

56.—REPORT ON BLACK COD OF THE NORTH PACIFIC OCEAN.*

By JAMES G. SWAN.

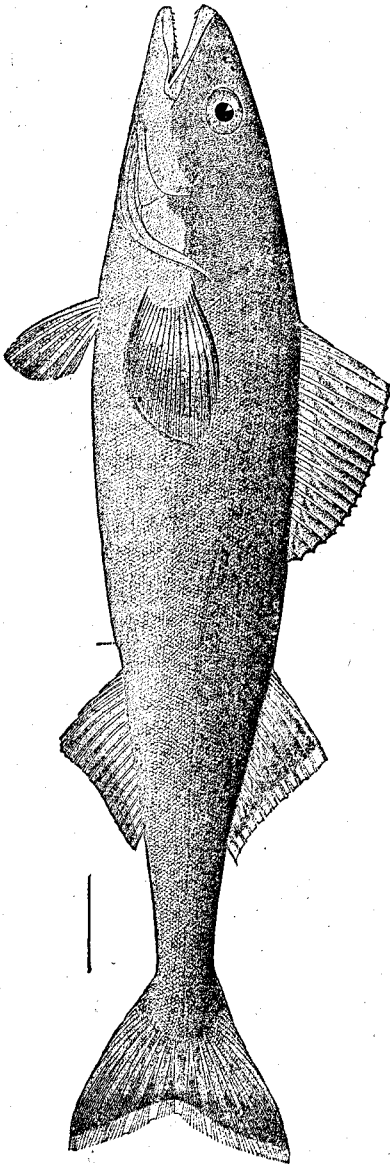
NAME.—The *Anoplopoma fimbria* is known in California as candle-fish, Spanish mackerel, grease-fish, &c. ; among the Makah Indians of Cape Flattery, Wash., as “beshowe,” and by the white residents at the cape as “black cod.” On Queen Charlotte’s Islands, British Columbia, it is called “coal-fish” by white settlers, and by the Haidah Indians, who reside on those islands, it is called “skil.” At Knight’s Inlet, British Columbia, it is called “kwakewlth.” Each tribe or locality where it is taken has a local name for it, but it is generally known as black cod.

The scientific name, *Anoplopoma fimbria*, has been adopted by Gill, Jordan & Gilbert, and most other writers, although a specimen taken off Mount Saint Elias, Alaska, was named by Pallas *Gadus fimbria* (Proc. U. S. Nat. Museum, 1881, vol. 4, p. 254), thus showing that its resemblance to the cod was observed by that naturalist. The term “cod” is applied by fishermen and fish-dealers on the North Pacific coast to a variety of fish which are not related to the genus *Gadus*, and are not found in Atlantic waters. The *Ophiodon elongatus* is called, in San Francisco, buffalo cod, green cod, blue cod, &c. At Cape Flattery the Makah Indians call it “tooshkow.” The whites call it kultus cod or inferior to true cod. The different varieties of *Sebastichthys* are known in the Victoria and San Francisco markets as rock cod, but do not resemble the rock cod of New England in any manner, being more like the perch, having a remarkable development of sharp bony spines and prickles. The popular name of black cod applied to the *Anoplopoma fimbria* does not seem any more of a misnomer than to call the *Ophiodon elongatus* blue or green cod.

DESCRIPTION.—In general appearance the black cod resembles a pollock, but when fully grown they have the rounded form of a true cod, but are not so marked. In color they are a dark olive brown or sepia on the back, with grayish sides and belly; the flesh is white and very fat, like mackerel, and they have been sold in San Francisco under the name of Spanish mackerel when of a small size. Professor Jordan says: “The young ones are taken off the wharves at Seattle, but are not much thought of as a food-fish. It attains its greatest perfection in very deep water, where it attains a size of 40 inches and a weight of

* *Anoplopoma fimbria* (Pallas) Gill, or black cod of the North Pacific Ocean; beshowe, Makah Indians, of Cape Flattery, Wash.; skil, Haidah Indians, of Queen Charlotte’s Islands, British Columbia.

15 pounds." Instances are not uncommon of black cod being taken measuring 50 inches and weighing 30 pounds, but the average is much less than this last. But it is the admitted rule that the deeper the water the larger the fish.



The black cod (*Anoplopoma fimbria*).

WHEN DISCOVERED AND ITS DISTRIBUTION.—Although I have the credit of first introducing this fish in a marketable shape to the public, yet it has been known to the officers and employees of the Hudson's Bay Company for many years, but was seldom seen on their tables; the enormous quantities of salmon, eulachon, herring, cod, halibut, and other fish, easily and plentifully taken, made it unnecessary to incur the trouble of fishing in the deep water for the black cod. The first I saw of them was at Neah Bay, Wash., at the entrance to Fuca Strait, in 1859. An old Indian caught a few when fishing for halibut. I procured one, which I broiled, and found it equal to a No. 1 mackerel.

They called it "beshowe," but the white settlers, from want of a better name, called it black cod. The true cod, *Gadus*, is called by the Makah Indians "cardatl." The kultus cod, *Ophiodon elongatus*, they call "tooshkows." As the black cod are best in water from 80 to 100 fathoms, the Makahs do not care to fish for them, and when by accident they catch any they ask one dollar apiece, and do not care to part with them even at that price. I have occasionally seen the "beshowe" every summer that I have been at Neah Bay since 1859, but I never have had an opportunity to get any quantity of them till in September, 1883, while at Skidgate, Queen Charlotte's Islands, which I visited under instructions from Professor Spencer F. Baird. I succeeded in procuring about 100 of these fish, which are called by the Haida Indians "skil." These

Indians take them in considerable quantities on the west coast of the group of islands, in the deep waters of the inlets and harbors, for the purpose of extracting the oil or grease, which is used as food by the natives, and is similar in appearance to the eulachon grease, which is of the color and consistence of soft lard.

From Monterey to the Arctic Ocean the *Anoplopoma* are found, but when young they are not considered as good for the table. They are caught, according to Professor Jordan, "from the wharves at Seattle on Puget Sound, by the Chinese at Monterey with set lines, and in San Francisco with sweep nets. It feeds on crustaceans, worms, and small fish, and reaches a length of 40 inches and a weight of 15 pounds; those usually seen rarely exceed 2 or 3 pounds. As a food-fish it is generally held in low esteem, although sometimes sold as Spanish mackerel. The large specimens taken in deep water about Vancouver Island, known to the Makah Indians as 'beshowe,' are highly valued as a food-fish, according to Mr. Swan" (Proc. U. S. Nat. Museum; 1881, vol. 4, p. 54). Hitherto the black cod have not been introduced among the whites as a food-fish, owing to a prejudice of some tribes against fishing for them to sell, of which I will make mention in another portion of this paper.

The officers and employees of the Hudson's Bay Company have known of the existence of the black cod for many years; but as salmon and halibut have been so exceedingly plentiful, no steps have been taken to engage in the fishery to develop it.

Alexander C. Anderson, Esq., inspector of fisheries for British Columbia, in his report to the minister of marine and fisheries, Ottawa, Canada, for 1860, says (pp. 286 and 287), while referring to Massett Harbor and the adjacent waters near North Island, Queen Charlotte's group, British Columbia:

"A species of fish is caught in these waters which I have frequently heard mentioned in terms of high praise, but of which I have never met with a specimen. I am therefore unable to say to what variety it may belong. For want of a better name it has obtained that of coal-fish, though, it is said, not from any real resemblance to a fish of that name found in Atlantic waters. Mr. McKenzie, Hudson's Bay Company's agent at Massett, says of the coal-fish: Length about 24 inches; back dark color; belly gray. Inhabits very deep water, and said to abound in the vicinity of Virago Sound. Indians fish with a long line, with about ten hooks, and generally haul up as many fish. This fish yields a large quantity of oil, which is used as an article of food and highly esteemed by the natives, but is not much fished for. Obstacles to prevent Indians from making it a business, depth of water, difficulty of anchoring canoes, strong currents, and necessity of calm weather. From others, now and in times past, I have learned that, from the richness and firm consistence of its flesh, this fish would bear salting equally well with the salmon, which fish, indeed, with doubtless exaggerated praise, some

have declared it to excel. Withal, I do not question that with time this fish will prove, with the aid of proper vessels and needful appliances, a valuable adjunct to the resources of the provincial waters, either as a market fish or certainly for the extraction of oil."

The fish above mentioned by Mr. Anderson were caught by the Indians in Parry Passage, between Graham and North Islands, Queen Charlotte's group; but along the west coast of those islands, particularly at Cliaatl, near the western entrance to Skidegate Chanfel, and south of that place, at Stunthlai, near Tasoo Harbor, the water is much deeper than in Parry Passage, and the fish much larger. Instances are not rare of specimens being taken measuring 50 inches long and weighing 30 pounds, although the average fish caught in shallow water will weigh from 10 to 15 pounds each when fresh, and before being dressed.

The black cod are found in the deep waters of Fuca Strait, between Port Angeles and Cape Flattery, a distance of some 60 miles, where they attain a large size, and are highly esteemed as a food-fish, but the same objection regarding Indians catching them in that locality exists, such as is mentioned by Mr. Anderson, as quoted, *e. g.*, "depth of water, difficulty of anchoring canoes, strong currents, and necessity of calm weather." Added to this, may be stated that the Indians have such a variety and quantity of other kinds of fish in shoaler water easily taken, such as halibut, ophiodon or green cod, *Sebastichthys* of many varieties, salmon, kelp-fish, and herring, they seldom care to fish in deep water for black cod, and when they do it is to obtain them as a luxury for their chiefs.

It is only the Makah Indians who take these fish on the American side of Fuca Strait, but their fishery is limited, as hitherto there has been no demand for them. Further north, along the west coast of Queen Charlotte's Islands, they are very plentiful in all the fiords and inlets where the water is deep, but are not taken by the Indians, owing to causes before mentioned. On the west coast of Queen Charlotte's Islands they are very plentiful, and the Haidah Indians catch them for their oil, which is used as food. These fish are also plentiful in the waters of the various inlets of the mainland; but the Indians of those tribes obtain their supplies of grease from the eulachon or candle-fish, and the herring. They also abound in the waters of Alaska, particularly the Prince of Wales Archipelago, where they have long been known, and a few have been pickled from time to time by white persons for their own use. The reason why this fishing has been so long neglected is that other fish are so abundant and so easily taken that the Indians obtain their food supplies from them.

The superstition some of the tribes have had about allowing white persons to catch these fish, to which I have alluded, may be illustrated by the following anecdote, which is but one of hundreds that could be told of similar Indian prejudices:

The late Capt. Edward Brotchie, for whom Brotchie's Ledge, near Victoria, was named, fitted out a small vessel in 1853 to engage in the

fishery for eulachon, *Thaleichthys pacificus* (Rich.) Grd. He took a quantity of salt and small kegs or half barrels in which to pack the eulachon, which are a small fish, in size and appearance like the smelt. He proceeded to Knight's Inlet, which makes into the mainland from the southeastern portion of Queen Charlotte Sound. The eulachon run up this inlet every spring in myriads, and are followed by halibut, black cod, green cod, cod, dogfish, and every other variety of fish found in those waters, which prey upon them for food. They are taken in immense quantities by the Indians of Knight's Inlet for food and oil, and as articles of trade with other Indians.

When Captain Brotchie arrived at the village at the head of the inlet, the Indians utterly refused either to sell, give, or allow him to catch any eulachon. In his dilemma a friendly Indian told him he could have as many of the "kwakewlth"—the name they give the black cod—as he wished, for they were plenty and fat; so with their assistance he filled all his barrels and started for Victoria with his cargo. But before he had got out of the inlet the old medicine men had a consultation, and decided that if the white man was allowed to take away the "kwakewlth," the eulachon would be ashamed and never come back. So a party of young Indians followed Captain Brotchie in canoes, and having boarded his vessel, they deliberately knocked in the heads of every one of the barrels and emptied the fish overboard. The captain was then allowed to return to Victoria with his empty barrels.

I mention this incident to show how abundant the black cod were thirty years ago, and they are fully as abundant now, and there is no fear of any Indian interference with any parties who may wish to engage in the fishery at the present time.

Since Captain Brotchie's unsuccessful voyage for eulachon no one has attempted to put up the black cod in any quantity for market, and the lot I took to Victoria dry-salted in boxes, were the first ever seen in a merchantable condition in that city, and the four boxes I sent to the United States Fish Commission are the first ever exported from the province of British Columbia, a fact to which special reference was made by the collector of customs of Victoria in his quarterly report to the minister of finances in Ottawa.

CAPTURE.—As the Haidah Indians seem to be the only ones who make a business of taking the black cod or "skil," I will confine myself to a description of the method adopted by them.

Their lines.—The fish-lines used in the capture of the black cod are made of kelp, in a manner similar to that of the Makahs, of Cape Flattery, and other tribes on the northwest coast.

This giant kelp, the *Nereocystis* (Harvey) is of the order *Laminariaceæ*, and is of much larger dimensions than the *Fucaceæ*, the fronds being measured by fathoms, not feet.

Harvey says:* "The ordinary oarweed, tangle, devil's apron, and

* *Nereis Boreali Americana*. Harvey, 1858.

sea-colander of the American shores, which are familiar examples of these plants, are frequently seen 10, 12, or even 20 feet in length, with immense fronds or aprons terminating their stems; but these are mediocre, indeed, compared with some of their co-ordinates in the Pacific. Some of these plants, it is said, when fully grown, have a stem measuring 300 feet in length. These grow where the water is rapid, and have to extend to a great length before their buoyancy will permit them to reach the surface. For about two-thirds of this length from the root up, the stem is about the size of a halibut line. It then expands till at the extremity it assumes a pear-shaped hollow head capable of holding a quart, and from which extends a tuft of upward of fifty leaves, lanceolate in form, each of which is from 40 to 50 feet long. The slender stem is of prodigious strength, and is prepared by the native for use as follows: The stems being cut of a uniform length, generally 15 or 25 fathoms each, are placed in running fresh water till they become bleached and all the salt is extracted. They are then stretched and partially dried in the open air, then coiled up and hung in the smoke of the lodge for a short time. Then they are wet and stretched again and knotted together. This process is continued at regular intervals till the kelp stem becomes tough and as strong as the best hemp line of the same size."

After using, it is always carefully coiled up; but as it gets brittle if allowed to dry too much it is invariably soaked in salt water before being used.

The hooks.—The hooks used by the Haidah Indians for catching the "skil" or black cod are of a peculiar shape, unlike any fishhook I have ever seen; they are made of the knots or butts of limbs of the hemlock, cut out from old decayed logs. These knots are split into splints of proper size, then roughly shaped with a knife, and then steamed and bent into shape, which shape they retain when cold. This form is adopted, so the Indians informed me, because the bottom on the west coast is very foul with stones and coral formations and incrustations; steel hooks get fast and lines are subject to being lost; but this style of hook does not get fast.

When the hook is to be used, the bait is tied on with the string which is used to bring the two ends of the hook together and keep them in position when not baited. After the bait is well secured, a piece of stick is inserted to press the ends of the hook apart. When the fish bites the bait, it knocks out the stick, which floats to the surface, the two ends of the hook, springing together, close on the fish's head and hold it fast. It is usual to tie from seventy-five to one hundred hooks to the line, at a distance of about 2 feet apart, and the fish are so plentiful that not unfrequently every hook will have a fish. The sticks which floats to the surface, when knocked out of the hook by the fish, serve to indicate to the Indian the sort of luck he is having at the bottom. But although the fish may be abundant, the Indian is not

always sure of securing what he has caught. His greatest annoyance is the ground-sharks or nurse-fish, as the sailors call them, which will often eat the bodies of the black cod, leaving only the heads attached to the hooks. Another annoyance is from a small fish called by the Haidah Indians "nee-kaiö-kaiung," the *Blepsias cirrhosus* (Pallas) Gün., one of the family *Cottidae*, which steals the bait and often gets hooked; as soon as the Indian discovers this pest he quits fishing and goes to another place.

As the depth of the water varies in different places it is usual to have a lot of spare lines in the canoe which can instantly be knotted together and form a line as long as required; sometimes 200 fathoms will be used, as the line when fully supplied with hooks becomes a trawl.

The sinker.—A most ingenious contrivance is the sinker used by the Haidahs in this deep-water fishing. This is a stone, from 10 to 20 pounds in weight. A small kelp line is wound round this stone and held by a bight tucked under the turns, and the end made fast to the end of the larger line, which large line is wound round this stone, and a smaller stone which serves to bind it fast and as a sort of tripping-stone. The large line is secured in a similar manner as the small line, by a loop or bight tucked under the turns. The stone is then lowered to the bottom and the line paid out. As soon as the fisherman sees enough pegs floating to warrant his pulling in the line, he gathers in the slack till he feels the weight of the stone, when he gives a sudden jerk, which pulls out the bight and loosens the tripping-stone, which falls out and loosens the big stone, which in turn becomes detached from the line, which is then pulled in relieved of the weight of the sinker.

METHOD OF CURING THE BLACK COD.—On my arrival at Skidegate, in the last of August, 1883, I arranged with Mr. Andrew McGregor, one of the partners in the Skidegate, to send some Indians to the west coast to procure some black cod. He sent four Indians, Scanayune, Ske-atlung, Ingow, and Skatsgai, who all belong to the Gold Harbor band on the west coast. I sent a sack of salt with the Indians, with instructions to take out the gills, remove the viscera without splitting the fish, and then fill the cavity with salt, which was done, and the fish were received in prime condition.

On the 2d of September, Scanayune returned with twenty fine fish. A council was now called to decide the best way to split them. There were a number of eastern fishermen present, who were the crew of the little steamer Skidegate, engaged in dogfishing for the oil works. Some were of the opinion that the fish should be split in the back, like a salmon; but I objected, as I thought people would say they were the white-flesh dog-salmon and be prejudiced, so I had them split and dressed like cod, and well salted in a vat. But now my trouble commenced. I was of the opinion, as were all the others, that the fish should be barreled like salmon; but we had no barrels or coopers, and the question was how to get them to Victoria without rusting, for we all thought that so fat

a fish would rust like a mackerel or salmon. At last I recollected how I had seen halibut treated when it was to be smoked, and I decided on that plan. After the fish had been in salt two weeks, I rinsed them in the pickle they had made, and piled them skin side up, put planks and heavy stones on them, and so pressed out the pickle. After they had been four days under this pressure I found them hard and firm, and beautifully white. I then packed them in boxes, which I made for the purpose, putting twenty fish in each box and filling up with dry salt. My intention was to repack them in Victoria and put them in barrels, but on examining the boxes on my arrival I found the fish in such fine condition that I was advised by experts of the Hudson's Bay Company to send the fish forward just as they were; and so well satisfied were the officers of the company with the plan I had adopted through necessity, that the chief factor, William Charles, Esq., instructed the Company's agent at Massett, Mr. McKenzie, to procure all the black cod he could get from the Indians, to cure them in every respect as I had done, and to pack them in similar packages, as it was thought they would take better in the London market.

QUALITIES OF THE BLACK COD.—I tested the fresh fish in every manner I could think of. I had the livers, and we fried and found them delicious. The females were full of eggs, which I found very small, about the size of herring spawn. This was the 1st of September, but I had no opportunity of ascertaining the spawning season or their spawning ground. I tried the tongues, but did not like them as well as codfish tongues, as they were quite small.

The fish does not make a good chowder, as it is too fat, the heads, however, after having been salted, we found made excellent chowder. The best way in which the fresh fish can be cooked, is to broil it like fresh mackerel, or roast it before the open fire like planked shad. After it has been salted, as I salted those I put up, it should be cooked by first soaking till the salt is well out, then simply boiled, and served with plain boiled potatoes. Made into fishballs it excels any fish I have eaten.

THE BLACK COD DOES NOT RUST.—On the 6th day of October, 1883, I gave George Vienna, the fish-dealer on Government Saint Victoria, one of the black cod, which he hung up in his stall for every one to examine. On the 17th day of December I examined the same fish, which had been exposed to the weather in the stall all the time, and it was perfectly sweet. Mr. Vienna said it never would rust; it was too well salted. A gentleman of Victoria, who had eaten of the black cod heartily on several occasions, told me that he is unable to eat either salt salmon or mackerel, as the oil of these fish does not agree with his digestion, but he experienced no such effect from eating the fat black cod, and mentioned the fact as something to be noticed.

ECONOMICAL MANNER OF PUTTING UP THE BLACK COD.—Now that the experiment of my method of dry-salting the black cod has proved

a success by the encomiums passed upon the excellence of that fish as tested by the experts of the Boston Fish Bureau, who are undoubtedly some of the best critics and judges of fish in the United States, I wish to call attention to the economy of my method for the poor settlers on our northwest coasts of Washington Territory and Alaska. All that is required for outlay is the cost of the salt for curing the fish, and the nails for making boxes, which can be made from the white spruce which abounds on the coast, from the Columbia River to Western Alaska. This wood splits as easily as cedar, is perfectly sweet and free from resin, as all the gum is contained in the thin ring of sap-wood and bark. The inside is free from resin. This will make the cheapest and best of boxes and save the expense of coopers and barrels, and the fish being of full size is better adapted for smoking than the same fish cut and barreled.

THE FISHERY FOR THE BLACK COD.—A very important question to be answered is, will the black cod be taken in sufficient quantities to supply the demand which is likely to spring up wherever their rare excellence is known? I think that at present the supply will be limited, as there are no fishermen on the North Pacific coast who have the appliances or the experience in deep-sea fishing as practiced at present on the Atlantic coast. Our coast fisheries are exclusively confined to salmon, which are taken in the rivers with nets and seines. The very few cod and halibut brought to our markets are taken with hand-lines and old-fashioned trawls, but it is rare to find any fishermen working in more than 30 fathoms of water. Our waters teem with fish, but as yet, with the exception of salmon, no organized plan has been tried for taking quantities of fish. What we want are Eastern fishermen with Eastern capital and Eastern methods of taking fish. If such men would come out here they can find plenty of black cod, but they will be found in deep swift water, where at times it is pretty rough. But to a "Grand Banker" or a "George's Banker" our most turbulent waters would be but a plaything.

In order to develop the fisheries of Puget Sound and the Alaskan waters there should be some regular wholesale fish-dealers established, who would take everything the fishermen would bring, and find markets themselves. Our fishermen are too poor to send their fish to a distant market; but let a wholesale dealer with capital establish himself, and he would find fish would be brought from all quarters, white men and Indians working with a will to catch fish which would bring them ready money.

There seems to be considerable interest evinced in British Columbia about the black cod, and several vessels will be fitted to go north in the spring; but on Puget Sound no one as yet seems to show any interest. Those who have means are not willing to embark in the business, and those who would like to develop it have no capital to work with. I think, however, that the prospect of an Eastern market may

induce some of our citizens to try their luck on black cod during the coming summer.

THE SEASON FOR BLACK COD.—I very nearly omitted an important point, and that is, the best season of the year for taking black cod. I find that in the spring, when the eulachon run up the inlets and streams, where they spawn, the black cod follow them, and can be taken in quantities; but I am informed by both Haidah and Makah Indians that the black cod can be taken in the deep water at any season of the year when the weather will permit fishing. There are undoubtedly certain seasons which are better than others for taking this fish, but as yet no one has made a study of their habits.

PORT TOWNSEND, WASH., *January 9, 1884.*

57.—UNUSUAL ABUNDANCE OF COD ON BROWN'S BANK.

By Capt. J. W. COLLINS.

The hand-line cod-fishermen who have arrived recently report fish unusually abundant on Brown's Bank, though they are scarce on George's, as is generally the case at this season.

Capt. William Dempsey, master of schooner Clara F. Friend, who has had upwards of twenty-five years' experience in the George's cod-fishery, arrived last Monday—May 25—from a trip to Brown's Bank. He was absent from home eighteen days, seven days of which were spent at anchor on the Bank. In this time, with a crew of 10 men, a fare of 37,000 pounds of fish was caught, 1,400 pounds of which were fresh halibut, the remainder being salt cod. The schooner lay in 45 fathoms, about south-southeast from the "Shoal-water," in north latitude 42° 46'.

Captain Dempsey says he never before saw cod so abundant on Brown's Bank, at this season, in all his experience. Not only were they plentiful near the bottom, but they appeared to be numerous nearly to the surface of the water. Many fish were caught "up in the water," and on one occasion Captain Dempsey hooked a pair of fine cod not over 10 fathoms from the surface. "High-course" tides prevailed while the vessel was on the ground, and they ran so strong that much difficulty was experienced in making the gear "tend" bottom. After a little while, however, it was found more profitable not to veer out any more line after once getting bottom, for, as the swift-running current gradually lifted the leaden sinkers from the ground, fishermen were more liable to catch pairs of fish than if they exerted themselves to pay out their lines at intervals, which is the usual method when fishing in a tide-way. These cod were in spawning condition, according to Captain Dempsey, who tells me that the milt ran freely from the fish after they had been landed on deck. Before he left the Bank, several schooners came there from George's, where they reported finding fish very scarce.

GLOUCESTER, MASS., *May 30, 1885.*