

When winter came I took all of them (some 18) and put them in a large tank of pure cold water fed by a windmill from a deep well, and kept them there until April last without any food whatever, or without any mud or other substance for protection. The tank was about 10 feet deep and froze over several times during the winter, the thermometer standing as low as 14° above zero for several weeks. From this tank I transferred them to a shallow pond dug in the alkali bottom near by, which has simply been supplied from the surface water draining in through the quicksand. In this pond at the age of two years and after such treatment they have bred, which I think proves conclusively that they are a very hardy fish. I did not lose one of them during the tests or since. Since putting them in the pond I have fed them liberally on corn-meal mush, wheat bread, spoiled cheese, &c., and they have grown wonderfully. I am confident they will be a great success in the Rio Grande Valley and other parts of New Mexico.

The Rio Grande is well stocked with catfish, suckers, eels, and several other varieties. I am confident that carp would do finely in it also.

ALBUQUERQUE, N. MEX., August 10, 1884.

207.—ON THE SCARCITY OF MACKEREL IN THE GULF OF SAINT LAWRENCE.

By Capt. J. W. COLLINS.

In view of the fact that the reciprocity treaty with Great Britain will soon expire by limitation, and that it is possible another may be negotiated, affecting to a greater or less degree the prosperity of the fishery industries of the United States, I assume that additional and reliable information relative to the mackerel fishery in the Gulf of Saint Lawrence may be of interest. The accumulation of such data may enable the legislative and executive departments of our Government to gain a more comprehensive idea of the subject under consideration and to estimate more accurately than could otherwise be done the probable gain or loss to our fishing interests by a renewal of the treaty on its former basis. It is not, of course, necessary for me to dwell on the well-known fact that the extraordinary claims made by Canada when the treaty to which I have referred was made, and also before the Halifax Commission, were based chiefly on the assumption that fishermen of the United States derived great profits from being able to participate in the inshore mackerel fisheries of the Gulf of Saint Lawrence. Therefore I beg to submit the following facts relative to the mackerel fishery of the Gulf, and which I have obtained from an interview with my brother, Capt. D. E. Collins, who returned last Saturday, August 30, from a cruise in the Gulf:

He left home June 18, in the schooner *Susie Hooper*, of this port, fully equipped for a mackerel trip, and carrying two purse-seines and

two seine-boats. Together with many others of the mackerel fleet that sailed about the same time, he went directly to the Gulf of Saint Lawrence, which he cruised over in all directions looking for mackerel wherever he thought they were liable to be found.

He estimates that a fleet of 200 New England mackerel vessels—the finest we have and commanded by the most expert and experienced fishermen—were in the Gulf seeking fish in every nook and corner, whenever the weather permitted. Notwithstanding the utmost exertions that might be expected from ambitious and capable men were put forth, June and nearly all of July passed away without any mackerel being taken worthy of mention. Indeed, before the end of July many of the fleet had become discouraged and left the Gulf, in some cases, I think, without a single barrel of fish. However, many vessels remained, and as late as July 20, while riding out a “breeze” under the lee of the West Cape of Prince Edward Island, my brother counted 110 other mackerel schooners at anchor in the same place. It may be stated here that the weather during July was exceptionally rough, so much so that the vessels were compelled to seek shelter under headlands, capes, and in harbor, a considerable portion of the time. Some half-dozen strong gales occurred during the month. As a matter of course, this kind of weather hindered seining operations, and what is worthy of remark, is the fact that the vessels on our own coast at the same time were hindered little if any by unfavorable weather.

In the latter part of July the Gulf fleet saw some mackerel about Tignish, Prince Edward Island, and on the New Brunswick coast opposite, in the vicinity of Miramichi Bay and Escuminac Point. A few good catches were obtained by the lucky ones, but these were exceptional, the majority getting small catches or nothing. The Susie Hooper took 37 barrels. As soon as this “spurt” was over she went to Bradelle and Bank Orphan, where from Tuesday, August 4, to Saturday, August 8, she took 150 barrels of mackerel. These were the last she caught, though she remained in the Gulf three weeks longer. These fish were taken about 35 to 40 miles from the land, Perce Hills being just distinguishable above the water.

Leaving the locality where the fish had been taken, as no more could be seen, the Susie Hooper stood to the westward, entered Chaleur Bay, and August 10 was at Paspébiac. On the following day she sailed out of Chaleur Bay, stretched across to North Cape of Prince Edward Island, and then worked down the north side of that island until she reached East Point a few days later. It goes without saying that a sharp lookout was kept for schools of mackerel, but none were seen until she was near East Point. During the remainder of her stay in the Gulf the Hooper cruised about the south side of Prince Edward Island, from Eastern Point to Georgetown, and in Saint Georges' Bay, north of the entrance to the Strait of Canso. As previously stated, nothing was added to the fare.

My brother tells me that the schools of fish about the northern part of Prince Edward Island, that were taken near the last of July, were composed largely of herring, comparatively few mackerel being mixed with them. There were enough, however, to tempt the eager fishermen to set their apparatus and to take the risk of having their seines torn on the bottom. The mackerel, both there and about the southern part of the island, were generally in such shallow water that they could not be caught in seines, since the latter would catch on the rocky bottom. And it often happened that the fishermen had the mortifying experience of seeing their seine torn to shreds and the mackerel they had surrounded making their escape through the holes. On one occasion Capt. Solomon Jacobs set his seine in the shallow water off Georgetown. It caught foul of the bottom, was torn all to pieces, and even the purse rings were stripped off. Another source of annoyance was the horse mackerel, which were very abundant, and which often interfered to hinder the fishermen from making good hauls. On a certain occasion Capt. John Y. McFarland had sounded out a spot of clear bottom where he could shoot his net without fear of having it torn on the rocks. Watching his opportunity he at length got a chance to set his seine around a fine school of mackerel. While it was being pursued up he saw the fish passing into the net beneath the boat's bottom. But the sequel proved that the smaller fish were being driven by horse mackerel which had also entered the seine, and when they found themselves enclosed by a circle of twine, they made a desperate rush, tearing their way through the net in all directions, not only injuring the apparatus very seriously, but at the same time causing the escape of the mackerel that otherwise would have been captured.

Besides all this, the mackerel did not "show up" well in the Gulf, and, as a rule, could not be seen for longer than five minutes at a time. In consequence, the fishermen had scarcely time to get into their boats and leave their vessel's side, after seeing a school of mackerel, before the fish disappeared and perhaps not to be seen again.

The mackerel that were about the North Cape of Prince Edward Island, early in August, apparently moved down the north side of the island. These were followed by a fleet as far as East Point. It was supposed that schools of the same body of fish were seen, at a later date, August 15 to 20, in Saint George's Bay, off Cape Jack, at the northern entrance of the Strait of Canso, and even in the strait itself. These fish, of which only momentary glimpses were obtained, were supposed, and doubtless correctly, to be making their way out of the Gulf. But whether or not they were the same mackerel that had been observed a short time previously off North Cape, is, of course, impossible to determine, though this is the opinion of many of the fishermen.

To sum up the results attained, up to this date, we have the following: Of the fleet that went to the gulf, some fifteen or twenty vessels have obtained fares ranging from 300 to 600 barrels of mackerel; three-

quarters of the fleet have made losing voyages, and a considerable number of these have only from 10 to 100 barrels for their season's work.

As an illustration of the difficulties and uncertainties attending the Gulf fishery it may be stated that Capt. Eben F. Lewis arrived yesterday, after spending the whole summer in the bay, with only 45 barrels of mackerel. And when my brother came through Canso, August 22, Capt. Solomon Jacobs was reported to have less than 100 barrels. Even these had been taken recently, for when Captain Jacobs was in Canso to refit early in August, after having spent nearly two months cruising in the Gulf, it was reported in the press that his entire catch to that time amounted to but one trout and a single mackerel.

Considering that Captain Lewis and Captain Jacobs have for the past five or six years been the "high-line" mackerel fishermen of the United States, and that both of them have made catches and stocks that have never been equalled by any others, it will be easy to see that the failure of the Gulf mackerel fishery is due to causes that may be considered unsurmountable. A better idea of this subject can, in my opinion, be gained from the foregoing statements than might be obtained from a great mass of data of the ordinary kind. For in the majority of cases it is clearly shown that skill, tact, knowledge of the grounds, and the most determined energy, have utterly failed to accomplish results that might reasonably be looked for where the conditions are at all favorable. It is worthy of remark that, in the mean time, the vessels on our own coast—chiefly in the Gulf of Maine, a few at Block Island—have made exceedingly large catches. I think it would not be an exaggeration to say that 1,500 to 2,000 barrels of mackerel have, in several instances, been taken by a single vessel since the middle of June. And in some cases schooners have left the Gulf of Saint Lawrence almost empty, and ten or twelve days later have arrived in Gloucester with a full fare—300 barrels or upwards—caught off our own shores.

In this connection I desire to mention that Capt. S. J. Martin, the Fish Commission agent, has done the Gloucester fishermen a very important service by replying to telegrams sent him from ports in the Gulf of Saint Lawrence, and by acquainting the skippers of some of the vessels with the state of affairs at home. Feeling assured that the information he sent was reliable they acted upon it, and immediately left the gulf. In some instances that have come under my observation these vessels arrived in Gloucester with full fares, caught in the Gulf of Maine in less than two weeks after getting the news from home. It is difficult to estimate correctly how much good may have been done, for news sent to one skipper might influence the action of a dozen others, who, knowing the first had sent a dispatch of inquiry, would naturally wait to learn and profit by the reply.

GLOUCESTER, MASS., *September 1, 1884.*