

the docks. But still this is asserted by many. My cousin, Mr. Spinney, who for many years was a practical fisherman and a good observer, and now the head of a firm which handles thousands of cod every month, has examined them critically and compared them with deep-sea cod, and said positively that they were the same. The specimen sent by Mr. Wonson is *G. morrhua*. If you wish specimens in alcohol Mr. Spinney will obtain any that you want upon receiving directions from you. Mr. Spinney sees nearly all the cod which enter Gloucester, and upon being asked if the gray cod was found at other points along the coast he said that the only instance that he knew of was the case of a vessel which had just landed 15 barrels of cod taken in shallow water near Mount Desert. I went to the wharf and found the fish, which proved to be *morrhua*, 14 inches long. I obtained two specimens for the National Museum. They seemed to run about the same size, varying about 1 inch in length, and correspond in size almost exactly with the specimens taken at Gloucester. These may be a portion of the cod from Gloucester emigrating from their original home. As this was the only case which I could find of the *G. morrhua* being found in shallow water, outside of Gloucester, I am inclined to the opinion that they are but an offshoot of the Gloucester cod.

Another recognized good caused by the Fish Commission while at Gloucester is in regard to the reddening of fish. I was informed by several fish-dealers who have adopted your suggestion to use Trepani salt instead of Cadiz, that not a single instance of reddening has occurred during the past summer. The butts used for pickling the fish exhibited a tendency to turn red only when they had previously been saturated with Cadiz salt.

WASHINGTON, D. C., November 12, 1883.

23.—SOME OBSERVATIONS ON THE COD GILL-NET FISHERIES AND ON PRESERVATIVES FOR NETS.

By J. W. COLLINS.

[From a letter to Prof. S. F. Baird.]

In course of a conversation last evening with two young men who have been engaged in the gill-net cod fishery this winter, I gathered the following items of information:

They stated that since the fishery closed in Massachusetts Bay, some time in the early part of the winter, and the vessels had resorted to Ipswich Bay, nearly all the fish caught in the latter locality had been netted on a small area that did not exceed three-fourths of a mile in diameter. This piece of ground, which seems to be swarming with fish while the adjacent bottom appears quite barren, is somewhat irregular in outline,

judging by where the fish are caught; but, so far as anything can be told of its physical conformation, does not differ at all from the rest of the sandy slope immediately surrounding it. The fishermen have a theory that there are fresh-water springs in this particular spot around which the cod love to gather, for they can assign no other reason, since there appears to be no more food than elsewhere and no special feature in the bottom to attract the fish. So persistent are the cod in clinging to this locality that it invariably follows that nets set within its limits come up "well fished," while those a dozen or twenty fathoms outside get very few if any cod. The fishermen confess that they are puzzled to know how the fish get there and escape the walls of netting which surround this "spot" in every direction. Not believing it possible that enough cod could be there at once to fill the nets night after night, for months, they arrive at the conclusion that the fish reach the place during the day, when they rise above and swim over the nets that bar their progress, and which they can see by daylight.

It is a common thing on the Grand Bank to find schools of codfish staying for weeks, possibly even months, on a small piece of bottom, the outlines of which, so far as catching fish is concerned, are as sharply defined as one could possibly imagine. In these cases it is generally supposed that this peculiarity which the fish exhibit is due to the fact that the bottom they stick to is better feeding-ground than that which surrounds it. So far as my observation extends, I believe this theory is correct in the main.

But to return to the cod gill-netters. It follows, as a matter of course, that when the fish are found in such a limited area there is much crowding, and it is said that the nets are literally piled on top of each other, crosswise and every way, each vessel's crew that comes along dumping over their gear regardless of everything except to get it on the "spot." The result is that the underneath nets are often sunk flat on the bottom and catch no fish; and it naturally follows that much gear is torn and otherwise injured, while far fewer fish are caught than if some better method was observed in setting the apparatus.

One of the young men above referred to has been using a net that had been treated with Horner and Hyde's preservative, and he says that it shows no signs of decay yet, though it has been in use about two months. He also stated very positively that this net caught *one-third more* fish than those prepared in the ordinary way, and which were always set with it *in the same string*. This is an extraordinary fact, and is one which is substantiated by the testimony of others. The advantages of fishing for cod with gill-nets are fully appreciated by the fishermen, who, among other things, say that "it don't cost anything to try a new piece of ground, for no bait is needed."

GLOUCESTER, MASS., *March 3, 1884.*