

XI.—REPORT ON AN OYSTER INVESTIGATION IN NEW YORK WITH THE STEAMER LOOKOUT.

By EUGENE G. BLACKFORD.

The steamer Lookout was subject to my orders this season from the 15th to the 26th of August, 1885, inclusive, and during this time we were able to visit seven different localities, making eight trips, as follows: Montauk Point, Greenport, the Kills, Execution Light, Port Jefferson, Prince's Bay, and two trips up the Hudson River.

MONTAUK POINT AND GREENPORT.—The first trip was to the eastern end of Long Island, for which locality we started on the morning of Saturday, the 15th of August. The vessel reached Shelter Island late in the evening and remained at anchor in Dering's Harbor until Monday morning, the 17th of August, when a visit was made to the oyster regions in the neighborhood of Montauk Point. I had been informed that some of the ponds near the Point contained quantities of oysters of fine quality, but while we found some oysters they were very few in number and quite flavorless. And we were not even able to find old shells to any extent, indicating that there ever had been oysters there in any quantity. These ponds are, with hardly an exception, cut off from the ocean, except during great storms, when the waves dash across the intervening sand strips and now and then cut passage-ways through, so that, until these passage-ways close up again, there is communication between the waters of the ponds and those of the ocean. The waters of the ponds are thus at times quite salt and then again only slightly brackish, and they are in this latter condition most of the time, depending for their supply of water upon the rain shed from the surrounding sand-hills or the water from the ocean percolating through the underlying strata. There is consequently, in all probability, very little food in these ponds of a proper character to sustain any large number of oysters, and that is undoubtedly why we were able to obtain but few specimens. What might be accomplished in the way of oyster culture, by opening permanent water-ways into these ponds, is of course a matter of mere conjecture.

Early on Tuesday morning we took Mr. J. M. Monsell, of Greenport, on board as pilot, and proceeded to examine some of the planted beds belonging to members of the Greenport Oyster Company. The land

under water controlled by this company lies close along the shores of the bay near the village of Greenport and where there is a fine tidal current flowing most of the time; consequently the oysters get plenty of food, and show this by an exceedingly fine growth. At least all of those we examined showed a very great increase in size since they were laid down in December, 1884. In many instances this increase was from 2 to 2½ inches in length, and proportionately in width. For many years past the only oysters obtained from Peconic Bay and vicinity were of the class known as single oysters, found scattered here and there on the sand, and among the pebbles of various portions of the bottom of the bay, and gathered principally by the clambers when raking for clams, or by the scollipers when after scollops. But it was known, by the great beds of old dead oyster-shells found here and there throughout the bay, that formerly the bay was well supplied with this bivalve, and laws were passed by the legislature of the State in 1883 authorizing the towns located upon the bay to appoint commissioners to survey such lands under water as were thought suitable for oyster cultivation, and to deed such lands, in small allotments, to those desirous of planting and cultivating oysters. Our pilot, Mr. Monsell, was one of the commissioners thus appointed by the town of Southold, and after the land had been surveyed in several localities, most of it was taken up by those living in the immediate vicinity, and then, in order to facilitate work, these parties formed themselves into oyster companies. There are consequently four or five plots of land, of greater or less extent, now under cultivation in Peconic Bay, all of which have been planted with a greater or less number of oysters within a year past, and everywhere the growth has been all that could be desired; but it is yet too early in the history of the enterprise to enable any one to tell whether or not the oysters will fatten, and be well flavored as well as grow fast.

While the outlook is thus very bright for the planters in the Peconic Bay region, so far as the mere growth of the oysters is concerned, they have one very serious evil against which to contend, and that is the starfish. In certain sections we found these pests in immense numbers, and they undoubtedly are responsible for the dead shell-beds of the bay and for the fact that so few oysters are found native in these waters. Against these animals the planters will have to make war incessantly or they will not have any oysters to need protection. But if by concerted action the planters get rid of the major part of the starfish, and then by constant watching and working keep them in subjection, it would seem as if Peconic Bay might become an exceedingly rich oyster region, especially as the bottom is comparatively stable, and there are thousands of acres where the soil is, for oyster culture, equal to anything the most ardent oysterman could desire. Most of the oysters employed for seed on the beds in the bay are brought from Connecticut; a few, however, are brought from other localities. Some of the planters

are loading part of their beds with old shells for the purpose of catching spat, and thus obviating the necessity of foreign importation. But so far there has been very little set noticed.

THE KILLS.—Our trip to the Kills on the 19th was undertaken principally to obtain, if possible, evidence of the injury to the oysters in that locality from the pouring of sludge, acid, and oily refuse into the waters in the vicinity. A number of dredgings were made in Arthur's Kill, as far south as Northwest Reach, and in the Kill von Kull at the mouth of Newark Bay. One or two dredgings were also made a short distance up in Newark Bay. At Northwest Reach the temperature of the water was 78° and the density, at half ebb, 1.014. Two hauls were made. In the first the dredge was down three minutes, and twenty-eight oysters were obtained. There were some last year's set, and the growth of all was fair. We found no direct evidence of oil upon the water or of oily refuse upon the bottom, but there were a large number of dead shells, the inmates of which had evidently died only recently, and all the shells, both living and dead, were covered with a green slime. The oysters were also very green and had a rank odor and an oily taste. In the second dredge there were a few oysters set on old bricks, stones, &c. The oysters were in the same condition as those in the first dredge, and there were many dead shells, the animals of which, as before, had been recently killed. Three dredgings were then made along in front of Coc's phosphate factory, and from these we obtained respectively one hundred, one hundred and eighty-six, and eighty-nine oysters. Most of the oysters were well-shaped and of fair growth, and there was a small amount of set. There were a great many shells of recently killed oysters, and all the shells were very slimy. The oysters themselves were thin and very green. From these dredgings we obtained a number of pieces of a brittle material, which is said to be the hardened refuse material from the oil-works, which after being cast into the water sinks to the bottom, and in many cases covers up large numbers of oysters. None of these pieces appeared, however, to be of recent origin. In the mouth of Newark Bay, where the temperature was 78° and the density 1.013, we obtained in three dredgings the respective number of eighteen, six, and four oysters. There were some shells, all of which, as well as the oysters, were slimy, and the oysters were thin and green. Farther up the bay we found the oysters to be of a similar character. We did not find as many shells here as in Arthur's Kill, nor any oily refuse. The oystermen claim, however, that upon a great many days during the past season the water has been covered with acid and oil waste from the factories located along the shores, and it looks very decidedly as if we must look to this cause for the destruction of the most of those oysters whose empty shells we found so abundantly.

EXECUTION LIGHT-HOUSE ROCK.—This locality was visited on the 20th, the steamer reaching the bed about 11 o'clock a. m., and leaving it about 3 p. m. In the morning the tide was on the ebb, and

we found the temperature of the water to be 74° and the density 1.0192. In the afternoon the tide had turned and the temperature rose to 76° and the density was 1.0186. A great many dredgings were made on different parts of the bed, but principally on the north side in from 6 to 8 fathoms of water. A goodly number of oysters were obtained at each haul, but not near so many as we undoubtedly should have obtained had our dredging apparatus been somewhat differently arranged and more suitable for use in deep water and from a steamer. The oysters were all in good condition for the time of year and depth of water, and there were very few enemies found, only two starfish and a few drills. A large number of spider-crabs were also taken. The amount of refuse gathered was considerable, but nothing like in quality what we found when we visited this bed last season. This is undoubtedly due to the working of the oystermen upon the bed and to the unquestionable fact that there has not been, for some reason, much dumping upon the bed this year. Taken as a whole, the condition of the bed seems to be much improved, although there was not much young growth to be found among the oysters taken.

HUDSON RIVER.—The trips up the Hudson were made on the 21st and the 25th of August, with Mr. Garrett Van Pelt as pilot. On the first day the steamer went as far up the river as Spuyten Duyvil Creek and then returned to New York Bay, where we examined the beds in the immediate vicinity of Little and Bedloe's Islands. The first dredging was made in Stryker's Bay, the water being of a temperature of 76° and of a density, near the last of the ebb, of 1.0036. A great many shells were obtained and from seventy-five to one hundred oysters, most of them being of good size. The meats, however, were all thin and of a green color. There were a good many pieces of wood taken from the bed and various kinds of refuse. This bed extends from where the water is about 4 fathoms deep to near the shore, where it is about 6 feet in depth. At the sugar-house bed a few shells were obtained and two live oysters. This has been a good bed, but has been overworked. Some mud was found among the oysters and considerable refuse. The meats were thin and green. The depth of water was about $2\frac{1}{2}$ fathoms. At Fort Washington Point, in 17 feet of water, a few large oysters were obtained, and a good many small ones of last year's set. There were also some dead shells and a good deal of refuse material. At Englewood bed we made our last dredging in the river for the day. The temperature was 76° and the density 1.0024. The dredgings were made in from 2 to 4 fathoms of water, and we obtained sixty-two oysters of good size and in fair condition. There were a large number of shells and some refuse material. Upon our return to the bay we found the water so rough that only one dredging was made on each bed, the first at Little Island, on the east side, from which we obtained four oysters, and the second on the northeast side of Bedloe's Island, from which we obtained three specimens. There were quite a number of

shells taken at both places, and both oysters and shells were quite slimy and of a bad odor. The meats were all thin and very green. The temperature of the water was 76° and the density 1.0076. It was not long after the beginning of the flood, and the depth was about 3 fathoms in both places.

On the 25th the first dredging was made on the Irvington bed in 14 feet of water. The tide was hardly one-quarter ebb, and we found the density accordingly somewhat greater than on the first day at Englewood, it being 1.0028 and the temperature 73° . We obtained fifty-three oysters and some shells. Most of the oysters showed traces of green coloration; otherwise they were in fair condition. There was not much refuse material taken from this bed. This bed is next to the last one up the river; but the one near Nyack, while a very large and prolific bed, lies in too shoal water to be dredged from the steamer, so we were obliged to pass it by or rather not go up to it. At Round Rock bed only seven oysters were obtained, together with some shells, but no refuse. It is not a large bed, and, like all the Hudson River beds, lies close to the shore. The meats of the oysters obtained here showed hardly any traces of green coloration. Density, 1.003; temperature 73° . At Dobb's Ferry, close to the dock, in $2\frac{1}{2}$ fathoms of water, twenty-five oysters were obtained, with many shells and some refuse. All the oysters were small and the meats slightly green. Density, 1.0031; temperature, 73° . At Hastings the bed is long and narrow, skirting the shore for some distance below the wharf. The water on the outer edge of the bed was only 9 feet deep, so we could not dredge it very satisfactorily, and obtained only twelve oysters. There were many shells and rocks and some refuse. The oysters appeared to be thrifty and in good condition. They showed little, if any, green color. Density, 1.0032; temperature, 73° . Willow bed is also long and narrow, but in deeper water. We made our dredgings in $2\frac{1}{4}$ fathoms, and obtained five oysters, some refuse, and a large number of shells. The meats were thin and quite green. Density, 1.004; temperature, 73° .

Off Yonkers we obtained twenty oysters at a depth of $2\frac{1}{2}$ fathoms. There were a good many shells, but little refuse. Most of the oysters were of fair size and in very good condition, with very little of the green coloration. Density, 1.004; temperature, 73° . The Lame Man's bed, which is next south of Willow bed, is one of the best beds in the river, and great quantities of seed are obtained from it. We obtained two hundred and two oysters from it, all of which were of good size and shape. The meats, however, while being pretty well filled, were of a somewhat greenish tint. A good many clean dead shells were also obtained, and five hard crabs. Density, 1.0045. At Mount St. Vincent bed about two-thirds of the take consisted of dead shells, most of which were quite clean. We obtained one hundred and fifty oysters, the meats being in fair condition, but with a faint tinge of green. Density, 1.0047. At Riverside bed we obtained more oysters than from any other

place on the river. In the first dredge there were three hundred and ten, in the second one hundred and forty, in the third two hundred and forty, and in the fourth one hundred and seventy oysters, respectively. There was very little refuse material, but a good many dead shells, most of which were pretty clean. The meats of the living oysters were in fair condition with very little signs of green coloration. Density, 1.005. The last bed examined was a small one called the Fisherman's bed. We found very few oysters, getting only five specimens, but a considerable number of shells. The meats were poor and considerably colored. Density, 1.005. All of the beds of the Hudson are worked for the purpose of obtaining seed with which to plant other beds, as the oysters on these beds do not fatten well until they are transplanted, although a good many are used directly from the beds, but such are almost entirely used for local consumption. The greater number of oystermen who work these beds come from the neighborhood of Staten Island, although some of the East River planters also obtain seed here. This is not as common now, however, as it was some years ago.

PORT JEFFERSON HARBOR.—The visit to Port Jefferson Harbor was made on Saturday, the 22d, and the Lookout lay at anchor in the harbor over Sunday, the 23d. On Monday morning early we started for the beds with Mr. C. J. Robbins as pilot. Most of the bottom of the harbor is leased by private parties and is planted, but year before last the trustees of the town voted to grant no new leases and no renewals of leases for the present, and as some of the leases expired last season there are certain grounds in the harbor that are now free to any who wish to work upon them. Such grounds, however, are of comparatively small extent and of no practical value, as all oysters were taken from them before the leases expired. Our work was accordingly on those grounds that are still under lease, and we found most of the beds to be well cared for and in good condition, although the growth is not so great as in many other localities along our coast. We made a large number of dredgings, some being on oysters nearly ready for market, and others on those only recently planted. The largest number taken at any one haul was one hundred and forty-two, on land leased and worked by the Port Jefferson and Setauket Oyster Company, but the dredge was seldom left upon the bottom for more than one or two minutes at a time, as we were not after numbers so much as to ascertain the growth and quality of those that had been planted. The growth, as already stated, we did not find to be great, but the quality was excellent for the time of year. We found no starfish or winkles, and, what surprised us much more, we obtained only two or three drills in all of our dredgings in the harbor. Most of the seed in the harbor comes from the Connecticut beds, but some is brought from Great South Bay, although it does not do so well as the Connecticut stock. The seed is generally from one to three years old, and 300 or 400 bushels per acre are used. The water in the harbor over the beds is from 2 to 4 or 5 fathoms in depth, and we

found it to be of an average temperature of $73\frac{1}{2}^{\circ}$, and a density on the young flood of 1.0196. Outside of the harbor we found the temperature to be 73° and the density 1.020. We dredged for some time outside the harbor in 5 to 6 fathoms of water on bottom which had been shelled two years ago, but we obtained only shells, the oysters having been entirely destroyed by the stars, or at least the starfish got the benefit of any doubt there might have been in the matter.

PRINCE'S BAY.—On the 26th we made a visit with Mr. Van Pelt as pilot to the beds along the Long Island shore of New York Bay, and to those along the southeastern shore of Staten Island. On account of the unfavorable weather we did not make so many dredgings as we should have done had the weather been pleasant. Near Owl's Head Landing, just off from Bay Ridge, Long Island, we found the temperature of the water, at half ebb, to be 75° , and of a density of 1.016. The oysters obtained were of good size and in fair number, but they were all thin and green, and the shells were quite slimy. There were a good many old shells, and some of last season's set. There was also some refuse material, but not of any account. The bed here was dredged in $2\frac{1}{2}$ fathoms of water, and used to be quite prolific. If properly cared for, it would now undoubtedly furnish a good many oysters for planting. In the edge of the channel near the Narrows, known as the Swash Channel, in 2 fathoms of water, we obtained some good-sized oysters, but they were not very abundant nor very thrifty. Like those at Owl's Head they were thin and green, and the shells covered with a green slime. There was also considerable refuse material, showing that there is more dumping here than along certain portions of the Long Island shore. In Prince's Bay the temperature of the water was found to be 75° , and the density on the latter portion of the ebb 1.017. A number of dredgings were made on different planted beds, and the oysters were found to be generally in fair condition, although in many cases the flavor was not pleasant. In the region where dredging is being carried on to widen and deepen the channel into Raritan Bay, we found that a good deal of damage had been done by the mud, which had been stirred up from the bottom, spreading out and settling over the planted oysters. In some instances, at least, the dredgings, instead of being carried out to sea, as they should be, have been dumped upon the planted territory, causing considerable damage by burying and thus smothering the oysters. The dredge, when thrown down over these old beds, is soon filled with a filthy mass of black mud, in many instances smelling quite strongly of kerosene. The beds in this neighborhood, when undisturbed by these dredgings, are well cared for and profitable; but each season the flavor of the oysters is getting poorer on account of the increase of filth and waste matters which are thrown into the bay.

NEW YORK, N. Y., September 28, 1885.