

may possibly be connected with another of some significance, namely, the great development or augmentation of the volume of the connective tissue of the animal during the winter months, when oysters are said to be fat or in good condition. This increase of the connective tissue mass in bulk and consistency may probably be regarded as a winter storage of reserve material, which upon the approach of warmer weather is gradually converted into germs. Such an opinion is supported by a large number of facts, derived from a study of the minute structure or the histology of the oyster.

Another fact of considerable importance is what Mr. Pierce notes regarding the late spawning of the oyster, which is in accord with my more exact observations made in 1880. I then found that spawning or spatting occurred during the period intervening from about July 1 to late in October, or that spat fell and fixed itself for a period extending over at least three and a half, if not for even as much as four months. This would indicate that in the case of the American species it is probably possible for the culturist to avail himself of the chance of collecting spat on collecting apparatus put out at intervals during the whole of this prolonged period of the reproductive activity of the animal.

WASHINGTON, D. C., *November 19, 1883.*

#### 14.—NOTES ON THE MENHADEN FISHING OF 1883.

By OSCAR O. FRIEDLAENDER.

[From letters to Prof. S. F. Baird.]

The result as far as dollars and cents are concerned was very unsatisfactory this year on account of the poor yield of oil. We had a large catch from our own boats—about 50 per cent. more than last year—26,053,250 fish. There was a yield of 49,900½ gallons of oil. The average price was 39.6 cents. The above quantity included 2,614,800 fish purchased from outsiders.

Last year we had 23,996,650 fish, including 9,766,700 bought from outsiders. These yielded 121,553 gallons of oil. The average price was 39 cents.

This year's price would have been much higher had it not been for the very heavy import of Japanese fish oil—something entirely new here. The fish were much better in October and November, and, although the weather was very favorable, only small bodies of big sea menhaden were caught here. The catch on the east end of Long Island and Rhode Island was better than here, and the fish yielded about double the quantity of oil. The Church firm caught with four steamers over 60,000,000 fish. I sent some of the last caught fish to Mr. E. G. Black-

ford, as they were full of spawn. The spring and summer fish were bare of spawn.

NEW YORK, *November 29, 1883.*

John Doyle, who is now chief engineer on the New York and Jamaica steamship, and who was three years an engineer with us, reports a solid body of Menhaden about the 1st of last month, 30 miles off Cape Hatteras. This steamer passed through this immense body for fourteen hours; they were apparently bound for the Gulf Stream and were full of sharks. The presence of the latter on our coast this year may account for the scarcity of bluefish.

Never before were our fishermen so much troubled by sharks as this year, and our catch of sharks was unprecedented.

NEW YORK, *December 3, 1883.*

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#### 15.—METHOD OF CATCHING CRABS.

By McMENAMIN & CO.,

[Packers of hermetically sealed goods, such as crabs, oysters, clams, &c.]

Our crab catch has been greatly lessened this season by the high winds that have almost constantly prevailed along the coast. We catch now with trot lines, one man in a small row-boat attending each line. It has occurred to us that if we could use sloops or schooners with dip or other suitable nets, we would be able to work regardless of the general winds.

Your familiarity with the habits of the crab, and your knowledge of the methods of taking fish both in this country and abroad, suggests that you might know of some net that would answer our purpose better than the trot-line.

HAMPTON, VA., *October 8, 1883.*

#### REPLY BY PROFESSOR BAIRD.

I am inclined to doubt very much whether it would be possible to use nets in the capture of crabs, especially such as would have to remain for any length of time under water, or where a considerable number of crabs were collected together. You would, I think, find that those meshed would be immediately devoured by their more fortunate fellow or by accompanying fish.

There are various forms of traps which might be used for catching fish by baiting; but you are, of course, familiar with all of these.

WASHINGTON, D. C., *October 12, 1883.*