PART VI.

NEW YORK AND ITS FISHERIES.

By FRED. MATHER.

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PART VI.

NEW YORK AND ITS FISHERIES.

A.—GENERAL REVIEW OF THE FISHERY INTERESTS OF THE STATE.

112. STATISTICAL RECAPITULATION.

GENERAL STATEMENT.—New York takes a prominent place in the fisheries, coming fourth on the list of the fish producing States, with products valued at $4,380,565, and in several special branches holds a still more important position. The menhaden fisheries are more extensive than those of any other State, and in 1880 the value of the oil, scrap, and compost reached $1,114,958, being more than half the yield for the entire country. The products of the oyster fishery for the same period reached $1,577,050, representing a greater value than that of any State, except Maryland, Virginia, and New Jersey. The fishermen secure annually larger quantities of both quahaugs and soft clams than those of any other State. In 1880 the amount of money realized by them from the sale of these two species exceeded half a million dollars. In the shad fisheries, this State is surpassed only by North Carolina and Maryland.

STATISTICAL RECAPITULATION FOR 1880.—The following statements show in detail the extent of the various fishery interests of the State for 1880:

STATISTICS OF THE FISHERIES OF NEW YORK.

Summary statement of persons employed.

Persons employed.	Number.
Number of fishermen	5,650
Number of shoremen	1,265
Number of factory hands	351
Total	7,266

Detailed statement of capital invested and apparatus employed.

Apparatus specified.	Number.	Value.
Vessels	*541	$777,600
Boats	3,441	289,885
Pound-nets	87	43,500
Fykes, pots, and baskets	3,950	6,750
Gill-nets	10,016	93,127
Purse-seines	126	50,400
Drag-seines	1,418	78,613
Minor apparatus, including outfit		117,810
Factories and shore property		1,052,400
Additional cash capital		119,500
Total capital		2,629,585

*11,582.51 tons.

Detailed statement of the quantities and values of the products.

Products specified.	Pounds.	Value.
Grand total of fishery products	333, 522, 813	$4, 380, 565
Sea fisheries.		
Bluefish	3, 000, 000	67, 500
Clams (hard)	2, 795, 480	262, 110
Clams (soft)	3, 407, 750	255, 581
Cod	3, 580, 000	67, 125
Crabs	1, 624, 583	69, 234
Lobsters	135, 000	5, 062
Menhaden (including that used for food)	288, 931, 200	1, 114, 958
Oysters	7, 303, 100	1, 577, 050
Squeteague	4, 000, 000	120, 000
All other species	11, 008, 100	522, 125
Total for sea products	325, 785, 213	4, 060, 745
River fisheries.		
Alewives	250, 000	3, 750
Shad	2, 733, 600	136, 680
Sturgeon	144, 000	8, 640
All other species	540, 000	15, 880
Total for river products	3, 667, 600	164, 950
Great Lake fisheries.		
Trout	569, 700	23, 100
White fish	1, 174, 000	56, 000
All other species	2, 326, 300	75, 770
Total for Great Lake products	4, 070, 000	154, 870

113. INTRODUCTORY REMARKS REGARDING LONG ISLAND.

Long Island may be divided into four districts, which are distinct in the character of their fisheries, as well as in their geographical position. Each one of these faces one of the cardinal points of the compass. The divisions are: (1) the North Shore, extending from Astoria to Roanoke; (2) the East End, including Peconic and Gardiner's Bays, the sound fisheries to the north of them, and the sea fisheries lying south; (3) the South Side, including the bays of Jamaica, South Oyster, Great South, Moriches, and Shinnecock; and (4) the West End, including New York and Gravesend Bays and the East River. The character of the fishing in all these districts is such that it is a most difficult matter to determine how many men are engaged as professional fishermen and how many as semi-professional, from the fact that they are fishermen, oystermen, farmers, clammers, yachtmen, and gunners by turns, following either one of these occupations at different seasons as their interest or inclination leads. A description of these men is given in the section of this report devoted to the fishermen.

Most of the wealth of Long Island has been derived from the waters surrounding it. In the western portion, where the soil is good, market gardening was once very profitable, owing to the proximity of New York; but since the introduction of steam as a motor, the increased facilities of transportation have led other States, and even the distant Bermudas, to compete for the early vegetable trade of the great metropolis, so that the business, although still extensively carried on, now yields much smaller profits than formerly. But the sea has contributed even to this source of income, since the principal fertilizers used have always been marine products, such as fish and seaweed.

The eastern end of the island is sandy and but little adapted to agriculture. The whale fisheries formerly furnished subsistance for most of the inhabitants there, and on the decay of that industry they turned their attention to the menhaden and other fisheries.

The oyster and clam business now exceeds in value the fisheries proper, and furnishes employment to a greater number of men, and the business is increasing yearly. The demand for small oysters for shipment to Europe has changed the market so that those which were formerly sold to "open" and market by the gallon at a small price are now sought for at a great advance; and such is the influence of fashion that the Americans have begun to imagine that they can detect the superiority of these smaller "Blue-points" to the large "Saddle-rocks"—names which formerly designated oysters from particular localities, but are now applied, the former to small and the latter to large oysters, regardless of the region whence they come. The figures relating to the water products shipped by railroad to the western terminals, including New York and vicinity, were furnished by favor of Mr. H. M. Smith, general freight agent of the Long Island Railroad. In certain localities all the products go by rail; at other points only a portion are so carried, while at some places near the city nearly all shipments are made by water.

B.—THE NORTH SHORE OF LONG ISLAND.

114. EXPLANATORY STATEMENTS, WITH STATISTICS.

EXPLANATORY STATEMENT.—The western half of the north side of the island, beginning on the west at Flushing and extending east to Port Jefferson, includes all that is of importance in the fisheries. The eastern half has an unbroken coast line, without bay or indentation, and furnishes no point of land to protect a pound-net from storms until Horton's Point is reached, which, for convenience, has been included in the eastern section. The country between Port Jefferson and Roanoke Point, which is nearly opposite Riverhead, is sparsely inhabited, and differs in character from the western half. The latter is a high rolling country, with its hills well wooded, and abounding in deep bays, which are well land-locked and form excellent harbors.

RECAPITULATION.—There are on the north side of the island 1,081 men engaged in the fisheries, of whom 1,000 are oystermen, and 2,586 persons are directly dependent upon their labors. They have invested $38,650 in boats, $15,000 in nets and tools, and $342,200 in oysters. They produce, and either market or consume at home, 426,300 bushels of oysters, 156,900 bushels of hard clams, 190,600 bushels of soft clams, 6,000 bushels of mussels, 2,000 pounds of scallops, 6,000 shad, 37,000 pounds of eels, 1,405,500 pounds of other fish, and 3,106 barrels of crabs, besides $24,500 worth of menhaden for manure.

115. FLUSHING BAY.

FLUSHING.—In the spring of the year about six pound-nets are set in Flushing Bay for shad and striped bass. Each pound has a "heart-bowl" and a leader running out from 400 to 500 feet. There is no spawning place for shad here, and why they enter the bay is not known. They are said to be going east when taken. Four thousand were taken last spring, and although this has been the average for five years past, it is considered far from satisfactory, and it would not pay to wet the nets but for the menhaden taken at the same time. The latter are used for manure here, and bring 10 cents per bushel, which contains about 100 fish. One man, Mr. O. C. Durling, says that when the northeast wind blows, more shad are taken than at other times, as they then come into the bay for shelter. Bass have been scarce this year, only 3,500 pounds having been taken. Ten years ago the bass were plenty, but they are gradually decreasing.

Twenty men, with six cat-rigged boats, measuring 4 or 5 tons each, are engaged in carrying clams and oysters. Few oysters are taken in the bay, the men being mainly clammers. "Flushing Bay clams" are larger than "Little Necks," and are solid and fat. The shells of the first are dark, while those of the latter are light, a difference traceable to the dissimilarity of their habitats, the former being embedded in the dark mud of the bay, while the "Little Necks" are found in the sand. Last year 5,000 bushels of oysters and 30,000 bushels of hard clams were marketed, all the shipments from this place being by boat to New York.

Of the score of men interested in the fisheries fourteen are married; including the families of these, we find sixty-five persons dependent on the fisheries at Flushing. Oysters are planted and beds claimed. The capital invested in the fisheries is as follows: In nets, $3,000; in boats, $3,000; in oyster-beds, seed, tools, &c., $8,000.

COLLEGE POINT.—Four men from this locality oyster in Flushing Bay, using two boats of 4 tons each. Daniel Hill is the principal planter. Three of the men are married, having eight persons depending upon them; $6,000 invested; product, 8,000 bushels. All shipments by boat.

116. LITTLE NECK BAY.

OYSTER GROUNDS.—The oyster grounds in the bay are free of cost, but are staked off in private claims and planted. This gives a man a right which is respected by his neighbors, but he has no legal claim upon it. The seed is usually obtained from the East River, and is worth 25 cents per bushel.

Edward Radcliffe, of Great Neck, has 7 acres staked off, on which he plants yearly 50 bushels of seed to the acre. He says it takes them three years to mature. At the time of my visit, December 8, it was too cold to work the night tides, and there had been only three of the day tides in the past week when he could work. On these three he made $27. The clam grounds are free. Comparatively few fish are taken. Shad are caught in pounds, fykes, and seines. During the run of shad there are five pound-nets set in the bay. There is not much other fishing, except for sport. There have been no smelts, scallops, or terrapins in the bay for the past ten years.

WHITESTONE.—There are forty men here engaged in fishing, oystering, and clamming, of whom twenty-two are married. There are, in all, one hundred and twelve persons dependent upon these industries for support. Seven vessels of 25 tons are used, one of 15 tons, and five of 4 tons. Some shad are taken in the spring, but not so many as formerly; 2,000 were taken last year, together with 3,000 pounds of bass, and $2,000 worth of menhaden for manure; 4,000 pounds of weakfish were taken in the fall of 1879. John Webster is a large oyster shipper. He ships 2,000 bushels per year, and other parties ship 2,500 bushels, making a total of 4,500 bushels, with 40,000 bushels of hard clams, and 100 bushels of soft clams, shipped annually. Capital in boats, $6,700; in oysters, tools, &c., $32,000. A few shipments are made by rail, but the majority are sent by boat. In the year ending June 30, 1880, 67 barrels of oysters, 858 barrels and 2 bushels of hard clams, and 100 pounds of fresh fish were carried by rail. Most of the fish taken are consumed locally.

LITTLE NECK.—There are two fishermen and thirty oystermen and clammers here. Of these, eight are married, and, including their families, there are one hundred and ten people dependent on the fisheries. Eight sloops, aggregating 75 tons, are employed, only one of which measures over 20 tons. Not over 200 bushels of soft clams are taken, the principal part of these being consumed on the island. The hard clams from this bay have a good reputation among epicures, and are in great demand at the time when oysters are out of season. They are most esteemed when about the size of a quarter dollar, and are usually eaten raw. The bottom of the bay is sandy, and

the shells are light colored. Some of the shad and bass are sent to market, but most of the other fish are consumed locally. Capital invested, $6,000 in boats and tools; $2,000 in oyster-beds, and $1,000 in nets. Ten thousand bushels of oysters and 50,000 bushels of hard clams are marketed.

GREAT NECK.—The oyster business is the principal interest of this locality. There are twenty men engaged in it, of whom ten are married, and a total of sixty-two persons are dependent upon the business. All shipments go in boats owned at Little Neck. A total of $5,000 is invested in seed.

PORT WASHINGTON.—This place has a greater number of persons engaged in oystering than any other point in the bay. Two hundred men are engaged in the business, about eighty of whom are married; and the whole population, numbering between six hundred and seven hundred, is dependent on the fisheries. The average yearly sales are: Oysters, $60,000; hard clams, $10,000; soft clams, $200. There are not fish enough caught for home consumption. Some are bought from the codfish smacks, and some are brought from New York to supply the demand. The railroad does not reach this place, and all shipments go by boat. No oysters are opened, and the greater part go to market in bulk in sloops, some going in baskets and barrels by steamer. Soft clams go in shell, and but few are taken, although in former years they were plenty. All vessels owned here or in this bay hail from New York. There are two sloops measuring over 20 tons, twenty others ranging between 10 and 20 tons, and an equal number of smaller size. About $3,000 worth of menhaden are taken yearly for manure, and some crabs, perhaps 1,000 barrels, are taken for home consumption. Some tautog, or "blackfish" (*Tautoga onitis*) are taken, as well as a few sheepshead. Formerly weakfish were plenty, but few are found at present. All these fish are consumed here, together with about 3 tons of flounders.

117. HEMPSTEAD BAY.

THE FISHERIES OF HEMPSTEAD BAY.—This bay has much the same character as Little Neck Bay, but does not seem to be so prolific of oysters and clams. Perhaps not over seventy-five men live from fishing and oystering. The people living at the bay get most of their fish from New York, except flounders and tomcod (frostfish). Quite a number of small bluefish are taken, with an occasional large one of 6 to 10 pounds weight. The natural growth of oysters here is poor, and the planters send south for seed. A few terrapins were taken some years ago, but the species has now nearly disappeared. Scallops have also been taken, but not recently.

ROSLYN.—There is no commercial fishing here. Thirty men occasionally rake for oysters and clams, but do not depend entirely upon this business. They have merely a skiff and a rake, the entire outfit costing less than $45 per man. Of these thirty men one-half are married, and have forty children, making eighty-five persons partly dependent upon the business, perhaps equaling forty persons wholly so. They gather several thousand bushels of oysters and a considerable quantity of clams yearly. Mr. Thomas Clapham, a yacht builder and well-known fishculturist, lives here, and has a trout pond, in which persons may fish for an equivalent. Year before last, besides his revenue from the above source, he sold $250 worth of trout; last year $240 worth, and this year $80 worth. One of his ponds covers 2 acres.

GLEN HEAD (GLENWOOD).—There are fifty men fishing for clams and oysters in this locality. Thirty-five of these are married, and a total of two hundred persons are dependent on the business. There are two sloops measuring 22 tons each, five measuring 9 tons each, and three of 4 tons, or 101 tons in all. Most of the products are shipped by boat, only 155 barrels of oysters and clams going by rail in the year ending June 30, 1880.

GLEN COVE.—There are fifteen men fishing for clams and oysters here; ten of these are mar-

ried, with sixty persons dependent upon them. About $5,000 are invested in seed oysters, and $2,500 represents the value of the boats and tools. One sloop of 15 tons and some skiffs and small boats are used. All shipments go by boat. Last year 20,000 bushels of oysters were sent. Cox Brothers also sent 1,000 barrels of hard and 250 barrels of soft clams to New York. There is no fishing, except for sport. A trout pond of 5 acres, owned by the Glen Cove Starch Company, is free to the public to fish from the shore, but not from boats. Some 2-pound trout are taken here, and one of twice that weight is recorded. At Mattinicock Point is a pond of 100 acres, which can be made fresh or salt, owned by Mr. Charles A. Dana, of the New York Sun. This pond could be utilized for fish or oyster culture.

118. OYSTER BAY.

This bay is a famous locality for oysters, and notwithstanding the line between Queens and Suffolk Counties strikes the bay at its eastern end, leaving Cold Spring on one side and the remaining villages on the other, the same laws prevail. The oyster beds are leased by the towns at 50 cents per acre, the number of acres being unlimited. Some oystermen object to this method of leasing, and a few of the principal ones refuse to pay the rental, staking off their claims and holding them by force. About three-fourths of the bay is staked off, and the greater portion is planted. The seed is obtained at Bridgeport, Conn., at 25 cents per bushel, which counts out about 5,000 oysters. It is not necessary to buy much when the spawn "sets" as it did this year and last. A few shipments are made by rail, but most of the catch goes by boat. A few lots have been packed for Europe. Soft clams are more plenty here than in the more western bays, but hard clams are not as abundant. Menhaden are taken in the spring of the year in seines for manure; about $5,000 worth were secured last spring. Many flounders are also taken for local consumption. Every few years there is a good crop of scallops; this year great quantities about the size of a quarter dollar may be seen; if these do not "winter-kill" there will undoubtedly be an immense crop next year. The fishermen tell me that a few scallops may be found at any time, but they are not always sufficiently abundant to render the fishing profitable. They say that the young in the first stages cling to the eel-grass until their weight bends the grass down or breaks it, when they drift out of the bay with the grass which goes out in the fall. Last spring the grass came in and brought young scallops, which they claim accounts for the quantity of young ones this year. There has not been a good crop in six years. A few terrapins were formerly taken, but not many are found of late. Not many crabs are caught. No fish are sent to market.

LOCUST VALLEY.—This is the terminus of one branch of the railroad, but there is no fishing here, as all of the fishermen of the region live on Oak Neck, at Bayville. One hundred and fifty barrels of oysters, 159 barrels of hard clams, and 66 bushels of soft clams in shell were sent by rail last year.

BAYVILLE.—Here we find a population of four hundred depending entirely on the fisheries; one hundred and thirty men are actively engaged, of whom seventy-five are married. About eighty women are frequently employed in opening soft clams and oysters. Mr. William R. Bell, postmaster, storekeeper, and oyster planter, estimates the average yearly revenue to be from $20,000 to $30,000, claiming that it sometimes reaches $50,000, $15,000 of which is from oysters. Thirteen sloops, of from 10 to 30 tons each, are employed; they are worth, on an average, about $1,000 each. Four small cat-boats, worth $100 each, and one hundred small row-boats are also employed. About $60,000 are invested in oyster beds. Most of the oysters go to New York and Connecticut by sail, steamer, and rail; a few are sent to Europe. James R. Ellison says that 500 bushels of hard and soft clams go from here each week; he sends 1,100 bushels of soft clams yearly, and from 300 to 500

bushels of hard clams during the season, which lasts from April to October; $2,000 worth of menhaden are taken.

OYSTER BAY.—This village has one hundred men interested in the fisheries; thirty-five of these are married, giving a total of three hundred persons dependent on the industry. Ten sloops averaging 14 tons, eight averaging 6 tons, and five of 4 tons are employed; $25,000 are invested in oyster beds and $2,000 in nets; $1,000 worth of menhaden are taken for manure in seines; 50,000 bushels of soft clams, 6,000 bushels of hard clams, and 75,000 bushels of oysters are taken.

COLD SPRING.—At Cold Spring Harbor, Oyster Bay, forty-five men are engaged in oystering during the season, and from December to April fifty others find employment on the clam flats. In this harbor there are 500 acres of oyster-beds planted under the regulations which govern the oystermen of the bay. The harbor is 3 miles long by 1 mile wide, three-quarters of the entire area being planted. Seven sloops, averaging 8 tons each, are used. In freezing weather, when the boats cannot run, shipments are made by rail. The total shipments are estimated at 25,000 bushels of oysters, 2,000 bushels of hard clams, and 18,000 bushels of soft clams; $2,000 worth of menhaden were taken.

SYOSSET.—This station, on the Long Island Railroad, sometimes receives a few barrels of oysters and clams from the bay when the boats are frozen in.

For the whole of Oyster Bay it is estimated that in the past year there were taken and consumed at home 300,000 pounds of fresh fish and 2,000 barrels of crabs.

119. HUNTINGTON BAY.

The principal products taken from this bay are mollusks. The fishing proper is almost wholly for supplying the villages of the locality, few, if any, being taken for shipment to New York, though considerable quantities are carried to the interior towns of the island. Many flounders and crabs are taken, but they are not shipped to any extent.

HUNTINGTON.—This village is situated on an arm of the bay which is well land-locked, and out of a population of 2,500, perhaps ninety men are engaged on the bay, of whom forty are married, giving a total of two hundred and fifty dependent upon the waters. Two thousand dollars' worth of menhaden are sold yearly for manure. The boats owned here are small ones, mostly skiffs; $1,800 are invested in boats, $8,000 in oyster beds, and $2,000 in seines. Many of the oysters are shipped in boats belonging to other places on the bay; 15,000 bushels of oysters, 20,000 bushels of hard clams, and 35,000 bushels of soft clams were shipped last year.

CENTREPORT.—Here we find one hundred men engaged in oystering, &c.; sixty are married, and not less than four hundred people depend upon the business for a living. Three sloops of 18 tons; 9 of 7 tons; and 15 of 4 tons sail from this place. About $100,000 are invested in the oyster business, and $3,000 worth of nets are employed in the fisheries; 50,000 bushels of oysters, 75,000 bushels of soft clams, and 25,000 bushels of hard clams were shipped last year; $3,000 worth of menhaden were sold for manure.

NORTHPORT.—Few fishermen live here. Most of the oyster planters in the adjacent waters live at Centreport. Mr. A. Ackley, an oysterman, resides here, but the figures of his business are blended with those of Centreport.

EAST NORTHPORT.—Fifteen men from this town and the adjoining country are engaged in oystering. They have no large boats; $150 will cover the investment in small boats; $1,500, in all, are invested in the oyster business. The bulk of the product is marketed in boats belonging to other places, though 363 barrels of oysters and 4 of hard clams were shipped by rail.

120. SMITHTOWN BAY.

This great bay is an indentation of the Sound into the shore line extending from Sugar Loaf Rock on the west to Crane Neck Point on the east, a distance of 7 or 8 miles in a line from point to point. It is not at all land locked. The Nissequague River empties into it, and Stony Brook Harbor, with its long inlet stretching east, called "Porpoise Channel," affords shelter for small craft. Formerly a number of pound-nets were set in the bay, near its eastern end, but on account of the scarcity of fish in this part of the sound they have been taken up. The fishing in the bay is done chiefly by men from other localities.

SMITHTOWN.—The are no fishing interests here worth noting, if we except the trout ponds of Mr. Aaron S. Vail and Mr. John M. Tyler. Mr. Vail is one of the oldest trout breeders in the country.

SAINT JAMES.—There are two or three fishermen here, but their catch is consumed at home. A fisherman from the next village estimated the products at 800 bushels of oysters; 500 bushels of hard clams; 900 bushels of soft clams, and 10,000 pounds of fresh fish.

STONY BROOK.—Eighty men, fifty of whom are married, live by fishing in the bay. With their children there are three hundred persons dependent on the fisheries. There are 16 sloops, aggregating 110 tons, used here, none of them being over 10 tons; $10,000 are invested in boats and tools and $20,000 additional in oyster beds. The shipments all go by boat; 20,000 bushels of hard clams, 30,000 bushels of soft clams, and 18,000 bushels of oysters were sold last year. About 20,000 pounds of fish, including flounders, bluefish, and other species found in the sound, were caught last year, the entire quantity being consumed locally.

121. CONSCIENCE BAY AND VICINITY.

Conscience Bay, and Setauket and Port Jefferson Harbors, lying between Old Field Point and Mount Misery Point, are practically one fishing ground, and it is almost impossible to separate the interests of the different villages. Port Jefferson Harbor is a favorite wintering place for pleasure yachts of the first class on account of its depth of water and its being securely land-locked.

SETAUKET.—Six men from this place devote their attention to oystering and clamming. John Sharpe and his son Charles buy soft clams at 40 cents per bushel, taking them across the island to Patchogue, where they sell them for $1. About 200 bushels were handled by them last year. There are two oyster planters, George E. Hand and William Risley; they secured 3,000 bushels of oysters last year. They employ two sloops of 500 bushels capacity. The catch is sent to Bridgeport, Conn.

EAST SETAUKET.—Fifty men from here are engaged in oystering in Port Jefferson Bay. Fully $25,000 are invested in oyster beds. The oyster business was not good this year; the oyster spat has not "set" well for four years. Thirty thousand bushels of oysters and 5,000 bushels of soft clams were marketed. Hard clams are plenty, and not less than 20,000 bushels were shipped. Eels are taken in pots of basket-work; 15,000 pounds were marketed. Twenty thousand pounds of fresh fish were taken for home consumption.

PORT JEFFERSON.—Thirty-five men from this town are engaged in the work on the bay; twenty are married and one hundred and thirty persons depend upon their industry. All shipments go by boat. Hard clams are taken in summer and soft clams in winter. Sometimes scallops are taken here, as well as crabs and lobsters. Many soft clams and oysters go from this place to Norwalk, New Haven, and Bridgeport, Conn. In former years oyster beds were free, but they are now leased by the town at $3 per acre, 4 acres being the limit allowed to one person.

This season 575 bushels of seed oysters were planted by Mr. Hand and others on the west side of the bay. The seed was purchased in Stratford, Conn., at 25 to 30 cents per bushel. This is the first season that any systematic planting has been done. Five thousand dollars are invested in the oyster business, and as much more in small boats, tools, etc., used for taking oysters and clams. Four of the boats are over 5 tons. Many flatfish are taken here in fykes and gill-nets for supplying the surrounding country; perhaps 50,000 pounds of all kinds of fish, excluding eels, are taken annually. The last-named fish are taken in pots and with the spear. Herbert Dayton took 3,000 pounds and other parties took 10,000 pounds. Bluefish, seldom exceeding 2 pounds in weight, are caught outside the bay in the sound; about 10,000 pounds were taken last season, half of which were sent to New York. The bay is full of small bluefish. Some white perch are taken with hand-lines, it being contrary to law to net them. Five years ago scallops were plenty and could be taken by the boat-load, but they have never been less abundant than now; only 2,000 pounds (opened) were taken last year. Charles M. Ivines is engaged in gathering and shipping mussels; in May and June he averaged 900 bushels per week, for which he got $1.25 per barrel. They are used mainly for pickling. Mussels are exceedingly plenty, but the demand is limited, and they are "full" in the spring only. Inquiry at the ship yards of John R. Mather, and of the sail-makers F. M. and A. Wilson developed the fact that nothing is now done here in building and rigging fishing vessels, and that the few vessels which are engaged in fishing only do a local business, none going to distant waters.

MOUNT SINAI.—This village is located on a bay to the east of Mount Misery Point. It contains six fishermen and oystermen. A little fishing is done with gill-nets for home consumption. A few hard and soft clams are taken, as well as a limited quantity of lobsters and crabs. Last year there were 800 bushels of oysters, 200 bushels of soft clams, 400 bushels of hard clams, 100 barrels of crabs, 2,000 pounds of eels, and 5,000 pounds of fresh fish taken. The brothers George W. and Samuel Hopkins have carp ponds between Mount Sinai and Miller's Place.

There are no fishing towns of consequence east of the above until we approach the district included in the next section.

C.—THE EASTERN END OF LONG ISLAND.

122. GENERAL DESCRIPTION OF THE FISHERIES.

This division, for convenience, will include the fisheries in Long Island Sound on the north, beginning at Baiting Hollow and extending to Orient Point, including those of Gardiner's and Peconic Bays. It will also include the fisheries of the Atlantic on the south, extending from the eastern extremity of the islands as far west as Southampton. The capture of menhaden for oil and fertilizers is extensively carried on in this region, and it is not an uncommon sight to see fifteen or more menhaden steamers lying at the wharf, at Greenport, on Sunday. Pound-nets are used. They are located as follows: On the sound shore there are three west of Horton's Point, and one just east of it; a fifth is placed just east of Rocky Point, and four others are located between that and Oyster Pond Point, at the extreme end of the northern shore. Inside of Oyster Pond Point, in Gardiner's Bay, are two other pounds, with three on Long Beach Point; two in Orient Bay; one on Shelter Island; one near Southold; two in Peconic Bay, between Jamesport and Mattituck; three in Little Peconic Bay; one on the eastern side of Hog Neck; two on the eastern

side of Gardiner's Island; two on Napeague Beach, and three in Fort Pond Bay; making, in all, thirty-one. These pounds are changed from place to place, their position depending largely on the run of fish. Fewer are fished now than formerly. Last year there were three more between Culloden and Shagwong Points, and a number of others on Gardiner's Island. They are usually constructed with a heart and bowl, although many have no heart but merely a funnel running into a square bowl, these being locally known as "traps." In my report I shall class them all as "pounds." They are all built in the usual manner of stakes and netting, with a leader running toward the shore, and are often owned by men who live at a distance and who own or lease the shore privileges. It is proposed to build one on a larger scale with iron piles, running out into the Atlantic from Napeague Beach, and circulars are out soliciting subscriptions to the capital stock. I take the following notice of it from the pages of Forest and Stream of December 2, 1880, headed "A Gigantic Fish-Trap":

"We have seen a circular headed 'The Long Island Fish Company,' which is now being circulated. It states that the company has been organized under the laws of the State of New York 'for the purpose of leasing and owning suitable locations for the erection of weirs, and erecting weirs or pounds (sometimes called traps) at such locations, and catching and selling all kinds of fish, and rendering fish for the oil and for fertilizers.'

"We also learn that the company has become the owner of a tract of land at Napeague Beach, near the eastern end of Long Island and a few miles west of Montauk Point. Here they propose to put out a monster trap; and as one built in the ordinary manner with poles would not stand a week on this straight line of the Atlantic beach, which is so frequently storm-swept, they propose to put down iron piles after the manner of the ocean piers at Long Branch and Coney Island. They have chosen a place where the island is only half a mile wide—Napeague Bay—an indentation in Gardiner's Bay being on the other side, where their vessels can load for Sag Harbor and where their factories and ice-houses can be built. There is no question about the millions of fish to be captured there, as all the fish which traverse the beach coming from the east, seeking the inlets of Shinnecock Bay and Fire Island, as well as those moving to the eastward to round Montauk and enter Gardiner's and Peconic Bays, or to enter Long Island Sound, traverse this route, and the fishermen often make enormous hauls there when the weather permits. Here, too, they come nearer the shore than at any other point, for there are no sand bars outside the beach to force them out for deeper water.

"This monstrous affair will fish night and day the year round, and take fish which should be allowed to fill their mission of spawning. They say 'a weir is fishing night and day, and not only catches the schools of fish accidentally seen from the shore or from the deck of a fishing smack, but catches everything that comes along, and schools of fish not apparent from the surface.'

"The weir is to run 600 to 700 feet into the ocean, into 30 feet of water, and with this they suggest that persons taking stock may receive a great return, say $1,000 per annum for every $100 invested, and assert that 'with the iron weir more menhaden can be caught than the whole fleet of boats can catch.' We have no opinion to offer as to these statements, being content, for the present, to present the facts as they appear. We do not hesitate to say, in this connection, that all fish seeking our shores to spawn should be allowed to do so, and that the Menhaden Association are killing their goose by allowing the fish to be taken for manure when they come to spawn and are worthless for oil.

"An article in the New York World describes the trap as follows: 'The weir will be an iron pier 10 feet wide, with bents or sections 20 feet long. It will run out 700 feet, with 30 feet of water. At the outer end will be the heart-shaped pound, the larger end of the heart inshore.

This heart is about 70 feet across, and outside of it is a box of iron piles and netting about 75 feet square. The fish striking the pier netting will run out seaward to the heart, and, passing out at the lower end, will find themselves in the outer receptacle. In the sections of the iron weir storage for thousands of tons of fish can be provided, where they will keep alive in their native element for a month or longer, and need not be brought to market when the price is low.'"

The waters of both Peconic and Gardiner's Bays contain scallops in considerable quantities, although there are many places too deep to dredge for them. Soft and hard clams also abound, as well as eels, crabs, and lobsters. On the eastern end of the southern "limb" of the island, near Montauk Point, is a large fresh-water pond. The fishing privileges of this entire point, from Napeague Bay to the extreme end, have recently been leased to Mr. E. G. Blackford, of Fulton Market, New York.

The region west of Napeague Beach, now called "Promised Land," is the site of many of the oil and fertilizer establishments known as "bunker factories." These, from Amagansett east, are the "Ragged Edge Oil Works," of Ellsworth, Tuthill & Co., Greenport; those of Jonas Smith & Co., Promised Land; "Ranger Oil Company," owned by T. F. Price & Co., Greenport; the Oil and Guano Works belonging to H. R. Dickerson, of Staten Island; "Falcon Oil Works" of George T. Tuthill & Co., Greenport; Oil and Guano Works of W. A. Abbe & Co., Promised Land. On Hick's Island, east of the above, are the oil works of William P. Green & Co., Greenport; and a little farther on, in Napeague Harbor, are those of W. M. Tuthill & Sons, of East Marion, and those of William Y. Fithian & Co., of Southold. At North West, near Sag Harbor, are the factories of Henry E. Wells & Co., Greenport, and the Sterling Oil Works, of which J. M. Raynor & Co., of Greenport, are agents. On Shelter Island are those of Hawkins Bros. & Co., Bunker City, and the Peconic Oil Works, of B. C. Cartwright & Co. At Deep Hole, between Promised Land and Springs, is the factory of Higgins & Payne, of Sag Harbor; and at Southold is that of W. H. H. Glover. Near Orient, on Long Point Beach, the "Atlantic and Virginia Fertilizing Company" are building a new factory to replace the one burned last winter.

Mr. W. Z. King, naval surveyor, has for some years been in the habit of gathering such statistics as could be obtained from all points on Gardiner's and Peconic Bays and forwarding them to the United States Bureau of Statistics. In his report he has included the figures for the menhaden factories of Vale & Griffin and Hawkins Brothers, on Barren Island, as the owners live at Greenport. Mr. King's figures for fresh fish are made up from the boat shipments, and are doubtless below the actual catch, for at times men from Connecticut have owned pound-nets in the vicinity and have marketed their fish in their own boats without reporting them. I give below the figures as obtained by him for the past year, beginning with July, 1879:

Quarter ending September 30, 1879.		Quarter ending December 31, 1879.	
Number of menhaden taken	75,000,000	Number of menhaden taken	40,000,000
Gallons of oil produced	356,350	Gallons of oil produced	207,000
Tons of guano	7,500	Tons of scrap produced	4,600
Tons of edible fish	350	Tons of edible fish taken	280

He sums up the catch of the year by estimating the total value of the products of the fisheries of the district for 1879 at $975,000. The total catch of menhaden by the bay fishermen is claimed to be 211,000,000 fish, producing 1,013,350 gallons of oil and 22,100 tons of scrap. The

entire menhaden catch for the bay, including those taken by the residents and other fishermen, is estimated at 400,000,000 fish. The figures for the first two quarters of 1880 are as follows:

Quarter ending March 31, 1880.		Quarter ending June 30, 1880.	
Bushels of hard clams	2,300	Number of menhaden taken	60,000,000
Bushels of scallops	7,000	Gallons of oil produced	120,000
Tons of edible fish	115	Tons of scrap produced	6,000
		Tons of edible fish (exclusive of those for home consumption)	330

Mr. W. S. Havens, collector of customs at the port of Sag Harbor, has gathered statistics of the fisheries for all points on Peconic and Gardiner's Bays, and for the ocean shore from Riverhead to Montauk and Orient Points. Mr. King informed us that these figures were included in the statistics furnished by him, but as they differ in many particulars, we furnish a copy as taken from Mr. Havens's books:

Products.	Quarter ending September 30, 1879.		Quarter ending December 31, 1879.		Quarter ending March 31, 1880.		Quarter ending June 30, 1880.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Oysters ... bushels	1,000	$1,000	3,000	$3,000	1,000	$1,000	1,000	$1,000
Other shell-fish ... do	2,500	2,000	15,000	7,500	.....	8,100	6,000	4,800
Fresh fish ... pounds	876,000	43,800	630,000	31,500	440,000	17,600	760,000	30,400
Oil, other than whale ... gallons	446,250	124,950	258,750	113,500	.....	.....	120,000	42,000
Fish and scrap for fertilizers ... tons	9,400	112,800	5,750	69,000	50	500	6,000	60,000
All other products of the fisheries	.....	1,000	.....	.....	.....	1,500	.....	1,500
Total	.....	285,550	.....	224,500	.....	28,700	.....	139,700

The items of "Fresh fish," "Other shell-fish," and "All other products" I think too low, and in the account of the different towns of the district I give my estimate for each.

123. THE FISHING TOWNS BETWEEN BAITING HOLLOW AND SOUTHOLD.

BAITING HOLLOW.—Six fishermen, four of whom have families depending upon them, reside at this place, which is an inland village with no harbor. Nearly all of them fish along the sound shore with haul-seines. The seines and boats aggregate about $1,600. The principal species taken are flounders, bluefish, striped bass, and weakfish, the first-named being the most abundant. Last year 40,000 pounds of fish were taken and marketed in the locality at an average of 6 cents per pound. Very few were shipped during the season.

RIVERHEAD.—This is a place of about 2,700 inhabitants. It is situated at the head of Peconic Bay, which separates the two peninsulas of the eastern end, or, as a citizen expressed it, "right in the fork of the boot-jack." A small river empties into the bay at this point, but a dam prevents any fish from ascending. A long pond, said to be 50 feet deep in places, is formed by the dam, and contains pike or "pickerel" (*Esox*), which, from the descriptions, I think are *E. reticulatus*. Black bass and carp have been introduced this year. One hundred of the men are engaged in fishing. Eighty-eight are employed in the menhaden fisheries, and twelve live by clamming, eeling, &c. Sixty out of the entire number are married, which, if the families be included, gives a total of three hundred and fifty persons dependent on the fisheries. Oysters were planted about 2 miles below the village last spring, but they do not thrive well. A company of six members was formed, with shares of $50 each, and 1 acre was planted with 675 bushels of seed from New Haven, Conn.

They have 12 acres of ground, but only 1 was planted, as an experiment. Of fresh fish, 100,000 pounds were taken last year; 1,975 pounds were shipped by rail, 800 pounds by boat, and the remainder was consumed at home. The fish are taken in seines and fykes, in which $400 are invested. Flatfish constituted the bulk of the catch. Three years ago a few shad were caught here, and if it were not for the dam it is possible that shad might become colonized in the river, as these places are suitable for spawning grounds. There is fresh water for half a mile below the village at low tide, and at high tide it is brackish up to the ship-yard. Charles H. Homer has been engaged in the menhaden fisheries, but he claims the business is so poor now that he is obliged to fish for eels and clams, along with twelve others. Clamming for hard clams was good last spring, but it has not been remunerative this fall. The season lasts from March to October, and two men average 50 bushels each per month; the others get less. Clams are sold at $1 per bushel to peddlers, who take them in wagons to other places. The year's catch amounted to 2,500 bushels. The soft clams were nearly destroyed a few years ago, but they are increasing again. The present catch is 100 bushels annually. But few scallops are taken here, as on account of the shallow water and its freshness, the river and the head of the bay close early.

Eels are taken both by "firelight" (spear) and pots. The former method is practiced during July, August, and September, and the latter during the rest of the year. Charles H. Homer makes the pots, which are 18 inches long by 12 inches in diameter, of pine strips woven into baskets. After dyeing them with logwood to make them less conspicuous, he sells them to the fishermen at 60 cents apiece. They are baited with "mummies" (minnows) in the early spring, but when the "horsefeet" (*Limulus polyphemus*) "crawl," in May, these are used in preference. About 2,500 pounds of eels were taken last year; of these, 1,740 pounds were shipped by rail to the larger markets, and the rest were consumed locally.

It is claimed here that Sylvester Petty, of Franklinville, invented the purse-net for taking menhaden. The old way was to take them in gill or "fly" nets. The menhaden steamers George Hudson and Nat. Strong are owned here. They cost $15,000 each, fully equipped with seines and boats. The boats cost $400 and the nets $500 each. The men in the menhaden fishery pay their own expenses, receiving a definite share in the catch, while the captains get an additional amount, usually a percentage of the gross stock, or so much per barrel for the fish landed.

JAMESPORT.—Sixteen men take scallops and clams in this vicinity, and eleven women and fifty children are employed in opening these bivalves. About ninety people depend in part on the business, equal to about forty people entirely dependent. About $7,000 are invested in boats and houses. The scallop fishery is described more fully under the town of New Suffolk. There are eight boats here, aggregating 30 tons; 8,500 pounds of scallops were taken during the season, of which 2,680 pounds were shipped by rail, and 3,000 pounds went by boat. Of the remainder, 1,500 pounds were sold to peddlers, and the rest were consumed locally; 2,000 bushels of hard clams and 500 bushels of soft clams were taken. A pound-net here, valued at $300, is estimated to take about 20,000 pounds of fresh fish during the year.

FRANKLINVILLE.—Four men from this town live by fishing. They have about $1,500 invested in boats, and nearly $500 more in nets; 8,000 pounds of scallops and 25,000 pounds of fish were taken. Nearly all of the latter were shipped by rail to New York.

MATTITUCK.—Five residents of this place are fishermen. Three of them are married, and eighteen persons are dependent upon them. Three women and fourteen children are employed in opening scallops during the season. There are three fishing boats, aggregating 14 tons. A capital of $3,000 is invested in boats and buildings for the scallop industry; 18,000 pounds were

taken last year, of which 14,968 pounds were sent west by rail, and the others were distributed elsewhere. A few hard clams, probably 600 bushels, were taken. A pound-net west of the village took 25,000 pounds of fresh fish, and about 15,000 pounds of eels were taken with spears and pots.

NEW SUFFOLK.—This small place has been built to accommodate the scallop trade. Shipments by rail are made at Cutchogue. The scallop fleet numbers sixteen sloop-rigged boats, ranging from 5 to 15 tons each, the aggregate being about 120 tons. Seventy men are engaged in fishing for scallops; while twenty men, thirty women, and eighty children are employed in opening the product, making a total of two hundred persons, the majority of whom are Americans, engaged in this industry. The fishery is carried on at any time between October and the following May, when weather and ice do not interfere. The fleet averages 100 bushels (in shell) per day, or 18,000 during the season. They "open out" half a gallon of meats to the bushel of shells, making 9,000 gallons, which, at an average of 60 cents a gallon, net the producers about $5,400. They are shipped in boxes to commission merchants in New York, the selling price varying from 25 cents to $1.50 per gallon. Not less than $20,000 are invested in boats, houses, and tools. The scallops are caught with dredges (pronounced *drudges* by the fishermen), similar to those used in taking oysters, except that they have no teeth. The bottom part of the bag, which holds from 1½ to 2 bushels, is made of chain and the upper part of net. The boats drift with the tide, and, if possible, with the wind. The dredges are used in 2 to 30 feet of water, 7 fathoms of line being the average length in shallow water; the length is, however, varied according to circumstances, for when it is windy they must pay out more, and when moderate less, to regulate the speed and prevent anchoring the boat. If very deep water is dredged, additional lines must be bent on. Scalloping has been practiced here twenty-five years, and it is claimed that the discovery that the species was eatable and marketable originated here.

Women and children are employed for shucking the scallops; the former ordinarily open from 15 to 18 gallons per day, according to the size of the scallops, and it is not uncommon to see a woman standing at her place working while she is rocking the cradle with one foot. The work is all done in frame buildings and the people stand in a row at a bench. Children often come down after school and open 5 or 6 gallons. The price paid for opening was formerly 25 cents per gallon, but it was reduced to 15 cents last season, and to 12 cents this year. If the demand for scallops is good, 15 cents will doubtless again be paid. From 80 to 200 scallops fill a quart cup, equal to 320 to 800 to the gallon. Every part of the scallop is used. The hard adductor muscle is all that is eaten, and it is the only part marketed. The soft parts called "rims" were formerly sold for manure at $1 per barrel, but they are now mainly used by the dealers on their own land. Fifty thousand bushels of shells have been sold at 2½ cents per bushel; they are used for catching oyster spat and are in growing favor on account of the ease with which they go to pieces when the oysters get large. They are often taken from the beds and turned over with a shovel to separate the oysters and keep them from bunching.

Some of the scallop boats are used in the "off" season for taking hard clams. About twenty-five men are engaged in clamming in the summer, averaging 4 bushels per day from April to October. They catch most of the clams in the early spring and bed them down for summer; 10,000 bushels were taken last year; 200 bushels of soft clams were dug for home supply.

PECONIC.—Three pound-nets on the sound side are owned by residents of this place. The principal sources of revenue from the fisheries are from these nets and from the catch of menhaden and scallops. Sixty men are engaged in these fisheries, forty of whom are married, with two hundred persons depending upon them. George H. Vail, a pound fisherman, claims that the fisheries are

decreasing. There are $1,500 invested in nets, exclusive of those used in the menhaden fishery, and $3,000 worth of fishing boats and tools are used. Most shipments of fishery products go by boat to New York or to Connecticut. Last year 18,000 pounds (2,000 gallons) of scallops, 1,200 pounds of eels, and 600,000 pounds of other fish were caught.

SOUTHOLD.—Mr. W. H. H. Glover has oil works at this place, and Mr. W. Y. Fithian, owner of works at Napeague, resides here. Mr. Fithian says that now (October 1) the menhaden yields an average of 3 gallons of oil per thousand fish, but that the average for the season, up to September 10, was only 2½ gallons. He owns a steamer worth $13,000, and two sail craft; his factory is worth $18,000. Some menhaden seining is done at Peconic in the spring, the fish being sold for manure. Perhaps $2,000 worth were so taken last spring.

Outside of the menhaden business there are six men engaged in the fisheries; three are married and twenty persons are dependent upon them. Two men, W. Maynard and John Dunkle, take scallops; three women and ten children find employment in opening them. One boat is used in the fishery and 40,000 pounds of scallops were obtained last year, 13,025 pounds of which were shipped by rail; 200 bushels of soft clams, 400 bushels of hard clams, and 50 barrels of hard crabs were taken. The other products were 30,000 pounds of dressed eels, of which quantity 9,290 pounds were shipped to New York by rail; 800,000 pounds of fresh fish, four-fifths of them being consumed locally; 200 bushels of oysters and 50 barrels of lobsters. Oyster culture is being attempted here by Mr. John P. Terry, who has 50 acres planted.

124. GREENPORT AND ITS FISHERIES.

GREENPORT.—This place, with its deep, spacious harbor, was formerly a great whaling center, but on the abandonment of that industry the capital was mostly transferred to the menhaden business. Many owners of factories live here. Mr. David G. Floyd, now seventy-nine years old, went into the whaling business in 1847, but, to use his own language, has now "got down to menhaden." He says that he remembers the first bluefish he ever saw; fifty years ago they were called "horse mackerel." In 1838, when the first Spanish mackerel were caught here, the people were afraid to eat them; they were taken in "Narrow Bay," between Moriches Bay and Great South Bay. Between 1850 and 1860 menhaden were usually plenty, with the exception of one year, when they failed. His father told him that the eastern end of the island did not raise grain enough to feed the inhabitants until they began using fish for manure; this practice began about fifty years ago. Rye was the main dependence for bread up to that time, but after applying fish they could raise wheat as easily as rye. He now has one factory and two steamers in the menhaden business. He first engaged in the business in 1865, when he bought a sail vessel, and, after putting oil works on board of it, went down to Chesapeake Bay. The business was a new one, and, having had no experience, he did but little. The next season he went to Maine, but the people objected to his fishing inside of the 3-mile limit, and thinking the point hardly worth contesting he gave it up temporarily and returned home.

This year the fish have been poor and have made but little oil, probably not over 2½ or 3 gallons per thousand, an average yield for other years being about 4½ gallons. Mr. Floyd says that the fish were plenty in May, but that they were very poor, and taking the season through it has been an unprofitable one so far; but as October and November are the best months, the fish then being fatter, it may help to bring up the average. Capt. B. F. Conklin, of Jamesport, says: "Six or seven years ago, in July, the fish in Gardiner's and Peconic Bays were very fat and made from 12 to 15 gallons of oil per thousand." Mr. Henry E. Wells, of D. D. Wells & Sons, says that he began

fishing for menhaden on July 4, 1850, and was the first person in the business. He put up steam oil works on Shelter Island. The fish were at first taken wholly in shore-seines. In 1852 he went into the purse-net fishing, with small boats; later he employed yacht steamers. "We built," says he, "the first steam factory in the State of Maine, at South Bristol. The firm was Wells & Co. We also built the first steam works in Virginia, on Tanner's Point, where we staid one year, after which we returned to South Bristol." He thinks the business varies from good to bad, as other business does. The catch for 1880 was better than that of the previous year. He thinks it would be better policy not to capture any menhaden before June 1, so as to allow them to spawn. In August, 1873, he took one boat load of menhaden in Little Peconic Bay which yielded 24 gallons of oil per thousand fish.

Bluefish and weakfish have been abundant this season, but Spanish mackerel were very scarce. Some shad have been caught in the pounds during the past few years. The schooner Storm Child, a well-smack running to the New York market, is owned here, and from the middle of April to the 1st of October fishes for lobsters and then goes to Nantucket for cod. Lobsters taken at Gay Head (Martha's Vineyard) are easily kept alive in the well, but those taken from the colder waters of Maine often die. The captain says: "This season would have been a good one had it not been for the 10-inch law, which has worked disastrously. If this law affected the canneries it would be an excellent one, but under it they can work up small lobsters, while the market is closed on them to us." When fishing for cod he gets his bait (sea-clams) from Rockaway. His catch being taken outside the limits of the island and marketed in New York, I have not included it here. Five smacks sail from this place, and two belonging to New York marketmen are often laid up here. They have not been out much this season, as they say it was too dull to pay expenses. Exclusive of the menhaden business there are forty men engaged in fishing here; twenty of these are married, and, including their families, one hundred and fifty persons are dependent on the fisheries; $15,000 are invested in boats and $5,000 additional in nets and implements.

Ten boats with twelve men were employed in the scallop fisheries. The season begins the last of September and ends about March 1. In the winter of 1876–'77 some of the boats took 50 to 60 bushels per day. They are opened by boys from nine to sixteen years old and are sent to Fulton market by express; 15,000 bushels, averaging a half gallon of meat each, were taken in the season of 1879–'80. These sold at an average of 60 cents per gallon. In July the young scallops are as big as a man's thumb-nail. In November they have increased to the size of an old-fashioned copper cent. The fishermen think that they spawn in June.

The yield last year, including the products shipped to New York and Connecticut, and those consumed at home, was 3,000,000 pounds of fresh fish, 20,000 pounds of eels, 80 barrels of lobsters, 75 barrels of hard crabs, 10,000 pounds of scallops, 1,000 bushels of hard clams, and 400 bushels of soft clams. Ten men take scallops and 14 women and 40 children devote their attention to opening the catch. The soft clams are not considered very good until snow comes; the fresh water from snow is said by the clammers to fatten them.

125. THE FISHING TOWNS BETWEEN EAST MARION AND SOUTHAMPTON.

East Marion.—There are seventy-five men engaged in the fisheries from this point. The pound fishers living here fish in Orient Bay, along the sound, at Niantic, Conn., and at Napeague. Capt. Henry Bellost formerly owned two pounds in Napeague Bay, just inside Rocky Point. He fished them regularly for nine years, but has now given up the business. He sent his fish to New

York in boxes averaging 225 pounds of fish each. The following are the shipments for the nine years, copied from his books:

Year.	Number of boxes.	Pounds of fish.
1871	272	61,200
1872	321	72,225
1873	363	81,675
1874	320	72,000
1875	251	56,475
1876	146	32,850
1877	236	59,175
1878	251	54,225
1879	113	25,425
Making a total of		515,250

His fishing season was from May to October. He has no record of the Spanish mackerel caught, but gives his recollections as follows: 1871, 6,000; 1872, 2,500; 1873, 1,000; 1874 to 1878, 500; 1879, 10 fish. He says in 1871 Spanish mackerel were plenty; in 1872 the pound-nets began to increase in numbers, and kept increasing until 1875, when this fishery was at its height; in 1878 it began to decrease, and there are not as many nets this year as last.

Capt. James McDermott is now engaged in the capture of flatfish for two months in the spring, beginning about the 1st of March. He fishes ten fykes, the hedgings to these extending fully 7 rods from the shore, while the wings are about 16 feet in length. The fykes proper have two funnels each. They are about 9 feet long and 4 feet in diameter. In the spring of 1881 he reports the flatfish much less abundant than formerly, his entire catch not exceeding 600 pounds per week. This he attributes to overfishing in the bay, where a large number of fykes are set.

Capt. Willard Rackett, of the sloop Laura Thompson, is engaged in running lobsters to the New York market. In the spring and early summer he visits Deer Isle, on the coast of Maine, to secure his supply, but later, owing to the loss of lobsters in transportation, he buys them of the Massachusetts fishermen. He can carry about 20,000 pounds of lobsters in cool weather. When the weather becomes warm only half that quantity can be taken with safety. During the season he carries about 80,000 pounds, the average weight of the lobsters being about 1½ pounds each. Vessels owned here hail from Greenport, and their tonnage is included in the fleet of that port. The fresh fish caught from different waters by the men living here is estimated at 150,000 pounds for the year. In addition to these, 10,000 pounds of eels, 100 barrels of lobsters, 100 barrels of hard crabs, 200 bushels of hard clams, and 50 bushels of soft clams were secured.

The fishermen report that bluefish are holding their own in numbers; weakfish decreased slightly from 1874 to 1877, since which time there has been little change; porgies (*Stenotomus chrysops*) have decreased, and butterfish (*Stromateus triacanthus*) hold their own. There are $4,000 invested in nets, and $6,000 in boats, by the resident fishermen.

ORIENT.—This is the most easterly village on the northern peninsula. There are five professional and eight semi-professional fishermen here. Two of the former are married, having nine children, giving sixteen wholly dependent on the fisheries. Of the latter, six are married, and having twenty-seven children, make a total of forty-one partly dependent on the fisheries. It has been my custom to take half the semi-professionals and add them to the others. This would make nine men, five married and thirty-six dependent. The owners of pound-nets from here to Oyster Pond Point are farmers, who own the beach. In Orient Bay are two pounds, which are owned in East Marion, and their catch is included in the figures of that place. There are three pounds and

a fertilizer factory on Long Point Beach, two pounds south of Oyster Pond Point, and five in the sound, between the last-named place and Rocky Point, lying to the west of Orient. There are $6,000 invested in nets, and $12,000 in boats for fishing. There are no men here engaged in fishing for either menhaden, mackerel, or halibut; all are pound-netters, here or elsewhere. The fishing is better than last year for all kinds of fish. A few Spanish mackerel (150) were taken. Both bluefish and porgies have increased.

The average cost of a pound-net is about $500. The pound proper requires 100 pounds of twine, and the leader from 100 to 150 or even 250 pounds, according to length and the depth of the water.

The Atlantic and Virginia Fertilizing Company, on Long Beach Point, lost their factory by fire last winter. When running they employed forty men all the year round. They are rebuilding. They buy fish-scrap from the oil factories and mix it with other materials, thus making an excellent fertilizer.

The catch last year was 300,000 pounds of fresh fish, 50 barrels of crabs, 100 barrels of lobsters, 800 bushels of oysters, 500 bushels of hard clams, and 200 bushels of soft clams.

GARDINER'S ISLAND.—Formerly ten pound-nets were fished here, but now only two remain. No fishermen live here, and the catch is therefore included in the figures of other places.

MONTAUK POINT.—Here is Great Pond, a pond of fresh water containing 1,500 acres. It sometimes empties into the bay, and the owner, Mr. Benson, has talked of making an opening with a sluice-way, so as to render it brackish and make an oyster-pond of it. It contains neither yellow perch (*Perca americana*), pike, nor pickerel. W. S. Gardiner, of East Hampton, once rented its fishing privileges at $100 per year. He caught white perch (*Roccus americanus*), a few striped bass (*Roccus lineatus*), eels, and one codfish; also some menhaden, tautog or blackfish, mullet, weakfish, and flatfish. The white perch were the most abundant. He sounded the pond from Big Island to the south end, and it showed a regular depth of 12 feet, except very near the shores. Oyster Pond has yellow perch and oysters.

FORT POND BAY AND NAPEAGUE.—There are three pounds in Fort Pond Bay, and two in Napeague, but, being owned elsewhere, the catch is reported in the towns where the owners live. Napeague Bay and Harbor are together called "Promised Land," and several menhaden factories are located here. On the Atlantic side the great pound-net which it is proposed to build, with an iron pier, referred to in general remarks on the east end, is to be located.

SPRINGS.—Here are forty professional and ninety semi-professional fishermen, equal to eighty-five men, of whom thirty are married, making fully two hundred and twenty persons dependent upon the fisheries. There are $8,000 invested in nets and apparatus, and $32,000 in boats. The aggregate for the boats is about 100 tons. During the fall and winter of 1879, 10,000 bushels of scallops were taken in Three-Mile Harbor. Two men dug 800 bushels of soft clams last fall and sold them at Watch Hill, Conn. Mr. Bennett, one of the interested parties, says that men from Block Island and from Connecticut took from Three-Mile Harbor, about a mile from Springs, 4,000 bushels of soft clams last season, and that they do so every year. The entire catch was 8,000 bushels, of which fully half were shipped. One thousand bushels of hard clams were taken for consumption in the vicinity. Of fresh fish 120,000 pounds were taken; of eels, 2,000 pounds; of crabs, 100 barrels; of lobsters, 60 barrels. Striped bass (*Roccus lineatus*) are taken in seines and traps from October until the weather gets too cold.

AMAGANSETT.—Fifteen professional and thirty semi-professional fishermen live here; $20,000 are invested in boats, and $5,000 in seines, traps, and fykes. Many of the farmers of the locality set fykes, and they occasionally fish with seines for striped bass and other species on the Atlantic

side. The bass have been scarce this year, and now (November 6) the men say none are to be found. Daniel Loper lives in his boat and fishes wherever he finds fish, at Montauk Point, Block Island, or elsewhere. He reports fishing as poor this year. Many men living here are engaged in the menhaden fisheries during the season, after which they fish with seines for other species. Few fish are shipped from the place. The catch for the past season has been: Fresh fish, 40,000 pounds; soft clams, 200 bushels; hard clams, 100 bushels; crabs, 30 barrels; eels, 4,000 pounds.

EAST HAMPTON.—The men here fish along the ocean shore and in Gardiner's Bay. They take scallops, clams, eels, and other fish in the latter and bass and other fish in the former. There are twenty-five professional and seventy-five semi-professional fishermen. The bass season begins in October and lasts for five or six weeks, or until cold weather sets in. Flat-fish are taken in fykes. Eels are speared, potted, and seined with a seine of fine mesh. The scallops taken are consumed locally; $10,000 are invested in nets and gear, and $30,000 in vessels and boats. The catch for the year was: Fresh fish, 50,000 pounds; soft clams, 500 bushels; hard clams, 150 bushels; scallops, 4,000 pounds; eels, 6,000 pounds.

SAG HARBOR.—This is the terminus of a branch of the railroad, and many fish caught by the men living at other points are shipped from here. Sixty men are engaged in the menhaden and other fisheries; half of them take clams and scallops. Three large and ten small sloops, aggregating 150 tons, are engaged in the business. At the time of my visit, October 21, the scallop season was not fairly opened, as the weather was too warm for them to keep well, but the outlook was good and the scallopers were confident of a good catch. Hard winters kill the species, but last winter was an open one and there was plenty of seed and few storms to drive them ashore to perish. They go in schools, and when driven on shore they soon freeze. In a storm Capt. S. Pidgeon, of sloop F. L. Nora, says that, if possible, they will work to windward, but if not possible, they are then drifted to leeward. He has seen them swimming in a crowd ten feet deep.

John Talmage, who has fished for fifty years, says that the porgies are increasing both in numbers and size; striped bass are getting scarcer every year; weakfish are not so plenty as ten years ago, but still fairly abundant, while bluefish are increasing. In referring to Spanish mackerel he said: "They were plenty twenty-five years ago, when they first came, and I have often caught one hundred in a night near Mattituck. This abundance lasted only four or five years, and they are very scarce now."

Mr. L. Palmer says: "Three years ago I was the agent of the railroad at this place, and during cold weather there were from 3 to 5 tons of flat-fish per day shipped from this station." It may be proper to remark here that the Long Island fishermen do not distinguish the difference between the several species of *Pleuronectidæ*, but class them all as "flat-fish." The names flounder, plaice, dab, window-pane, &c., seem to be unknown, and in conversation with fishermen in different parts of the island I observed that they knew that some had the mouth on the right and others on the left side, and that there were a few other differences, such as shape of the tail-fin, &c., but they either seemed to regard these things as accidental or not of importance. A few of them had noticed that those which lay upon a certain side of the body and had different tails grew larger than the others, but on the island the term "flat-fish" covers all the species found.

There are $4,000 invested in nets and tools and $30,000 in boats. The year's catch was as follows: Fresh fish, 2,000,000 pounds, of which 600,000 pounds were flat-fish; eels, 40,000 pounds; scallops, 50,000 pounds; soft clams, 3,000 bushels; hard clams, 1,000 bushels; lobsters, 200 barrels; hard crabs, 100 barrels, none shipped; oysters, 500 bushels. With the fresh fish are included some cod caught by men living here, though taken in other localities. The sloop Georgiana sails from Sag Harbor and fishes occasionally for bass, and at other times goes for cod,

as does also the sloop Eveline, Captain De Castro. The men fish with hand-lines, and for bait use "bunkers" or menhaden, and clams. Captain De Castro says that the trawls and pound-nets have spoiled the fishing.

BRIDGEHAMPTON.—At this place are ten professional and forty semi-professional fishermen. John Ludlow fishes for bass and finds them decreasing. There are $3,000 invested in nets and $7,000 in boats. The catch last year amounted to 150,000 pounds of fresh fish, 10,000 pounds of eels, 50 bushels of hard clams, 150 bushels of soft clams, 50 barrels of crabs, and 8,000 pounds of scallops.

WATER MILLS.—Twenty men fish from this place; eight are married and forty persons are dependent upon the fisheries. About $4,000 are invested in nets and $8,000 in boats. The catch last year was 200,000 pounds of fresh fish, 8,000 pounds of eels, 10 barrels of crabs, 20 barrels of lobsters, 180 bushels of hard clams, and 75 bushels of soft clams.

SOUTHAMPTON.—Forty men fish from this place; eighteen are married and one hundred and twenty-five persons are dependent on the fisheries. Six thousand dollars are invested in nets and $12,000 in boats. The fishing is done chiefly in the Atlantic and the small bays. The yield last year was 200,000 pounds of fresh fish, 500 bushels of oysters, 1,000 bushels of hard clams, 400 bushels of soft clams, 2,000 pounds of eels, 80 barrels of crabs, and 20 bushels of mussels. Nelson Burnett claims that the bass are getting scarce, while the porgies are growing more plentiful; that the weakfish are decreasing, while the bluefish are increasing.

D.—THE SOUTH SHORE OF LONG ISLAND.

126. EXPLANATORY STATEMENTS.

This division, beginning at Shinnecock Bay on the east and ending at Rockaway on the west, is flat, level, and sandy. The peculiar feature of the district is that the bays are not indentations in the coast line, as in other parts of the island, but are formed by a long sand-bar running nearly parallel to the main shore, which is locally known as "the beach." This beach being nearly straight and the shore quite irregular, the intervening strip of water varies greatly in width, expanding and contracting in turn so as to form a succession of salt water lagoons which are respectively known under the names of Shinnecock Bay, Moriches Bay, Bellport Bay, Great South Bay, South Oyster Bay, and Hempstead Bay. Here the oyster industry takes the first rank, and comparatively little fishing is done for market. The region is, however, a favorite resort for anglers, who often take hundreds of pounds in a day of various species, chief among which is the bluefish (*Pomatomus saltatrix*). It is also noted for the number and size of its trout streams, most of which are preserved. Many ponds have been constructed, and trout are being bred both for anglers and for market.

127. SHINNECOCK BAY.

This bay is about ten miles in length and varies from one to four miles in width. In former times it was connected with Moriches Bay on the west, but for many years it has had an opening of its own which is occasionally closed by storms in autumn which drive the sand into it. On these occasions the inlet will remain closed until the spring storms open it, unless it is opened by the people living upon the bay. It is a singular fact that all the inlets on the south side are working westward, and Shinnecock Inlet is no exception, for each time it closes and opens of its own accord it goes in this direction. When closed the waters become higher than those of the Atlantic, and

leach through the sand. They become quite fresh from the influx of the streams emptying into the bay, and the sea fish thus shut in die when the waters get cold. In this way untold millions of valuable food-fish have perished. Such a closing happened in October last (1880), and among the fish lost were thousands of small bluefish, weakfish (*Cynoscion regale*), porgies or scup (*Stenotomus chrysops*), and menhaden (*Brevoortia tyrannus*). Several public-spirited citizens offered to dig an opening at their own expense, but there is said to be a law forbidding it. They all want the inlet opposite their own houses, and so commissioners were appointed to select a location for it. These commissioners put it off until their fall farming work was done, and in the meantime the fish died. Mr. William N. Lane, at Good Ground, says that when the fish die in the bay in such quantities it seriously interferes with the fish which desire to enter it to spawn the next season, as the oil or "slick" which is produced upon the water is very offensive to them. In former years Spanish mackerel (*Scomberomorus maculatus*) were taken in this bay, but none come now. The principal species at present are bluefish, weakfish, eels, and porgies. It is claimed to be the best place for eels on Long Island.

"Duck clams" come into the bay periodically and when they are here the porgies (scup) come in and feed upon them in great numbers, as do several species of wild fowl, as red-heads, canvass-backs, broad-bills, coots, boobies, and old-squaws. This clam came in last summer, after an absence of three years. Their stay is usually three or four years, when they all die from some cause unknown.

GOOD GROUND.—Seventy-five men at this settlement derive their support from the water. They divide their time between fishing, clamming, wild-fowl shooting, and taking out parties of pleasure fishermen in their sail-boats. The fishing season continuing more than two-thirds of the year, the number of fishermen may be placed at fifty. Twenty of the men are married, and one hundred and thirty persons in all are dependent upon the fishery. Small boats of 2 tons are used, of which there are fifty, worth $4,000. About $5,000 are invested in seines, fykes, and gill-nets. Eels are taken in great numbers. Mr. Lane, alluded to above, took eels from twelve to fifteen years ago, and averaged 25,000 pounds per year. He thinks that in the whole bay there are fifty men eeling at the present time, but their labors are not rewarded with the same success as formerly, and the entire yearly catch probably does not average more than 100,000 pounds. About 30,000 pounds of eels are taken at Good Ground, together with 1,000,000 pounds of fresh fish, including flat-fish. Crabs are plenty, but not many are sent to market. The catch reaches about 100 dozen of soft crabs and 200 barrels of hard crabs, the latter being consumed at home.

ATLANTICVILLE.—Forty men fish here, of whom twenty are married. There are one hundred persons in all dependent on the fisheries. The apparatus of capture is similar to that of the neighboring towns. Fifty 2-ton boats, worth $4,000, and $6,000 worth of nets, are used in the fisheries. The products consisted of 50,000 pounds of eels, 1,200,000 pounds of other fish of various species, 50 barrels of hard crabs, 300 dozen of soft crabs, 200 bushels of oysters, and 500 bushels of hard clams.

QUOGUE.—This locality has ten fishermen, six of whom are married. Including these men and their families a total of thirty persons are dependent upon the fisheries. In the months of May and June, and sometimes in October, these fishermen devote their attention to the capture of striped bass with seines and gill-nets on the outer shore. The catch of this species has fallen off greatly in the past few years. The total production of the fisheries of this place for the last year amounted to 20,000 pounds dressed eels, 40,000 pounds fresh fish, and 50 barrels hard crabs.

At Pond-Quogue, or Canoe Place, as it is otherwise designated, is a menhaden factory owned by Mr. Albert Terry, of Riverhead.

128. MORICHES BAY.

This bay is 16 miles long and from 1 to 2 miles wide, and has 5 feet of water in its channel at high tide. It opens on the west end into Great South Bay, and has no independent inlet into the ocean. Its nearest connection with the sea is Fire Island Inlet, some 25 miles to the west, and in consequence its waters are at times rendered quite brackish by the large fresh streams flowing in at Seatuck Cove and Forge River.

Most of the hard crabs shipped from Long Island come from this bay, the people of other localities never having engaged so extensively in the work. They are taken from small boats by means of long lines, with short ones, or snoods, attached at intervals of 2 or 3 feet, which are baited with pieces of eel or other fish. The fisherman "overruns" the line from one end to the other, and as the unfortunate crustaceans are successively lured within reach he secures them with his dip-net. The crabs are shipped to New York in second-hand cement barrels. These cost 10 cents each, and are delivered to the shippers free of transportation from New York by the Long Island Railroad for the sake of the return freight when full. There are no oysters in the bay east of West Moriches. The water is too fresh for scallops, hard or soft clams.

WESTHAMPTON.—Forty men belonging to this place are occupied in fishing. Fifteen of these have families, which raises the total number depending upon the fisheries to one hundred. Seine fishing in the surf is carried on from May to November. Each seining crew consists of eight men, and is accompanied by two horses, which are used for hauling the seines and carting away the fish. The men fish on shares, one-third going to the owners of the net and the remainder being divided equally among the members of the gang. An outfit, consisting of nets and small boats, costs $1,200, the total amount invested in apparatus for the five gangs thus reaching $6,000.

Striped bass (*Roccus lineatus*) and white perch (*Roccus americanus*) are taken in South Bay from November to May.

Ten men devote a portion of their time to the capture of eels. An eeling outfit costs $150. This includes boats, cars, eel-pots, and shrimp-nets for taking bait. Mr. S. B. Topping, who was an eeler thirty years ago, informs us that he has taken 300 bushels of them in a day from April 1 to July 1. At that time minnows were used as bait in this fishery, but they are now rather scarce.

About forty years ago Mr. John Lawrence put some "mud-pike" (*Esox americanus* [*nobilior*] Gmelin) in a pond which he made for them at Mastic. A high tide overflowed the pond and let them into the bay, where they have increased to the detriment of the trout streams. They are now in all the mill-ponds, and have exterminated the trout in some places. Many are taken for market in fine gill-nets. They attain the weight of from one-half to three-quarters of a pound.

The products of the fisheries of Westhampton amounted last year to 3,000 pounds of eels, 500,000 pounds of fresh fish, and 100 barrels of hard crabs, all of the latter being consumed locally.

SPEONK.—Ten men fish from this place in the waters of the bay. Four of these are married, and have fifteen persons depending upon them for support. Five hundred dollars are invested in boats and $1,000 in nets. The yield last year was 3,000 pounds of eels and 30,000 pounds of fresh fish.

EASTPORT AND EAST MORICHES.—At Eastport and East Moriches there are twenty-five fishermen, ten of whom fish outside and the remainder in the bay. Ten are married, and, including the families of these, seventy-five persons derive their living from the fisheries. One thousand dollars are invested in boats and $2,000 in nets. The catch last year was: Fresh fish, 100,000 pounds: dressed eels, 150,000 pounds. The crab catch is included with that of Moriches Station, below.

CENTRE MORICHES.—Twenty of the residents of this town are engaged in taking hard crabs from June to November. Twelve are married, and sixty persons depend upon their labors. The men make from $10 to $15 per week during the season. Crabs are sold on commission, sometimes netting them 25 cents per barrel after all expenses and sometimes as high as $2.50. The average is about $1. The business is only three or four years old and is growing. At the approach of winter the crabs go into deep water and the men turn their attention to the capture of eels and other fish.

Besides the crabbers there are thirty other fishermen here, two-thirds of whom are married. About eighty persons are dependent upon their exertions. There are two gangs of surf-fishermen, numbering six men each, who fish with seines on the outer beach from October to December. Each gang has an 18-foot boat propelled by three pairs of oars. The seines used are 175 fathoms long and 2 fathoms deep in the middle, with a 2-inch mesh, and are hauled without the help of horses. Five hundred dollars are invested in boats and $2,000 in nets and traps. The year's catch was: Fresh fish, 200,000 pounds; eels, 250,000.

MORICHES STATION.—This place is quite inland, and only six fishermen live near here. It is, however, the principal shipping point for all the surrounding region. Four-fifths of the shipments of fish are made by express, and the remainder by freight. Eels are commonly shipped on Thursdays, as many being sent on that day as in all the rest of the week together. On October 28, 1880, 3,000 pounds of eels were shipped, and on November 4 1,980 pounds. The figures for hard crabs in 1880 were as follows, each barrel containing from 225 to 250 crabs:

	Barrels.
June	126
July	403
August	1,194
September	1,941
October	905
November (to 10th)	92
Total	4,661

129. GREAT SOUTH BAY.

Great South Bay is a body of water 36 miles long and from 3 to 6 miles wide. Its waters mingle on the east with those of the bays of Moriches and Bellport, extending westward to South Oyster Bay, from which it is separated solely by an imaginary line. The only direct communication with the sea is at Fire Island Inlet, which opens well to the westward, opposite Bay Shore. There are but few islands, and these are near the beach or ocean side. The region is a famous resort for anglers, but its commercial fisheries are not large. Oystering is extensively carried on in the western half and clamming in the eastern.

The winter of 1880–'81 was a severe one, the bay being frozen nearly solid, but the oysters did not suffer as much as was expected. One of the old oystermen, Mr. Floyd R. Skinner, of Sayville, has noticed that a long hard winter leaves them weak and in bad condition, but that the losses by death are less than when the weather is changeable with high winds. The winter of 1879–'80 was mild and but little loss occurred. As no dredging is allowed in the bay, all oysters are taken with tongs except the few which are gathered with rakes in shoal water. The bay lies in the townships of Brook Haven and Islip, the oyster district extending from Brook Haven on the east to Ford's River on the west. The oyster beds in the former township are free to citizens of the town on payment of a "toleration fee" of $1 per year. The beds are places where there are deposits of old shells. The "grounds" are staked off or buoyed into 4-acre lots, which are leased to citizens.

The price was formerly $1 per acre, but is now $3 for 4 acres. In the town of Islip, the eastern portion, which was formerly part of Brook Haven, is still under the above rules, but in the western part the grounds are leased at $1 per acre without a toleration fee for public beds. They plant under a special act of the legislature. Most of the oystermen use cat-boats, averaging 4½ tons each, of which there are about three hundred in the bay. One thousand men and two hundred boys, composing the entire fishing population, engage in oystering during the greater part of the season, which lasts from the 15th of September to the 15th of June. The boys "cull," that is, pick over the oysters and throw back the shells. In former years more boys and fewer men were employed. On public grounds a season's work for a man is 500 bushels. The quantity was much greater in years past, but the species has been failing for years. The oysters are sold by the "tub," holding about a bushel. It is part of a barrel, and should be 10 inches high, 17 inches across the bottom, and 19 inches at the top, inside measurement. The price varies from 75 cents to $1.25 per tub, the average being about a dollar. The men generally sell to shippers by rail or boatmen who buy for markets. About one-half the catch goes to New York, and the remainder is divided between Norwich and Providence. Messrs. La Salle & Day buy for both the New York and the European markets. Many are now shipped in barrels to Europe, but no special packing is done for this trade except to wash them clean, so that no mud gets in.

Mr. Skinner, referred to above, says that during the third quarter of the present century the oysters in the bay spawned only once in three years, but that during the last five years they have spawned oftener, although from causes in part unknown the greater portion of the seed have died soon after. One fruitful agency in their destruction is the "drill," which attacks the thin shell of the young and bores through. Their work can be plainly seen. There are very few star-fish, and the drill is the only known enemy. This is disappearing to some extent, and prospects seem better, as an unusually large proportion of the last year's crop survived. Much seed from Virginia, the Hudson River, Newark Bay, and Connecticut has been planted in the bays. The planters think that the last is best, because more likely to stand the winters and live. The Virginia seed is not so hardy; 50 per cent. dies the first winter and 30 per cent. of the remainder dies afterward. The Hudson River seed is the next best.

Forty years ago the principal oyster grounds were at Blue Point, near Patchogue. They have, however, been moving westward at the rate of from one-quarter to 1 mile per year, having gone 15 miles in thirty years. Sayville is now the center of the "Blue Point" oyster industry. The clams are going east at the same time, a few now being taken as far east as Terry's bed, opposite Brown's Point, one-third of a mile east of Sayville. Seed was formerly shipped from the bay; now it is brought in. Thirty-five years ago 10,000 bushels of seed were shipped to Boston, and sold at 10 cents per bushel. In those days the oysters grew thickly on old shells, and in selling 3 bushels the purchaser took 2 of oysters and 1 of shells. Seed is worth 50 cents per bushel, and from 1,000 to 2,000 bushels are planted on a 4-acre lot, according to the size of the seed.

Mr. La Salle believes that the days of oyster-planting are numbered, unless the plants are guarded from their enemies, human and other. In the flush oyster times seed often sold from this bay for 4 cents per bushel.

There are plenty of shells in the bay for oyster spat to set on, but there has not been a good catch of spat in five or six years. The "drills" have made their appearance within this period. They thrive in the salter water nearer the inlet, decreasing in numbers toward the eastern end of the bay. About $750,000 are invested in the oyster business, and the annual yield amounts to 800,000 bushels. As has already been mentioned, 1,000 men are engaged in the fisheries of this

bay. One-half are married, and about 3,000 persons, altogether, are dependent upon the products of the salt water.

Besides the oyster, clam, fish, and menhaden industries, a little revenue is derived from the "horsefeet" (*Limulus polyphemus*) and the common mussels (*Mytilus edulis*). Smith's Point, on Bellport Bay, is the eastern limit of the horsefeet on account of the freshness of the water. They are used to bait eel-pots, feed chickens and hogs, and for manure. Farmers pay 50 to 75 cents per hundred for them. Eelers pay 2 cents each for females, but will not buy males. The season is May and June, when they "crawl" or come ashore to lay their eggs between tide marks. They are picked up on shore at night or speared with an iron pike in the water by day. If speared in the carapace, the juices run out and they die and are worthless. A man can load a small boat at low tide in season. There are probably 10,000 caught in a season, which, at $1 per hundred, would only net $100, and yet their actual value must be much more.

Mussels are taken around the islands with oyster tongs principally, although a few are caught with rakes. They are worth 3 cents per bushel for manure. Probably 200,000 bushels are taken between Moriches and Babylon. A very few go to market for pickling, but the demand is small. Minnows, "silversides" (probably *Engraulis vittatus* and other species), are taken with a net made of milnet for eel bait, but usually by the eelers themselves, so that there is no regular price.

Hard clams are taken from the opening of the bay in spring to its close. The season is more active when oysters are out, from the middle of June to the middle of September. The same boats are used, probably two hundred, ranging from 2 to 6 tons each. During the height of the season five hundred men and two hundred boys are employed. A good day's work for a man is 1,000 clams (about 3 bushels). They sell for $2 per thousand or 70 cents per bushel. The yearly production is about 150,000 bushels, of which about 20,000 bushels are put up by the cannery at Islip. The tongs and rakes used are made rather heavier than those for oysters, and cost $5 and $6, respectively. Three-fifths of the catch is taken with tongs the heads of which are of iron. Gill-nets, or set-nets as they are here called, are used, to a certain extent, in the fisheries of the bay. They are 600 fathoms long and 6 feet deep, being made of cotton twine, 12-thread, and having a 3-inch mesh. A "fly-net," another common kind of apparatus, is a seine not hauled to shore; one end is fastened to a stake and the boat pays it out and rows around to the starting point.

Off Fire Island Inlet about seventy-five men fish for cod in winter. They use hand-lines and bait with sea clams and razor clams. Three or four men fish from one boat of about half a ton burthen. The twenty boats take 2,000,000 pounds in the course of a season. A portion of the catch, perhaps 500,000 pounds, goes to New York by boat, the remainder is sent by rail and is included in the figures for the different stations.

In addition to the products already mentioned, 50,000 barrels of soft clams and $10,000 worth of menhaden are taken in the bay, the latter being used for manure.

BROOKHAVEN.—The shipping station on the railroad is Yaphank, 3 miles north. Twenty-five fishermen live here (not included above), of whom fifteen are married, and seventy persons in all are dependent upon the water. Ten of the men fish outside and the remainder in the bay. There is no hand-lining for cod. Seines are used outside, and set-nets, fykes, and "run-arounds" or "fly-nets," inside; $500 are invested in boats and $2,500 in nets. Eeling has been poor this year, the catch amounting only to 2,500 pounds; 25,000 pounds of fresh fish of other species have been taken.

BELLPORT.—At Bellport fifteen men are engaged in the fisheries proper; nine of these are married, and have thirty-five persons depending upon their exertions. In addition to these, fifty oystermen are numbered among the residents of the village. No fishing is done outside; $2,500

are invested in nets and $500 in boats; 1,000 pounds of eels were taken for local consumption. A few clams are obtained about Fire Island. The shipments are included in Patchogue.

PATCHOGUE.—Patchogue has twelve married and eighteen single fishermen, with a total of seventy-five persons dependent on the fisheries. Besides these, one hundred oystermen are included for this place in the general report on the bay. The yearly catch amounts to 5,000 pounds of eels, 600,000 pounds of fresh fish, 400 barrels of hard crabs, and 300 dozen of soft crabs. Fykes, seines, and eel-pots are used; $1,000 are invested in boats and $2,000 in nets.

BLUE POINT.—Here were formerly taken in great quantities the famous oysters which still retain the name of "Blue Points," although the grounds here do not yield as formerly, and the same quality of oysters are now taken at Sayville, 2½ miles west. Ten men fish from Blue Point with fykes, seines, and eel-pots, and six of them are married and have twenty persons dependent upon them. The catch for the last season was divided as follows: Eels, 5,000 pounds; fresh fish, 80,000 pounds; hard crabs, 300 barrels; soft crabs, 200 dozen. About $800 are invested in boats and $1,500 in nets.

BAYPORT.—Very little fishing is done here. The men engaged in oystering and other bay work set a few fykes and eel-pots. The catch was as follows: Eels, 1,000 pounds; fresh fish, 15,000 pounds; hard crabs, 100 barrels; soft crabs, 150 dozen. There are $600 invested in boats and $1,200 in nets.

SAYVILLE.—Sayville is now the center of the "Blue Point" oyster trade. (See introductory remarks to Great South Bay.) Twenty fishermen fish and eel here, twelve of whom are married. Seventy persons in all are dependent upon the fisheries. Seines or "fly-nets," fykes, and eel-pots are used. Five thousand pounds of eels, 100,000 pounds of fish, 300 barrels of hard crabs, and 400 dozen soft crabs were taken; $2,000 are invested in boats and $2,000 in nets.

The owners of the three menhaden oil works on the beach live here. Mr. William H. Bedell, superintendent of W. J. Terry's works, says (August 20, 1880):

"All factories have been closed since July 1 because there were no fish. The steamers drive them off. They chase the schools and capture or scatter them. We often take them when full of spawn, when they are of little use, as the eggs mix with the oil and cannot well be separated. They are only good for guano, and should be left to breed. These spawners do not mix with the others. They spawn and go, and give place to a run of smaller fish. They struck in about April 15 in fair numbers. The run which comes in June is best, the fish are fat, and it is our main run."

Striped bass were plenty in South Bay forty years ago, on what is called "Bass Flat." Mr. Terry has seen wagon-loads taken of fish weighing from 10 to 60 pounds. There are none there now, although the character of the ground has not changed. He attributes their absence to the increase of sailing vessels, which are continually on the grounds. Formerly there were but few nets, and no pounds. Forty years ago they took small bass of 2 to 3 pounds in winter by means of nets under the ice.

The bay men hardly distinguish flounders from other flat-fish, and do not consider any flat-fish good eating. A few flounders are taken in spring and sent to market. Weakfish are holding their own as well as any fish excepting the bluefish. The latter are actually increasing, while all others are decreasing.

Josiah Smith fishes with a fly-net 1,500 to 1,800 feet long, with meshes 3⅛ inches. He says that no Spanish mackerel of any account have been taken since 1876. Then they were quite plenty. Few, if any, spawn here.

Hon. Robert B. Roosevelt, one of the Fish Commissioners of New York, resides here in

summer. He reports that kingfish, or barb (*Menticirrus nebulosus*), are not as plenty as formerly; bluefish seldom get further in the bay than the main channel, near Fire Island, on account of pound-nets in the channel; striped bass have disappeared; and "Porgy Flat" is about deserted. In regard to the Spanish mackerel he says: "Seven years ago I saw a school of Spanish mackerel 20 miles wide, and as far up the beach as I cared to go." He pays $1 a thousand for menhaden for manure for his land.

C. W. Smith fishes with a fly-net 100 fathoms long, 18 feet deep, with 3½-inch mesh, made of cotton twine, No. 9, tarred. He and his father fish together with two nets, requiring four men to handle them. He says there are many young kingfish now in the bay, and he never knew of them here before so small and in such numbers. Men go from here to Oakdale to fish for eels in winter. They take them in Great River with spears through the ice. Formerly they averaged 25 pounds a day per man before pots were used. Eels are now smaller. The season is from November to March, and the average for forty men is 8 pounds per day to the man.

As has already been said "Blue Point" oysters now come from Sayville, at "Browns Point." Floyd R. Skinner and Day & La Salle are oyster packers and ship to Europe.

"South Bay Oil Works," owned by Capt. W. J. Terry, of Sayville, are situated on the beach east of Fire Island Inlet, and are the most western of the three works situated there; $20,000 are invested in the factory, and in two sloops and a small steam yacht. When working, he employs twenty to twenty-five men which are paid, on an average, $22 per month, without board. The expenses are $700 per month for wages and fuel.

"Fire Island Oil Works," owned by Comstock Brothers, are next east, the middle one of the three. Twelve to fifteen men are employed in busy seasons. This year (1880) has not been a very successful one. They made 2,000 gallons of oil, now worth 45 to 46 cents. Last year it was only worth 28 to 30 cents. The scrap is worth $2.40 per unit of ammonia, per ton. Last spring it sold for $24 a ton. The factory closed July 22.

Smith & Yarrington, owners of the third oil and guano establishment, say that the steamers are killing the business, and that Church & Brother, who own a factory on the east end of the island, and Louis C. D'Homergue, owner of a factory at Barren Island, both offer to burn their steamers if others will do the same. Smith & Yarrow have three boats of 20 tons each, and buy menhaden of others. They keep thirty-four men during a season of five and a half months. They have seen small menhaden in the eastern end of the bay in September, but there is no more fall fishing for them. The capital invested amounts to $15,000.

There are five hundred men in this town, or election district, who live partly by fishing, but none who do so wholly. They are what are known as "bay men," turning their attention in different seasons to whatever branch of the various occupations connected with the water may promise to be most profitable at the time. Captain Terry says that fish forms one-fourth of the animal food used in the district of 2,700 inhabitants, and that more fish are consumed here than are shipped to other places. The railroad agent says that for the year ending June 30, 1880, there were 95,000 pounds gross weight of fish shipped from here. Six-tenths of this was ice and boxes, leaving a net weight of 38,000 pounds. The freight rate to New York is 21 cents per hundred. Clams all go by boat. For the year as above, 3,655 barrels of oysters were shipped to New York.

OAKDALE.—Few fish, except eels, are taken here. The fishermen and fish are included in other places. Many eels are taken near here but shipped at other points. The land is largely owned by wealthy gentlemen.

CLUB HOUSE.—Half way between Oakdale and Islip the well-known "South Side Sportsman's Club" is located on the Connetquoit River. Their trout preserves are very fine, and artificial

breeding is practiced. Their angling is mainly done in April, May, and June. The following is the catch, from their books: Brook trout, 1876, 903 pounds; 1877, 350 pounds; 1878, 1,087 pounds; 1879, 1,583 pounds. The catch of 1880 has not been drawn off, but exceeded that of any previous year. In 1881 they sent a surplus to market for the first time. It was said that it would be 4,000 pounds. The club is limited to one hundred members, who are restricted to twelve trout each, per day. The hatching-house has a capacity of 250,000 eggs. The trout are fed on "mummies" (minnows) and liver. The average amount expended for the latter is $50 per month.

ISLIP.—A clam and vegetable packing establishment, belonging to Messrs. J. H. Doxsee & Low is located at Islip. Eight years ago they put up small menhaden under the name of "American Lunch Fish," but the business not proving very profitable was abandoned. Two brands of clams are put up: "Little Neck clams," and "clam chowder." In 1880 the above cannery used about 5,000,000 hard clams in number; soft clams, none; number of men employed in factory, 10; number of women, 12; boys and girls, 4; men employed catching clams, about 80; number of 2-pound cans clams 75,000; number of 1-pound cans clams, 40,000; number of 2-pound cans clam chowder, 10,000; number of 3-pound cans clam chowder, 3,000; amount of capital invested, $10,000. The packing was done during the summer months, from the 1st of May to the 1st of October. During the winter only three or four hands were employed making cans.

The "Olympic Club" have their house here. They are a club of salt water anglers and employ five men. Islip is quite an angling resort, and many handsome boats are kept to supply the city sportsmen on their annual visits to the locality. This is the case with most other places, but this town is preferred by many both on account of its proximity to the inlet (to which it is nearly opposite) and of the lower price charged for boats, $3 to $4 per day. Of the fifteen fishermen at Islip nine are married. A total of fifty persons are dependent on the fisheries. The methods of fishing are the same as at other places. A few hard crabs are shipped from the village. The catch, exclusive of the clams, was distributed as follows: Eels, 7,000 pounds; fresh fish, 350,000 pounds; hard crabs, 500 pounds; soft crabs, 600 dozen. About $1,200 are invested in boats, and $1,500 in nets.

BAY SHORE.—Some pound-nets owned here are set on the south side of the bay, in the channel, although their use is unlawful. Some hard crabs are taken for market; some are kept in boxes and fed until they shed their shells, the others are sold in the hard state. From three to six men do quite a business at times during the season in the sale of menhaden to anglers, for bluefish bait. In May and June there are forty or fifty fly-net boats taking menhaden for manure. They sell bait also. In August the demand for bait is often greater than the supply. Most of the men fishing with fly-nets for menhaden go with purse-nets, outside, later in the year.

Mr. Frank Doxsee, a "bay man," says that the fishery for bluefish and weakfish was better in 1880 than for five or six years prior to that date. Older fishermen say that thirty years ago it was not uncommon to take 10-pound bluefish on the shallows among the grass where only those of 1½ pounds are now found.

In the "bunker fisheries" (menhaden) there were formerly twenty to thirty boats, each carrying 25 to 40 tons of fish, but for the past few years, especially the last two, not much has been done in this line, only two or three schools having been seen outside the beach. No men from this place now follow this fishery, although a few menhaden were taken this spring and used as a fertilizer upon the land.

James Wicks, seventy-three years old, says:

"About fifty years ago the first bluefish was caught, and no one knew what it was. Jonathan

Smith, better known by the name of 'Governor Smith,' the father of Mr. S. I. Smith, now proprietor of the Watson House, at Babylon, caught it while pulling in a sheepshead."

An observant angler, who has a summer cottage here, says that ten years ago Spanish mackerel were plenty, although they are very rare now. He does not fish on Sundays, but notices that those who do, find the best fishing on that day because the fish are not disturbed then by the dragging of the fly-nets.

Mr. George L. Benjamin, pound-netter, says: "Every other year there is a large catch of porgies; this year, 1880, they are plenty, but small, mostly under a quarter of a pound. Sheepshead have been plenty this year."

The catch of eels this year amounted to 3,000 pounds; of fresh fish, 1,000,000 pounds; hard crabs, 1,500 barrels; soft crabs, 1,000 dozen. There are twenty fishermen here, of whom fifteen are married; and a total of eighty persons live from the fisheries; $5,000 are invested in boats and $4,000 in nets.

BABYLON.—Babylon, like several of the preceding places, is a popular angling resort and fashionable retreat for summer visitors. Boats are let here at $4 to $5 per day. Fifty persons here are dependent upon the fisheries, including the ten fishermen and the families of the six married ones; $500 are invested in boats and $2,000 in nets. The catch for the past year has been: Eels, 1,000 pounds; fresh fish, 1,000,000 pounds; hard crabs, 200 barrels; soft crabs, 300 dozen.

BRESLAU.—Most of the inhabitants of the town of Breslau live by cigar making. Four men devote part of their time to fishing, but their catch, which last year amounted to 800 pounds of eels, 10,000 pounds of fresh fish, and 50 barrels of crabs, is consumed locally.

AMITYVILLE.—Eels form the principal product of the fisheries of Amityville. Forty men are engaged in taking this species in the bay, and cod in the outer waters. Twenty-five of the fishermen are married, and one hundred and fifty persons in all are dependent on the fisheries; $8,000 are invested in boats and $6,000 in nets. Four large seines are used, in addition to a number of fykes, fly-nets, and eel-pots. The pots are of the same form as those described under Riverhead, in the chapter on the East End, and are worth 60 cents each. Oysters are planted, and some hard and soft clams are taken. Some of the men fish for menhaden at times. The catch was divided as follows: Eels, 200,000 pounds; fresh fish, 250,000 pounds; hard crabs, 200 barrels; soft crabs, 200 dozen.

130. SOUTH OYSTER BAY.

South Oyster Bay is the central portion of that expansion of the coastal lagoon of which the eastern part has already been described under the name of Great South Bay. It begins at the line dividing Suffolk and Queens Counties, lying wholly in the latter, and in the township of South Oyster Bay, which extends across the island to Oyster Bay, on the north shore. A cluster of large islands serves to separate it from Hempstead Bay on the west, and numerous other groups and single islets diversify its surface. The oyster and clam interests are the principal industries on this bay.

There are five hundred men engaged in the oyster and clam business, and twenty in fishing. Twelve of the latter are married, and seventy persons derive a livelihood from the fisheries proper. Five hundred boats are used of 1 or 2 tons each, worth from $25 to $100. The yearly value of menhaden taken for use as a fertilizer is $1,000. The catch of oysters per annum is 20,000 bushels; hard clams, 7,000 bushels; soft clams, 2,000 bushels; mussels, 50,000 bushels (for manure). A large part of the products are sent to New York by water. Some shipments, however, are made by rail or teams. The oyster ground is leased in three-acre lots from the town of Hempstead, at

$5 per acre. There are no free grounds or toleration fees. The beds used to be carefully watched to prevent stealing. The stealing of oysters or other products of the water is not looked on as an offense so great as stealing the products of the land. In the prosecution of an oyster thief no oysterman can sit on the jury. It is difficult to prove theft in the night, as the location of the boat is hard to swear to. An average catch of oysters for a man is 60 bushels per week on good grounds. They are worth from $1.25 to $1.50 per bushel. Planting is increasing, although most grounds which are fit are now planted. Not many of the animals which elsewhere prove such destructive enemies of the young bivalves frequent these waters. No borers or drills are ever found, except when brought in on foreign seed. Seed comes from Newark Bay and up the sound. The men think that seed from New Haven, Conn., grows faster, but that that from Blue Point is surer. Clams are not very plenty. Crabs are caught when hard and kept until they have shed. They are worth $1 to $1.50 per dozen in the spring, and 30 to 75 cents in summer. Eels are taken in pots mainly, and are mostly consumed at home. Surf fishing for striped bass and bluefish was poor in the fall of 1880, but good in the previous spring. Three 10-ton sloops, carrying three men each, fish for cod from November 1 to April, having an average catch of 90,000 pounds. The total tonnage of the small boats on the bay is about 600 tons.

SEAFORD, OR SOUTH OYSTER BAY.—There are six fishermen here, of whom four are married. The families dependent upon the latter contain about fourteen persons. The capital invested in boats amounts to $500; in nets, $1,500. The catch last year was as follows: Eels, 5,000 pounds; fresh fish, 10,000 pounds; hard crabs, 100 barrels; soft crabs, 200 dozen.

RIDGEWOOD, OR BELLMORE.—There are five fishermen here, and ten persons are dependent upon the three who are married: $500 are invested in boats and $1,000 in nets. The following is the catch for the past year: Eels, 3,000 pounds; fresh fish, 10,000 pounds; hard crabs, 100 barrels; soft crabs, 100 dozen.

MERRICK.—The settlement of Merrick has ten fishermen, of whom six are married, and a total of forty of the inhabitants are dependent upon the fisheries; $1,000 are invested in boats, and in nets $1,500. The catch last year amounted to 2,000 pounds of eels, 30,000 pounds of fresh fish, 200 barrels of hard crabs, and 300 dozen soft crabs.

HEMPSTEAD BAY AND ROCKAWAY.—This bay opens into the western end of South Oyster Bay, and, like the latter, is dotted with islands. Four hundred men are engaged in oystering and clamming in its waters. The Rockaway oysters are well known in the markets, 200,000 bushels being produced annually. The capital invested in the oyster business amounts to $100,000; 15,000 bushels of hard clams and 75,000 bushels of soft clams are taken, and 400 bushels of mussels are sent to market for pickling. Three-fourths of the shipments go to New York by boats. Fishing is done with seines, fykes, hand-lines, and eel-pots. Some of the fish are hauled to New York by wagon and sold outside the markets.

FREEPORT.—There are ten fishermen at this place, of whom four are married; twenty-five persons in all are dependent on the fisheries. About $1,000 are invested in boats and $2,000 in nets. The catch for the last year was as follows: Eels, 24,000 pounds; fresh fish, 650,000 pounds; hard crabs, 100 barrels; soft crabs, 300 dozen. At times the fishermen get extra help, and form gangs of four men each for seining in the bay, or of nine men each for surf fishing in the fall or spring. A few shad have been taken here, the number last year amounting to 500.

BALDWIN.—Twenty fishermen live here, and, including the families of the ten who are married, seventy-five persons are dependent upon the fisheries. There are $3,000 invested in boats and $8,000 in nets. The catch for last year was: Eels, 10,000 pounds; fresh fish, 250,000 pounds; hard crabs, 300 barrels; soft crabs, 2,000 dozen.

ROCKVILLE CENTRE.—Rockville Centre has twenty fishermen, of whom twelve are married and have families, averaging five persons each; $2,500 are invested in boats and $5,000 in nets; 3,000 pounds of eels, 120,000 pounds of fresh fish, 200 barrels of hard crabs, and 300 dozen soft crabs comprised the last year's catch.

PEARSALL'S.—Four men from this locality are engaged in the fisheries and twenty persons depend upon them; $600 are invested in boats and $1,500 in nets. The products for last year were as follows: Eels, 1,000 pounds; fresh fish, 20,000 pounds; hard crabs, 300 barrels; soft crabs, 1,000 dozen.

FAR ROCKAWAY AND LAWRENCE.—These places, which are only a mile apart, have six fishermen, of whom four are married, and twenty persons in all dependent on the fisheries. About $500 are invested in boats and $1,000 in nets. The catch for 1880 was: Eels, 3,000 pounds; fresh fish, 50,000 pounds; hard crabs, 400 barrels; soft crabs, 1,000 dozen.

HEWLETT'S.—At this place and Woodsburg, one-half a mile distant, are ten fishermen, eight of whom are married, and thirty-five people depend on the fisheries. There are $600 invested in boats and $1,500 in nets. The catch consisted of 5,000 pounds of eels, 100,000 pounds of fresh fish, 500 barrels of hard crabs, and 800 dozen soft crabs.

E.—THE WEST END OF LONG ISLAND.

131. EXPLANATORY STATEMENT.

The remaining portion of the island, which is here included in the "West End," begins on the south, at Rockaway Beach, and includes Jamaica, Sheepshead, and Gravesend Bays. The report does not include the drift and stake net fisheries for shad in New York Bay, as it is not practicable to separate the interests of the New York and New Jersey fishermen in the bay. The shore fishing practically stops at Fort Hamilton. The East River is too swift to admit of the use of nets, and it affords no fishing, except to anglers, who go out in small boats for weakfish and other species.

132. JAMAICA BAY.

This bay is deeply indented in the coast and is filled with islands. Its waters are generally shallow and its northern shore is marshy. It is inclosed on the south by Rockaway Beach, a fashionable watering place. The principal villages are Canarsie and Flatlands. The inlet has moved 3 miles to the westward within the past twenty years. Scallops and terrapin were taken in the bay in former years, but more of the former are obtained at present and of the latter only an occasional one is secured. Mussels are gathered in considerable quantities around the islands. They are not used for manure, as in the South Bay, but are sent to New York and Newark, N. J., where a portion of them are eaten fresh and the remainder are pickled. Not many fish are shipped, most of them being consumed near home. Some Spanish mackerel used to be taken, but for the last ten years only occasional specimens have been secured. Sheepshead are scarce, notwithstanding the splendid mussel beds, which might be expected to attract them. Eels are moderately plenty, and are taken in pots made with hoops and netting, as well as in fine-meshed seines and with spears. The fishermen say that the eels do not bed in the bay as they did formerly, some attributing it to the disturbance of the water caused by the passing of sail and steam boats, and others to the jar of railroad trains running to Rockaway Beach and to Canarsie. Oyster beds were

leased for the first time in 1880. Three acres are leased for $10 per year to each applicant. The clammers object, as the grounds have always been free; but soft clams are giving out, and the grounds are more valuable for oysters.

CANARSIE.—There are one hundred "bay men" here, who take fish, clams, mussels, &c. About fifty of these fish for cod outside of the bay at certain seasons. There are forty-nine registered boats here, aggregating 343 tons. These cost on an average $800 each. None of them are of over 20 tons burden. Sixteen boats, with three or four men each, fish outside with hand-lines for codfish; they use the "sea" and "razor" clams for bait. The catch of cod, which amounts to 10,000 pounds in a season, is shipped to New York by water, all other fresh fish going by wagon. The entire quantity of fresh fish, including cod, taken by the Canarsie fishermen last year, was 100,000 pounds; of eels, 15 tons; oysters, 10,000 bushels; hard clams, 10,000 bushels; soft clams, 100 bushels; and mussels, 24,000 bushels. The mussel season is from April 1 to the end of July, during which time about 100 barrels go to New York by wagon each night. They are worth 50 cents per barrel. Many hard crabs are consumed here, and a few are sent to market, in all about 1,000 barrels; some are kept confined in pens until they have cast their shells, when they are sold at a much higher figure. The men can readily distinguish a "shedder." One dealer ships 500 dozen soft crabs per week from June 15 to October 15, the entire catch being 13,000 dozen, having an average value of 62 cents. The value of menhaden taken for manure is $2,000. The capital invested in nets amounts to $10,000.

FLATLANDS.—This village has forty fishermen; twenty are married and, including the families of the latter, one hundred persons depend on the fisheries. Ten boats, aggregating 80 tons and valued at $600 each, are employed; $4,000 are invested in nets and $1,000 in oyster beds. The annual production is about 3,000 bushels of oysters, 4,000 bushels of hard clams, 100 bushels of soft clams, 5,000 bushels of mussels, 10,000 pounds of eels, 50,000 pounds of fresh fish, 200 barrels of hard crabs, 2,000 dozen of soft crabs, and $800 worth of menhaden for manure. The methods of fishing are the same as at Canarsie.

133. SHEEPSHEAD BAY.

This little bay, which lies to the eastward of Coney Island, was formerly a famous resort for the fish whose name it bears. It is frequented by anglers, by whom many bluefish, weakfish, &c., are taken. Two fishermen from Gravesend fish here to supply the local demand. A few men take clams. The yield of the bay, including Coney Island Creek, is estimated at 1,000 pounds of eels, 5,000 pounds of fresh fish of other species, 100 barrels of hard crabs, 200 dozen of soft crabs, 500 bushels of hard clams, and 500 bushels of mussels. This is intended to include the catch both of the fishermen and sportsmen.

134. GRAVESEND BAY.

This is an indentation in the lower part of New York Harbor, formed by the western end of Coney Island on the south, and extending to Fort Hamilton, in the Narrows, on the north. Coney Island Creek (a small sound) makes in at the lower part. There are no islands in the bay. Shad are taken in pounds, fykes, and gill-nets. Two pounds stand the greater part of the year and four more are put in during the shad season, which lasts from the 1st of April to June. These pounds cost $1,000 each, including two sets of netting, one of which is used while the other is being dried and repaired. The shad fykes, which are 9 feet in diameter, are often placed at right angles to the leaders of the pounds, which are very long. The gill-nets are drifted. They have a 5-inch mesh, are 300 fathoms long, and fish 27 feet deep, being valued at $125 apiece. Small fykes are

used for bass and fine-meshed seines are employed for eels. Crabs are taken in winter by means of rakes, similar to ordinary clam-rakes. These have a 4-foot bar with 32 to 36 fingers, and a handle 30 feet long. Hard and soft clams are taken, but no oysters.

NEW UTRECHT AND BATH.—Forty men are engaged in the fisheries of these places, of whom 18 are married. Including the families of these, 100 of the inhabitants are dependent on the fisheries. Six boats of 10 tons each are used. These are worth $800 apiece. Last year 60,000 shad were secured; 35,000 of these were taken by 5 fyke and pound fishers, while the remainder were caught by the 25 gill-netters. In the season of 1881 a fisherman named Stephen Morris took 12,000 shad prior to May 12. There are $10,000 invested in nets in the two villages. The yield of the fisheries last year was: Eels, 100,000 pounds; fresh fish, exclusive of shad, 150,000 pounds; hard crabs, 1,200 barrels; hard clams, 5,000 bushels; soft clams, 300 bushels. Fifteen men fishing from an equal number of small boats average about 3 bushels of hard clams per day during the months of May, June, July, and August.

FORT HAMILTON.—Eight of the 10 fishermen of Fort Hamilton are married, and 30 persons are dependent upon them for support. The methods of fishing are similar to those employed at Bath. William J. Cropsey owns a pound and 20 shad-fykes, while another pound is fished by other parties. About $4,000 are invested in nets and $1,500 in boats. Two 10-ton boats are used, and many smaller ones. The catch last year was 20,000 shad, 20,000 pounds of eels, 30,000 pounds of other fresh fish, 400 barrels of hard crabs, 2,000 bushels of hard clams, and 100 bushels of soft clams.

F.—NEW YORK HARBOR.

135. GENERAL DESCRIPTION OF THE FISHERIES.

This section does not include the fisheries of Gravesend Bay, which are given with those of the western end of Long Island. It refers chiefly to the fisheries of Staten Island and the Upper Bay, though it naturally includes fishermen from New Jersey that fish in New York waters. It has been a difficult matter to separate these fisheries and to assign them to their respective States, as men living in one State fish during the shad season in the waters of both. This is especially true of the drift-netters. In this matter the only way seemed to be to credit each State with the fish caught by its citizens, no matter where taken, and this system has been followed. Another difficulty has been the migratory character of the fishermen who take shad in the harbor, and the impossibility of interviewing any considerable portion of them. This has been overcome by intelligent estimates of old and reliable native fishermen. The drift-netters come from many parts, especially from up the Hudson, even as high as Catskill. They come down and "drift" in the Narrows as long as it suits them to do so, and then follow the shad up the river to or even beyond the Highlands. Shad are taken in fykes and in gill-nets. There are two forms of gill-nets; but in the local idiom one is a "drift-net," while the stationary form of stake-net is technically a "gill-net." In drifting they use two nets. They put one in at near the last of the ebb tide and drift down until the first of the flood, when that net is overhauled and the fish taken out. The other net is then dropped in and drifted up stream. These nets are from 200 to 250 fathoms long. They are fished in deep water, and sunk about 25 to 28 feet below the surface. They are weighted so heavily that the float-lines are sunk to this distance, where they are held by occasional buoy-lines which keep them from going deeper. Even at this distance the suction of large steamboats often draws

the nets together in a mass, and even at times actually lifts them into the wheels. Three men go in one boat on a fishing trip; two are engaged in rowing and the third handles the net. The fishing season is usually from April 1 to May 15. The season of 1881 was short on account of cold weather and the men had only one month's fishing. During the first of the season there were 100 drift-nets in use, but at the close only 4 were employed. Mr. Joseph McLyman, a drift-netter living at Tompkinsville, Staten Island, says that the season of 1880 was better for this mode of fishing than that of 1881. In the latter year his highest catch on a tide was 42 shad, while in the former it was 153. Some tides do not yield more than half a dozen fish. He thinks a fair average for 1880 was 50 shad to each net on a tide, while it was only about 18 in 1881; a tide, in this case, meaning the last of one tide and the first of the next, two tides a day being fished.

The "gill-nets" or stake-nets are made of linen, coated with verdigris, white lead, and oil. They are made of 5½-inch mesh, 80 meshes deep and 70 meshes wide. These nets are stretched between poles which are set in rows. They are weighted at the bottom with heavy rings which slide up the poles when lifted, and are suspended from the top by lines called "arm lines."

None of these stake-nets are fished below Staten Island. On the island there is a company (A. Simonson & Co.) that fishes four rows of nets, with twenty in a row. They employ eight men in two boats. William Wardell, of Bay Ridge, Long Island, fishes in the same manner. Isaac Van Duzer, of A. Simonson & Co., has fished thirty-five years, and 1881 is the lightest season he has known, though 1880 was light in comparison to former years. In the last-named season he took 16,000 shad, while in 1881 he caught only 9,500. His best season was in 1874, when he secured 21,000. He attributes the bad catch of 1881 partly to the late season and partly to the pollution of the river, which is distasteful to the fish. He thinks that sewage is the main cause of his poor success, as he fishes near the city, north of Staten Island, while 5 miles below, at New Dorp, the fykes and pounds have had the best season in twenty years. Mr. Van Duzer says that there is a coating of coal oil on the water, and he further adds that even the crabs taste of coal-tar. At New Dorp, or Cedar Grove, there are two pounds and two fykes. The catch here has been good. Robert Barnes owns the pounds, and Stephen Berger and John Kettletash fish the fykes. The fykes have brush wings which extend greater or less distances. One fyke was set from Governor's Island running from the south battery off southwest. The same parties fish for eels and flounders in winter. A few lobsters were taken in former years, but none are found now. No crabs are taken for market. One hundred men are engaged in fishing; forty are married, and two hundred and fifty persons are dependent on the fisheries; $16,000 are invested in boats and vessels, and $5,000 worth of nets are employed.

NEW YORK CITY.—There are few fishing vessels hailing from New York City, though a very large fleets from Long Island and New England ports resort to this market to dispose of their catch. There are also great quantities of fishery products received by rail from all parts of the Atlantic coast, the Gulf of Mexico, and from the Great Lakes. The receipts of fresh fish in 1880 aggregated nearly 56,000,000 pounds, valued at about $3,500,000 at wholesale.

The most important species, as regards weight, was cod, of which the receipts were 9,250,000 pounds. Among other species were bluefish, 5,500,000 pounds; halibut, 3,650,000 pounds; shad, 4,002,000 pounds; large quantities of haddock, mackerel, herring, porgies or scup, smelts, flounders, bass, sturgeon, whitefish, and other salt-water and fresh-water species; besides clams, crabs, lobsters, scallops, frogs, turtles, and other aquatic animals.

The quantity of ice used for refrigerating fish in 1880 was 6,981 tons, valued at $41,655. There are some large refrigerators, occupying buildings two or three stories high, where fresh fish are stored during seasons of abundance, to be marketed throughout the year.

There are about fifteen establishments for fish-curing. The principal method is by smoking. Sturgeon is more largely smoked than other species, though salmon, herring, eels, mackerel, and smelts are also cured in this way. About 3,000,000 pounds of sturgeon were smoked in 1880, and consumed mostly by the German population.

Boneless cod, shredded cod, caviare, and many kinds of canned products are prepared here. Pickled eels are growing in favor with the foreign residents, particularly with the Germans, who are also very partial to caviare. The twenty-five leading salt-fish dealers in 1880 sold products valued at $3,940,000.

Further details of the fish trade of New York City will be given elsewhere in this report.