in sharp puffs, and hauling to NNE., while it grew cold very fast, causing the flying spray to soon congeal into ice on the rigging and such portions of the hull as were not under water when the vessel lurched. At 4.30 a. m. the wind had freshened to a gale, and the sea ran sharp and high, causing our vessel, which was running with the wind abeam, to occasionally take a heavy lurch to leeward. Fearing the dories might be injured if we continued on our course, we furled the jib and hove to under the reefed foresail until 7 o'clock in the morning, at which time we kept off again, the wind in the interim having changed to NNW., which was fair for us, though it was blowing hard.* It was bitterly cold all the morning and ice made rapidly on deck and about the rigging. Nevertheless, we set the jib and riding-sail soon after breakfast, and a half hour later saw a vessel at anchor ahead, which, as we approached nearer, we knew was the Everett Steele. There was no one to be seen on her deck, and as we passed close to her stern our men, most of whom had gathered aft on the quarter, joined in a general shout. This had the desired effect of frightening her crew, and four or five of the Steele's men rushed up, bareheaded and stockingfooted, to be greeted by the laughter and shouts of our fellows as we went dashing by. At 10 o'clock a. m. we passed a brig which was lying to under main-staysail. She was badly iced up, and appeared to be laboring heavily, rolling her lee yard-arms nearly to the surface of the water.

* The schooner Howard, of Gloucester, in which I had formerly sailed, was knocked down and came near being lost in this gale; the Thresher, of the same port, also had her deck swept, and it is believed by many that the Gwendolen, which was also bound to the Banks, went down the same day, since she was never seen afterwards.

To one standing upon the deck of our little schooner at this time, the scene, though grand and impressive, had a decidedly wintry and dreary look. The ice-covered hull and rigging, the dark masses of snow-laden clouds driven to leeward by the gale, which shrieked and whistled through the ropes and lashed into the wildest fury the foam-flecked waters, piling them into huge waves, was a sight that, once seen, could never be forgotten. But on we went, now plunging down the side of a great wave, again lurching heavily, filling the deck with water, which, as the vessel straightened up again, went dashing over to the weather-side, often out over the rail, and some of it finding its way, through the binnacle, into the cabin.

The remark of one of our boys that "any one who can't swim had better take a back seat" was certainly very apt, but the gravity of the situation, and the dangers incident to running in such a gale, with the sea on the quarter, were better expressed by the order, frequently shouted to the man at the wheel, "Watch her sharp, now! Keep your eye to wind'ard, and if you see a big one coming, swing her off and let her take it stern-to."

During the afternoon there was a nasty and dangerous cross-sea running, rendering it extremely unsafe to continue on our course during the night. We therefore took in the jib and furled it before dark, and at 5 o'clock p. m. hove to under double-reefed foresail and riding-sail. At 7 p. m. the gale still continued with undiminished force, but, like a gull with its head under its wing, our little vessel rises and falls, safely breasting the foam-crested waves as they go seething by, leaving behind them a phosphorescent track, which lights up the surrounding darkness, in a peculiarly weird manner. Thus closes this day, the events of which I now sit down to write before turning in for the night.

Monday, January 27, 1879.—We kept off again at 6 a. m. At this time the wind still blew a gale. The sky was overcast with heavy leaden-looking clouds, varied occasionally by a wild-looking black and scurrying snow squall, driving along to leeward. The barometer had risen to 30.00. It still remained as cold as yesterday. We set the jib at 7, and shook the reef out of the foresail at 7.30 a. m. The wind had lulled some at this time, though it still blew heavy in the squalls. When these struck in the sails, the Marion would tremble and quiver like a leaf, and, settling down to her work, roll up the white water under her bows, sending sheets of foam and spray hissing off to leeward. At 10 a. m. we passed about half a mile to windward of a large brig rigged steamship. She was heading to the westward and had fore and main trysails and close-reefed fore and main topsails set; was badly iced up and going slow. As a general thing we go along first-rate. Sometimes, however, our schooner takes a heavy lurch to leeward, sending the lee rail under out of sight. When she straightens up again the water rushes to windward, often going over the weather rail, but more frequently filling the binnacle, and thereby finding its way into the lee bunks, and calling forth emphatic exclamations from those who are thus unfortunate enough to have wet boots and bed-clothes. The clouds were broken at noon. I got a meridian observation and found our latitude to be 42° 39′ N. We made an average of ten knots this forenoon. The wind decreased a little in the afternoon, and there was a decided change in the temperature, so much so that the ice on deck grew softer. At 4 p. m. a "flopper" broke over the quarter, some of which came into the cabin and wet the book in which I am writing my journal. This is a bad time for writing, but I shall not soon get a better chance, and this one must therefore be improved. The wind veered gradually to the westward in the afternoon, and at 6 p. m. was WNW.; barometer, 29.95. At 8.30 p. m. there was somewhat less wind and smoother sea.

Tuesday, January 28, 1879.—The wind moderated gradually after midnight, and at 2.30 a. m. called all hands, unbent the riding-sail, and set the mainsail and staysail. Light baffling airs and calms at 6 a. m., with indications of an easterly wind. Barometer, 30.10. At 7.30 a. m. a light breeze sprang up from SE. by E. We tacked, and headed to the eastward on the starboard tack;

set the light sails. All hands busy this morning clearing the ice off the deck and rigging. The sky overcast all day. There was a moderate breeze all day from SE. to SSE., and the barometer remained steady. Our position at 4 p. m. by dead reckoning was 42° 32′ north latitude and 57° 2′ west longitude. At 7 p. m. the wind had increased to such a smart breeze that we took in the light sails. The latter part of this p. m. there was a strong whole sail breeze, as much wind as our vessel could swing her three lower sails to.

Wednesday, January 29, 1879.—There was a good whole sail breeze the first of this a. m. The morning broke red in the east, but overcast elsewhere. Barometer falling; on 29.85 at 6.30 a. m. The wind at this time was SE. and freshening, and our schooner had all she could stagger under. We double reefed the mainsail and took the bonnet out of the jib at 7.30 a. m. The wind blew steady and strong all the forenoon, but lulled some at noon and backed a trifle to the eastward; rain and hail showers. At 3.30 p. m. we changed the color of the water from dark blue to a whitish green. We shot to in the wind and sounded, but got no bottom with 150 fathoms out. The wind freshened again at 1 p. m., and all the afternoon it blew steady and strong, accompanied with rain and hail. We tacked at 4.45 p. m. and headed to the southward, with our port tacks aboard. Barometer at 8.30 p. m., 29.60. At 11 p. m., the wind having veered some to the southward, we tacked again, and headed to the eastward on the starboard tack.

Thursday, January 30, 1879.—The first part of this a. m. there was little or no wind, but as the barometer was down to 29.50 I expected a change to the westward; therefore I concluded to leave the reef in the mainsail until after breakfast, when, a light breeze having sprung up from the SW., we set the whole mainsail and staysail. At 8 a. m. saw a four-masted steamer going to the westward. Our position at noon was 44° 17′ north latitude and 54° 30′ west longitude. Barometer at noon, 29.40. When the men learned the position they began sharpening their bait knives and fixing other things preparatory to setting the trawls. Longitude at 3.20 p. m., 53° 46′ W. Barometer at 7.30 p. m., 29.55, at which time there was a fine southwest breeze, but later the wind moderated. We sounded at 10 p. m. in 110 fathoms, but as there were no vessels in sight we hauled to nearly by the wind and steered SSE., along the western edge of the Grand Bank.

Friday, January 31, 1879.—The early part of this a. m. it was calm. At 6 a. m. light WNW. breeze. Barometer, 29.40. We sounded at 6 o'clock in 65 fathoms, and soon after we saw two fishing vessels (one under sail and the other at anchor) to the SW. of us. We hauled aft our sheets and steered for the one at anchor, which proved to be the Magic. I spoke her. The skipper reported halibut very scarce on all parts of the Bank where he had tried or had heard from. He told me that the schooner under sail was the William Thompson. We saw two more vessels at anchor to the NNW., just in sight. We set the staysail and worked up to them; they were the Addison Center and A. M. Williams. I went aboard of the Center. She lay in 160 fathoms. The skipper told me that he got 7,000 pounds of halibut yesterday, but only 500 pounds to-day, and he was going to get under way and shift his position. He says that there has been plenty of fish here, and their present scarcity proves that they are on the move, as they usually are at this season. He also said that all the fleet had left the southern part of the Bank, and thinks many of them have gone farther to the northward. I had previously formed the same opinions in regard to the movements of the vessels and fish. So after a brief stay I returned to our vessel, filled away, and stood to the northward again. At noon we spoke the Alice M. Williams at anchor in 170 fathoms, and soon after the Gatherer in 160 fathoms. Both of them had done very poorly and were heaving up their anchors. These vessels were anchored from latitude 44° (where the Magic lay) to about 44° 8′ (where the Gatherer lay). We spoke the George W. Stetson at 1.50 p. m. in 80 fathoms, and about 44° 17′ latitude. She was heaving up, too, not having taken any fish

to-day. We saw the Laura Nelson under "bank sail" standing to the northward, but did not speak her. We worked to windward all day until we got up to about 44° 25′ north latitude. At 5 p. m. we passed astern of the Polar Wave, but as it was getting late in the afternoon I concluded not to speak with her. The wind, which had been increasing since noon, and was now NW., blew a stiff breeze at this time, as much as we could carry the three lower sails to, and it looked wild and squally. The barometer was down to 29.25, which, with the appearance of the sky, made me apprehensive of a considerable increase of wind, therefore I thought best to anchor in shoal water. We anchored a berth NNE. of the Polar Wave, in 90 fathoms. We also saw two more vessels at anchor just in sight to windward. The A. M. Williams spoke us this evening, and later she anchored a berth NNE. from us.

Saturday, February 1, 1879.—This day begins with strong west-northwest wind; sky overcast with dark heavy clouds; barometer at 6 a. m. on 29.15. The clouds were broken at noon, which enabled me to get an observation of the sun; latitude 44° 25′ N. By an afternoon "sight" I found our longitude to be 52° 58′ W. I have a different chronometer this trip from that I had before, and I think it is a better one.

The wind blew steady and strong all day; not heavy, but still too much to send dories out. There were some snow squalls in the forenoon, but at noon and during the afternoon the clouds looked broken and fine, although the barometer still keeps low, as in the morning. The Gatherer passed across our stern this afternoon, and later she anchored a berth to the westward of us. We caught a halibut this afternoon on a "bull-tow."* Two of our men are on the sick list with very bad colds, and as I have to be both nurse and doctor, I am busy most of the time.

Sunday, February 2, 1879.—The first part of this a. m. it was calm, but as the barometer was falling instead of rising, we waited until daylight before we put our dories out. At daylight there was a light southwest air and the weather looked clear and fine. Barometer 29.05. We set 8 skates of trawl, baited with herring, in order to get some codfish, &c., for bait. Went to haul at 10.30 a. m. The wind at this time was breezing up SSW., and it looked wild and threatening in the west and northwest, and as the glass was so low I had some anxiety lest some of the dories would get caught out in a squall. We got about 1,000 pounds of small halibut. About the time that the dories got aboard the wind blew up smart, so we took them in on deck. Baited 12 skates of trawl at 1 p. m. I saw the Gatherer's flag in the rigging for her dories to go aboard. It was blowing strong at that time and looked very wild, but at 2.30 p. m. it was calm; such are some of the changes and uncertainties of the winds and weather here. When the wind died away we hoisted our dories out and set the 12 skates of trawl we had baited. The barometer has been down on 29.00 nearly all day.

The latter part of this p. m. the sky was cloudless. Since it was calm, and a bright moon shining, it justified the remark of one of the men, who asked, "What in thunder ails that old barometer? A finer night than this never shone out of the heavens." There is a heavy ground-swell, however, which tells quite plainly that a gale is blowing at a distance.

Monday, February 3, 1879.—We had a rain-squall before daylight. At 6 a. m. there was a brisk breeze SW. by S. The weather to windward looked dirty, and the barometer was down to 28.90. The sick man was quite comfortable in the morning. He said he felt "first rate." I think with care, he will come out all right in a few days, but he has had a narrow escape from a fever. Of course, on account of his sickness, I had to go in a dory myself this morning, and my parting injunction to

* "Bull-tow" or "boulter" is the Newfoundland vernacular for trawl-line. Bull-tow with American fishermen is a short piece of trawl (15 or 20 hooks) set from the vessel, with one end allowed to swing free with the tide; the other made fast to an anchor. The bull-tow is lowered carefully down to prevent the hooks from fouling the buoy-line. After it is on bottom the buoy-line is made fast somewhere on the after part of the vessel, and it is generally allowed to remain out from two to four hours before it is hauled.

all hands, as we left the side, was: "Now, boys, you all know that the glass is low, and you must make your own almanacs. If you see a squall coming, or find that it is breezing up, you'd better strike for the vessel." Our trawl was to windward of the beam. We pulled for the outer buoy, but before we got out to it a wild-looking snow squall was coming down on us like a race horse from the WSW. I thought by the looks of it that it would "make things hum" when it struck, and said to Phil. Merchant, my dorymate, "I think we'd better slew around and scatter for the vessel. We're to windward, and are all right ourselves, but if the squall strikes as heavy as it looks, those fellows to leeward can never pull up in the world, and the best thing we can do is to get aboard as soon as we can and pay our dory down to them." Accordingly we kept off and pulled for the vessel, but before we got far the squall was upon us. It blew smart for awhile, but there was not as much wind and snow as I had expected there would be. Three of the dories reached the side just after we did, but there were two others out, one which was dead to leeward and one to windward, the crews of which held on. The trawl which the men in the lee dory was hauling parted just as the squall struck, and they tried to pull up. At first they could not gain any, but after it lulled a little they made out to reach the dory which we had paid down to them and hauled up by the buoy-line. The dory which was to windward got about a skate and a half of trawl, but as it began to blow hard again after a little while, the wind also veering westerly, the men cut the trawl and came aboard. One of the dories got a hole knocked in her side alongside of the vessel, which we repaired after they were all in. We bent the ridingsail after all hands got aboard and hoisted it up. At 8.30 a. m. wind W., blowing a smart breeze. One of the men is catching some kittywake gulls for a "pot-pie." At 10 a. m. strong and very dense snow squalls. At 11 it was blowing heavy; we stuck out 100 fathoms more cable. At 1.45 p. m. it blew a gale W. by N., with a bad sea running. We stuck out some more cable; put all the gear below; set the dories amidships; reefed the foresail and ridingsail, and made all ready for a heavy gale.

A sea-hen (great skua gull) came quite close to the vessel to-day, but, although I was anxious to obtain so rare a bird, it blew so hard that it would have been only useless cruelty to shoot it, for it would be impossible to get it if I succeeded in killing it.

The wind gradually veered toward the NW., and at 5 p. m. was NW. by W., still blowing a gale; barometer 29.10. At 9 p. m. wind W. by N.; barometer 29.30.

Tuesday, February 4, 1879.—At 6.30 a. m. a fishing schooner passed across our bow under double-reefed foresail, ridingsail, and jib, with both bonnets out. At this time the wind was W. and not blowing so hard as it blew yesterday. Sky overcast; barometer 29.35.

After breakfast we began to heave in cable. It was a slow, hard job, but we managed to get 100 fathoms of it in at 10 a. m. There were frequent snow and hail squalls and some breaking seas in the forenoon. After dinner the weather looked a little better and we went out and hauled our gear. We lost one skate of trawl and got 2,000 pounds of halibut. We began to heave up at 3 p. m. I saw several vessels under way this afternoon. At 5 p. m. wind WSW.; sky overcast; barometer 29.55.

We got our anchor up at 6.30 p. m., set bank-sail and staysail, and stood to the NW. on the wind. We dressed our fish and baited twelve skates of trawl. Our sick man was much better this afternoon. He helped us heave up the anchor and baited his trawl. The wind was light in the evening and in the last part of this p. m. nearly calm.

Wednesday, February 5, 1879.—Calm in the first part of this a. m., but at 2 o'clock it began to breeze up, and at 6 a. m. there was a fresh northwest breeze and windy looking sky; barometer 29.85. We kept under way, working to the NW. all of the past night. At 7 a. m. we saw two

vessels at anchor to windward, which were just in sight. At 8 o'clock there was a smart whole sail breeze, with snow and hail squalls, sun-dogs, and rainbows.

At 10 a. m., having worked up to the vessels we sighted in the morning, I went aboard of the N. H. Phillips, Capt. Jerome McDonald. He was lying in 140 fathoms and was getting good fishing; had 8,000 pounds of halibut, or thereabouts, on deck, and one-third of his gear yet to haul. I made only a brief stay. The Alice M. Williams lay a berth to the northward of the Phillips. We worked up and passed across the bow of the Williams and anchored a berth W. by S. from her in 130 fathoms. We were then about a mile and a half from the Phillips. We set our gear at 1.30 p. m. The tide ran to windward, so we put three men in a dory and set the trawls in four strings, three skates in each, in that direction. By "doubling up" in this manner we had in each dory two men to pull—that number being required—and one to throw the trawl. I went out in one of the dories. By the time the trawl was all out it blew a strong breeze, and there were some very sharp combing seas, which were bad for a dory. We all got aboard safe, but our dory came near swamping, or upsetting, while we were pulling before the wind for the vessel. A combing sea caught her on its crest and broke over and around her. For a moment she seemed like an egg-shell amidst the great mass of snowy foam which seethed and whirled around us. Fortunately she shipped but little water, and, thanks to steady, cool hands at the oars, she came out of it all right. Two of the Alice M. Williams's crew were aboard of our vessel while we were out setting the trawls. They had set their trawl about the time we put ours out, and, as their outer buoy was very near our vessel, they came aboard of us and staid a few minutes. They said that they got about 4,000 pounds of halibut to-day, but I think they are in too shallow water to catch many fish.

Our position by dead reckoning is 44° 31′ north latitude and 63° 41′ west longitude. At 8 p. m., no change in wind or weather; barometer, 29.55.

Thursday, February 6, 1879.—This morning was dark and gloomy looking, with a fresh west-northwest breeze and rough sea; barometer, 29.60.

As soon as it was light we put the dories out. Five of them went to haul the trawls, while the sixth one set three skates of trawl, which we baited yesterday afternoon after we had set the others. Our sick man had so far recovered this morning that he was able to take his place in his dory again. The wind died away soon after the men went out, and in the afternoon it was almost calm, though the sea still kept up. The Williams got under way at noon, and anchored a berth NW. from us at 5 p. m. We lost two skates of trawl, and another, which is afoul of the cable, I do not expect is any better than lost. On the remaining twelve skates we got about 12,000 pounds of very fine halibut, both as regards size and color. I think about half of them are white. Their weight varies from about 30 to 80 pounds each; very few go over 100 pounds. We set eighteen skates of trawl this p. m. After the men returned from setting, we hove in 100 fathoms of cable, and then dressed and iced the fish.

At 5 p. m. the wind breezed up NE., and later it hauled to ENE. We had light showers of hail in the evening. At 8 p. m., wind light; barometer, 29.55. We got through work at 9.20 p. m.

Friday, February 7, 1879.—This morning broke dark and cloudy, but, as there was only a moderate northerly breeze and a fair prospect of getting our gear without any danger, I did not feel like complaining (a rarity for a fisherman). Barometer at 6 a. m., 29.65. We got only 6,000 pounds of fish to-day. Nearly all of those were on the western ends of the trawls, which leads me to think that the halibut are working that way. We therefore began to heave up the anchor as soon as we had eaten dinner (11.30 a. m.), and had it on the bow at 2.15 p. m. There were frequent snow showers while we were doing this. The wind backed to NW., but still continued moderate. Under bank-

sail and staysail, we worked to windward of the Williams, and at 5 p. m. anchored a berth NNW. of her in 130 fathoms. I spoke one of her dories while we were beating up to our new berth. The men told me that they got 15,000 pounds of halibut to-day. After anchoring, we set eighteen skates of trawl. It was snowing when the men went out to set. Barometer at 5 p. m., 29.60.

I saw five vessels under way to-day; one under whole sail beat up from to leeward, and now (5.30 p. m.) is up to the Williams; one to leeward 6 or 7 miles made a short berth; one to windward about the same distance made a short berth. I saw two others just in sight to windward, and I think they are running this way, but am not certain. The one I saw under whole sail proved to be the Laura Nelson. She spoke us at 7 p. m., and said there were twenty-five sail of vessels to the southward "doing nothing," which, in fishermen's vernacular, means getting no fish. She anchored a berth NW. of us this evening.

Saturday, February 8, 1879.—The first of this a. m. we had frequent snow-squalls. The day began dark and cloudy, with a strong north-northwest wind. Barometer at 6 a. m., 29.55. The wind gradually increased, until at eleven it blew heavy and there were frequent smart snow-squalls. We stuck out some more cable. The wind blew strong all the afternoon, and there was a rough breaking sea. It is nothing unusual while sitting in the cabin for one to look out of the companion-way and see the water dripping off the end of the main-boom; for when the vessel's stern falls in the hollow of a sharp sea the end of the boom is frequently immersed to a depth of two or three feet. The cook set a short "bull-tow" (18 hooks) this afternoon and caught 6 fine halibut. Barometer at 8.30 p. m., 29.70.

Sunday, February 9, 1879.—The wind blew a gale all of the past night, and at daylight this morning it had abated very little. The wind was northwest, with a bad cross sea heaving from the westward. Barometer at 7 a. m., 29.95.

I feel very anxious about the gear we have out. It is exceedingly trying to one's patience to know that there are plenty of halibut here and to have no chance to catch them. Since a few fine days would, in all probability, enable us to get a good fare, we indulge the hope of soon having better weather. It was colder to-day than I have seen it since we have been on the Bank. There was little or no change in the wind until late in the afternoon, when it lulled a bit and hauled to NNW. Barometer at 6 p. m., 30.15; at 8.30 p. m., 30.20.

The cook caught four halibut on his bull-tow this afternoon. At 7.30 p. m., though it still blew a strong breeze, we began to heave in cable, and hove as short as we dare to do, since if we got too short a scope the vessel might go adrift.

Monday, February 10, 1879.—At daylight this morning a southeast snow-storm was prevailing—a most undesirable condition of the weather. The wind began to breeze up at 2.30 a. m. and freshened very fast, while the barometer fell rapidly, and at 6 a. m. was on 29.85.

With the wind in this direction, all of our trawls were dead to leeward; and as it was blowing smart and rapidly increasing in strength, it was out of the question to try to get them. It is nevertheless very discouraging to have trawls, which are worth hundreds of dollars (and in all probability as many hundred dollars' worth of fish on them), setting so long, with no chance to get them. The longer they remain out the smaller the probability becomes of ever getting them at all. It is difficult under such circumstances for one to muster philosophy enough to endure it with patience.

At 7.30 a. m. it blew a gale. We gave her nearly the whole string of cable (about 375 fathoms we have out), reefed foresail and ridingsail; set dories amidships, &c. Barometer at 8.30 a. m., 29.60. Ten a. m., smart SSE. gale and thick snow. At 10.35 the watch sang out, "Here's a feller drifting down close to us." We were all on deck in a minute, but the first glance showed

that the vessel was drifting clear of us, and with the remark, "Oh, he's all right; he'll go clear of us," the crew went below again, all except the watch and myself. I tried to make out what vessel it was, but was unable to. The weather was so thick that, although she drifted by us not more than 150 fathoms distant, I could only see the blur of her hull and spars showing indistinctly through the snow and flying spray. I thought at first it was the N. H. Phillips, but afterwards, when the snow lit up, I saw that it was the A. M. Williams, and one, which probably was the Phillips, was also adrift about 2 miles to the eastward of us.

Barometer at noon 29.45, and indications of a sudden change of wind. At 12.30 p. m. the wind struck in a squall from the westward, but it did not last long. As soon as it moderated we manned the windlass and began to heave in cable. We had in 100 fathoms of cable at 3 p. m., at which time the wind began to breeze up again and the sky looked wild and squally. The Nelson must have gone adrift, too, for when the weather cleared she could not be seen.

A little land bird (a snow bunting) came aboard this afternoon. As an evidence of the strength of wing possessed by these little creatures it is only necessary to mention that the nearest land is Cape Freels, Newfoundland, 128 miles distant.

The southeaster and westerly squall left the sea all up in heaps, which, with the squally appearance of the weather, made it extremely hazardous, if not foolhardy, to attempt to get any of our trawls. After we got the cable stradded up, &c., at 4 p. m. we hoisted out a dory to go and look for the inner buoys. Three men went in her, who were told to see how many inner buoys they could find, and to lift them out of the water and see if the buoy-lines were chafed, &c. Strict orders were also given to them not to go far from the vessel if they valued their lives, for it was liable to blow a gale in fifteen minutes. They saw only two of the inner buoys, which were near the vessel. They also saw some of the other buoys, and disregarding orders, as well as their own safety, pulled out towards them and went quite close to them. They got back again just before dark in the midst of a thick snow squall. Fortunately the wind did not blow very heavy, or in all probability these men would have had a narrow chance to save their lives. It was taking too much risk for nothing, and it can be said of them that they are of that class whose courage can be more commended than their judgment.

At 6 p. m. it was nearly calm, and we hove in to a short scope, for I feared our cable might chafe on the bottom. Just as we got through heaving a puff struck NNE., but lasted only a short time. Barometer at 6 p. m., 29.25. The Williams spoke us at 7.15, and we ran down to where she was this morning and anchored. I saw her riding light at 7.45. At 8 p. m. the wind struck in a very heavy squall N. by W. This was what I had been expecting. We mustered on deck in a hurry, and stuck out nearly the whole string of cable. By the time we had the cable out, the wind, which was gaining in force, began to screech, and all the latter part of this p. m. it blew a hurricane N. by E., with dense snow. We had two men in a watch, one stationed on the foregaff and the other on the main, so as to be out of the way if the vessel shipped a sea. In this way the men kept the best lookout they could. But looking to windward is hardly possible in such a gale, with the snow, sleet, and spray driving furiously to leeward and nearly blinding whoever turns his face to windward. But the attempt must be made, for in such a gale there is imminent danger of some other vessels driving down across our hawse, and if these should not be seen in time for us to cut the cable, and thus prevent a collision, both would sink. One or the other of the watch occasionally comes below to look at the clock and ascertain how the time is passing, and also to get his breath. As they brush the snow and frozen spray from their eyes, hair, and beard, they often remark, "I tell yer what 'tis, this is a tough one. If this haint a regular old-fashioned screamer I never saw one." They are, however, confident of the ability of the vessel to ride

the gale out in safety, and to the question of "How does she ride?" they reply, "Ride? Why, she shames the gulls! But there's some wild seas going; some regular old tearers that give her all she can do to climb over them." *Barometer at 10 p. m., 29.45.*

Tuesday, February 11, 1879.—This morning at 7 o'clock the wind still blew a heavy gale, but its fury did not compare with that of last night. There was a high combing sea, but our vessel rose bravely over the sharp waves. The air was as it has been, quite cold, and there was some ice on deck. All the damage the vessel has sustained, so far, is one broken checker plank and the cleats knocked off two others; a damage so trifling as to be hardly worth mentioning. The barometer, at 7 a. m., stood at 30.05. There were no vessels in sight this morning, so it is evident that the Williams and Phillips both went adrift again last night. The sky was generally overcast in the morning, though here and there a patch of blue showed through the rifts in the clouds. It was a wild scene around us, but one which has so often been described that a repetition would be words wasted.

The little white gulls sit hovering on the water near the stern of the vessel, occasionally rising on a wing to clear a breaking wave, or to pick up any fish offal that may be washed from the scuppers.

At 3 p. m. a brig-rigged steamship passed across our stern, going to the westward, and a half hour later another of the same rig passed, going to the eastward. The wind blew a smart gale until the latter part of the afternoon, when it began to moderate some. At 6 p. m., barometer 30.25.

The men have been variously employed to-day, each to his own taste; some have been making mats out of buoy-line; others patching oil-clothes, reading, &c.; while one poor fellow with a penchant for card playing has been coaxing some one to play a game with him. "Anything you like," he says; "state your game, only say you'll play."

At supper time I ordered the cook to get on his boilers and heat some water, so that we can thaw the strad, and get the ice off the windlass, and later the order was given to the watch to pass along the word to give me a call if it moderated any more. I was called at 10.30 p. m., and we began to heave in cable. The wind at this time had backed to W. by N. and still blew a fresh breeze, making it slow, hard work heaving in cable.

Wednesday, February 12, 1879.—At 1 a. m. we got the "slack" cable (100 fathoms) hove in, went below, and all except the watch turned in again. At this time (1 a. m.) the air was milder, and the ice began to soften up and drop off the rigging and rails in some places. Before going below I ordered the watch to fix up the checker planks, and to tell the next watch to clear the ice off the dories.

The morning broke fine and clear, with a moderate westerly breeze. Barometer at 6 a. m., 30.30. Having had breakfast, our fellows were off to look for their trawls as soon as it was fairly light.

At 7 a. m. two vessels were in sight to the northward of us, under whole sail, heading this way, but as they frequently changed their course it was apparent that they were looking for gear. After awhile they both steered straight for us. They proved to be the Alice M. Williams and N. H. Phillips. Both skippers came aboard to find out if we had drifted any in the gale, for they knew if we still held on they could find their gear by the bearings and distance from our vessel, which they had observed before the gale came on. After shaking hands and the usual inquiries about each others' welfare, one said to me, "Did you ride it out?" I replied in the affirmative, when he continued, "What kind of a vessel have you got? I don't believe there's another vessel on the Bank that rode it out, and I didn't think any could—not in deep water. We've come thirty miles up the edge of the Bank, and there's not a vessel at anchor." I inquired of the skipper of

the Williams when he went adrift, and he replied that his vessel held on only about fifteen or twenty minutes after the squall struck. The two captains made a brief stay, but soon returned to their own vessels, and went in search of their gear.

I got good observations to-day, by which I found our position to be 44° 33′ north latitude, and 53° 46′ west longitude.

The skipper of the Andrew Leighton came aboard at 2.30 p. m. His vessel went adrift in the late gale, and in consequence he lost 18 skates of trawl, which were out, and these, together with previous losses, make 27 skates he has lost this trip, besides 75 fathoms of cable and two anchors. He told me that every vessel that was near where he was went adrift. He reports his trip as 20,000 pounds of halibut, but as he could see no probability of finding his gear, he said he should go home, which, under the circumstances, was about all he could do. The wind at this time (3 p. m.) was SSW., blowing a fresh breeze. After he returned to his own vessel he put the bonnet in the jib and started for home under three lower sails.

We got about 9,000 or 10,000 pounds of halibut to-day. Set twelve skates of trawl at 3.30 p. m. While the men were out setting the gear the Edwin C. Dolliver spoke us and then ran a short berth to the NNW., where she anchored. Soon afterwards the Phillips also spoke us and ran to the northward, how far I don't know, as it came on dark a short time after she passed us. The wind blew up smart at dark. We stuck out more cable and took our dories in before we began to dress the fish. After the dories were in we shoved them up forward as far as we could, so that they would be out of the way of our work. It was 9 p. m. when we got the fish dressed and the dories placed in their proper positions. At this time it was blowing strong and there were indications of a gale. Barometer 30, and falling quite fast. Thinking it best to get everything prepared for a gale before we turned in, I did not take off my oil-clothes, but sat down on the cabin floor to wait until the men in the ice-house got the fish iced. Feeling somewhat fatigued after the work and anxieties of the day, I soon fell asleep, but was awakened at 10.30 p. m., when the ice-house crowd came into the cabin. By this time the barometer had fallen to 29.80, and it was blowing heavily and storming. We manned the windlass, hove in the strad, and then stuck out some more cable and set the dories amidships.

Thursday, February 13, 1879.—At 7 a. m. wind SW., blowing heavily, with rough sea, thick fog, and drizzly rain. Barometer 29.60. At 9 o'clock the wind struck in a heavy westerly squall, and, thinking it would continue to blow a gale, I turned in and went to sleep. I waked at 10 a. m., but not hearing the familiar roar of breaking waves, and howling of the wind, I knew at once that it had moderated. I immediately turned out and inquired of the watch how long it had been since the wind died away. "Only about half an hour or less," he replied. "Why did you not call me before? You knew I wanted to be called if it died away," I said. "Well, I didn't know but it'd blow agin soon; it looks nuff like it," he answered in a dogged sort of manner. It could not be denied that it did look "nuff like it," nevertheless I told him to call the men forward and we would heave in some cable, at the same time rousing out the after crowd. We had hove in only about 30 fathoms before I knew by the bearings of the Dolliver that we were adrift. After the cable was in we found that it was chafed off square as an ax would cut it, and that we had lost 120 fathoms. It is probable that the cable was not on the bottom more than half an hour, and it must have come in contact with a very sharp rock to cut it off so quickly. Although the loss of cable is not an uncommon occurrence, I have generally been fortunate in that respect, never having lost so much before in the eighteen years I have been master of a fishing vessel. This is a special misfortune to us, too, at this par-

ticular time, for the good prospects which we had for obtaining a fine fare of halibut are thus ruined in an hour, since we have not cable enough left to ride in deep water. After we got the cable in, we set bank-sail and worked back to our gear. There was not more than a whole sail breeze at this time, but the sea still ran very high and sharp. As it was too late to haul the trawls before dark (with such a rough sea the gear would be liable to part, even if the dories did not upset), I concluded to keep under short sail through the night and "jog" around the Dolliver and Williams, the latter of which lay a berth to the northward of the Dolliver. I did not dare anchor for fear it might blow up; in which case we should certainly go adrift and thus lose all chance of getting our gear. By keeping under sail we can, if it blows up, run on the Bank into shallow water, only a short distance from our gear, and anchor. When it moderates we can then heave up and run back to it.

I went aboard of the Dolliver at 4 p. m. The skipper said he left home the 1st instant, was in Halifax the 3d, where he saw the Howard, which was in there for repairs. She had been knocked down in the gale of the 26th and 27th of January, had her deck swept, losing anchor and 80 fathoms of cable, also some of her dories. The Dolliver went adrift in the late gale. I returned to the Marion at 5 p. m. Barometer at 5.30, 29.90. Hazy looking in the WSW., but clear elsewhere.

Since there was a fresh breeze at this time we double reefed the foresail and took the bonnet out of the jib, in order to have the vessel under easy sail for the night. At 8 p. m. it was very dark, and we came near getting afoul the Dolliver's bow. Special orders had been given the watch not to cross her bow unless it was at a long distance. They mistook the distance until it was too late to keep off; the wind moderated just then, and the tide setting to leeward came near drifting us afoul of her. As it was, we cleared her by about a vessel's length. We then set the whole foresail, and giving strict orders to the watch not to cross her bow at all, I went below and turned in.

Friday, February 14, 1879.—The first part of this a. m. it was very moderate, wind backing to the SW. The wind, which was very light in the morning, finally died away calm at 9 a. m. We had light showers of rain and hail in the morning; sky overcast, dull, and rainy looking.

At 5 a. m. called all hands, put the bonnet in the jib, and set the staysail. Barometer at this time, 29.95. As soon as it was fairly light we "hove" out the dories, and the men started for the trawls. We got all our trawls and two and a half skates that we had previously lost, on which were 4,000 pounds of halibut, besides what we reserved for bait. The object of saving some for bait was because if the weather looks favorable we shall make a set under sail to-morrow. The last dory was aboard at 1.30 p. m., at which time there was a light southwest air springing up, so we kept off to run to the northward, as it is my intention to go as far as Green Bank, if the wind is favorable. The Dolliver and Williams both got under way and ran in the same direction.

The last part of the afternoon we had light westerly airs and calms. Since there were some indications of an easterly wind, I was in doubt for a while what to do, whether to start for home at once or stop longer on the Bank. At last I concluded to have another trial, and we baited twelve skates of trawl for that purpose just before dark. Barometer, at 7 p. m., 30.00.

Saturday, February 15, 1879.—At 3 p. m. the wind, which had been out as far as E., backed to N. by E., snowing very thick. We hove to for awhile to await developments. The N. H. Phillips spoke us at 4.30 a. m. She was under bank-sail, heading to the NW. We stood along with her, and just before daylight sounded in 65 fathoms, muddy bottom. Barometer, at 5 a. m., 29.90. As soon as it was daylight the Phillips set her mainsail. We did the same, and headed to the westward on a wind. Soon after that I saw another vessel about 7 miles to windward, under whole

sail. The wind at this time had backed to N. by W. and began to freshen up. In the northwest the sky looked squally and unsettled. Under such circumstances I did not dare set out gear, for fear of losing it if the wind should blow up strong. Seeing the crew of the Phillips turning their dories over, I concluded to do the same and start with her for home. All hands were called and we swayed up the lower sails, and after having lashed the backstay out rigger to the after cross-tree, so that the backstay would support the topmast and prevent it from being carried away, we set the staysail. We were astern and a little to leeward of the Phillips when we set the staysail, but soon caught up with her and passed to leeward of her. At noon she was nearly hull down astern.

I have rarely ever started for home feeling so much dissatisfied as now. I was confident of getting a good fare of fish this time, and am quite sure we would have succeeded in doing so if we had not lost our cable. What influenced me to start for home to-day—aside from the loss of our cable—is because I think we will probably reach there about the first of Lent, and may possibly get a better price for our fish at that time than if we arrive later. The wind in the afternoon was puffy and extremely variable, with snow and hail showers. At 5.30 p. m., began to have strong snow-squalls, so we took in the staysail. At 6 p. m. the wind changed very suddenly, in a puff, from WNW. to NNW. It struck our vessel a hard full (the sheets were flat aft), and before she came to the wind it made her show her mettle, for she had all she could stand up under. After this we made an average course W. for about two hours, when it knocked her off again. Barometer, at 8 p. m., 30.30.

Sunday, February 16, 1879.—We had strong puffs of wind all of last night, and at times the vessel had all she could stagger under. At 6 a. m. the wind was steadier and not quite so strong, so all hands were called to sway up the lower sails and set the staysail. Barometer, 30.40 at 6.

We could see the Phillips astern this morning. She was a little to leeward of our wake and probably about 8 or 9 miles distant. Two steamships and a sailing ship passed us this forenoon going east. During the forenoon the wind was extremely variable, and we beaged all the way from SW. to NW. on the same tack. Latitude, at noon, 42° 45′ N. Longitude, 56° 54′ W. Barometer, 30.50. Longitude, at 3.15 p. m., 57° 04′ W. It was very moderate in the first part of the afternoon and calm and fine towards evening. At 9 p. m. a light easterly breeze sprang up and we squared our booms to make all the sails draw. At 11.30 p. m. the cry came down the gangway, "Hear the news there below. The main halyards have parted, and you'll have to turn out and fix 'em." All hands accordingly roused out and hauled down the mainsail. We then spliced the halyards and put a mat over the copper on the jaws of the gaff, which had worn through, and being "rucked up," cut the rope like a knife.

Monday, February 17, 1879.—At 1 a. m. we had the mainsail and gaff-topsail set again. At this time there was a light southeast breeze, which, at 7 a. m., had increased so that we ran along 5 or 6 knots. The sky was overcast with stormy looking clouds; barometer, 30.40. The wind gradually backed to the eastward, and from that northerly until 10.30 a. m., at which time it was NE., blowing a smart breeze, and snowing. The snow cleared off toward noon, and, though the sky was overcast, the weather was clear all the afternoon, with a fine, steady northeast breeze and smooth sea. The barometer remains steady at 30.45. It has been more like summer sailing to-day than anything else, but one may expect that these mild breezes will soon be succeeded by gales that will be anything but gentle in force or pleasant to encounter.

Tuesday, February 18, 1879.—At 2.30 a. m. the barometer had fallen to 30.25. The wind at this time was veering easterly, and blowing a strong breeze accompanied with snow. We took in the staysail and gaff-topsail. At 7.30 a. m. the wind had increased still more and was so far to the

eastward that we could not run our course (WNW.) without danger of jibing the foresail, which would be liable to carry away the foremast head. Not wishing to run winged out when it was blowing so heavy, we took in the mainsail, and having first double reefed it, furled it up and let her run under the whole foresail. Barometer, at 8 a. m., 30.10. We had a very heavy fall of snow this a. m., until 11 o'clock, when it stopped snowing and turned to sleet and misty rain. Wind at this time had increased considerably. Barometer, 30. At 2 p. m. the barometer stood on 29.90. There was not so much wind at this time as during the forenoon, but the sea had made up high and sharp. There was a fine, sleety snow falling. The wind was about east and, as we were running W., we were dead before it. At 3 p. m. we noticed that the fore throat-halyards were stranded. We set the jib, and having first shook the reef out of the mainsail, we hoisted it up in order that she would run fast enough to keep clear of the sea. As soon as the foresail was in we let the vessel come to, swayed up the mainsail, and then kept off again. We first furled the foresail and then repaired the halyards. The wind backed slowly to the northward, but still continued to snow. At 5 p. m., just after supper, a heavy northeast puff struck, and if I had not been ready to let the mainpeak run she would have repeated the performance of last winter, when she came so near going to the bottom in a squall. But this time we had daylight in our favor, which doubtless saved us from disaster. We hauled down the mainsail, set the foresail, hauled down the jib and took the bonnet out and furled it. At 5.30 the weather cleared so that we could see about half a mile, and before dark we could see 2 or 3 miles. Set the jib at 9 p. m.

Wednesday, February 19, 1879.—At 1 a. m. we set the mainsail. The barometer at this time had risen to 30.10. The wind still continued NE., decreasing slightly in force. There was a cold, sleety rain that had coated everything on deck and above deck with ice. I judged we were well up to Cape Sable, and hauled to W. by N., having previously been running W., to go well clear of the cape. At 5 a. m. set staysail and gaff-topsail. It was very cold at this time; barometer had risen to 30.20. At 10.30 a. m. there was a smart breeze NE. by N., and "spitting" snow. Barometer, 30.35. Our position at this time, by dead reckoning, was latitude 42° 55′ N., and longitude 66° 41′ W. There was a good leading breeze all the afternoon, and we went along very smartly. Barometer, 30.35 at 6 p. m.

Thursday, February 20, 1879.—At 12.15 a. m. (correct apparent time) we made Thatcher's Island Lights a point on the weather bow, and, as we headed, we would have just about struck Eastern Point. The wind at this time was veering easterly, with indications of snowing thick very soon, and shortly after snow began to fall, though it did not immediately get very thick. "Beautiful snow" may sound very pretty and poetical, but it certainly is not appreciated very much by one coming on the coast in winter. I was kept in a constant state of anxiety concerning the weather, as there was every appearance of a coming gale.* The lights kept disappearing and reappearing as we neared them, being hidden most of the time, keeping me in suspense between hope and fear; hoping that the snow would not shut down thick before we got in, and fearing it might be so dense as to preclude all possibility of making the land until daylight, before which time it might blow a gale, and compel us to haul off. At last Thatcher's Island Lights were entirely shut in and we saw no more of them; but as it was not so thick to the westward and we had got pretty well in, a glimpse of Eastern Point Light was obtained, and we steered straight for it. The wind in the mean time had hauled out to SE., and began to breeze up smart. As the snow grew thicker and thicker we barely kept sight of the Point Light, although, with every foot of canvas

* One of the most furious gales of the winter was then approaching the coast; the gale in which thirteen sail of George's cod fishermen were lost on the Bank, with their crews of one hundred and forty-three men.

spread, we were running toward it at least 9 or 10 knots an hour. We lost sight of it several times, and when passing by it I do not think we could see objects more than a half-mile distant. We anchored off Harbor Cove at 3 a. m., furled the sails and went ashore. At 9 o'clock this morning there were seven vessels, besides ours, in with fares of halibut, which, with the Polar Wave in Boston, makes nine cargoes on the market to-day. The Alice G. Wonson, Andrew Leighton, George W. Stetson, and Gatherer all left the Bank the 12th instant (three days before we did) and got in this morning. The Alice M. Williams arrived the same time we did, and the N. H. Phillips at 9 a. m. The Nathaniel Webster also got in from the "Gully" last night. So many arrivals at once causes a depression in the market, and as a natural consequence prices rule low. The Stetson went to Boston in the forenoon; all the rest, with the exception of the skipper of the Webster and myself, sold in the forenoon for 3 cents per pound right through for white and gray alike, to take out here. I was offered three cents, but would not sell. The dealers finally offered me 3¼ cents per pound right through, and thinking no better terms could be obtained I sold the trip at that price. We had previously let go our second anchor, and at this time (1 p. m.) it was blowing smart.

Friday, February 21, 1879.—It blew a heavy gale from the NE. last night; this morning there was still a smart breeze and some undertow heaving in the harbor, which is usually the case after an easterly gale. The "hawkers" wanted the halibut to send away, so we took a tug, which towed the vessel into the Atlantic Company's wharf. The undertow made it very difficult to lie at this wharf, the vessel surging back and forth considerably. She parted several lines, and we had much trouble to hold her. Toward noon it was smoother. We finished taking the halibut out in the afternoon, and towed down to our own wharf. We weighed off, heads and all, 36,855 pounds of halibut, all in splendid condition. Fourteen per cent. was deducted for the heads, for which we receive nothing. This deduction leaves the net weight 31,691 pounds. Net stock, $970.26; share of each man, $33.48.

Monday, February 24, 1879.—The William H. Oakes arrived to-day. She was from Green Bank, and had a good fare of halibut. She had a rough time of it in the late gale; she came very near sinking, and her crew had a thrilling experience. She was loaded so deep in the water that the sea made a clean breach over her; and to save her from going down, which they say there was imminent danger of, the crew broke through the cabin bulkhead, and in this way got into the hold and hauled out halibut and threw them overboard. They threw away several thousand pounds (variously estimated from ten to twenty thousand), until she lay better and shipped less water. The Bessie W. Somes also got into Massachusetts Bay during the gale. She ran to make the land, but the snow shut down so thick and the gale blew so heavy that it would have been madness to run longer. She hauled off, but as it blew too hard to carry sail enough to gain to windward, she finally anchored on Middle Bank.* It was blowing very heavy at this time, and there was a wild sea going. After riding awhile she pulled her anchor in two, breaking the shank, a result which proves what a fearful strain there must have been on the cable and anchor. Fortunately, the gale lulled shortly after this, and gave her crew a chance to set sail enough to hold off until the weather cleared. All late arrivals report the gale very heavy, and one must feel thankful to have got in clear of it.

* This is named Stellwagen's Bank on the charts, but is always called "Middle Bank" by the Cape Ann fishermen, the latter name having reference to the position of the Bank between Cape Ann and Cape Cod.

2.—THE SALT-HALIBUT FISHERY, WITH ESPECIAL REFERENCE TO THAT OF DAVIS' STRAITS.

By Newton P. Scudder.

I. GENERAL DISCUSSION OF THE FISHERY.

The demand for smoked halibut maintains a fishery of increasing importance, in which the vessels are employed exclusively in catching and salting these fish. The demand is at present greater than the supply, and it seems probable that in the future this fishery will grow much faster than it has in the past.

In order to understand this prospect of increase it is necessary to inquire from what fisheries the "smoke-houses" obtain their salt halibut for smoking. These are the salt-cod, the fresh-halibut, and the salt-halibut fisheries.

Halibut caught by the salt-cod fishermen are commonly salted and sold to the smoke-houses. In the fresh-halibut business, however, when the quantity taken is greater than the fishermen have ice for preserving and there is danger of the fish spoiling before reaching a market, sometimes part of the fish are salted for smoking, and when the market is overstocked with fresh halibut the surplus is often sold to the smokers and salted. Were either of these two fisheries, or both combined, able to meet the demand for smoked halibut, there would be no inducement to send out vessels on purpose to catch and salt these fish. It is, however, a fact that though halibut were formerly very abundant near the coast of New England and on the banks frequented by the cod-fishing vessels, they have been gradually disappearing from these places, until at the present day the fresh-halibut fleet finds greater and greater difficulty in supplying the market with fresh fish, and the cod fishermen cure less and less every year.

The scarcity of halibut near the coast would at first seem unfavorable to the development of a salt-halibut fishery, but in reality the contrary is true. The fresh-halibut fishery must ever be limited by distance, for only those fish caught comparatively near home can be sold in the market as fresh fish. All others must be salted. But this scarcity, by decreasing the amount of salted halibut furnished by the cod and fresh halibut fisheries, and thus making the demand greater than the supply, encourages vessels to engage in the salt-halibut fishery and to utilize distant fishing banks where the halibut are more abundant. These banks must be more numerous than is at present realized, for the halibut is a widespread species, and may be circumpolar in distribution. It occurs off the Orkneys and to the north of Norway, has been caught in the Arctic north of Siberia, is abundant off the coast of Alaska and British Columbia, supports an important fishery in Davis' Strait, and is a nuisance to the cod-fishermen about Iceland.

In the autumn of 1881 over 432,000 pounds of salt halibut were brought from Greenland, the principal source of supply, but by the following spring the supply had been exhausted, and smoked halibut was out of the market.

We see, then, that the demand for smoked halibut is sometimes in excess of the supply; that the salt-cod and fresh-halibut fisheries furnish less and less every year; and that the halibut, though decreasing near the coast of New England, are very plentiful in northern waters. When we consider that the fishermen, competent in all that pertains to their profession, are especially eager

when encouraged by prospects of making money, what other result can be predicted than a considerable growth of this branch of the fisheries.

OUTLINE HISTORY.—The salting of halibut was doubtless begun by the cod-fishermen as an experiment, and then continued for the winter food of their families. These fishermen, though finding the halibut so plentiful as to interfere considerably with the catching of cod, did not prize them much as a food-fish, and as there was no demand in the market for them, the quantity cured was at first very small. So gradual was the growth of the custom that it would hardly be possible to trace it back to its commencement or to state when salt halibut first came into the market, but from the practice of the fishermen of Marblehead and of other places of salting these fish for winter consumption no doubt arose the market value of salted halibut.

We find that about 1842, before the introduction of ice-houses on board the fishing-vessels, it was customary to bring flitched halibut from George's Bank, and that from 1845 to 1850 the Grand Bank cod-fishing vessels from Beverly, Provincetown, and other places were in the habit of sending flitched halibut to the Boston market, to be there sold as "dried halibut." Since 1850, however, the demand for smoked halibut has been so great that all the salted halibut have been bought for smoking, and there has been no dried halibut in market.

From 1850 to 1863 or 1864 the halibut brought in by the cod-fishermen, and by the fresh-halibut fleet were sufficient to meet the demand of the smoked-halibut trade, and the fitting out of vessels for salting halibut was resorted to in only one or two instances.

Perhaps the first trip of this nature was made by Capt. Chester Marr, in the schooner Grace Darling. He says:

"I went on a flitching trip to the Canadian shore about 1858. I had heard from the mackerel fishermen that halibut were very plentiful about Magdalene River in the summer. I was in the Grace Darling, and I hauled the vessel into the river, moored, and fished in our dories, setting the trawls along the shore in the vicinity for six weeks. I was induced to stay so long by the native fishermen, who made exaggerated statements concerning the halibut. I got only about 100 quintals of salt halibut, and gave up the trip and went to the Bay and filled up with mackerel."

The following is on the authority of D. C. & H. Babson, of Gloucester:

"The first vessel that ever sailed from Gloucester on a flitching halibut voyage to the Grand Bank was the schooner A. J. Chapman, 105 tons, that sailed May 19, 1864, commanded by Capt. George W. Minor. Arrived home August 13, and stocked on the trip $4,933.05. Her crew was composed of eleven men, and they shared $223.59 each; captain's share and commission was $426.82."

The practice of sending out vessels to salt halibut, once commenced, has continued up to the present time, but the vessels engaged in this way have ever been few, and at no time, according to Mr. Wonson, of Gloucester, has the number for any year exceeded ten.

Though the practice has been continued, the banks to which the vessels are sent have become fewer and fewer, until for several years past the banks in Davis' Strait have been the only ones visited by these vessels.

THE GROWTH OF THE GREENLAND HALIBUT FISHERY.—Reports of the abundance of halibut off the west coast of Greenland were first brought to Massachusetts by Provincetown whalers. The first trip to Greenland after these fish was made in 1866, by the schooner John Atwood. She sailed June 29 and returned October 14, stocking $5,500. Capt. G. P. Pomeroy, of New London, went as navigator, and Capt. Averill L. York, of Gloucester, as fishing-master. Though she failed to fill her hold only because of her late arrival upon the fishing banks, no enthusiasm was excited in this fishery until Capt. John McQuinn, in 1870, brought from Greenland a trip of flitched halibut worth over $19,000. Each of the two or three succeeding years five or six vessels, with hopes of having

like success, were fitted out for the same place. But, for some reason or other, the fish were not caught in very extravagant quantities, and a fall in the price of the fish rendered such a long trip financially rather uncertain. Besides, as there was no reliable chart of Davis' Strait and the coast of Greenland, the fishermen hesitated considerably before undertaking a voyage to such a precipitous and barren coast, and no one can blame them. Once give them a good chart of the coast and harbors of Western Greenland, and their greatest difficulty will be removed. No reliable survey and chart of Greenland have been made.

Notwithstanding the need of large and accurate charts and the immense distance of two thousand miles, so great are the probabilities of making a profitable catch that thirty-one trips have been made from Gloucester to Davis' Strait after halibut. The following is a tabulated statement of the vessels and captains engaged in the Greenland fishery from its beginning to the present time, showing also the year and the weight of flitches for each trip. This gives a total of 3,283,765 pounds of salt halibut brought to Gloucester from Greenland, or an average of 113,233 pounds for the vessels that returned *in safety*:

Year.	Vessel.	Captain.	Pounds of fish.
1868	John Atwood	George Pomeroy	60,000
1869	Caleb Eaton	John McQuinn	134,400
1870	Caleb Eaton	John McQuinn	177,900
1871	Membrino Chief	John McQuinn	429,200
1871	Caleb Eaton	Jeremiah Hopkins	
1871	River Queen (lost)	George Robinson	
1871	Thorwaldsen	James Hamilton	
1871	William S. Baker	Albion Pearse	156,800
1871	Mary E	Rasmus Madsen	80,000
1872	Aaron Burnham	Charles J. Lawson	112,000
1872	Thorwaldsen	Henry Hamilton	145,600
1872	William S. Baker	Albion Pearse	145,600
1872	Membrino Chief	John McQuinn	134,400
1872	Carrie Jones	John Guskill	112,000
1872	Caleb Eaton	Jeremiah Hopkins	134,400
1873	Aaron Burnham	Charles J. Lawson	91,000
1873	William S. Baker	Albion Pearse	75,700
1873	Caleb Eaton	Jeremiah Hopkins	62,500
1873	Albert Clarence	John Guskill	51,000
1874	Nulli Secundus	Charles J. Lawson	163,000
1877	Henry Wilson	James Jamison	91,000
1878	Grace L. Fears	Randall McDonald	60,000
1878	Cunard (lost)	Garrett Galvin	.....
1878	Bellerophon	Thomas Scott	60,000
1879	Herman Babson	Charles J. Lawson	140,000
1879	Bunker Hill	John McDonald	140,000
1879	Mary E	Rasmus Madsen	75,000
1880	Mary E	Rasmus Madsen	70,000
1881	Herman Babson	Charles J. Lawson	168,400
1881	Mary E	Rasmus Madsen	84,890
1881	Bunker Hill	John McDonald	179,576
	Total		3,283,765
	Average for vessels returning		113,233

Two vessels were lost; but one of these, the Cunard, after starting for home, went to the Grand Bank and was lost there, leaving only one lost in the Greenland fishery. The River Queen probably failed to reach home because too little care had been taken in properly arranging the salted fish, thus throwing the vessel considerably out of trim. The last seen of her she was rather low in the bow and sailing before a northeast gale, on her way home.

If we compare the Davis' Strait fishery with that of the Grand Bank we find much in its

favor. The water is not so deep, and fogs are not so frequent as on the Grand Bank. Good harbors are available in case of storms, which are not common. The climate is excellent, neither very cold nor very warm. The continual light permits fishing at all times of the day, and does away with much of the risk of the dories losing sight of the vessels. One great objection is the long distance from home, and lack of opportunities of hearing from the outside world. The fish, however, are plentiful, and, if the fishermen only had accurate charts of the banks of the west coast of Greenland, and of the harbors of Sukkertoppen and Holsteinborg, the long distance would be little thought of, as they would then be quite sure of a profitable catch. The harbor of Holsteinborg is usually open by the middle of May and perhaps fishing could be commenced by the 1st of June, but the ice, brought by the current down the east coast of Greenland, besides blocking up the more southern harbors, will probably render the passage north too dangerous before the middle of June. On this account and because of the change in the weather about the 20th of August, the fishing here will have to be done in July and August.

Besides the halibut, the Greenland cod is also caught on the trawls of the fishermen, but not in sufficient numbers to warrant their being salted. The proportion of cod to halibut is about 1 to 15. The Eskimo fish for both, in the bays and harbors, and the cod may be more plentiful there, but they are smaller.

The fine salmon of the coast might afford profitable fishing. This opinion is founded upon the quantity of these fish the natives catch with their rude appliances, and sell for $4 to $8 a barrel to the Danish trade agents. If the American fishermen were acquainted with the deep fiords, and should engage in this fishery with all the modern improvements for seine fishing, they would probably meet with great success. There is, however, this probable limit: the fish are caught mostly in June and July when they visit the mouths of the fresh-water creeks. After this they become scarce, but, if the fishermen do not succeed in securing a cargo of salmon, they have at least a month, after the salmon season is over, during which they can set their trawls for halibut.

The average of 113,233 pounds of salt halibut for a trip does not represent fully what the fishery may become in the future; for several of the trips were made the conclusion of cod-fishing trips to the Grand Bank, and the vessels were already partly filled with cod, leaving not enough room for a full cargo of halibut. Thus the Mary E., in 1871, '79, '80, and '81, fished first on Flemish Cap, and from there went to Greenland. In 1871 she did not reach the Davis' Strait fishing ground until August 20, and left off fishing August 28, but during these eight days she secured 30,000 pounds of halibut. In 1879 the Herman Babson had on board 60,000 pounds of codfish, which she brought from the Grand Bank. If we omit from our calculations the Mary E., which is comparatively a small vessel, the above average will be increased to nearly 121,000 pounds for each trip.

Again, since the fishermen first visited Davis' Strait, the methods of fishing in that region have altered considerably, principally because the first fishermen were unacquainted with the fishing banks, and were afraid to remain on them whenever the wind showed signs of increasing to a gale. Because of this, visits to the harbor were frequent, and much time was lost in regaining the banks after the blow was over. The custom now is to remain on the banks as much as possible, and to fish at every opportunity: had this method been employed from the start, the average catch would have been considerably larger. The success of the Bunker Hill, in 1881, proves this beyond a doubt. This vessel, though not arriving upon the banks until July 11, commenced fishing before going into the harbor, and by persistent effort, in spite of unfavorable weather, secured the largest fare of any vessel since the beginning of the fishery.

In the future, competition among the fishermen will become greater, knowledge of harbors and fishing banks more definite and widespread, improved methods of fishing will be introduced,

and, as the demand for the fish and the confidence of the fishermen increase, the Greenland halibut fishery will no doubt grow to be of considerable importance.

Where the halibut are caught on the Grand Bank they are flitched and salted; but as the fresh fish bring the higher price, the nearer the fishing grounds are to the market so much greater is the probability of the fish being brought in fresh. On the other hand, fishing grounds at a long distance from home present so many difficulties to the fresh fishermen that no attempt is made to carry home the halibut uncured.

Formerly, when the smoked fish were first coming into the market and the halibut were very abundant on nearly all the fishing banks, the supply was easily obtained near home, but now the halibut on George's, Grand, and other southern banks are no longer plentiful enough to encourage a fishery devoted to salting these fish. These banks, however, yield a few salt halibut, brought in by the cod-fishermen.

The reason the fresh-halibut fishery is still carried on with success where there is no encouragement for a salt fishery is that it takes only one-tenth the time to obtain a cargo of fish in the former that it does in the latter industry. In the fresh fishery the fish in the hold of the vessel occupy nearly as much space as when first caught, and they cannot be packed tightly together for fear of spoiling, whereas in the salt fishery a large part of the bulk of each fish is thrown overboard, *and the parts saved are packed away as solidly as possible, not occupying nearly as much* space as the same number of fresh fish would. Again, in the fresh fishery much space is occupied by the ice and ice-chest, which are not needed in the salt fishery. In this way it takes ten or more times as many fish to make a cargo of salted halibut as it does to make a cargo of fresh halibut.

Thus if a fresh fisherman fills his vessel in five days it would take a salt fisherman, with the same luck in fishing, fifty or more days to fill the same vessel. If the fishing were twice as good the fresh fisherman could secure a cargo in two and one-half days and the salt fisherman in twenty-five days. It is thus an inducement to the salt fisherman to spend part of these twenty-five days sailing to and from grounds where the fishing is much better than nearer home. In the north the scarcity of fish does not limit the fishery, but the slow discovery and utilization of banks where the halibut are probably very abundant. These fish, circumpolar in distribution and very abundant in the North Pacific and in Davis Strait, must abound in many places where we have no knowledge of their existence.

ICELAND.

In 1872 Capt. John McQuinn attempted to secure a "trip" of salt halibut from the fishing banks near Iceland, but did not catch a sufficient quantity to encourage a second attempt. Other circumstances, however, would indicate an abundance of these fish near Iceland. The French and other fishermen who catch cod in the vicinity of Iceland, but to whom the halibut are worthless as a food-fish, complain that the halibut are at times so very plentiful as to seriously interfere with the codfishing in these waters. A few years ago a Danish Government vessel returned to Denmark with a quantity of salted halibut, caught somewhere between Greenland and Iceland, but the crew refused to reveal the exact spot where the fish were taken, fearing lest England or some other foreign power might develop a fishery in that region.

Considering the difficulties a stranger has to encounter when attempting to fish in unfamiliar and distant waters, the failure of Captain McQuinn is not surprising, and is no indication of a scarcity of halibut near Iceland.*

* The United States Fish Commission having called the attention of the American fishermen to the abundance of halibut at Iceland, three Gloucester vessels went there in 1884 and secured good fares, and the present summer (1885) five Gloucester vessels are on a voyage there. A full report of the voyages in 1884 is published in Volume V, United States Fish Commission Bulletin.

2. FISHING GROUNDS.

DAVIS' STRAIT.

(*a*) LOCATION AND CHARACTER.—The fishing banks are 15 to 40 miles from the coast, and, if we can rely upon the Danish charts, extend from Disko Bay to within 3° of Cape Farewell; for these charts give soundings all along the coast between these two points. Extensive as the banks may be, only a small part of them, the part about Holsteinborg and Cape Amalia, has been tried by American fishermen. That the fish are to be found throughout their whole extent is more than probable, for the species is identical with that taken on the Grand Bank, and we would naturally infer it would be found in all favorable situations within the limits of its distribution. It is also reported that Capt. Rasmus Madsen, commonly known as "Captain Hamilton," who has been to Greenland several times, set his trawls for these fish farther to the south (probably off of Godthaab) and found them very abundant, but was unable to secure many on account of the numerous ground-sharks playing the mischief with his trawls.

At Cape Amalia are the favorite fishing grounds of the natives, and a few of the Gloucester vessels have visited them, but, as the fishing there is mostly by anchoring in the harbor and sending the dories a distance of 2 or 3 miles, this place does not offer many inducements to our fishermen. The best luck has attended the vessels fishing off and to the south of Holsteinborg.

Previous to 1872 the fishing grounds were 4 or 5 miles off Holsteinborg. That year, however, some of the fleet went 30 miles off this settlement, and since that time most of the fishing has been done on this latter ground.

In 1879 the fishing in July was on this ground, but in August better fishing was secured on a new ground 20 miles south of this. In 1881 the best fishing was found in the vicinity of Victori Island, some 15 miles from shore, in water from 14 to 28 fathoms deep.

Between the old ground off Holsteinborg and Victori ground there is a gully over 150 fathoms deep and 15 or 20 miles wide, and there is probably another gully south of Victori ground.

The depth of water on the banks is from 15 to 90 fathoms, and, on this account, the fishing is much easier than in the deep water of the Grand Bank. At the inner edge the banks have a sudden slope, leaving a long submarine valley, the depth of which I did not ascertain, between them and the mainland. The surface of the banks is varied, though generally rocky, with here and there sandy and clayey spots.

The character of the fauna varies considerably, and often abruptly, in places a little distance apart, as the following extract from my diary of the 25th of July will show: "The fish caught to-day and two preceding days have not been taken on all sides of the vessel, but in one particular spot, where the bottom is more attractive than elsewhere. This spot is covered by *tunicata*, called 'sea-lemons' and 'sea-pumpkins.' The moment the trawls strike the bottom covered by the stems of *hydrozoa*, by the crew called 'trees,' the fish are no longer found in any quantity."

It will readily be seen from the preceding remarks that a careful survey of the banks, with the view of determining their limits, character, and fauna, could not fail to be of great value to the fishing interest, to say nothing of its immense importance from a natural history and geological point of view.

(*b*) *Climate.*—The climate on the banks for July and August is, on the whole, very favorable for fishing. In the tables which follow I have omitted observations made in harbors, in order to avoid confusing the two climates together, for there is considerable difference. The climate on the banks is more constant in temperature and absence of rain, but more variable in respect to wind.

The temperature is very uniform. The lowest observed was 36° Fahr. and the highest 52° Fahr. The extremes of surface temperatures were 38¾° and 43¼° Fahr. There were no sudden changes, as the tables will show. The temperature was thus very favorable for work, though perhaps a little chilly in foggy weather, but nevertheless much better than the sweltering heat of summer in our own latitude. The men found, on sunny days, even a temperature of 48° Fahr. uncomfortably warm for work. On chilly days a fire was kept in the cabin, so that all could be comfortable when not working.

A reference to the tables of the condition of the sky will show that we had very little rain on the banks. Clouds were common and fogs not rare, but it only rained four or five times, and then mostly in the shape of fine misty rain, lasting at the longest only four or five hours.

The tables of the wind need explanation. The directions expressed are those of the compass, which here varies about 70°; for not knowing the exact variation, I thought this the best way of expressing them. The estimate of the velocity is much of it guess-work, founded on remembrance of former estimates and comparisons of the wind's velocity made by myself, and, on this account, not much reliance can be placed on them except for the relative velocities of the winds observed. The hardest blow was August 14, on which day I have put the velocity down as between 45 and 55 miles, and am well satisfied it could not have been any greater. Between this and a perfect calm I have used six numbers to designate as many different velocities: 2 for air just perceptible; 5 for a breeze of 3 to 10 miles an hour; 13 for a breeze of 10 to 15 miles an hour; 20 for a breeze of 15 to 25 miles an hour; 30 for a breeze of 25 to 35 miles an hour; 40 for a breeze of 35 to 45 miles an hour; and 50 for a breeze of 45 to 55 miles an hour.

The temperature, sky, and winds were quite different in the harbor. The land on all but the sea side of the harbor rises abruptly, and not only protects it from the winds, but also permits the sun to warm the surface of land and water more than in an exposed place. The thermometer is, therefore, more variable than in the strait, and the wind is seldom felt. The mountains, by causing the condensation of the vapors of the sea breezes, make fogs and showers frequent.

I have also given tables of the height of the barometer, made from an aneroid belonging to the captain. This was hung up in the cabin, and I noticed considerable variation in the instrument whenever a fire was built there. When this variation was very marked, I have indicated the same in the tables by an asterisk.

The season of 1879 was, however, uncommonly mild for Davis' Strait, and the weather that summer more favorable for fishing than it has been since. In 1880 the Herman Babson was started for Greenland, but was turned back in 52° north latitude by immense quantities of icebergs and field ice. The Mary E. succeeded in getting through by going farther to the eastward.

In 1881 the three vessels which went to Davis' Strait skirted the ice 200 to 300 miles before succeeding in getting through, and, even after reaching the fishing grounds, they were obliged several times during the summer to change their positions on account of drifting bergs.

This ice is carried by the currents down the east coast of Greenland, and thence across to the Straits of Belle Isle, and the fishermen will probably encounter more or less of it every year.

Table of the temperature for July and August.

JULY.

No observations made in harbor.

[Expressed by the Fahrenheit scale—all positive.]

	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
July 1																								
2								37½	37¾	38	37½	38	38¼	39¼	39	39	39	38½	38¾	37½				
3																38¾	39							
4													38	38	38½	38	37	37						
5	39							41	42	45	44	43	44	43¼	42½				41½		40			
6														37½		38			36¼	36½				
7	36											39	39¼	39¼	41½	41	40¼		39¼	39½				38½
8											45½	41¾			41	40½	39½	38½	38½	38½				
9												38½	40				41½		40½					
10																								
11								45	44						46									
12																		46¼						
13													49	48½	48	46½		44½	41		39	38		
14										42½											39¼			
15													39¾	39¾	39	39¼		39	39		38½			
16																40				42				
17																								
18																								
19							40	40½	41		41		42											
20																								
21																								
22																								
23												40	40½			40½				48				
24											42½	42¾	42¼	44	44¼	45¼								
25									45¼	45	45	46		46¼		44	44	42½	42		41			
26									39¾	40		40	40		41	41	41	40½						
27								40	40¼	41½	42¼			43			41¼							
28								41¼	40½	42½		43¾	42¾	44½	45½				41½					
29								42½	42¼		42¾	43			43	44	44							
30											40½		43		44	45		44½						
31																								

AUGUST.

Aug. 1																								
2										45	45	45		45½	45½	45½	45¼	45½	45¼	44½	44			
3								43		44	44½		46	46½	46½	45½	45	43½	44¾	44½				
4							44	44	44¼	45¾	46¾	47¼				*50	*52	46						
5								46½			46½	46½	46¼	46	46	46			46		45			
6						46	46	47		47	*50	47½	47½	48½			47		47¼					
7							45		45½		45¾		47			*48½				46				
8									45½	46½	46½	47	47						45½					
9										46	46½		46		45½		44½		43					
10										44½			45						44½					
11								44					44½						44					
12								45					47						46					
13									42				42											
14							40						41						39					
15							42		43															
16†																								
17†																								
18							38						39						42					
19																								

* Affected by reflection of sun's rays.

† Barrels lashed in front of thermometer so it could not be seen on the 16th and 17th.

Table of the temperature for July and August—Continued.

AUGUST—Continued.

	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
Aug. 20													43						47					
21								42					42						42					
22*																								
23*																								
24													40½						40½					
25							39¾						40						39¼					
26							40						41						41½					
27							41																	
28																								
29									42															
30							40½						40						38¾					
31							40						41½											

* Thermometer wet with spray.

Table showing the condition of the sky for July and August.

b. Blue sky. f. Foggy. m. Hazy. r. Rain. c. Clouds, detached. g. Gloomy. o. Overcast. k. Clearing off. No observations made in harbor.

JULY.

	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
July 1																								
2											b., m.	m.	m.	m.	c.	c.	c.	c.	c.	c.				
3																o.	o.							
4													m.	f.	f.	o., m.	o., m.	o., m.						
5	o., m.							b.	m.	b.	m.	m.	m.	m.	m.			o.			o.			
6														c.		m.			c.					
7	o., m.											o.	f.	k.	b., c.	b.	c.		m.	c.				b., c.
8											c.	c.			m.	f.	r.	r.	c.	r.		r.		
9	o.											k.	b.				c.	r.	c., r.					
10																								
11								c.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	f.	f.
12	f.	f.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	b.	f.
13	f.	b.	b.	b.									b.	b.	b.	b.	b.	f.	f.	f.	o.	o.		
14										o.											f.			
15													f.	f.	f.	f.	f.	f.	f.	f.	f.	f.	f.	f.
16	f.	f.	f.	f.	f.	f.	f.	f.	f.	f.	f.	f.	f.	f.	k.	b.				b.	b.			
17																								
18												k.												
19							o.	o.			o.		o						o.					
20																								
21																								
22																								
23												o.	o.	o.	o.	o.	o.	o.	o.	o.				
24											o.	o.	o.	o.	o.	f.	f.							
25									o.			o.		k.			o.	o.	o.	o.				
26									m.	m.		o.	o.		o.	o.	o.	o.						
27								o.	o.	o.	o.	o.	o.	o.			o., m.							
28								b., f.	b.	b.		b.	b.	b., f.	b., f.				f.					
29								r.	r.	r.	o.	o.	o.	o.	o.	o.	o.							
30											o.	o.	o.	o.	o.	o.	o.	k.						
31																								

U. S. Fishery Laboratory
Beaufort, North Carolina

U. S. FISH COMMISSION
BEAUFORT, N. C.

Table showing the condition of the sky for July and August—Continued.

AUGUST.

	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
Aug. 1																								
2													c.	c.	c. r.	c.	c.	c., r.	c., r.	c., r.	c., r.			
3								c., h.		b., c.	m.	c.	c.	c.	c.	c., r.	c., f.	c., f.	c.	c.	c., f.			
4							c.	c.	c.	c.	c.	c.		b., c.		b.	b.	b.	b.					
5								c.			c.	c.	c.	r. b.	b., c.	b. c.			c.		c.			
6						b.	b.	b., c.		c.	c.	b., c.	b., c.	c.	c.		c.		b., c.					
7							c., f.		c., m.		c., m.		c., m.		c.	c.				b., c.				
8									c.	c., c.	c.	c.							r.	r.				
9										c.	b., c.		c., b., m.		m.		F.		f.					
10										c.			c.						f., m.					
11								c., m.					c.						c.					
12								c.					c.					b.	b.					
13									m.				c.											
14							c.						c.						c.					
15							c.		c.				c.						b., m.					
16								b.					b.						b.					
17							c.						c.						c.					
18							c.						c.						c.			r.		
19							c., r.																	
20													b.						b.					
21								b.					c., f.						c.					
22								b.					b.						b.					
23								b.					b.						c., f.					
24								c., f					c.						g.					
25							b.	b.					b.						b.					
26							b.			b.			b.						b.					
27							c.																	
28							b.						b.						b.					
29									b.		c.								c.					
30		r.		r.	r.	c.	c.	c.			b.	b.	m.											
31							c.						c.						m.					

Table showing the directions and relative velocities of the wind for July.

Calm, by 0. Just perceptible, by 2. 3 to 10 miles, by 5. 10 to 15 miles, by 13. 15 to 25 miles, by 20. 25 to 35 miles, by 30.
No observations made in harbor.

Date.	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.
July 1												
2											E. by N. 20	E. by N. 20
3												
4												
5								SE. 2	SSE. 2	SSE. 2	SW. 5	SW. 5
6												
7	0											0
8											SE. 5	E. 5
9	WSW. 20											WNW. 20
10								0	0			
11												
12												
13	0	0	NE. 5									
14										W. by S. 5		
15												
16		ENE. 6										
17												

Table showing the directions and relative velocities of the wind for July—Continued.

Calm, by 0. Just perceptible, by 2. 3 to 10 miles, by 5. 10 to 15 miles, by 13. 15 to 25 miles, by 20. 25 to 35 miles, by 30. 35 to 45 miles, by 40. 45 to 55 miles, by 50. No observations made in harbor.

Date.	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.
July 18												
19							SW. 20	WSW. 20			SW. 13	
20												
21												
22												
23												0
24											0	0
25									0	0		NE. 5
26									N. 13	NNW. 13	NNW. 13	NNW. 13
27								0	0	NW. 2	NW. 2	NW. 2
28								NE. 5	NE. 13	NE. 13		ENE. 5
29								S. by W. 5	S. by W. 5			S. by W. 5
30											0	0
31												

Date.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
July 1												
2	E. by N. 20	NE. 20	NE. 20	NE. 20	NE. 20	NE. 20	NE. 20					
3				ENE. 5	ENE. 2							
4	NNE. 13	NNE. 13	NNE. 13	NNE. 20	ENE. 20	ENE. 20						
5	SW. 5	SW. 5	SW. 5	SW. 5	SW. 5	SW. 5	SW. 2		WNW. 20			
6		NE. 13		NE. 5			NNE. 5					
7	0	SW 5	SW. 5	SW. 5	SW. 5		0	0				ENE. 5
8			NE. 13	NE. 13	NNE. 13	NNE. 13	NE. 13	0		SW. 13		
9	WNW. 13				0	ESE. 13						
10												
11												
12												
13	WNW. 5	WNW. 5	WNW. 5	WNW. 5	W. 13	W. 13	W. by S. 13	W. 20	W. 20			
14									NE. 13			
15	NE. 13	NE. 5	NE. 5	NE. 5	NE. 5	NE. 5	NE. 13		NE. 5		ENE. 5	
16				NE. 13				NE. 13	NE. 13			
17												
18												
19							WSW. 20					
20												
21												
22												
23	0	0		SW. 2				0				
24	0	0	0	0	0							
25	NE. 5	NE. 5			NE. 5	N. 13	N 13	NNE. 13				
26	NNW. 13	NNW. 5	NNW. 5	NW. 5	NW 5							
27		N. 5			ENE. 5							
28	ENE. 5	NE. 2	NE. 2				0					
29			0	0	0							
30	0	0	0	0		SW. 5						
31												

Table showing the direction and relative velocities of the wind for August.

Calm, by 0. Just perceptible, by 2. 3 to 10 miles, by 5. 10 to 15 miles, by 13. 15 to 25 miles, by 20. 25 to 35 miles, by 30. 35 to 45 miles, by 40. 45 to 55 miles, by 50. No observations made in harbor.

Date.	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.
August 1												
2											S. W. 13	S. W. 13
3								S. W. 20		WSW. 20	WSW. 20	WSW. 13
4							0	SE. 2	SSE. 5	S. 5	SSW. 5	SW. 2
5								0			0	NNW. 5
6						E. 2	E. 2	S. 2		SW. 2	0	0
7							WNW. 2		0		0	
8									WSW. 5	W. 5	W. 5	W. 5
9										W by S. 5	W by S. 5	
10										S. W. 30		
11								SW 20				
12								SW. 5				
13									NE. 20			
14					N. E. 50		NE. 50					
15							WNW. 30					
16								NE. 13				
17							NNE. 30					
18							ENE. 5					
19							WSW. 20					
20												
21							NE. 20					
22							NE. 30					
23							NE. 30					
24							NE. 20					
25							NE. 30					
26							NE. 20					
27												
28												
29									SW. 13			
30				0	EE. 5							
31					N. E. 30							

Date.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
August 1												
2	SW. 13	SW. 13	SW. 5	SW. 5	SW. 2	SW. 2	SW. 2	SW. 2	S. 2			
3	WSW. 13	W. 13	W. 5	0	0	0	0	0				
4		0		E. 2	E. 5	E. 5	E. 5					
5	NNW. 13	N. 13	N. 13	N. 13			0		NE. 2			
6	N. W. 2	0	0		0		0					
7	0			0				NE. 13				
8	0						0					
9	W. 5		W. 5		W by N. 5		W. 5					
10	SW. 30						W. 30					
11	W. 13						W. 13					
12	ENE. 5					ENE.	NE. 13			NE. 30		
13	NE. 40											

Table showing the directions and relative velocities of the wind for August—Continued.

Calm, by 0. Just perceptible, by 2. 3 to 10 miles, by 5. 10 to 15 miles, by 13. 15 to 25 miles, by 20. 25 to 35 miles, by 30. 35 to 45 miles, by 40. 45 to 55 miles, by 50. No observations made in harbor.

Date.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
August 14	NE. 50						NE. 13					
15	NW. 20						0					
16	NNE. 13						NNE. 30					
17	NNE. 30						NE. 13					
18	0						WSW. 20					
19												
20	NE. 13						ENE. 5					
21	NE. 20						NE. 20					
22	NE. 30						NE. 30					
23	NE. 30						NE. 30					
24	NE. 20						NE. 20					
25	NE. 30						NE. 30					
26	NE. 20						NE. 13					
27												
28							NNE. 13					
29	SW. 30						SW. 20					
30	NNE. 20						NE. 20					
31	NE. 30						NE. 20					

Table showing the height of the barometer for July and August.

JULY.

Date.	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.
July 1												
2								30.23	30.22	30.22	30.22	30.21
3												
4												
5								29.73	29.75	29.75	29.76	29.76
6												
7												30.28
8											30.19	30.18
9	30.05											30.37
10												
11								30.41	30.40			
12												
13				30.46								
14										30.50		
15												30.42
16	30.37	30.37										
17												
18												
19							30.25	*30.36			30.36	
20												
21												
22												
23												30.46
24											30.54	30.56
25									30.50		30.44	30.42
26									30.32	30.34		30.33
27								30.36	30.36		30.35	30.35
28								30.24	30.26	30.24		30.24
29								30.18	*30.30	30.28	30.28	
30											30.18	
31												

Table showing the height of the barometer for July and August—Continued.

JULY—Continued.

Date.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
July 1												
2	30.21	30.20	30.20	30.19	30.16	30.16		30.15				
3				29.92	29.93							
4	29.78	29.78	29.76	29.75	29.72	29.70	29.68					
5	29.76	29.77	29.78			29.80			29.80	29.82		
6				30.05			30.11	30.11				
7	30.28	30.29	30.30	30.30			30.29	30.27				30.20
8					30.13	30.08	30.07	30.08		30.08		
9	30.39				30.41		30.49					
10												
11												
12												
13	30.30	30.30	30.30	30.32		30.40	30.50		30.52	30.50		
14								30.58	35.53			
15	30.43	30.43	30.40	30.43		30.42	30.38		30.36	30.38		
16				30.24				30.26	30.24			
17												
18												
19	30.38			30.33			30.26					
20												
21												
22												
23	30.44	30.43		30.48				30.48				
24	30.57	30.56	30.56	30.54	30.56							
25		30.37	30.36		30.46	30.42	30.43		30.40			
26			30.28	30.28	30.26	*30.38						
27		30.35			30.33							
28	30.20	30.20	30.20				30.26					
29				30.25	30.26							
30	30.12		30.12	30.10		30.06						
31												

* Due to building of fire in cabin.

AUGUST.

Date.	Midnight.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.
Aug. 1																								
2										30.02	30.04	30.04	30.05	30.04	30.04	30.04	30.06	30.14	30.15		30.17			
3								30.24		30.24	30.26	30.28	30.28	30.28	30.28	30.30	30.30	30.33	30.33	30.32				
4							30.27	30.36	30.34	30.34	30.26	30.28		30.40		30.40	30.36	30.40	30.32					
5								30.30			30.26	30.24	30.22	30.22	30.22	30.20			*30.26		30.20			
6						30.24	30.26	30.24		30.27	30.26	30.24	30.24	30.26	30.28		30.32		30.28					
7							30.30		30.28		30.27					30.20				30.16				
8									30.26	30.27	30.26	30.33							30.30					
9										30.37	30.37		30.38		30.36		30.32		30.40					
10										30.26			30.20						30.18					
11								30.06					30.04						30.07					
12								30.11					30.11						30.04					
13									29.92				29.90											
14					29.80		29.74						29.74						29.80					
15							29.89		29.93				30.06						30.00					
16								29.78					29.84						29.84					
17							29.96						29.94						29.96					
18							30.00						30.06						29.95					
19							29.86																	
20													30.12						30.12					

Table showing the height of the barometer for July and August—Continued.

AUGUST—Continued.

Date.	Midnight.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.
Aug. 21								30.18					30.12						30.12					
22								29.92																
23																								
24													30.09						30.14					
25							30.12						30.12						30.11					
26							30.00						*30.06						30.08					
27							30.02																	
28													30.22						30.22		30.23			
29								30.18					30.30						30.16					
30							30.06				30.28		30.22						30.22					
31							30.12						30.08						30.10					

* Due to fire in the cabin.

(*c*) *Tides and currents.*—I had hoped to compile tables that would give definite figures regarding the tides, but on account of the frequent changes of position and the remarkable complexity of the currents near the edge of the banks this was impossible. The first peculiarity one would be likely to notice is that the tide runs up the strait much longer and with greater velocity than in the opposite direction. In fact, some days there was no tide at all down the strait, but corresponding to it would be nearly slack water for seven or eight hours. The tide also, instead of changing every six hours, would only do so twice a day. The observations made August 4 will show this. The velocity is expressed in the number of feet a chip floated in a minute, and the directions are those of the compass. As this varies about 70° toward the west, it will be seen that all the directions given are up rather than down the strait.

Tide August 4.

6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.
NE. Slight.	NE. Gentle.	NE. Moderate.	NE. x E. 169 feet.	ENE. 179 feet.	E. 246 feet.	.....	E. x S. 168 feet.	.....	SSE. 135 feet.	SE. x S. 96 feet.	SE. x S. 90 feet.	SE. 60 feet.

The greater velocity of the tide running north compared with that going south is probably due to the existence of a current on the east side of the strait running up the coast of Greenland. The slack water of six or seven hours at a time would then be when the current and tide just balanced each other. The few icebergs we saw while fishing came from the south. The harbors of Holsteinborg and Sukkertoppen are open much earlier than the more southern ones, owing to the ice that is brought round Cape Farewell blocking up these latter. The existence of this southern ice will be a great barrier to the utilization of the southern fishing banks, making those about Sukkertoppen and Holsteinborg the ones most accessible.

The combining of the tide and current often renders fishing impossible five or six hours at a time, but, as the slack water is usually correspondingly long, the loss of time need not be very great, for by careful observation the fishermen can time themselves so as to sleep while the tide is strong and fish when it is slack water. It must be remembered that in this latitude it is light enough in July to work all night without inconvenience.

The tides and currents are not, however, as simple as the preceding remarks would seem to imply. Often a changing of our position a few miles would bring us into a different combination of currents. The banks occasion variations in currents a few miles apart. The whole coast of

Greenland is indented by deep fiords, 3 or more miles broad and 50 to 100 miles long, and the tides running out of these with great force have an influence miles from their mouths.

Temperature of the water, at every ten fathoms, on the Fishing Banks, off the west coast of Greenland, latitude 66° +. Time, July and August.

July 6. Latitude 66° 25′. Taken between 3 and 4 p. m., during the slack, after the tide had been running north.

	° Fahr.
Temperature of air	38
Temperature of surface	38¾
Temperature of 10 fathoms	37¾
Temperature of 20 fathoms	36¾
Temperature of 30 fathoms	35¾
Temperature of 40 fathoms, bottom	35½

July 7. Same place and time of day.

	° Fahr.
Temperature of air	40½
Temperature of surface	38¾
Temperature of 10 fathoms	37¼
Temperature of 20 fathoms	36¼
Temperature of 30 fathoms	35¾
Temperature of 40 fathoms, bottom	35½

August 2. Taken between 7.30 and 8 p. m.

	° Fahr.
Temperature of air	44
Temperature of surface	42½
Temperature of 10 fathoms	39¾
Temperature of 20 fathoms	38¾
Temperature of 30 fathoms	38
Temperature of 37 fathoms, bottom	37¾

August 5. Taken between 7 and 7.30 a. m. Tide very slack.

	° Fahr.
Temperature of air	46½
Temperature of surface	41½
Temperature of 10 fathoms	38½
Temperature of 20 fathoms	38½
Temperature of 30 fathoms	38
Temperature of 35 fathoms, bottom	37

August 8. Taken 6 p. m. The time of slack different in places a few miles apart; likewise the force and direction of the current.

	° Fahr.
Temperature of air	45½
Temperature of surface	43½
Temperature of 10 fathoms	41
Temperature of 20 fathoms	38½
Temperature of 24 fathoms, bottom	37¾

August 20. Taken between 8 and 8.30 p. m. Slight surface tide. About 40 miles WSW. from Holsteinborg.

	° Fahr.
Temperature of air	44
Temperature of surface	43
Temperature of 10 fathoms	41½
Temperature of 20 fathoms	39½
Temperature of 25 fathoms, bottom	38¾

The preceding observations, though few, will show very well the temperature of the water on the banks at various depths.

HARBORS.—The harbors of greatest use to the fishermen will be those of Holsteinborg and Sukkertoppen. Of the latter I can say nothing, except that it is reported, by those who have been there, as a good harbor. Holsteinborg, surrounded on three sides by the mainland and on the

other by several islands, is completely protected from the rough water, and is only exposed to the wind on the side towards the strait, from which quarter there is scarcely ever a violent blow. The harbor is large, and has a depth of 10 to 25 fathoms. The harbors mentioned are ninety miles apart, and, as the best fishing we had was about half way between the two, we could easily have run into one of them, whichever way the wind might have been.

Previous to the summer of 1879, which was considered very mild, the fishing vessels went into harbor at least three times a month. This was due to the southwest and northeast winds, which, combined with the strong tides and comparatively shallow water, would soon raise a "nasty sea." These blows, though perhaps not extremely dangerous, would frequently occasion loss if an attempt were made to ride them out, either by the breaking of some part of the rigging, or, if the deck were filled with fish when the wind came, by the loss of a part or all of these.

Nor are winds and waves the only things causing the vessels to seek the harbor. It is frequently very convenient to leave some things on shore, so as to have more room on the vessel. Thus the Bunker Hill left barrels of pickled fins on shore, and Captain Lawson left there, until ready to return home, quite a cargo of codfish he had brought from the Grand Bank, but which was in his way while fishing. New supplies of water must also be secured. The harbor of Holsteinborg is usually open by the middle of May, and perhaps fishing could be commenced by the first of June, but the ice that is brought down the east coast of Greenland, besides blocking up the more southern harbors, will probably render the passage north too dangerous before the middle of June. On this account, and because of the change in the weather about the 20th of August, the fishing here must be carried on in July and August.

3. THE FISHERMEN.

GENERAL CHARACTER OF CREWS AND FINANCIAL ARRANGEMENTS OF TRIPS.—In choosing fishermen for a salt-halibut trip particular care is taken to secure only those whose disposition and ability qualify them for a long trip and continuous hard work. A quarrelsome disposition, bodily inability to stand long, continuous hard work, ignorance either of the proper management of a sailing vessel, or of the methods of fishing employed, are great drawbacks to the financial success of the voyage.

The crew of the schooner Bunker Hill, during the season of 1879, consisted of 14 men, including the captain and cook, and was considered one of the best that ever sailed from Gloucester. They were certainly well acquainted with their business, and, as for disposition, there was no sign of a quarrel during the whole summer. This last is especially remarkable, because of the absence on board of the fishing vessels of the traditionally severe ship discipline. The captain was the only officer on board, unless the cook can be so called. The cabin was open alike to all, and as the bunks, with the exception of the captain's and my own, were chosen by lot, each one of the crew, providing he was sober when the lots were drawn, had as good a chance as his neighbor of securing sleeping quarters there.

The explanation of this general freedom is probably to be found in the co-operative nature of the trip, the financial plan of which was about as follows: The owners of the vessel were to receive 46 per cent. of the net stock, and, besides the vessel, furnished food, salt, and fishing tackle, while 50 per cent. of the net stock, after deducting the cost of tarring the rigging, refilling medicine-chest, pilotage, &c., was to be divided into fourteen equal parts, according to the number of the crew, one part going to each. The captain was to receive, besides one of the fourteen parts, the remaining 4 per cent.* The arrangement was thus, in some sense, a partnership, the owners fur-

* The captain's share is usually 4 per cent. of the net stock, but it may vary either one way or the other.

nishing the capital and the fishermen the labor, the profits to be shared in certain proportions. This general arrangement is not universal, for on some fishing vessels the men are paid a stipulated sum for the trip, the owners running the risk of profit or loss, while on others the crews are composed of both hired men and sharesmen.

EVERY-DAY LIFE, SUPERSTITIONS, &c.—On the evening of the 9th of June, at 6 o'clock, the steam-tug pulled the Bunker Hill from the wharf, so that her sails might catch the wind favorably. We had expected to start several hours earlier, but the little unexpected delays common to such occasions had prevented. Even as it was, on counting up hands two men were missing, so that while we tacked back and forth at the mouth of the harbor, waiting, a dory was sent to find the delinquents. Two hours passed before the return of the dory, and our number was complete; but during this time the wind had died out, rendering it doubtful whether we would succeed in leaving the harbor that evening. At nine o'clock, however, we were outside of the harbor, headed in the direction of Nova Scotia.

The captain had his berth, and one had been assigned to me, but the rest of the crew had as yet no settled sleeping place. The bunks to be chosen were in the cabin and forecastle. The cabin had two double berths on each side; but as the starboard (right hand) ones were reserved for the captain and myself, only two of the berths were vacant. As the berths were large, there was room in the two larboard (left hand) ones for four, making six to sleep in the cabin. The forecastle was arranged with berths on each side and a table in the center, in front of the foremast, where we took our meals.

The crew took their meals in two sets, the first of seven and the second of eight, and this division was made in such a manner as least to interfere with the fishing arrangements. As described below, the dorymates attended to the fishing arrangements of their own dory. Now, many of these things, such as renewing hooks, baiting, &c., could be attended to by one man at a time, and less time would be lost if only one went to meals while the other kept on working than if both went together. On this account the division of the men at meals was made, with one exception, caused by my presence, in such a manner that only one man to a dory would eat at a time. As for the captain and cook, who were exempted from fishing, the captain ate with the first set, while the cook waited until the second.

Another important matter attended to the first evening was the setting of the watches. On leaving the wharf at Gloucester, the captain had taken the helm and kept it until we were well out of the harbor and on our course, when the watches were divided. Two men stand on watch at a time. Each watch is two hours long, and each man is at the wheel half of this time and forward the other half. The captain and cook having no watching to do, this falls upon the other twelve of the crew, who each have, out of the twenty-four, four hours of watching, two of which are spent at the wheel. In order to prevent each man's watch coming the same hour each succeeding day, one man each day omits his watch, and by this means all the watches are pushed backward every twenty-four hours. The man who omits his watch is the one who otherwise would have his wheel between six and seven in the evening.

12–1 p. m.	*a*	*b*	*c*	6–7 p. m.	*h*	*i*	*j*
1–2 p. m.	*b*	*c*	*d*	7–8 p. m.	*i*	*j*	*k*
2–3 p. m.	*c*	*d*	*e*	8–9 p. m.	*j*	*k*	*l*
3–4 p. m.	*d*	*e*	*f*	9–10 p. m.	*k*	*l*	*a*
4–5 p. m.	*e*	*f*	*g*	10–11 p. m.	*l*	*a*	*b*
5–6 p. m.	*f*	*g*	*h*	11–12 p. m.	*a*	*b*	*c*

Thus, for instance, in the table just given, if *f*'s wheel was between 5 and 6 p. m., *g*'s wheel would naturally come between 6 and 7, but *g* omits his watch, and *h*, taking his place, has the

wheel an hour earlier than the preceding day. The next day *g* has the wheel between 5 and 6, and *h* omitting, *i* takes the wheel from 6 to 7.

The watches were arranged so that dorymates watched together every other day. Thus, in the table, suppose that *e* and *f* are dorymates. The first day *e* and *f* watch together, the second day *f* and *g*, while the third day *e* and *f* are together again. Each watch called the next watch. The order of the watches was decided in the following manner: A hat was held crown down, one man from each dory putting a finger upon the border of the opening, while one of the others, commencing at random, counted the fingers in succession until he reached the number nine. Finger number nine being withdrawn, the counting commenced again with one and continued to nine, which was also withdrawn. This continued until no fingers were on the hat. The owner of the first finger withdrawn, together with his dorymate, had the first watch, the owner of the second finger withdrawn, with his dorymate, the second watch, and so on through the whole.

I have said that the watches were two hours long, and this was true while we were on the passage out and back, but not so the intervening time; for while we were anchored in the Strait no watch was kept, because there was little or no danger. When, however, we shifted position, and were expecting to anchor in a very few hours, the time would be divided into twelve equal parts, each man taking one part at the wheel. Thus once or twice the watches were only ten or fifteen minutes long.

The passage from Gloucester to Holsteinborg lasted twenty days, and was along the coast of Nova Scotia through the Gut of Canso, northward in the Gulf of Saint Lawrence, within sight of the western coasts of Cape Breton and Newfoundland, and thence, through the Straits of Belle Isle, into the Atlantic and Davis' Strait. The pleasanter days were occupied by the crew in fixing the dories and fishing-tackle. The crew were very much like bees. On warm, pleasant, sunny days, they were all activity; other days, when it was cold and rainy, they were in their bunks most of the time from breakfast until dinner, and during the rest of the time, with few exceptions, they did little or nothing. This was not on account of any disposition to shirk work, but rather because of there being only enough to do to occupy them on pleasant days; for, after the fishing commenced, they showed themselves to be good, steady workers.

The duties devolving upon the men while on the way north were the sailing of the vessel, fixing the dories, and rigging the trawls. The first was of course attended to principally by the different watches, leaving much time for the others. The fixing of the dories did not take very much time, as it only consisted in making thole-pins, three seats, and two vertical partitions for each boat, and winding the oars with oakum to prevent them from wearing out. The vertical partitions, like the seats, were movable, and were used to divide the dory into three parts. Typically, the stern apartment held the trawls, the central one the fish, while the bow was reserved for the anchors; but whenever the fish were numerous they were put wherever room could be found for them.

The rigging of the trawls, however, kept the men busy much longer than fixing the dories. Four skates had to be rigged for each dory, and all of these were of new material, excepting a large part of the lines to which the hooks are fastened. These short lines, called gangings, had been for two years kept in bundles, with the hooks protected from moisture by a canvas or rubber covering. These must, of course, be examined, in order to test the strength of each ganging, and to free the hooks from rust. Besides this, most of the hooks had to be taken from the line and refastened. This last operation is called "ganging the hooks."

The gangings finished, the ground-line next occupies the fisherman's attention. This being

composed, as already stated, of 50-fathom pieces requires that each of these pieces should have a loop spliced in one end, while the other is fastened by what the sailors call a "wall," so that it will not untwist. The loops and walls finished, and six of the 50-fathom pieces tied together, the ground-line is ready for the attachment of the gangings, which are then fastened to it at every 2 fathoms. Besides the ground-lines and gangings, the buoys, buoy-lines, and anchors had to be made ready, but as these have already been mentioned they will need no further notice here. In doing these things the men would sometimes be in the cabin, forecastle, or on deck, just as convenience and fancy inclined them.

The only difference between Sunday and any other day in the week was that no nail must be driven on that day, for they said that would "nail the trip." Their superstitions are a little curious. The old notion that any enterprise commenced on Friday would be unlucky has, in a great measure, disappeared, on account of the fishermen having read in the papers a long list of great events that had happened on Friday. The objection to hammering on Sunday was so strong that the captain delayed fixing a part of the rigging from Sunday until Monday on this account.

The food during the trip was excellent of its kind. Fresh meat and vegetables were, from the nature of the case, out of the question, but the salt meat could not have been better, and fresh halibut and cod, while the fishing continued, were ever available. There was no milk of any kind, and no canned vegetables. Only enough potatoes were taken to last a few days. A little variety was noticed in the meals on Sunday, for on this day the cook added baked beans and brown bread to the bill of fare. Pea soup was common. Tea was prepared for each meal, and coffee for breakfast, and occasionally also for dinner, but both of these had to be taken without milk. Rice pudding and the famous dish of "duff" appeared occasionally. Neither were we without our mince pies, for the cook made some very fair ones out of dried apples and salt meat. Sugar, butter, and molasses were only wanting the last two weeks. The water obtained in Greenland was excellent, as well as that taken from Gloucester.

The most regular meal was dinner, which came about noon. The other meals were more or less interfered with by the fishing, but while we were on the passage out and back breakfast came about 6 a. m. and supper about 5 p. m.

The course taken coming home was the reverse of that going. Those who have been to Greenland after halibut several years say that after August 20 the weather will permit of but little fishing. Our captain, however, having some salt left, decided to remain a little longer, so we did not start for home until the 28th of August. Then followed the active preparations for going home. The first thing was the bringing on board the barrels of fins, and the careful heading up of these. Next came the repacking of the flitches. After flitches have been packed ten or twelve days, for the first time, they are usually repacked in a more compact form and a little more salt added. During the fishing the packing had been mostly forward of amidships, so that the bow of the vessel was low down in the water, and to trim the vessel better the flitches were repacked farther aft. The trawls were also unrigged and packed away in the hold, but the cleaning of the vessel was left until we were south of the Straits of Belle Isle.

The decks being cleared, and the dories lashed in their places amidships, we started for home August 28. For the first few days the wind favored us, but before reaching Belle Isle it died out, and most of the time after that was unfavorable in direction or a dead calm.

Getting south of the Straits of Belle Isle we found the climate much different from that in Davis' Strait. The captain had brought a bushel or so of very fine black sand from Holsteinborg, and this was now used to scrub the vessel clean of fish slime which had been collecting ever since the fishing commenced.

The passage home was uneventful, the crew being unemployed the greater part of the time. Some read, others walked the deck, smoked if they could get tobacco, and lay in their bunks. Most of the food gave out, until toward the last nothing but salt meat and bread were left. We reached Gloucester the 17th of September.

4. THE VESSELS

A part of the salted halibut is brought into port by vessels not exclusively engaged in this fishery. Vessels visiting the Banks after codfish are in the habit of salting the halibut they catch, and even the fresh-halibut fishermen, when the number of fish taken is greater than they have ice for preserving, often salt the remainder. But at present the larger part of the salted halibut is obtained by schooners "fitted out" for catching and salting these fish. These schooners, in size, speed, and sea-worthiness are among the best of fishing vessels. Remaining on the fishing grounds months at a time they often experience heavy weather such as only the stanchest vessels could possibly survive, and, as the grounds are at a distance from home, size and speed are very desirable.

The following table gives the names, the tonnage, and the date and place of building of vessels engaged in the Davis' Strait fishery, which has for the last few years monopolized the salt-halibut fishery:

Tonnage, date, and place of building of vessels that have been engaged in the Davis' Strait fishery.

Name.	Tonnage.	When built.	Where built.
Aaron Burnham	69	1870	Essex, Mass.
Albert Clarence	101	1863	Portsmouth, N. H.
Bellerophon	85	1872	Essex, Mass.
Bunker Hill	100	1875	Gloucester, Mass.
Caleb Eaton	104	1866	East Boston, Mass.
Carrie Jones	97	1869	Chelsea, Mass.
Cunard	74	1877	Essex, Mass.
Grace L. Fears	88	1874	Gloucester, Mass.
Henry Wilson	93	1875	Essex, Mass.
Herman Babson	101	1876	Essex, Mass.
John Atwood	109	1865	Kennebunk.
Mambrino Chief	227	1871	East Boston, Mass.
Mary E	67	1871	Essex, Mass.
Nulli Secundus	89	1874	Essex, Mass.
River Queen	128	1853	Haddam, Conn.
Thorwaldsen	88	1871	Essex, Mass.
William S. Baker	158	1860	Essex, Mass.
Average	101+		

5. APPARATUS AND METHODS OF FISHING.

The fishing is done by means of trawls. A trawl is composed of several parts. First, there is the ground-line, which is anchored at each end and lies on the bottom. The hooks are attached to lines 5 feet long, called gangings, which are in turn fastened to the ground-line at every 2 fathoms, sometimes at every 2½. To mark the position of each end of the trawl, a line extends from the anchor at the end of the ground-line to a buoy on the surface of the water.

The main or ground-line is about a quarter of an inch in diameter, and is made up of parts 50 fathoms long. Each of these parts has one end fastened, so that it will not unravel, while the other has a loop spliced in it. The end not spliced is tied to the loop end of the next part by a knot, which is both strong and secure, though easily untied. The trawls can thus, by using

more or less of these 50-fathom pieces, be made of any desired length, but, when not in use, six of these parts are usually kept fastened together, and are then called a tub or skate of trawl, according to the manner of keeping them. In fishing for cod and haddock, and formerly in the halibut fishery also, they were kept coiled up in tubs, whence the name "tub of trawl," meaning 300 fathoms of trawl. But now, in the latter industry, they are kept in what are called skates.

A skate is a piece of canvas about a foot and a half square, having two pieces of rope, 6 feet or so in length, so fastened across it that an end projects from each corner. Upon this canvas the 300 fathoms of trawl are coiled and firmly secured by the ropes, tied together above.

The phrases "tub of trawl" and "skate of trawl" are used interchangeably. Thus, on the Bunker Hill, though no tubs were used to keep the trawls in, it was quite common to hear the fishermen speak of setting two or more "tubs of trawl."

The buoys used on this trip were of two kinds, the "boat-buoys" and "keg-buoys." The boat-buoys were blocks of wood, 3 feet long, cut in the shape of a round-bottomed row-boat, and coated with tar. The buoy-line is attached by means of a swivel to the under part of the buoy, just in front of the middle. Back of the middle is bored a hole from top to bottom, through which passes the flag-pole. This pole fits in loosely so that it turns freely and can be taken out for easy packing in the dory. In order that it may not slip too far through the hole, a piece of leather is nailed round the pole above the hole, and, to keep it upright, a weight is attached to its lower end. The flag is a piece of canvas painted black. These buoys are not, however, so serviceable as the keg-buoys, which are small water-tight kegs, holding a little over a quarter of a barrel. Through the keg runs the flag-pole, tightly wedged in to prevent leakage and strongly fastened by stout lines to prevent its coming out. To this is fastened the flag above and the buoy-line below. The great advantage of these last over the other kind of buoy is their greater buoyancy; for the boat-buoys were continually being carried under by the force of the tide, so much so that it was frequently necessary to use two of them in place of one. On the other hand, the keg-buoys were liable to burst, an accident rendering them fit only for the fire. Unfortunately only ten keg-buoys were brought on this trip; not enough for each dory to have one at each end of its trawl. The matter was settled by using one of these for the outer end of the trawl, while one or two of the boat-buoys were used at the inner end.

The typical manner of setting a trawl is in a straight line, across the direction of the tide; for if the fish swim either with or against the current a greater number will cross the ground-line lying in this direction than in any other. Two men are necessary for the operation. One man sits in the bow of the boat, rowing slowly in the required direction, while the other, in the stern, sets the trawl, by first throwing out the inner buoy, with its attached buoy-line, to be followed by the inner anchor. This, in turn, is succeeded by the ground-line, outside anchor, buoy-line, and keg-buoy. The length of a trawl varies, according to circumstances, from one to four skates, that is, from 300 to 1,200 fathoms.

As already stated, two men in a dory were necessary for setting a trawl, and as there were six dories, three for each side of the vessel, twelve of the crew were required for the fishing, while the captain and cook made the whole number fourteen. Each dory had by lot a particular position assigned to it, and according to this was its relative place of setting the trawl. The vessel at anchor would naturally have her bow toward the tide, and thus the middle dory, on each side, by setting in a line at right angles to the length of the vessel, would set exactly across the tide, the most favorable direction. In order not to be too close together, the dories in front of the middle ones would set in lines running a little forward, while the stern dories would set in lines running

a little backward. This, the typical manner of setting, is varied, of course, by many circumstances—as winds, tides, position of vessel, or the narrow spots to which the fish may be confined.

Before speaking of the hauling of the trawls it will be best to consider the arrangements about the dories and the baiting. Before starting, the crew, according as the disposition of the men inclined them, had become divided up into pairs for dorymates, but not until we were well on our way were lots drawn to decide upon their respective dories. Previous to the drawing of these lots the dories, which were entirely without internal arrangements, such as seats, &c., were kept amidships, three on each side of the vessel, firmly lashed, upside down, one within the other, to the deck. The dories were numbered from one to six, and six slips of paper were prepared, each having one of these numbers on it. These, being thrown into a hat, were drawn by one from each pair of dorymates, each having the dory with the number corresponding to the one on his slip. Boards had been brought for making seats, and, as might have been expected, different degrees of proficiency were displayed by the men in working them up. The men in each dory are expected to do everything pertaining to their own boat, such as taking care of dory, baiting, setting, hauling, and keeping the trawls in good condition.

Two barrels of pickled menhaden were taken to use for the first baiting, or until enough fresh bait had been caught for this purpose. Afterwards the cod and smaller halibut were employed, and when these were not enough the napes of the larger halibut were used. The bait is cut up into strips about six inches long and an inch square at the end. The cutting of this is done mainly on the roof of the cabin, by large, heavy knives. Thick planks had been nailed on top of the cabin for this purpose, and the men of each dory had their places for chopping (for the cutting is more of a chopping than anything else) chosen by lot. There not being room on the cabin for all the men, those of the forward dories used boards laid across the large flitching tubs for cutting their bait.

After enough bait is cut, the skate of trawl is placed on the cabin, and, being untied, the skate is taken away from the coil and spread out on the deck below. The fisherman then commences at the top of the trawl, and, baiting the hooks as he proceeds, recoils it again on the skate below The baited hooks are thrown into the center of the coil. Both the chopping of bait and the baiting are lively times, and wonderful stories are told about the speed with which some fishermen can perform these operations. There is, however, a limit to the speed with which these can be done well, and those who boast most of their quickness are, ten to one, not the best fishermen.

The skates, baited and tied up, are ready for the water, and, if the set is to be made immediately, they are placed in the stern of the dories. When the weather is favorable it takes about fifty minutes to set four skates to a dory, but when either tide or wind is strong more time is necessary. Two to four hours are allowed from the time of setting to the time of hauling.

The hauling is usually commenced from the outer end, so that the men may work toward the vessel and have less distance to row should they be so fortunate as to secure a load of fish. When the buoy is reached the oars are taken in and laid one side, where they will be the least in the way; a roller, whose wheel is four to six inches in diameter, with two or three grooves on its rim, is fastened to the side of the dory near the bow; the buoy is taken in, unfastened from the line, and placed in the stern of the boat, and the hauling commences. The roller is almost indispensable. The line is hauled over this by the man in the bow, who does the hauling, and is then passed on to the man in the stern, to be by him coiled up and put with the buoy in the stern. (The stern is separated from the rest of the boat by a cross-partition of boards.)

After the buoy-line and anchor have been taken into the boat comes the fishy part of the haul

The hooks, whether with or without fish, are not hauled into the dory by the man in the bow, but are kept over the side until, as they are carried along by the ground-line, they reach the other end of the boat, and are there freed either of poor bait or of fish. The bait is easily shaken off by striking the hook against the gunwale of the boat, but the fish are not so easily managed. The large size of the fish necessitates the use of something besides the fishing-hooks for pulling them into the dory. Accordingly large iron barbless hooks, with a loop on one end for the hand to grasp, are used for this purpose.

But the fish must also be killed or stunned before taken into the boat or otherwise considerable inconvenience, to say nothing of danger, might be occasioned by their lively flapping. For this reason killers are used. The "killer," which is also employed for unhooking the fish, is a hard wood club about 2½ feet long. The larger or striking end is round, while the handle is flattened a little and has a notched end.

When the fish comes to the stern of the dory the fisherman hooks it in the eye, or some firm part of the head, with the large iron hook, and, after stunning it by hitting it several heavy blows over the snout with the killer, hauls it into the boat. Frequently the fish has swallowed the hook, and its extraction, were it not for the killer, would require considerable cutting and loss of time. The flattened and notched end of this instrument is run down the gullet of the fish, and, after the line is secured to the other end so as to prevent slipping, the club is turned, until, by the coiling of the line, the hollow of the hook fits into the notched end. Then by a sudden push downward and a jerk upward the hook is loosened and hauled out.

The work continues on in this manner, the man in the bow doing the hauling, while his mate attends to the coiling of the line, shaking off old bait, and taking the fish into the boat until either the boat is full or else the trawl is hauled. In the latter case a return is made to the vessel. Should, however, the boat be filled before the hauling is completed, and any other fishermen be through with the hauling of their trawls, an oar is raised as a signal for a dory to come and take the fish already caught, that the hauling may be interrupted as little as possible. If, on the other hand, all the fishermen are busy when the boat-load is secured, the ground-line is buoyed at the end of one of the 50-fathom pieces, while the load is carried to the vessel. Relieved of their load, the men return to the buoy they have just left and continue the hauling.

Sometimes the trawl is caught in the rocks, so that it is necessary to break it and commence at the inside buoy for the hauling of the remainder. Should it be caught and broken the second time, there is great danger of losing the part which is still in the water, unless it can be caught by the grapple. The grapple is a chain, with an iron bar at one end, and having, at several places along its length, circles of iron points 3 or 4 inches long, directed away from the end to which the bar is attached. It is used in the following manner: Three men go in the dory, two to row and one to attend to the grapple, which, fastened to a line by the end toward which the iron points are directed, is let down until the iron bar drags upon the bottom, but not so low as to permit the whole chain to drag. The men row back and forth over the spot where they think the trawl is, and, if they are right in their calculations, it is hard to see how they can fail to grapple it.

The fish are taken from the dories by the large iron hooks, already mentioned as being used in the small boats. When a load of fish is brought to the side of the vessel, one of the fishermen holds the stern and another the bow painter, while the man in the stern hooks the fish and hands them up to his dorymate, who stands on deck ready to haul them on board.

The last set was made August 27, and was done while the vessel was under sail. Comparatively little fishing had been done since the 20th, for the strong wind had prevented the setting of

the trawls, though the hand-line showed that the fish had not departed. The captain accordingly decided to run into harbor and prepare for going home, but finding the wind near the shore rather gentle and the water smooth, thought best to see how the fish would bite near the mouth of the harbor. As this was the first time we had set under sail, I was curious to see how it was managed.

The dories set in turns. First one is towed astern, while the outside buoy and buoy-line are being thrown overboard, then it is set adrift and the rest of the trawl set at right angles to the direction the vessel is sailing. The rest of the dories go through with the same operation in succession, by which time the first dory has finished setting and is taken in tow by the vessel. Some of the dories are left fastened to the buoy-line to mark the place of the trawls while the vessel sails back and forth an hour or two, until the time of hauling comes. The hauling is done in the usual manner. This manner of setting is practiced quite frequently on the banks of Newfoundland to find out whether the fish are abundant. If the fish are found in considerable numbers, the anchor is dropped, and the trawls run out again in the regular way. Only eighteen fish were caught this haul, so we turned the bow toward the harbor.

6. DRESSING AND SALTING THE CATCH.

After all the trawls have been hauled the men usually attend to the dressing of the fish. For this operation the men had prepared four legless tables, about 6 feet long and 3 feet wide, which, in use, were inclined against the side of the vessel in such a manner that one end rested upon the rail while the other remained on deck. Two men worked at a table, one on each side.

The knives employed were of different shapes and sizes, but the one seemingly the most in favor has the blade about 8 inches long, an inch and a half wide, and not so thick but that it had a good spring to it. All were sharp pointed, and most of them of good material.

Iron hooks, similar to but smaller than those used for taking the fish out of the dories into the vessel, are used for fastening the fish upon the table. To the loop end of the hook a short rope having a cross-piece of wood is fastened. The fish is hooked in the small of the tail, and being drawn up on the inclined table is secured there, head downwards, by placing the rope in a notch cut in the top edge of the table, the cross-piece of wood preventing its slipping back.

It will be remembered that the halibut is shaped somewhat like our common flounder, or flatfish. The backbone, with its spines lying in the same plane with the body, leaves, on each side, a thick layer of boneless flesh. These layers, called flitches, are what the men are after. After the flaps of the dorsal and ventral fins have been cut off close to the body, a cut, deep enough to reach the plane of the backbone and extending from the head to the tail, is made, about 2 inches from and parallel to the dorsal line of the body, followed by a similar cut from the gills to the tail, but on the ventral edge of the body. These two are then connected at the head by a cut parallel to a gill plate and at the tail end by a straight cross-cut. For the better handling of the flitch a slit, large enough to admit the hand, is made at each end. The flitch is then grasped at the posterior part with one hand, and, as it is raised by this hand, is cut free from the backbone with the other. The fish is then turned over and the other flitch taken off in the same manner.

The cuts made parallel to the dorsal and ventral edges of the body, being 2 inches or more from these, leave strips of flesh and fat attached to the inner bones of the fins, which, when pickled, bring a good price under the name of halibut fins. Accordingly, after the flitches, these strips are cut off and pickled. The rest of the fish, consisting of the bones, head, and viscera, is then thrown overboard and another fish is placed on the table.

After the flitches are cut from the fish they are thrown into large tubs, called flitching-tubs, to be there rinsed free from blood and dirt, previous to being salted in the hold. It is one man's duty to attend to the washing of the flitches and to the passing of them below, while three men are salting. The hold is divided by plank partitions, into six large bins, three on a side, in some of which the salt is kept until needed for salting the fish in the others. One man carefully places the flitches in layers, one above the other; a second man, with a scoop such as grocers use for flour and sugar, covers them with the salt, while a third shovels the salt within reach of the second. The Bunker Hill left Gloucester with 270 hogsheads of salt, and out of this salted 9,000 fish, amounting to 140,000 pounds of flitches, having used a little over nine-tenths of the whole quantity. This salt came from Cadiz, Spain, and cost $1.50 per hogshead, or $405 for the whole.

7. TABULAR VIEW OF A SUMMER'S WORK IN DAVIS' STRAIT FISHERY.

The following tables represent in a concise form the time of setting and hauling the trawls, the number of fish caught at each haul, together with the depth of water, tides, weather, &c., while the trawls were in the water. I have taken the time when the men left the vessel for setting and hauling to represent the time of these operations. To set four skates of trawl usually took a little less than one hour, while for hauling the same, especially if there were many fish, required three, and often four, hours.

Since the outer end of the trawl was set last and hauled first, this would remain in the water less time than that represented by the tables, while the inner end, set first but hauled last, would be in the water much longer. Yet, as a rule, more fish were caught on the outer than on the inner end. Many things are unfavorable for the trawls remaining long in the water. In the first place, if the fish are present they will soon hook themselves, and more time than is necessary for this is, of course, wasted. Then, again, the tide, fish, or both combined, are apt to entangle the trawls in the rocks, if these are left too long in the water; besides, the voracity of the little shrimp would soon leave nothing but the bones of the halibut for the disappointed fishermen, were they allowed many hours to satisfy their appetite. So plentiful are these little creatures in some places that they could be scraped off the fish by the handfuls, and, when the trawls had remained in the water two or three hours, they had left the branchiostegals hanging loosely, besides making a general assault on the whole body.

There were three days of fishing before the 5th of July (the date first mentioned in the table) of which I have no detailed notes, and have therefore omitted mentioning them in the table. The fish caught during these days, together with those caught on the hand-line from the side of the vessel, would certainly make the whole number taken during the trip over 9,000. Sixty-six hauls are recorded in the table, by which 8,616 fish were taken, averaging 139 for each haul. The smallest number taken at a single set was 4, the depth being 27 fathoms, and the largest number was 497, the depth being between 25 to 30 fathoms. The depths expressed, owing to the irregularities of the banks and the extent of surface covered by the trawls, are, of course, only approximate, but whenever this was measured I have used the depth where the vessel was anchored in preference to the rough calculations of the fishermen, for I have found them, in this respect, a little inclined to overestimate. It will be observed that the depth in August was less than in July:

Table for July and August, representing the times of setting and hauling trawls, number of fish taken, depth of water, and remarks on weather, tides, &c.

Date.		Set.	Hauled.	Fish.	Depth.	Remarks.
					Fath.	
July	5	2.30 p. m.	4.05 p. m.	48	40	Wind SW. Cloudy, with slight mist. Tide slackening from running N. Shifted position.
	5	8.15 p. m.	11.40 p. m.	96	40	Wind WNW. and increasing. Cloudy.
	6	2.50 p. m.	5.25 p. m.	144	40	Wind NE. Hazy. Tide slackening from running N.
	6	7.45 p. m.	10.05 p. m.	24	40	
	7	3.15 p. m.	6.55 p. m.	90	40	Wind SW. and nearly calm toward the end. Partly cloudy. Tide slackening. Shifted position.
	8	4.05 p. m.	6.45 p. m.	56	50	Wind NE. Rain. Tide slackening from running N. Fish small. Shifted position.
	9	3.45 p. m.	6.30 p. m.	352	50	Calm at first, wind rising from ESE. Cloudy. Tide quite strong, but slackening from running NNE.
	10	5.50 p. m.	8.45 p. m.	95	50	Wind WSW. Raining. Tide slackening from running N. Shifted position.
	11	7.30 a. m.	10.20 a. m.	66	(?)	Calm. Sky clear. Tide slack.
	11	2.50 p. m.	6 p. m.	48	(?)	Calm. Sky clear. Tide running slight toward the SSW. Shifted position.
	12	6 a. m.	10 a. m.	158	50–60	Calm. Sky clear. Tide not strong; running N.
	12	3.45 p. m.	6 30 p. m.	282	50–60	Wind slight, SW. Sky clear. Tide slackening.
	13	8.30 a. m.	11.45 a. m.	157	50–60	Wind slight, WNW. Sky clear. Tide running W.
	14	6.40 a. m.	(?)	12	50–60	
	14	4 p. m.	7 p. m.	37	(?)	Wind gentle, NE. Foggy.
	15	1.20 p. m.	4.15 p. m.	93	55–60	Wind NE. Foggy.
	15	7.55 p. m.	1 a. m.	65	55–60	Wind NE. and ENE. Foggy.
	16	2.30 p. m.	6 p. m.	14	55–60	Wind NE. Sky clear. Shifted position.
	18	11.35 a. m.	2.10 p. m.	4	27	Wind SW. Clearing from fog. Tide quite strong. Shifted position. Three skates to a dory.
	19	12.55 p. m.	2.15 p. m.	54	40	Wind SW. Cloudy. After hauling ran into Holsteinborg Harbor.
	23	7.15 a. m.	10.45 a. m.	148	35–40	Calm. Cloudy. Tide running strong toward N. Two skates to a dory.
	23	2.50 p. m.	5.40 p. m.	389	35–40	Calm. Cloudy. Tide slackening from running N. Four skates to a dory.
	24	8.30 a. m.	12.25 p. m.	328	35–40	Calm. Cloudy. Tide running strong to the NE. Four skates to a dory.
	24	4.15 p. m.	9 p. m.	127	35–40	Calm. Cloudy. Threatening fog from the W. Tide strong toward the W. Two skates.
	25	6 a. m.	9.20 a. m.	305	35–40	Calm. Cloudy. Tide moderate at setting, strong at hauling. Four skates to a dory.
	25	4.05 p. m.	7.45 p. m.	257	35–40	Wind gentle, NE. and N. Cloudy. Tide strong. Four skates to a dory.
	26	8.45 a. m.	10.45 a. m.	162	35–40	Wind gentle, N. Misting. Tide running strong to NE. Shifted position.
	27	6 a. m.	9.30 a. m.	24	55–60	Calm. Cloudy. Tide running northward. Four skates to a dory. On edge of bank.
	27	12.45 p. m.	3.40 p. m.	25	55–60	Calm. Cloudy and misting. Tide slackening. Two skates to a dory. On edge of bank. Shifted position.
	28	5.30 a. m.	8.40 a. m.	7	(?)	Wind slight, NE. Low fog; clear above. Tide moderate. Two skates to a dory. Shifted position.
	31	5.10 a. m.	8 a. m.	76	40–45	Wind moderate, SW. Cloudy, with rain. Tide strong, running NE. Two skates to a dory.
Aug.	1	Noon	2.30 p. m.	138	40	Two skates to a dory.
	1	5.30 p. m.	7.15 p. m.	61	40	Two skates to a dory.
	2	5.15 a. m.	7.15 a. m.	30	40	Wind SW. Raining. Tide strong. Two skates to a dory. Shifted position.
	2	1.15 p. m.	4.15 p. m.	113	40	Wind slight, SW. Raining. Tide slackening. Two skates to a dory.
	2	5.45 p. m.	8.45 p. m.	48	40	Wind slight, SW. Raining. Tide commencing to run. Two skates to a dory. Shifted position.
	3	1.45 p. m.	4.45 p. m.	305	40	Wind moderating, W. Cloudy. Tide strong, but slackening. Four skates to a dory.
	4	1.15 p. m.	4.30 p. m.	289	40	Calm. Sky clear. Tide slackening, running E. Four skates to a dory.
	4	7.15 p. m.	11 p. m.	18	40	Shifted position.
	5	2.30 p. m.	6 p. m.	274	35	Wind gentle, N. Clear, with few clouds. Tide slackening. Four skates to a dory.
	6	3 a. m.	5.45 a. m.	84	35	Wind very slight, E. Sky clear. Tide nearly slack when hauled. Two skates to a dory.
	6	3.20 p. m.	(?)	172	(?)	Calm. Cloudy. Tide slackening. Four skates to a dory.
	7	7.15 a. m.	10 a. m.	251	25–30	Calm. Cloudy. Tide commencing to run strong. Two skates to a dory.
	7	2.15 p. m.	8 p. m.	407	25–30	Calm. Nearly clear. Tide slackening. Four skates to a dory.
	8	2.15 p. m.	5 p. m.	497	25–30	Calm. Cloudy.
	9	2.40 p. m.	5.30 p. m.	430	25–30	Wind slight from the W. Hazy, followed by fog.
	10	9 p. m.	(?)	234	25–30	Wind moderate, WSW. Cloudy. Tide slackening. Four skates to a dory.
	11	4.15 a. m.	7 a. m.	61	25–30	Wind moderate, SW. Two skates to a dory.
	11	1 10 p. m.	5 p. m.	53	25–30	Wind W., moderating. Cloudy. Shifted position.
	12	4.50 p. m.	7.30 p. m.	254	35	Wind gentle, ENE. Clear. Tide slack. Two skates to a dory.
	15	4 a. m.	6.45 a. m.	60	35	Wind NW., freshening. Cloudy. One skate to a dory.
	15	4.45 a. m.	7 p. m.	63	35	Calm. Clearing, followed by blue sky. Two skates to a dory.

Table for July and August, representing the times of setting and hauling trawls, &c.—Continued.

Date.	Set.	Hauled.	Fish.	Depth.	Remarks.
				Fath.	
Aug. 16	6.30 a. m	8.10 a. m	102	35	Wind gentle, NE. Sky clear. Tide strong, running to windward. Two skates to a dory. Shifted position.
16	2.30 p. m	4.45 p. m	112	30	Wind gentle, NE. Hazy. Tide moderate, running to the east. One skate to a dory. Fish large.
16	6 p. m	8.30 p. m	111	30	Wind moderate, NE. Clear. Tide running to windward. Two skates to a dory.
17	6 p. m	8.10 p. m	112	30	Wind moderate, NE. Cloudy. Tide slack. Three skates to a dory. Shifted position.
18	7.10 a. m	Noon	200	30	Wind light, ENE., becoming calm. Cloudy. Tide strong. Three skates to a dory. Fish excellent. Holsteinborg.
20	4.35 a. m	7.45 p. m	68	25	Wind gentle, NE. by E. Clear. Tide running strong, SSW. Three skates to a dory.
21	5.30 a. m	10 a. m	74	25	Wind moderate, NE. Clear, followed by fog. Tide strong to windward. Three skates to a dory.
21	4.30 p. m	7.30 p. m	81	25	Wind moderate, NE. Foggy. Tide slackening. Shifted position.
24	11 a. m	2.40 p. m	123	30	Wind moderating, NE. Clouds broken. Tide running to windward. Shifted position.
27	7.15 a. m	(?)	18		Set under sail on the inner ground, near the mouth of Holsteinborg Harbor.
	Total		8,616		

Average time between setting and hauling in July, 3 hours.
Average time between setting and hauling in August, 2 hours, 53 minutes.
Average depth of water in July, 45.5 fathoms.
Average depth of water in August, 33 fathoms.

Number of fish caught in July	3,764+
Number of fish caught in August	4,852
Total	8,616+

8. THE HALIBUT IN ITS RELATION TO THE FISHING.

In the preceding tables, under the head of "Remarks," quite frequently occurs the phrase "Shifted position," which signifies, in this connection, a little more than merely changing the position of the vessel; it implies that the fish, for some reason, are no longer to be caught where they may have been, up to that time, quite abundant. Are the fish of a roving disposition, or do the individuals remain within restricted limits? I shall not attempt to decide, but will merely mention some facts which may have a bearing on the question.

The fishermen seldom expect to catch many fish near the vessel after the first flitching. If you ask for an explanation of this, they will tell you that the "gurry" drives the halibut away. By "gurry," they mean the refuse of the fish which is thrown overboard at the time of flitching. There is only a single case, that I know of, which would seem opposed to this explanation. It is that of a large halibut which had eaten the head, backbone, and viscera of a fish that had been flitched. It cannot be that the flesh of their own species is distasteful to the halibut, for this is what the fishermen use for bait, nor can it be that they mistake the white gleam of the flesh for sharks, for the sharks caught here were of a very dark color. Whether we know the cause or not, it is none the less true that the fish cease to bite near the vessel after the first flitching, whereas, if this operation be delayed, or if the tide at that time be strong enough to carry the gurry away a considerable distance, the fish continue to bite freely. Considering, then, that the gurry has this effect, what is the result of remaining in one spot several days? Evidently the mass of gurry will increase, and, being drifted by the tides, will cause the vessel to be the center of an ever-increasing spot where the halibut will not bite. It is thus necessary either to set the trawls at a greater distance from the vessel or else to move her to a new spot. The latter method, of course, is the easier.

On the 23d, 24th, and 25th of July over 1,500 fish were taken from a limited area, at some distance from the vessel, where the gurry did not reach, because the tide ran in the opposite direc-

tion, but there appeared little if any decrease in the numbers. The spot could be easily distinguished from the rest of the bottom by the absence of the tree-like stems of hydrozoa. On the 26th only two of the dories succeeded in setting on this spot, and these two got fish, while the others failed. The attempt to bring the vessel nearer failed so utterly that the trawls did not touch the spot again. 1,700 fish had been caught in four days on a spot not a mile square. I am inclined to think that as fast as some were caught their places were filled by new arrivals, and were it not for the gurry, a vessel once anchored in a favorable position would not have to move until a load had been secured.

But, it will be asked, will this gurry permanently injure the fishing? Probably not. There are many carnivorous animals, besides the little shrimp already spoken of, which would soon eat up everything except the bones of the fish, and it is hard to see what harm these can do. Nevertheless, there does seem to be some effect produced by the fishing of one year upon the abundance of the fish in the same place the succeeding years; for the fishermen complain that the halibut off the coasts of New England, Nova Scotia, and Newfoundland must be sought in deeper and deeper water year after year. If this be so, it is hard of explanation. For, if we consider the halibut as of a roving disposition, why should they shun their former haunts because they have been fished on, or if, on the other hand, they are not rovers, how can they, considering their great fecundity, be so easily exterminated, as their disappearance from these haunts would imply?

Their fecundity must be very great. In a fish about 6 feet in length I calculated the ovary had 2,782,425 eggs. This was done by counting the number of eggs in a straight row an inch long and from this finding how many there were in a cubic inch. The number of cubic inches in one of the boxes in which the codfish hooks came was calculated and the box filled with eggs. These eggs were then weighed. The whole mass of eggs was next put on the scales and their weight divided by the weight of one cubic inch, to ascertain the number of cubic inches of eggs. This result, multiplied by the number of eggs in one cubic inch, would give the number of eggs in the whole ovary. The estimate may be too large, though I cannot conceive how any error so great as to make the number less than two millions could have crept in. I do not know whether all these eggs would have been laid at one time or not, but as they appeared to be nearly of the same size I judge that such would probably have been the case.

There was no way of determining accurately at what stage of the tide the fish were the most voracious, but they appeared to take the bait best the latter part of the stronger tide, for it was then that the hand-line was most successful, and the men expected the best luck with the trawls.

Though the fish are of the same species as those caught on the Grand Bank, nothing was found in them, in the shape of hooks or food, indicative of a migration from any other place.

August 5th I made several observations upon the temperature of the rectum of the halibut, when they were first taken by the hand-line, and found, with one exception, the temperature to be 39° Fahr. These observations were made within an hour or two of the time the temperature of the bottom was taken. The exception referred to was where one halibut showed a temperature of 39½° Fahr., half a degree higher than the others.

The food of the fish was different for different places and times. Where we first fished it was composed of crabs and other crustacea, with now and then a fish of the genus *Cyclopterus*. But when we shifted to a spot 20 miles or so south of this, we found some of the species of crustacea had disappeared, and the principal source of food was a small fish called "lant." There was also a great difference in the condition of the fish in these two places, those of the last place being far better and more vigorous. The males were above six to one female in the first place, whereas the

females in the latter place predominated greatly over the males. I take the following from my diary of August 8 to show the difference in the two places:

"The fish on this bank have none of the large shrimp in their stomachs that were found in the stomachs of the halibut on the other bank. Here they have mostly lant, there mostly shrimp. None of the common cod have as yet been caught." A few were caught after this. "Sharks and catfish are likewise very few. There are no walruses or seals, few whales, and many birds. The birds are not as hungry as on the other bank, and it is harder to shoot them, for they do not fly very near."

NW. from Holsteinborg, July.	WSW. from Holsteinborg, August.
Food, principally crustacea.	Food, principally lant.
6 males to 1 female.	1 male to 7 females.
Fish poor.	Fish fat and vigorous.
Fish in spots.	Fish more evenly distributed.

The halibut do not always swim near the bottom. I saw one leap out of the water where the depth was 40 fathoms, and have caught them on the hand-line when it was only half-way down. Several have followed the bait to the surface, and one even followed the thermometer up twice in succession. Feathers were pulled out of the mouth of one, and the skeleton of a gull, *Larus tridactylus*, was found in the stomach of another.