PART IV.

THE FISHERIES OF RHODE ISLAND.

By A. HOWARD CLARK.

NOTES ON OYSTER INDUSTRY GATHERED BY ERNEST INGERSOLL; ON GENERAL FISHERIES, BY W. A. WILCOX AND LUDWIG KUMLIEN.

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PART IV.

THE FISHERIES OF RHODE ISLAND.

A.—REVIEW OF RHODE ISLAND AND ITS FISHERIES.

91. DESCRIPTION OF THE STATE AND EXTENT OF ITS FISHERIES.

GENERAL REVIEW.—The State of Rhode Island is about 50 miles long and 35 miles wide Its continental shore-line is only 45 miles, yet, with its numerous bays, 320 miles of shore are. washed by the tide. It is divided into two unequal parts by Narragansett Bay, which extends inland some 30 miles from the ocean. Throughout the State there are fresh-water ponds, and in the southern part some large ponds of salt-water. The bays embraced within the State limits are bountifully supplied with fish; some species are fit for food, others only for the manufacture of manure. The ponds contain abundant shell-fish. The State derives its name from the island called Rhode Island in the middle of Narragansett Bay, and upon which are the towns of Newport and Portsmouth and the village of Bristol Ferry.

It is claimed by geographers that Rhode Island is the Vinland of the Northmen, and that the famous Dighton Rock, on Taunton River, bearing some strange hieroglyphics is a memorial of the visit of Thorfin, in the tenth century. The celebrated stone mill at Newport is by some supposed to be another monument left by very early visitors to these shores.

Into Narragansett Bay empty the Taunton, Providence, and other rivers. The city of Providence, an important manufacturing and commercial center, is on the Providence River, some 15 miles from the bay. Here is an excellent harbor. No fisheries are now carried on at Providence, though when the whale fishery was at its height this place, in common with Warren, Portsmouth, and Newport, had its whaling fleet.

The colonial records of Rhode Island give evidence that the early settlers were engaged in carrying on the fisheries, especially for the capture of shad and shell-fish, and frequently whales were "cast up on the shores, and being cut in pieces were sent far and near as a most palatable present." The Indians were accustomed to use nets made of hemp, and to shoot the bass as they became entangled in the meshes of the net. Sturgeon were taken with harpoons, and were very highly prized for food. In 1731 the authorities passed an act for the encouragement of the cod and whale fisheries, and granted a bounty of 5 shillings a quintal for codfish caught by Rhode Island vessels; 5 shillings a barrel for whale oil, and 1 penny a pound for whalebone. As a result of this encouragement the fisheries increased in importance, and at the period of the Revolutionary war were very profitable to the inhabitants. In 1789 one hundred and one vessels, many of them whalers, were owned at Providence. The war of 1812 caused the decline of the whale fishery; after the war it revived and from 1840 to 1850 a number of whaling vessels were owned at several ports in the State, but the business is now entirely abandoned.

In 1860 the general fisheries of the State yielded 118,611 barrels of menhaden and other fish for manure and oil, worth $27,817; about $25,000 worth of food fish; and $11,692 worth of clams

and other shell-fish. Besides these productions of the waters there were gathered from the shore 34,927 cords of sea-drift, valued at $37,604, and 1,540 tons of salt hay, worth $12,320. The Rhode Island State Census for 1865 gives the following figures to show the products of the fisheries for that year: Fish seined for manure and oil, 154,468 barrels, worth $126,035; fish caught for food, 2,462,360 pounds, $121,094; clams, 31,697 bushels, quahaugs, 9,241 bushels, scallops, 9,653 bushels, oysters, 72,895 bushels, and lobsters 42,900 pounds, having a total value of $118,655; sea-drift, 34,146 cords, $38,083; and salt hay, 2,116 tons, $18,545. The aggregate value of the products of the waters and shores of the State was $422,412.

STATISTICAL SUMMATION OF RHODE ISLAND FISHERIES FOR 1880.—The following statements show the statistics of the Rhode Island fisheries in 1880. The number of persons employed is 2,310, the capital invested is $596,678, and the value of products is $880,915. The menhaden industry employs 608 men, some of whom are also engaged in the capture of food fish; the capital invested is $304,300, and the value of products is $221,748. In the oyster business 650 persons are employed; the capital invested is $110,000, and the value of the products is $356,925.

Summary statement of persons employed and capital invested.

Persons employed.	Number.	Capital invested.	Amount.
Number of vessel-fishermen	536	Capital in vessels and boats	$296, 775
Number of boat-fishermen	1, 066	Capital in nets and traps	95, 053
Number of curers, packers, fitters, and factory hands	708	Other fixed and circulating capital	a204, 850
Total	2, 310	Total	596, 678

a In menhaden factories, $77,900; in other fishery industries, $126,950.

Detailed statement of capital invested in vessels, boats, nets, and traps.

Vessels and boats.	No.	Tonnage.	Value.	Value of gear and outfit, exclusive of boats and nets.	Total value.	Nets and traps.	No.	Value.
Vessels.						*Nets.*		
In food-fish and lobster fisheries	31	314. 19	$20, 800	$5, 600	$26, 400	Gill-nets	70	$3, 760
In menhaden fishery	61	2, 188. 58	171, 050	24, 600	195, 650	Purse-seines	50	20, 000
						Haul-seines	52	5, 070
Total	92	2, 502. 77	191, 850	30, 200	222, 050	Total	172	28, 830
Boats.						*Traps.*		
In vessel fisheries	150		11, 410		11, 410	Pounds and weirs	166	56, 633
In shore fisheries	584		49, 835	13, 480	63, 315	Fykes	865	7, 530
						Lobster and eel pots	2, 857	2, 060
Total	734		61, 245	13, 480	74, 725	Total	3, 888	66, 223

Detailed statement of the quantities and values of the products.

Products specified.	Pounds, fresh.	Pounds, prepared.	Bulk.	Value.
Grand total				$880, 915
Fresh fish.				
For food	a10, 838, 328			184, 482
For bait and fertilizer	1, 355, 000		6, 775 barrels	2, 432
Total	12, 193, 328			186, 914

a The proportion of different species in this quantity is estimated as follows: Alewives, 140,000 pounds; sea bass, 197,000 pounds; striped bass, 292,000 pounds; blackfish or tautog, 468,000 pounds; bluefish, 738,000 pounds; cod, 652,000 pounds; eels, 272,500 pounds; flounders and flatfish, 352,400 pounds; mackerel, 89,000 pounds; white and yellow perch, 30,000 pounds; salmon, 400 pounds; scup or porgy, 6,691,178 pounds; shad, 48,100 pounds; smelts, 95,000 pounds; squeteague, 326,000 pounds; swordfish, 90,000 pounds; mixed fish, 356,750 pounds.

Detailed statement of the quantities and values of the products—Continued.

Products specified.	Pounds, fresh.	Pounds, prepared.	Bulk.	Value.
Cured fish.				
Dry cod	1,931,800	768,720		$26,270
Pickled alewives	505,000	404,000		6,060
Smoked alewives	2,333,000	1,400,000		7,000
Total	4,769,800	2,572,720		39,330
Shell fish.				
Lobsters	423,250			15,871
Clams	539,600		53,960 bushels	48,564
Scallops	124,600		17,800 gallons	8,900
Oysters	1,305,600		163,200 bushels	*b*356,925
Total	2,393,050			430,260
Miscellaneous.				
Menhaden, for oil and scrap	68,693,800		270,482 gallons oil; 10,590 tons scrap	221,748
Cod oil			3,250 gallons	1,300
Squeteague sounds		400		163
Irish moss			400 barrels	1,200
Total				224,411

b Includes $131,425 enhancement on 274,300 bushels of southern oysters.

B.—THE OYSTER INTERESTS OF RHODE ISLAND.

EXTRACTS FROM REPORT BY ERNEST INGERSOLL.

92. ORIGIN AND IMPORTANCE OF THE OYSTER INDUSTRY.

LAWS; STATISTICS FOR 1860 AND 1865.—When the people of "The Colony of Rhode Island and the Providence Plantations" felt themselves sure of future stability, they applied to the king, Charles II, to grant them a charter, which he graciously did in the year 1683. This charter was a wonderful document for those days, because of the well-nigh perfect liberty it embraced, and its hospitality to every conscientious belief, whatever the name of the religious banner it rallied under. Among the privileges and liberties it insisted upon was the right of free-fishing in every shape. The relations of the fishermen to the owners of the shores were defined with great minuteness, and were calculated to make all the fish of the sea and all the molluscous denizens of the muddy tide-flats as available as possible to every citizen. Thereafter they were jealously preserved for public benefit. In 1734–'35, for instance, the first session of the assembly at East Greenwich was distinguished by an act for the preservation of oysters, which the thoughtless inhabitants were burning in large quantities for lime; and in October, 1766 an "act for the preservation of oysters" was passed, forbidding them to be taken by drags, or otherwise than by tongs, under a penalty of £10. Parents and masters were held liable for the violation of this law by their children or servants, and the owners of boats engaged in evading it were subject to a double fine. When (and it was not many years ago) the State constitution was adopted, no clause was so scrupulously worded against possible evasion as that which declared that in respect to the rights of fishing and of taking clams, &c., everything should remain precisely as decreed in the old charter.

The oyster-law, therefore, is based upon the principle that between high-water mark and the public highway of the ship-channel the land and water are controlled by the State as public

property, to be administered for the greatest good to the greatest number. Rhode Islanders are extremely tenacious of these shore and water rights, and there has been no little quarreling over some actions of the legislators and decisions of the courts with respect to this subject; but, upon the whole, there has been little alteration of the original law. The general statute, in substantially its present shape, came into force in 1864. Previous to that time the State had let oyster-grounds at $1 rent per acre, and not much business was done.

Five out of the thirty-two towns that compose the State are situated on islands. The bays embraced within the State and the extensive salt ponds near the southern coast abound with shell-fish. To ascertain the extent and value of these fisheries the Rhode Island Society for the Encouragement of Domestic Industry made great exertions, but without success, at the time of the general census of 1860. A statement, nevertheless, exists in the report of 1860 that the oysters of Rhode Island were valued at $382,170, out of a total of about $600,000 for all the fisheries, excluding whales. In 1865 this point was made a special feature, and much fuller information was gathered. "These statistics," says the report of the general assembly's committee, "must, from the nature of the case, depend to some extent upon estimates. For example, the clams on the shores are free to all the inhabitants of the State who choose to dig them. Persons come to the shores from all quarters, and often from distances of several miles, and dig as many clams as they choose to eat or carry home. Nothing is exactly known of the quantities thus removed. The only estimates which could be made were from the opinions of the owners of shore farms."

The following is the table of the product of the shell-fish industry as presented by the committee in 1865:

Towns.	Clams.	Quahaugs.	Scallops.	Oysters.	Total value of all shell-fish.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	
Barrington	962	457	.....	.....	$2,313
Bristol	200	.....	.....	.....	200
Warren	1,215	10	.....	.....	1,225
East Greenwich	1,415	339	6,635	13	6,313
Warwick	9,127	2,953	1,627	242	13,949
Jamestown	162	6	.....	.....	98
Little Compton	.....	.....	.....	.....	.....
Middletown	119	.....	.....	.....	232
Newport	(Lobsters.)	.....	.....	.....	2,200
New Shoreham	.....	.....	.....	4,200	1,680
Portsmouth	7,715	145	500	.....	4,331
Tiverton	576	55	.....	.....	468
Cranston	200	.....	.....	.....	200
East Providence	3,405	830	.....	12,100	19,662
Providence City	404	2,966	3	50,450	54,122
Charlestown	200	.....	.....	1,812	1,515
North Kingston	5,740	1,480	870	.....	6,791
South Kingston	257	.....	18	3,070	3,345
Westerly	.....	.....	.....	7	11
Total	31,697	9,241	9,653	71,894	118,655

Although the amounts in the above table ought to have been doubled to represent the truth in each case, on the average, yet they show that when the new law, putting a rent of $10 an acre and organizing the oyster interest under careful control by the State, went into operation, the whole value of the industry was very small, compared with the present. Since the passage of this statute the oyster interest has steadily grown in importance.

Nevertheless, there has always been more or less grumbling on the part of the owners of leases, who pleaded that they are paying an exorbitant rent. The general financial depression of 1873–'76

heightened this discontent, and in the winter of 1878–79 it came to the surface in a contest before the legislature, which brought up several mooted points. The great bone of contention was the construction put by the commissioners upon who were suitable persons to receive leases. It was notorious that many Boston dealers planted oysters and operated business generally in Narragansett Bay, upon ground leased in the name of some "inhabitant of the State," who might or might not act as their agent at the scene of operations. This practice was deemed by many native fishermen an infringement of law and an injury to them. They, therefore, endeavored to procure the passage of a bill through the legislature making it a misdemeanor for any lessee of oyster-beds to be interested with any person not a resident in the State, with a penalty of $100 and a cancellation of the lease for such "interested" connection. The result of the fight was that the bill failed to become a law.

93. THE PLANTING GROUNDS OF NARRAGANSETT BAY.

EAST SIDE OF THE BAY.—Tradition says that oysters used to grow in Mount Hope Bay proper, below the mouth of the Taunton River; though but little trustworthy testimony could be obtained on this point. Beyond that, on the eastern side, no oyster-beds could be found, ancient or modern, until Newport was reached, where now none are growing or planted (the city deriving all its supplies from Providence), but where, in some of the larger salt-water ponds, they formerly existed in considerable quantities. They were described as a large, round, scalloped oyster, quite different from those anciently found in the pond on Block Island, which were said to be long, slender, and very good. It is probable that a careful survey of ponds and inlets along the eastern bank of the Sakonnet River and around Sakonnet Point would disclose the remains of many extinct beds, and perhaps some living colonies of oysters. The same may be said of Newport Neck and Conanicut Island.

The Kickamuit River is an inlet of Narragansett Bay, at the extreme eastern boundary of the State, which has an entrance only a stone's throw in width, but expands interiorly into a bay about 3 miles long and 1 wide, the narrow upper portion of which is called Palmer's River. The water is shallow, of course, and the bottom of a very varied character. Forty-one acres have been leased, distributed among eight planters. Native oysters grew there of good size and quality, and some are got yet, but the chief value of the ground is for planting; and as yet the experiment is too slight to afford much judgment. There seems good reason to expect success, since it used to be a famous place for "set." The bottom is also said to be full of fresh springs, which is highly to its advantage.

Westward of the Kickamuit River are Warren, Barrington, and Palmer Rivers, joining in an inlet of Providence River. In these three streams is leased a total of 173 acres, distributed among thirteen proprietors, some duplicating Kickamuit, Drownville, Providence, and Boston names. The shell-heaps strewn upon the knolls along all four of these rivers show that the succulent bivalves have lived in their waters since time immemorial. Occasionally the natural oysters are still to be found; and that twenty years ago many remained is shown by the fact that in 1860 an extraordinarily large number of infant oysters "set" on the shores. These native oysters were very large and long and slender. Their shells were not usually very heavy, and they were held in high esteem. At present there are none to be had of marketable size, and there are not enough young ones to be found in these rivers to amount to anything. Nevertheless the Warren and the Barrington are among the best places in Rhode Island, apparently, for oyster culture. The water is wonderfully pure, sparkling, and salt, and flows in and out with a swift tide. The bottom is very hard, as a rule, and in places rocky. This fact makes the oysters there come to have a round

outline, and a firmer, better substance within, though they do not grow so fast as they would lying upon mud.

A score of years ago planting was begun above the road and railway bridges, in Barrington River, and among the first leases taken out was one for the acre or two of "quick-water" between the bridges; but it is only within two or three years that operations have been extended below this part into the main river, where the water is salt, and ranges in depth from 9 to 18 feet, over a hard bottom.

The Virginia oysters bedded here do very well indeed. They are handled mainly by one planter. His plan is to lay 75 bushels on an area 50 feet square, distributing them by shoveling overboard from the large crafts known as "planting-boats." Ten men, the usual number engaged on a single cargo, will thus unload and put upon the beds from 2,000 to 2,500 bushels a day. The Virginia oysters cost, put down, about 35 cents a bushel. On good ground the growth is gratifying, although about one-fourth of the original number put down are expected to perish. The large amount of cultch spread upon this gentleman's territory had thus far yielded him no return of consequence, since he had planted with it only a few natives. On the contrary, another prominent lessee in Warren River gave his whole attention to rearing native oysters, and paid no attention at all to "Chesapeakes." He procures his seed, like all the rest of the dealers, from Somerset, Wareham, Pocasset, &c., but mainly from the Connecticut shore. Formerly he got it much cheaper, but now it costs him from 50 to 70 cents a bushel. The several hundred bushels he put down three years ago lived well, and he now considers them trebled in value. He has adopted the plan of not planting until June. "When the weather gets warm," he says, "the slime rises from the sand and rocks on the bottom of the river and floats away. There remains a clean bottom, and I wait to take advantage of this most favorable condition of things for my young oysters, that will have a hard enough time, under any circumstances, to live through it." Being fortunate enough to have a tract where the swift tide never permits serious freezing, he is able to wait until all his competitors are frozen up, when he can sell his easily accessible stock at a large advance upon the ordinary price, which averages about a dollar a bushel.

Rumstick Point juts out from the southern end of Rumstick Neck, a peninsula dividing the Warren River from the waters of Providence River. It is the site of a dangerous shoal, and the bottom is hard and in places rocky. There is only one owner of ground there, who leases 12 acres, but it is probable that a hundred acres more will be let there during 1880.

PROVIDENCE AND THE WEST SIDE OF THE BAY.—Proceeding now up the eastern shore of Providence River, at Nayat Point (which stands opposite Canimicut, and marks the real mouth of the river on this side), 46 acres are now planted by a Providence firm. The beds are north of the point, on the sandy bottom around Allen's Ledge.

The next point above this is Drownville, where the oyster-bottom is owned by three men, who divide 25 acres. Many other dealers, however, make Drownville their opening and shipping point, among them several Boston firms having large opening-houses and shipping extensively. So many citizens, not less than one hundred and twenty-five, are given employment, therefore, in the winter, that the remark of one was justified: "Drownville would evaporate if it were not for the oysters." The starfishes and periwinkles have been troubling the Drownville planters of late more than elsewhere.

Reaching back into the country north of Drownville, and protected from the outer bay by Bullock's Point, is Bullock's Cove, a shallow estuary, by many regarded as the very best place to plant oysters in the whole State. It is certain that, uniformly, the best oysters now put into the market come from this immediate neighborhood. The only reason assigned is, that the bottom has many

springs in it, supplying constant fresh water. In Bullock's Cove 13 acres are taken up by two men; but the ground at Bullock's Point (239 acres) is held by twelve lessees.

At Sabine's Point, just above, there is only one owner, whose tract of 64 acres lies in a crescent between the light-house and the point. Just north, a single acre is let at Pomham Rocks; and beyond, at Fuller's Rocks, 9 acres are divided among four persons. This brings us to Field's Point, on the western side, the northern limit of oyster-culture, and a scene of considerable operations, 23 acres being under lease to nine persons. South of Field's Point the river widens suddenly, but the channel hugs the opposite (eastern) shore, leaving extensive shallows all along the western shore. Southward from Field's Point to Starvegoat Island (familiarly condensed into Stargut Island) runs a reef which is pretty nearly dry everywhere at lowest tide. This reef was among the earliest tracts taken up by the veteran oysterman, Robert Pettis. When, about 1861, the starfishes were depopulating the beds all over the bay, he alone was so situated that he could get at them at low tide and destroy them, and his good luck was the occasion of great profit to him. At Starvegoat Island the beds now operated are 27 acres in extent.

There were formerly natural oysters growing abundantly all over this part of the river; but the main deposit was just south of Starvegoat Island, in the center of the tract of 160 acres, now known to oystermen as Great Bed. This in old times was the great scene of oyster-raking, and it is more than thirty years since these beds were wholly exhausted. Once in a while then they used to get a few enormous specimens from there, and peddle them about town at 10, 15, and 20 cents each; but even these disappeared long ago. The owners on this bed are no less than twenty-one in number, and at Patuxent 63 acres more are taken up by five men.

At Gaspé Point, 10 acres, and at Canimicut Point, 60 acres, both being in a little salter and deeper water than any of the rest, complete the list of plantations, except 1 acre in Wickford Harbor and another at Westerly.

In former years beds grew naturally clear up to the city of Providence, and oysters were even found in the "Cove," that pretty circle of water near the railway station, the banks of which have been converted into a park. Now, however, any leasing of ground north of Field's and Kettle Points is impracticable and prohibited, because of the large amount of impurities thrown into the water by the city's drainage. The few beds up there—Long Bed, West Bed, Diamond Bed, &c.—have, therefore, now been abandoned, and are not counted, though a few leases have not quite yet expired.

At its January session, in 1878, the Rhode Island General Assembly passed a resolution enjoining the commissioners to visit the Great Salt Pond (also known as Powaget Pond), in Charlestown. It lies on the southern border of the State, and communicates with the open ocean by a narrow inlet, which frequently becomes closed by the shifting of the sand in the autumnal storms. In this pond the spawn of the oyster sets abundantly each year, and grows rapidly until the closing of the breach connecting the pond with the ocean cuts off the daily supply of salt water, which causes the oysters to die in immense quantities. If a permanent connection of this pond with the ocean could be secured, the natural oysters, which are of excellent quality, could be grown with great success, and large quantities of seed-oysters could be obtained for stocking the oyster-beds of Narragansett Bay.

Such was the report of the examining committee, and such is the opinion of the people generally. Accordingly, the legislature appropriated $1,500 to defray the expense of constructing a sort of riprap wall, in such a way that the currents and waves should help to keep the breach open, instead of closing it, and so maintain a constant influx and efflux of sea-water. This work is not

yet completed and tested. If it should succeed, a large new territory will be added to the oyster-grounds of the State.

PAWCATUCK RIVER.—The Pawcatuck River divides the State of Connecticut from Rhode Island, and is subject to tides as far up as Westerly, at least. From a mile below Westerly to its mouth it is inhabited by oysters, though of poor quality, and hence of small commercial importance. These are of two sorts: one kind, the "rock oyster," attaches itself to the rocks along the shores and in the bottom of the stream, and grows singly to a good size; the other, called the "bed oyster," grows in dense clusters, in crowded beds, and is of very small size; it is rarely brought to market, and is considered by the fishermen worthless to transplant on account of the clustered condition. Sufficient painstaking in the matter would, of course, overcome this objection. For some years the oysters of all kinds in this river have been affected by a disease which interferes with their sale, because, whether for good reason or not, they are supposed to be unwholesome. The disease was described to me as producing little "boils" on the body, inside the mantle, as near as I could understand. It appeared first as a greenish spot, then became yellow, and finally turned into a black, rotten pustule. Various causes are assigned, but none are satisfactory. Dry seasons, like the present, seem to augment the disease, which is perhaps a fungoid growth that finally "eats out a hole," as the fishermen say, and it is not essentially different from the "greenness" of Somerset and Seekonk oysters.

A large set occurs regularly in this river, but in some years to a greater extent than in others. Three years ago was said to be an exceedingly productive year. Young oysters were found upon everything all through the river, and upon some rocky points down toward the mouth they were said to have been seen lying on the shore "in windrows a foot deep." This is an exaggeration, no doubt, but gives evidence that there was a vast quantity. This was immediately following a dredging-out of the channel. Nothing of any account was done toward saving them to stock beds anywhere. Pawcatuck River is not considered suitable for oyster-bedding to any extent, unless the ground should first be prepared by paving the mud and killing out the eel-grass. There are many impurities in the water, also, arising from drainage and the waste of many mills, print-works, and other manufactories. In Ward's Pond, on the contrary, a sheet of water affected by the tides, which lies four miles east of Westerly, is found a most excellent place for oysters, wild and cultivated, but the people who inhabit the shores do little themselves and object to attempts on the part of outsiders. This pond contains between one and two hundred acres, and is nearly every where gravelly or sandy on the bottom, with considerable fresh water flowing in. I was told that nowhere in this whole region did oysters grow so fast, and acquire so fine a relish as here, but not having inspected the pond myself I cannot corroborate these glowing reports by personal observations.

The total area of pre-empted oyster-grounds in Rhode Island in 1879 was 962 acres, and it is probable that as much more ground might be found suited to oyster-planting.

94. BUSINESS IN SOUTHERN, NATIVE, AND SEED OYSTERS.

SOUTHERN OYSTERS.—Thus far the bedding and fattening of Virginia oysters, mainly to be sold opened, has been the most profitable branch of the business. Of these oysters about 500,000 bushels are laid down annually, at present. The vessels employed in bringing them are mainly owned on Cape Cod. None, so far as I could learn, hail from Rhode Island ports. The freight is about 15 cents a bushel in the fall and winter, falling to 12 and 10 cents in the spring, when quicker voyages for planting purposes can be made. What part of the Chesapeake Bay furnishes the best

oyster for these waters is a question that has received much attention. One gentleman told me that he had lost the whole of two years' labor by trying to put down cargoes from the Rappahannock. Another planter, equally experienced, said these succeeded well enough if brought here and planted before the weather became at all warm. Oysters from the Saint Mary and Potomac Rivers are troublesome because mixed with many obnoxious mussels, and, besides, they do not grow well, as a rule. Those from Tangier Sound are pretty good, and are largely bought. The general verdict, however, is that the best Virginia oyster for this bay is to be had in the James River. These show the largest growth at the end of the season, developing a hard, flinty shell and white meats; on the contrary, I was told that at New Haven, Conn., the James River oysters cannot be used at all. But many cargoes are planted here, the exact southern home of which is never known.

The laying down of southern oysters must all be done early in the spring. If they would only survive the voyage as late as June, Mr. Bourne thought that month would be the best time to plant them. When I suggested the use of steamers to expedite the transfer, he said it would not help matters, for the jarring of the cargo, caused by the throb of the engine, would kill the mollusks. He did not even allow any wood to be split on his oyster vessels for fear of this species of damage. Of the half a million bushels bedded in Rhode Island yearly, about half are owned in Boston.

During the winter of 1878–'79, the Norfolk-opened oysters were brought to Providence in large quantities, but the experiment was generally considered unsatisfactory, and but few now come.

NATIVE AND SEED OYSTERS.—The fattening of Virginia oysters is only half the business, though perhaps the most profitable part, in Rhode Island. A vast number of "native" oysters are raised in Narragansett Bay, though but a portion of them are born there. There are only a few places in the bay where a "set," as it is called, occurs with any regularity or of any consequence. In the Warren and Barrington Rivers it has not happened for twenty years, and the same is true of the whole eastern shore, except Cole's, Kickamuit, and Seekonk Rivers. Providence River itself never produces young oysters now, nor does any part of the western shore, except Greenwich Bay and the ponds in the extreme southern part of the State, deriving their salt water directly from the Atlantic. The cause of this dearth of spawn and seed, where once every shore was populous with it, can only be ascribed, I think, to the antecedent disappearance, through persistent raking, of all the old native oysters. In Cole's River a heavy "set" occurred three years ago, and from 500 to 1,000 bushels are obtained every year. In the Kickamuit the shores are dotted with infant ostreæ annually, and supply the planted beds there, while old oysters of very good quality are not infrequent. In dredging back and forth throughout the whole extent of Greenwich Bay, the scallop-fishers frequently take up large oysters, evidently "to the manor born," and they are now and then seen on the shore rocks. About 1872 there was a very large "set" here and in Potowomut River, just below. Boats came down from Providence and elsewhere and were filled again and again. But all of the crop left was swept away by starfishes, which were then very abundant, or was buried beneath drifting sand and wrack, and so no establishment of a natural bed there was possible. If these young oysters were not all picked out of Greenwich Bay in the fall, they would live through the winter, even where the ice rested fully upon them at low tide, and would soon repopulate the bay. But now their annual value to any one is insignificant and constantly decreasing.

There remains one river, nevertheless, where, under protection, the oysters are able to reproduce regularly every year. This is the Seekonk, which flows down past Pawtucket and Providence,

with East Providence on its left, and numerous bridges and small shipping to worry its swift tides. The Seekonk has always been a favorite home of the oyster, and year by year the river contributes its quota to the tongers, through a space from the Wicksbury pier to nearly 5 miles above. This is due largely to the fact that the oysters of the Seekonk, like those of the Taunton River, are vividly green. No better reason can be assigned than in the former case, and, like the others, this seed, when transplanted for a few months, entirely loses its verdant tint. Seekonk oysters, therefore, never go to market, but are all caught for the seed. This catching begins November 1, according to law, and must close on May 1. These dates are arranged with the purpose to prevent successful planting, and so protect the fishery; but the planters buy as long as the weather remains "open" and warm. Very little raking is done in this river in the spring. The men are rivermen, who work at this a few weeks in November and December, and the rest of the year do other water-work. The law forbids taking more than 10 bushels in one day to each boat, but if the seed is plentiful this law is very often violated, since there is no officer to watch. Perhaps it is a direct good effect of these regulations that 1878 and 1879 have witnessed the largest yield of Seekonk seed known in a dozen years. The main buyers are Wilcox, Browne, Wall, and Adams, of India Point; but everybody buys a few bushels who can. The catchers have to take what pay is offered them, but competition sometimes produces a good rate, the usual price being 25 cents a bushel. This being public ground, and everybody having a chance at it (many of the heavy owners send spare boats and crews up this river to rake at odd times), it is impossible to come at any close estimate of the amount of seed-oysters taken from the Seekonk during the last year. The truth I believe to be somewhere between five and ten thousand bushels. It is a shapely, hardy seed, opening well, and is in general demand, some planters putting it at the head of the list for its good qualities. One year on its new bed suffices to remove totally the green tinge, and two years to make it marketable.

The remainder of the seed-oysters planted in Narragansett Bay come from the Connecticut shore, East River, Fire Island, and the Great South Bay, Somerset (planted chiefly by those owning privileges in Taunton River), and from various parts of Buzzard's Bay. I often asked which was best, but could never get evidence of much superiority in any one kind. The success of a planting does not depend on the kind of seed put down so much as it does upon a thousand circumstances of weather, water, and bottom. The seed which would do excellently in one cove would behave badly in the next, and *vice versa;* individual preferences being founded upon these varying and unexplained experiences. The seed from the south shore of Long Island used to be cheapest of all, and good; but a Boston demand ran up the price beyond the pockets of Rhode Island planters. In general, it may be said that any seed transplanted to Narragansett Bay develops into a better oyster than it would have come to be if left in its native waters. * * * On Block Island, many years ago, there was an abundance of small oysters living in the pond that occupies so much of the interior of the island. For some reason, however, they were rarely found in a fit condition for food, but would serve to transplant. The oystermen at Clinton, Connecticut, and elsewhere, used to buy them, the price being 25 cents a bushel, delivered at their destination. The shells of these Block Island oysters were so delicate, one planter told me, that it was easy to pinch your thumb and finger through them, and often there would be so much air and fresh water held within their half-vacant shells that they would float when thrown overboard in planting, and drift away. All these oysters long ago disappeared, and no cultivation has been tried to replace them.

95. EXTENT OF THE OYSTER BUSINESS IN 1879.

CAPITAL INVESTED.—The amount of capital invested in this State it is almost impossible to come at. It probably approaches $1,000,000, including perhaps $300,000 or $350,000 worth of seed oysters growing on the beds. One-third or more of this property is owned in Boston, and the necessary money for carrying on operations comes thence, but is represented by men who also do more or less private planting on their own account. Of course this is chiefly in the hands of a dozen or more planters on the list; the forty or fifty others will not average a greater sum than $1,000 each invested in this business, which is chiefly conducted personally, close to their bay-side homes, and without hired help, by selling to home shippers. The expensive warehouses required by some of the wholesale dealers and shippers in the city of Providence count largely in the estimate of capital involved; and the boats used are of a good class.

YIELD AND VALUE OF THE OYSTER BEDS.—The yield of the beds and its value, appears in the following table:

		Bushels.
1879.	Native oysters produced on beds owned in Rhode Island	108,200
	Southern oysters, ditto	274,300
	Native oysters produced on beds owned out of the State	40,000
	Southern oysters, ditto	238,000
	Total Narragansett production	660,500

The total value of this, and some additional annual business, will amount to at least $600,000, at the original wholesale price paid the producer.

PRICES AND WAGES.—The prices at which oysters were sold by wholesale dealers in the city of Providence, during 1879, were the following: Virginias, in shell, selected, $1 to $1.25 per bushel; Virginia plants, common, 90 cents per gallon; Virginia plants, selected, $1.25 per gallon; natives, in shell, $1.25 to $1.50 per bushel; at retail, 25 to 35 cents a quart, of all kinds. Some "fancy" lots, of course, brought higher rates than these prevailing market prices. In "Arnold's" and other restaurants the most palatable oysters possible are laid upon the counter to tempt the appetite. Those from Gaspé Point, purely native grown, are recognized as the very best of all, and sell for 5 cents a piece. They are delicious. So great an industry, of course, gives support to a numerous body of citizens in this district, at least during part of the year. In the summer so little is done that comparatively few are employed, this number, including only the proprietors of beds, the dealers and assistants who are obliged to keep their shops open, and the few men required for catching oysters for the feeble market, for spreading shells and planting seed, and for watching the safety of the beds. Reckoning the proprietors as perhaps 100 in all, the addition of the rest employed the year round would bring the total up to about 250; but this varies considerably from year to year. They are paid by the week, as a rule, wages running from $7 to $14, and averaging about $10. For the colder half of the year, "the season," as it is called, large additional help is needed, both on the water and in the opening houses that are placed close to the shore at various points, or on the wharves in the southern part of Providence city. Taking all the oyster houses together at the head of Narragansett Bay, I find about 350 openers employed. Add this to the 250 counted up as otherwise employed, and I have 600 men as the total. A very large proportion of these men are married; and I believe it would not be unfair, all things considered, to multiply this 600 by 4, which would give us 2,400 persons of all sexes and ages supported chiefly by the oyster industry in the Rhode Island district. I believe this is short of the truth. The sum of the wages paid is somewhere about $125,000 annually.

Statistics of the oyster interests of the State for 1879.

Number of planters		100
Number of lessees in 1879		56
Extent of ground cultivated	acres	962
Value of same (about)		$15,000
Value of shore property (about)		$75,000
Number of boats engaged		100
Value of same with outfit		$20,000
Number of men hired by planters and dealers through the whole year		150
Annual earnings of same		$75,000
Number of men hired half the year		350
Semi-annual earnings of same		$50,000
Number of families supported, exclusive of retail trade (about)		500
Annual sales (1879) of—		
I. Native oysters	bushels	148,200
Value of same		$205,500
II. Chesapeake "plants"	bushels	274,300
Value of same		$200,000
III. Fancy stock	bushels	15,000
Value of same		$20,000
IV. Baltimore and Norfolk "open stock"	gallons	8,650
Value of same		$5,600
Value of oysters raised in Rhode Island, but owned elsewhere		$250,000
Total first value of all oysters produced in Narragansett Bay, annually		$680,500

C.—GENERAL FISHERIES OF NEWPORT COUNTY, INCLUDING BLOCK ISLAND.

96. ADAMSVILLE, LITTLE COMPTON, TIVERTON, AND VICINITY.

ADAMSVILLE.—After leaving Massachusetts, if traveling in a southern direction, the next State bordering on the ocean or its bays, is Rhode Island; and, upon crossing the line between the two States the first fishing place is Adamsville, in Newport County. The fish caught here are chiefly tautog and eels, both of which are found plentifully throughout all seasons of the year, save winter. A small amount of fishing is done by five men a part of the season, farming being their chief employment. The catch by these men in 1880 was 5,000 pounds of tautog and 2,000 pounds of eels, valued at $350.

LITTLE COMPTON.—Sakonnet Point is the spot to which numerous fishermen of Little Compton and the neighboring places come for the purpose of fishing. This point juts out into Sakonnet River, which is an arm of Narragansett Bay. Into this bay flow the Providence, Taunton, and several other rivers and streams. A great variety of fish, including shad, mackerel, bluefish, rock bass, striped bass, tautog, squeteague, Spanish mackerel, alewives, kingfish, butterfish, flounders, flatfish, cod, hake, pollock, sturgeon, and scup are taken in the bay and adjacent waters. The last-mentioned species is usually caught in the greatest quantity. The Spanish mackerel, cod, hake, and pollock are rare visitors. Sturgeon are plentiful, but, like the pollock, are not considered a food fish, being classed with the dogfish, goosefish, shark, skate, and menhaden, which are sold at 25 cents a barrel for fertilizing purposes. The fishing grounds extend

from Church's Point to West Island, a distance of 3½ miles. Shore fishing is carried on south of Church's Point.

For pound-net fishing the shore is divided into twenty-one sets or sections of 65 fathoms. Some of the sets are much better than others. No one can draw for a set unless he has all the gear required for fishing. If one man has nearly all the apparatus he cannot draw, but a second party can go in with him under a firm name. This is to give a poor man a chance. Thus a rich fitter will furnish what is lacking and the poor man will do the fishing. No one can set nearer than 65 fathoms to another. When three draws occur in succession in one bay the one having the middle set is allowed to run his leader out till he gets abreast of the other two, but no further. The fishermen are all Americans. Two-thirds of them leave home by the 15th of June and ship on the menhaden steamers and follow that fishery the season through. Most of them are said to be more intelligent than fishermen generally, and many of them are land owners and quite well to do.

Fishing is generally done on shares, rarely any other way. One-third of the gross amount goes to the fitter and the balance, after deducting board, is distributed among the men.

Before the law required a close time many of the men used to go home on Saturday night and stay over Sunday, but if there were any runs of fish during this time those who staid were the only ones who shared; those who were away got nothing of the Sunday's catch. In one instance all were away from one gang but three men, and they got $100 each for the day's catch.

Traps have been fished here for 30 years or more. On the same place where there are now seven traps there have been as high as eighteen.

In the latter part of March notices are posted up in the town of Tiverton that on a certain day and place the subject of the Sakonnet fisheries will be discussed and the draws for the sets made. If there were more than twenty-one applications the distance would be divided into shorter sets, but there has never yet been over eighteen applications.

It is said that in 1879 the run of scup was very great, and came in larger bodies than ever before known. The theory is that the spring of 1879 was cold and backward, and that for this reason the fish did not appear until 3 weeks later than usual. The first scup come in schools at different times, some days apart, and when they strike the cold water they seem to stop. Other schools follow, and they keep coming till bye and bye the water gets warm and the whole body "strike on" the shore at once. This accounts for the enormous runs of 1879. One trap took as high as 3,000 barrels. Traps were so full that they could not be raised, 1,200 to 1,500 barrels being taken at a time.

One year with another, the scup are not as abundant as formerly, though in 1879 they were more numerous than at any other time during the last fifteen years. Fish seem spasmodic in their movements. The year 1880 compares only with an average year, while 1879 was an unusual one. Many of the fishermen think the great runs of fish sometimes get by before the traps are set.

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of the buoy-lines is raised by the occupants of one boat, the fish retreating to the farther end of the net. The pockets attached at the sides and end are movable, and when filled with fish can be detached and brought singly into harbor. The use of these pockets will readily be understood when it is learned that from a single one 3,000 barrels of fish were landed. The end pocket is mostly used, those at the sides only coming into play after the end one has been filled. In 1879 many of the nets had the three pockets full at once. These traps are set so as to catch the fish when they are traveling eastward, the reverse being the case on the east shore of Rhode Island. In heavy blows fish "hang" to windward; the nets on a lee shore then fail to draw. The Sakonnet traps catch only the spring fish that come in to spawn.

A single fishing gang consists of six men and a cook. Sometimes the gangs double and even treble up, using but one cook. When trap fishing is over most of the men go on the menhaden steamers. In 1879, 7,000 barrels of scup were taken in these traps. The assertion is made that a single trap in one season has taken 6,000 barrels. The catch is sold at from 50 cents to $5 a barrel according to their abundance. About three-sixths of the fish go to New York, two-sixths to Philadelphia, and about one-sixth is taken by local trade. In 1879 the seven traps numbered alphabetically stocked as follows: A, $2,000; B, $1,500; C, $1,200; D, $1,200; E, $1,000; F, $800; G, $500; total, $8,200.

During the season one salmon only and several porpoises were caught. Lobsters are taken from 5 to 10 miles off shore; four men follow this fishery, setting sixty pots. Their catch in 1880 was 12,000 lobsters. The capital invested here in traps, boats, and buildings is about $12,000, and the value of the products in 1880 was $9,040, including 12,000 barrels of scup worth $8,200.

SACHUEST NECK.—The fishing at Sachuest Neck, opposite Little Compton, has been carried on for many years. Capt. Ben. Tollman has fished here for 70 years. He employs six men engaged in fishing with a trap that cost, when new, $1,000. The catch of this trap in 1880 sold for about $350 in the New York market. As an instance of the voracity of squeteague Captain Tollman says he has frequently taken from 40 to 50 and occasionally 100 young menhaden out of the stomach of one fish, and he says that bluefish are equally destructive.

In 1879 the number of squeteague, bluefish, and small menhaden was extremely large. The assertion is also made that fish of all kinds are as abundant as ever, but that one kind will absent itself for a year, whose loss is usually compensated by an immense supply of another species. This alternation, often irregular, conveys the impression that fish are diminishing in numbers. The average price obtained here for scup was 50 cents a barrel.

THE TOWN OF TIVERTON.—The menhaden fishery is the principal one carried on from Tiverton. This fishery employs twelve steamers, owned here, and five schooners, with their large boats, to carry their catch to the factories. In the line fishery for tautog there is emyloyed an old fashioned well-smack of 13.98 tons, with a crew of three men. This vessel in 1880 caught 16,000 pounds of tautog, valued at $800. From 2 to 7 miles below the Tiverton stone bridge, on the eastern shore of Sakonnet River, there are nine heart-pounds fished from the last of April until the last of June. The catch consists of scup, squeteaugue, tautog, alewives, and butterfish.

Nonguit Pond, just in the rear of the pounds, is fished from the last of April until June 1 for alewives, four seines being used in the pond by sixteen men. The alewife catch of 1,200 barrels or 480,000 fish is sold mostly through the interior by peddlers. The fish are smoked, or having been well struck with a salt pickle they are strung on sticks and hung up for a few days until dry. Quite an amount are also sold to the hand-line fishermen for bait.

Twelve men are engaged in working the flats and beaches in this vicinity for clams and quahaugs, and in 1880 dug 960 bushels that were peddled in the surrounding country for $720.

Fyke-nets are fished to a limited extent during the fall and winter. The catch is almost entirely flounders, of little value or amount. On both sides of the river from Tiverton to the point there are forty-three fyke-nets set more or less of the time during the fall. The catch by the heart-pounds is much less than from those used on the south and west side of Newport Island. Pounds and fyke-nets are made from the old, condemned purse-seines of the menhaden fleet. The catch by pounds is marketed at Newport, New York, Providence, and Boston.

The capital invested in the fisheries of Tiverton, exclusive of the menhaden interests, is $3,458. The catch of fish by the pounds, nets, and seines in 1880 is valued at $7,274, and includes 814,000 pounds of the various kinds, the catch of alewives being 240,000 pounds. The menhaden fleet took 800 barrels of mackerel in addition to their other catch.

Mr. D. T. Church, of Tiverton, in a letter dated September 15, 1879, says:

"Most of the fishermen from here go to Sakonnet in the spring and trap there for about a month, then they dry their traps and put them away for the year, and don't take them out until the next spring. The balance are purse fishermen that take menhaden, and that is a large business. I am wrong in saying the balance, for there are some old patriarchs that take fish with a hook and line, but they are a poor class in worldly goods, and they cannot compete with the pounds or weirs; in fact, hook-and-line fishing in this vicinity always was a poor business, and the record proves that all families that depended on making a living by taking fish in this vicinity in this way were always poor, and that was the fact before the weir or pound-nets were set. My father was a hook-and-line fisherman, and he educated his seven sons in that calling, and by industry he made more than a living, but we all left it when we left him and went to taking fish with nets, and I think hook-and-line fishing stands to net fishing as walking stands to railroad traveling. The trouble with hook-and-line fishing is this, that early in the spring the fish don't bite; during the hot weather the small sharks that infest this coast drive them into the eel grass for protection, and it is hard work to catch them while there. In fact it is a poor business, and always was and always will be."

In Nannaquacket Pond, Tiverton Four Corners, four seines, worth $50 each, are used mostly for the capture of herring or alewives. Sixteen men follow this fishery and peddle the fish, which are mostly smoked, at an average of 50 cents per hundred pounds. In the spring they get 3 or 4 cents apiece for the fish, but the price soon runs down to 1 cent or less. Nearly all the people at this place are interested in the menhaden business, either working in the factories or running on the steamers from this vicinity. When large schools of bluefish strike in, some men fish for them for a few days, and two or three men follow the hook-and-line fishing more or less during the summer, peddling their catch about the country.

PORTSMOUTH AND BRISTOL FERRY.—The fishing interests of Portsmouth, opposite Tiverton, are centered in the menhaden industry. One of the largest menhaden oil and guano factories in the United States is located here. A fleet of steamers hailing from Tiverton and Newport annually supply this factory with from 50,000 to 90,000 barrels of menhaden, that are manufactured into scrap and oil. The statistics of the fisheries of this town are included in the summation for the State.

Between April 1 and May 25 two sea-traps, owned at Bristol Ferry, are set, one at Sachuest Beach and the other at the "Wash Bowl," on the west side of Rhode Island. Nineteen men in all are employed. In 1879 the nets were set a little too late, many of the schools of fish having passed by. It is here asserted that squeteague and bluefish are more destructive to the fisheries than are the sea-traps. These fish have increased immensely of late years. After the spring fishing of

1879 no scup appeared until the middle of July, when millions came; these were too small for market. As at other places, the men go menhaden fishing when trap-fishing is over.

In 1879 the trap at Sachuest Beach stocked about $200; the one at the "Wash Bowl" about $1,200. The greater part of the combined catch was shipped to Philadelphia and sold at 50 to 75 cents a barrel.

97. THE FISHERIES OF NEWPORT.

PRESENT CONDITION OF THE FISHERIES OF NEWPORT.—The fishing business of Newport is confined chiefly to fresh fish, and is carried on by ten firms. The catch is mostly during April, May, and June, being principally scup. Later in the season bluefish, mackerel, squeteague, bass, and some other fish are caught. Lobsters are taken at all seasons and of all sizes.

Fifty small cat-rigged boats are used by the local fishermen in the near waters of Narragansett Bay and Long Island Sound, fishing more or less of the time until November, after which the season may be considered over until April. The leading catch by these small boats is lobsters, which are caught in the 1,500 pots set about the islands of the bay and Long Island Sound. Tautog, bluefish, squeteague, bass, and eels, with a less amount of many other species, are included in the catch of the boats. These are taken by hand-lines and nets. The largest part of the fish which are marketed or shipped from here are taken by "heart-pounds and square netted traps." There are twenty-five heart and eight square traps set in this vicinity about Newport, Conanicut, and Prudence Islands. These traps and pounds are located as follows:

Location.	Heart.	Square.
On Newport Island:		
Northeast side on Sakonnet River	4	.....
East side at Sachuest Neck	.....	2
East side Boat-House Point	.....	1
South end Gooseberry Island	.....	1
South end Price's Neck, 1 double	.....	1
Southwest side Brenton's Point	2	2
Southwest side Pine Tree	.....	1
Southwest side Brenton's Cove	3	.....
West side Coddington's Cove to Coggshall Point	8	.....
On Conanicut Island (on both sides)	6	.....
On Prudence Island (on west side)	2	.....
Total	25	8

The square traps are put down the last of April, and usually taken up about the first of June, being anchored in from 4 to 7 fathoms of water, with a leader from the shore from 100 to 150 fathoms long. The heart pounds are put down at the same time, the twine being fastened to small piles driven into the ground, in from 25 to 35 feet of water. A small part of them are fished until October, but most of them only during the spring and early summer. In case the heart-pound is located on rocky bottom, the poles are held in place by cast-iron "feet" weighing 500 pounds each. These are cast for the purpose, are of circular form, with a hole in the center for the water. In working a square trap eight men to each are usually employed. The heart-trap, when used single, has three men. When two or three heart-traps are fished by one firm, being set near one another, a single team of three to five men will tend them. The catch from these thirty-three traps during 1880 amounted to 4,185,300 pounds of eatable fish, five-sixths of which were scup. This amount of fish was distributed as follows: New York received three-sixths; Philadelphia, two-sixths; Providence, the near inland cities and local trade, one-sixth. One-third of the New York and Philadel-

phia shipments were forwarded by steamer from Newport, packed in barrels of about 180 pounds of fish with 30 pounds of ice each, and boxes of 300 pounds of fish with 50 pounds of ice each; and two-thirds by sailing vessel iced in bulk. The money paid the fishermen for the catch in 1880, $33,907.50, is quite an item, yet the chief value of the catch is in giving so large an amount of good food to the laboring classes in the cities, by whom it is mostly used, at a very low cost; the first-cost value being less than *three-fourths of a cent* a pound. To this of course must be added the additional expense of placing the same on the market.

The Newport fleet of fishing vessels includes seven sail, aggregating 100.86 tons, and manned by thirty-two men. The gross stock of these vessels in 1880 was $13,200. The catch comprised 172,000 pounds of cod, 30,000 pounds of swordfish, 130,000 pounds of tautog and other species, and 116,250 pounds of lobsters. The catch of pounds and traps was 3,487,750 pounds of scup, and 697,550 pounds of other fish, and the catch of small boats was 350,000 pounds of fresh fish and 160,000 lobsters, having a total value of $51,757. The number of men employed in these shore fisheries is two hundred and seventeen, and the capital invested is about $40,000. The value of the vessels and their outfit is included in the summation for the State. The lobsters are all sold fresh, mostly in Providence, the near inland cities, and home local trade; very few being sent to New York or Boston.

98. BLOCK ISLAND AND ITS FISHERIES.

DESCRIPTION OF THE ISLAND AND ITS FISHERIES.—Of the many islands along the New England coast, Block Island is one of the most interesting and possesses many features of originality. This island is about 8 miles long, and is of peculiar formation, consisting of a succession of hills and valleys, with over a hundred fresh-water ponds scattered here and there. The hills extend all over the island, at some places reaching to the water's edge, forming high bluffs, and at other places retreating inland, thus leaving the water's edge bordered with small beaches. Some of the hills are quite high; Beacon hill, the highest, has about 300 feet elevation. From this hill a magnificent view is obtained, not only of the entire island, but far away to the shores of Long Island, 18 miles distant, and to the main shore of Rhode Island, 12 miles away. Point Judith is a prominent landmark and Newport can be seen 30 miles to the northeast.

The ponds are scattered all over the island, some of them near the highest points and others near the sea-level. The water of the near-shore ponds, although fresh enough to be drunk by animals, is too brackish for domestic use, so that the inhabitants depend mostly upon cistern water. The largest of the ponds is named Great Pond, and was so called by Roger Williams in 1649. It is said to cover 1,000 acres, and is about 3 miles long by 1½ miles wide. Its maximum depth is 12 fathoms. A narrow roadway that is often overflowed separates this pond from the sea. By many this pond is supposed to be sustained by springs flowing from the surrounding hills; others claim that it is supplied from the ocean by the water filtering through the sandy beach, and that its brackishness is caused by a partial evaporation of the salt. Enough salt is retained from this cause as well as from the overflow from high tides and storms to sustain oysters and other shell-fish up to about half-growth, at which time they die. A breach through the beach into the sea is much needed, and this question is now agitated by the inhabitants. With a small outlay thousands of bushels of fine oysters could be made to add to the yearly income of the fisheries.

At present the fishing industry is, as it was two hundred years ago, the main reliance of the inhabitants. From April 15 to June 1 they fish off the southeastern end of the island, at a distance of 6 to 10 miles, and off the southern side at a distance of 2 miles from shore. Most of this spring fishing is, however, over by May 15. The catch is mainly cod, which annually

visit these grounds in spring and fall. The best grounds are Coxswain's Ledge, The Bank, and Coggeshall's Ledge, all of them from 12 to 30 miles south and southeast of the island. Thither numerous open, two-masted sail-boats plow their ways when the cod-fishing season is at hand. The daily routine of a fisherman visiting these ledges for cod was graphically described as follows in the Providence Bulletin, April 26, 1873:

"A fisherman's life is a hard life, and cod fishing in open boats taxes physical vitality to a degree which is hardly realized by those unacquainted with its hardships. The fisherman leaves home at from 12 to 3 a. m., goes to the harbor and starts for the fishing ground. It is well if he has a breeze of wind, better if it be fair, but if perchance, as often happens in spring, during the latter part of the night there be no wind, he must get out his oar and help row the boat to the fishing grounds 10 or 12 miles away, and there is a vast difference between rowing a wherry for pleasure and rowing a heavy fish-boat capable of carrying from 2 to 20 tons. He arrives at the fishing ledges, and, if there are plenty of fish, stands up and hauls fish with a 30-fathom line and heavy lead (for there is a strong tide here) for three or four hours, and there is no harder work than hauling heavy fish. It would puzzle a novice to stand up in one of these boats in good weather, but when the wind blows and there is a bad swell running, the boat ends up and down and rolls her gunwales under in a manner that would be apt to try not only the muscles but the nerves and even the stomachs of those who were not experienced fishermen. About 2 o'clock in the afternoon he gets under way and comes home. Then his boat is to tie up, his fish to be brought ashore in a skiff or small boat, then they are thrown out on the beach, divided, dressed, washed, carried up a steep bank in hand-barrows known as 'kids' and salted. This usually takes about two hours, and he seldom gets home before sunset. Then, if he thinks he has sufficient bait, he eats his supper and goes immediately to bed. If he has but little bait he must look up some that is fresh, sometimes traveling two or three miles to catch some alewives for the next day's fishing. In rough weather his work is increased and intensified, and the uninitiated know but little of the labor and exposure endured in 'beating in from the edge of the bank in a norther.' When the captain says 'Start,' the first thing to be done is to reef the sails and get the anchor, and in rough weather the crew of the larger boats have enough to do before the anchor is at the bow. It is not an uncommon circumstance for three or four good men to be from half an hour to an hour in getting the anchor on board of one of the larger boats. Then sail must be hoisted before the boat falls off in the trough of the sea, and by the time the sails are up and the sheets trimmed aft the crew are ready to drop down with exhaustion; but now the pumps must be manned and one man stationed at the fore-sheet (the helmsman attends to the main-sheet), while the captain, his eyes almost blinded with spray, watches the seas and eases the boat over them as best he can.

"I have only described the *modus operandi* of beating a boat to windward in what would be termed, in fishermen's parlance, a 'three-reef breeze,' but the boats are occasionally caught down to leeward in some terrible periodical storm, and then they get home *somehow*, though no seafaring man not acquainted with their sea-going qualities would suppose the boats could live a minute. It would be difficult for any one to attempt to say how rough a sea would have to be or how hard the wind would have to blow to prevent a large Block Island boat, with a good crew, from going to windward under close-reefed sails. I know of no case on record where one of the large boats, in good working condition, with good spars and sails, has been absolutely compelled to keep off and run to leeward. In fact, some of them would probably live as long, if not longer, on the wind than they would before it."

From October 15 to November 1, dogfish are caught for their oil and for fertilizing purposes, after which date, and extending to January 1, cod again become abundant; this time about half a

mile from shore, off the northeastern side of the island. These codfish are seldom large, averaging 9 pounds; but, being thick fish and carefully cured, they stand high in the markets. The grounds above enumerated are visited by Connecticut and Massachusetts fishermen, as well as by Block Islanders. The latter always fish with hook and line, being decidedly opposed to the use of any apparatus unknown to their ancestors. They regard the fishing grounds as their own property, and only ask the "foreigners" to let them alone and to keep at a distance with trawls and other modern appliances.

The spring catch is placed in pickle for four days, spread on flakes until thoroughly cured dry, and then sent to market. The fall catch is retained in pickle until it is wanted, and is then dried the same as the spring catch. All codfish are cured before sale; most of the catch being marketed in Rhode Island and Connecticut.

Although the leading catch on the fishing grounds about Block Island is cod, yet numerous other species are found in greater or less abundance. One of the most important species outside of cod is the large bloater mackerel that frequently visit this vicinity in the spring of the year. During 1879 hundreds of barrels of these fish were caught. They measured 16 to 19½ inches in length, weighed from 1¾ to 3 pounds each, and sold for $20 to $25 a barrel. These fish appear irregularly.

The boats used by Block Island fishermen are very peculiar in construction. They are sharp-pointed at each end, 20 to 25 feet long on the keel, a few attaining 29 feet, 3½ to 4 feet deep, with open deck and lap-streak sides, of schooner or sloop rig, chiefly the former, with narrow tapering sails, small masts well forward, with no shrouds, registering from 5 to 9 tons, and worth $250 to $800 each. From their odd appearance, which is increased by their lying very low in the water, they immediately attract the attention of a stranger. They are most excellent sea-boats, and, in the hands of a practical island fisherman, are as hard to drown as a duck, and rarely lost. There are twenty-three of these vessels, aggregating 199.35 tons and carrying eighty-five men. In addition to these "double-enders" there are fifty small boats of less than 5 tons register, with crews of two men each. These follow the same fisheries as the larger vessels.

In 1867 net-fishing on a limited scale was introduced. In April, 1879, two heart-pounds were set on the west and one on the north side of the island. They remained down until September 1 to September 15. Fish were found to be plentiful; but, on account of the exposed position of the island, it is doubtful if pound-fishing will prove very profitable. In these nets squeteague, bonito, scup, and tautog were taken in 1879. Spanish mackerel have been occasionally taken. The catch of the pounds is shipped to New York in ice usually by sailing vessels interested in the pounds. Bluefish are caught and used at home by the hotels. Lobsters are caught, but mostly by the Connecticut fishermen, only 150 pots being set by the Block Island fishermen. Irish moss is found in abundance. This is gathered, and has been since 1850, in warm weather by women and children; then it is washed and dried (many washings being requisite before it is bleached) and sold to the grocers, who, as a sufficient quantity accumulates, ship it to the woolen and flannel mills of Connecticut. The crop in 1880 was 400 barrels.

As only a small part of the year is given to fishing, ample time remains to cultivate the ground. Nearly all of the island is under cultivation or used for grazing, the land being well fertilized by refuse fish and seaweed. The latter is gathered in large quantities for this purpose. It is estimated that over $30,000 worth of fertilizing products are so used each year. Each farmer or fisherman gathers any amount he may wish free of cost, except for his time and team.

The capital invested in the fisheries at Block Island in 23 vessels with their outfit, 60 shore-boats, 12 gill-nets, 3 pounds, 150 lobster-pots, and other apparatus, is $28,040. The number of

persons employed is 263. The products in 1880 are valued at $36,824, and consist of 748,720 pounds of dry cod, 300,000 pounds of fresh fish, 120,000 pounds of refuse fish for manure, 6,000 pounds of lobsters, 3,250 gallons of fish-oil, and 24,000 pounds of Irish moss.

HISTORY OF BLOCK ISLAND.—The earliest records of this island date back to the year 1524, when the French navigator, Verazzano, reported to Francis I, King of France, that the island was in shape triangular, about three leagues from the mainland, full of hills, covered with trees, and well peopled, for "we saw fires all along the coast."

This opinion of Block Island was doubtless formed at a distance from the island itself, for the first record obtained of a landing was dated 1614, when the Dutch explorer, Adrian Block, explored the coast and gave to it its present name. In 1636 John Oldham, a trader from Boston, while landing to trade with the Narragansett Indians, was murdered by them, for which act an expedition was sent under Col. John Endicott, to punish the Indians. After executing their commission they explored the island and established a claim by right of conquest.

The Indians who first dwelt on the island called it Manisses, after the name of their tribe. The first explorer called it "Claudia," in honor of the mother of his king, Francis I. The Dutch maps of 1614 have it marked "Adrian's Eyland." About the same time appeared the name Block Island. In 1672 it received the additional name "New Shoreham," at which time also a charter was given to it by the Rhode Island assembly. The island was once covered with trees, but they have well nigh disappeared, so that now only a few scattering trees can be seen.

A town record of April 14, 1702, states:

"Capt. John Merritt brought before us one John Meeker for being a delinquent for absenting himself from out of said Merritt's employment, being his servant for the fishing season, for 40 shillings a month, with 6 pounds of bread and 6 pounds of pork a week, for the which considerations the said Meeker did promise to him his faithful service till the middle of June, or thereabouts, as by witness on oath doth appear before us. We, therefore, determine and give our judgment that the said Meeker shall perform the said conditions as above said. The 40 shillings per month is to be paid in current money of this colony, with cost of court, which is 1 shilling for the constable's fee, and 2 shillings for other charges which said Meeker is to pay.

"Given under our hands.

"SIMON RAY, *Sen. Warden.*
"EDWARD BALL, *Dep. Warden.*"

In 1670 the legislature first took action for the improvement of the harbor for "incouraging fishing designs," and in 1723 the legislature again granted aid in building a new pier "for the encouragement of the navigation of the colony, especially the fishery."

In 1695 one Robert Carr was engaged "to be forward in making a harbor and promoting the fishing trade." In later years storms swept away the piers, which were in 1816 replaced with white oak poles, or small piles driven into the beach. These offered little protection in rough weather, and the fishermen on stormy days were compelled to use oxen in hauling their boats out of danger's reach. The piles above alluded to were 12 to 15 feet above water, and were far enough apart to allow small vessels to pass in between. As business increased more poles were added, until in 1876 there were 750 of them, hence the name "Pole Harbor," the first object of attraction to every stranger. To these relics of old times the fishermen still make fast their boats; but the old piers are superseded by substantial breakwaters of granite, built by the Government. On February 16, 1870, Congress appropriated $30,000, and on October 22 of the same year the work was commenced. In 1871 an additional appropriation of $75,000 was made, and in

1872 another of $50,000. The total expenditure, therefore, was $155,000. This pier has been of great service, yet it is incomplete, and large appropriations are still necessary.

Block Island has two light-houses, one on the northwestern end, known as Sandy Point, on which spot four have been built, the first one having been erected in 1829, and the other on the southeastern end, built in 1874. This is a two-story brick dwelling, with octagonal tower, and cost $75,000. It is on a bluff, 152 feet above low water, the light being 52 feet from the ground. It was first used on February 1, 1875, and is visible 35 miles out at sea. One hundred feet to the southeast of this light is a fog-horn, blown by steam. Two life-saving stations, Nos. 2 and 3, of district 3, have been established, the one in 1872, the other in 1874. The fishermen constitute the crews. A signal station was established on July 28, 1880, and connects with the main land by cable.

A most remarkable feature of the administration of law on Block Island is that it boasts of not a single lawyer, policeman, or jail. The total population is 1,208, nearly all of whom are natives. The same names are found now which were common in the early history of the settlement. The inhabitants are industrious, frugal, and contented. The children are well provided with schools, there being five common schools and one high school. The two churches on the island belong to the Baptist denomination. The island has lodges of Free Masons, Odd Fellows, and Good Templars, two ministers and a doctor. There are quite a number of summer hotels, some of them quite large, fine buildings, and all of them owned and managed by the islanders. The first hotel was opened in 1842, and the first pleasure party entertained there numbered seven persons, one of whom was Martin Van Buren. Of late years the island has become well-known, and is annually visited by hundreds for health and pleasure.

D.—GENERAL FISHERIES OF BRISTOL, PROVIDENCE, AND KENT COUNTIES.

99. FISHING TOWNS FROM BRISTOL TO WARWICK NECK.

BRISTOL AND WARREN.—Bristol is situated nearly at the head of Bristol Harbor, an arm of Narragansett Bay. The fishing grounds are off Walker's Island, in the bay opposite Bristol City, at the head of Bristol Harbor, and in Mount Hope Bay. Five heart-pounds are used from the last of April until September. In the spring, alewives, scup, and shad are taken; and later, squeteague, tautog, bluefish, flounders, and eels. In winter a small amount of fishing is carried on by fyke-nets, the catch of which consists mainly of flounders. At the northern end of Narragansett Bay fish become less abundant, possibly owing to the pollution of the water by the refuse from the numerous factories. A few lobster pots are set about the ledges and islands. The boats used at Bristol are all cat-rigged, with the exception of one sloop, one yacht, and small skiffs for the traps. Each of the heart-pounds requires the attention of two men. A good week's produce is estimated at 1,000 pounds. There is a small amount of hook-and-line cod fishing, also sword fishing, from a sloop at the lower end and outside of the bay. One seine and one gill-net are also in use at Bristol. About twenty-five eel-pots are set in the bays.

Fishing at this place has deteriorated to such an extent that many of the men have left the business and have found employment in the Bristol rubber works. Large numbers of destructive fish are caught in the traps, and for that reason one would suppose that the smaller species would

increase yearly in abundance. One-third of the 1879 catch was sent to New York and Providence, the remainder being consumed at home. The lobsters are all sold in Bristol.

The capital invested at Bristol in traps, boats, and fixtures, nets and seines, and a small sloop, is $2,655. The value of the products is $4,755, and comprise 100,000 pounds of fresh fish, 30,000 pounds of swordfish, 5,000 pounds of eels, and 23,000 pounds of lobsters.

Warren represents the northern limit of the fishing industry in Narragansett Bay, with but a small amount taken here. During the spring five heart-pounds are fished for shad in the Warren River near its outlet into the bay. The catch of 1880 averaged 1,000 shad to each pound, of an average weight of 3½ pounds each. Two-thirds of the catch was sold at Providence and one-third at Warren and Bristol. Clams are found quite plenty. On an average twelve men in the summer and four during the winter work the clam flats. Six men with three small sail-boats and eighteen dredges fish the scallop-beds during the season, which by law lasts from September 15 to May 15. The State law also limits the catch of each boat to 15 bushels a day. The law as to quantity is not as generally observed or enforced at the various fishing stations as the time; the close season being quite generally observed. Scallops are sold at New York and Providence; clams at the latter city and at Rocky Point, Rhode Island.

The capital invested in the fisheries of this place in five heart-traps, three scalloping boats, eighteen dredges, and ten boats with fixtures for clam digging, amounts to $1,872. The products for 1880 are 5,000 shad, 2,500 bushels of clams, and 1,000 gallons of scallops, worth $3,862.50. The number of fishermen employed six months in the year are eighteen, all of them Americans.

PAWTUXET.—Pawtuxet is located on the Providence River, 4 miles south of the city of Providence, and is the clam town of the State. The main business of the place is the fishery for clams and scallops. Seventy-five men are engaged most of the year in that industry or in net fishing. During the summer season nearly twice that number are engaged, and the average number for the year is one hundred. The products of 1880 amount to 40,000 bushels of clams and 10,000 bushels of scallops. The latter are always opened before they are sent to market and many of the clams. This gives employment during the busy season to one hundred persons, mostly women and children.

Clams are dug on both sides of the Providence River. Of late years some complaint has been made of their not being as plenty as in former years. During 1880 large clams were not as abundant as usual, but small clams were more plenty than for years and give promise of a bountiful supply in the future. During the summer months most of the clams are used at the summer resorts, where they sell from $1.25 to $1.40 a bushel. Providence and the local trade take any surplus. A small amount are forwarded to Boston. The price during the winter is from 75 cents to $1 a bushel. An average price during the year being $1. Scallops are shipped to New York and to Providence for a market.

From April until November scup, tautog, squeteague, and bluefish are taken in seines and nets, twelve men fishing them in Mount Hope and Greenwich Bays. Eels are plenty. They are caught near home and sent to New York. One smack, 26 feet long, is used; the other boats are of the skiff pattern. Two gill-nets are fished; each is 115 fathoms long and 21 feet deep. They are made of 4 to 4½ inch mesh. In these nets are caught bluefish and sea-trout. An average day's catch is 50 pounds, although 1,000 pounds have been taken in one day by one gill-net. The two seines are 100 fathoms each in length and 15 feet deep. The mesh is 3½ inches. Three men are required to haul one of these nets, which are fished from March until September. The species chiefly taken is scup. The average daily catch is 200 pounds, taken at about five hauls of the net.

In September a hundred eel-pots are fished near the town, and succeed very fairly. Six years ago the net fishing produced results six times as large as at present.

The investment in this place amounts to $3,130; and the products, which include 40,000 bushels of clams, 10,000 bushels of scallops, and 37,500 pounds of fresh fish, are worth $47,100. The number of persons employed is 175.

WARWICK COVE AND WARWICK NECK.—During the summer nine men fish in Warwick Cove for bluefish and three at the Neck for tautog. Some hand-lining is also carried on from the boats during April, May, and June. Most of the men here give up fishing during the summer and hire their boats to pleasure parties. This is a good indication of the state of the fisheries.

Two men fish for eels. In 1879 two tons of eels were shipped to New York, where they sold for 5 cents a pound. Most of these eels were speared in the winter.

100. THE FISHERIES OF APPONAUG AND EAST GREENWICH.

APPONAUG.—Apponaug is 12 miles south of Providence, at the northern end of Greenwich Bay. In past years it has done considerable fishing; of late years the business has largely decreased. The fishermen claim that chemicals and refuse from the large print-works have driven away the fish and killed every clam in the immediate vicinity of the town.

There is quite a little fleet of sail-boats owned here by the fishermen. At least one-half of them are chiefly used for pleasure parties. On the average nine are used for fishing purposes. Hand-lines and seines are used by the fishermen in Greenwich and Narragansett Bays. The catch consists of bluefish, squeteague, tautog, flounders, and scup, mostly caught in the spring; no winter fishing. The leading products of the fisheries are clams and scallops. The same men follow line and net fishing and dredging, each in their season. The scallop beds are quite extensive and productive, extending from Wickford, on the south, along the west shore of Narragansett Bay, into and on both sides of Greenwich Bay, to Warwick Light, on the north, a distance of 20 miles. The boats average 4 dredges each, which are used in about 2 fathoms of water. The catch, from 3,000 to 4,000 bushels a year, is brought home and shelled. The opening is mostly by girls, some thirty being employed during the busy season. They receive 12½ cents a bushel for shucking. Clams of the various kinds—round, long, and quahaugs—are found in abundance on Prudence and Patience islands, the shores of Providence River, and Greenwich Bay.

A novel feature of the fishing industry is a small steamer of 10 tons, from this port, engaged exclusively in gathering clams, and probably the only one so engaged in the United States. The steamer visits the numerous beds along the shores mentioned, where captain and crew of from sixteen to twenty men take on their cargo direct from the beds. They also stop at points along the shores and buy from the diggers, but rely chiefly on their own digging. The cargo is taken to Rocky Point, Kent County, the celebrated resort of thousands for clam-bakes. The entire season's work of this steamer is contracted for in advance by the hotels, and to insure the clams a steamer is required. The catch of this steamer in 1880 was 5,000 bushels of clams, worth $7,000. Some idea of the amount of clams annually consumed at this celebrated roasting place may be judged by those who have often seen over 10,000 persons at a time at a Rocky Point clam-bake. There are also numerous other well-known points along the beautiful waters of Narragansett Bay that are noted for their clam-bakes, and yearly consume large quantities of shell-fish, but the one mentioned is the leading one.

The catch of fish by seine and hand-line is mostly sold at Providence. In case a surplus happens in that market they are forwarded to New York, all being sold fresh. Scallops are mostly

sold in New York; clams, chiefly used at the summer resorts in their season and sold throughout the near towns and cities at all seasons.

The investment in the fisheries of Apponaug in 1 steamer, 9 sail-boats, 36 scallop-dredges, 4 seines, 30 small boats and fixtures, and the fish-houses, is $4,609. The catch includes 3,300 gallons of scallops, 6,000 bushels of clams, and 37,500 pounds of fresh fish, worth $11,975. The number of persons employed is 38.

EAST GREENWICH.—East Greenwich is located at the head of Greenwich Bay, in which fishing is carried on for six or eight months in the year. Seines, gill-nets, and fyke-nets are used. The same species of fish are taken here as at Apponaug. The fishing by Greenwich men is extended as far south as Newport; but, wherever they go, a scanty living only is their reward.

The gill-net fishery is the most important. These nets are set in about 4 fathoms of water. Sandy Point is a noted bluefish ground. The boats used by the gill-netters are those which have already served as seine-boats and will yet fill the place of scallop-boats later in the season. June and July are the two best months for gill-netting. Eleven nets are used; they are each 75 fathoms long and are made with a mesh of 4 inches. In these no fish of a less weight than 2 pounds are taken.

Four seines, each 100 fathoms long and 12 feet deep, of 1½ to 2-inch mesh, are used. Each seine requires the labor of three men. April and May are the best months for this fishery, but it is kept up by some all the year round. In addition to bluefish, these seines catch squeteague and tautog. Before menhaden steamers were so extensively used one seine would at times catch 250 barrels of menhaden at a single haul.

About a hundred fyke-nets are set in Greenwich Bay, close inshore, under the ice. Very little hook-and-line fishing is done.

Near Greenwich numerous scallops and clams are taken. The former are obtained by dredging the beds between Greenwich and Wickford, from September 15 to May 15. Clams are dug on the main shore and near islands at all seasons, but chiefly during the summer. The scallops are shipped to New York and Providence or are used for local consumption. The clams are sent to Providence and the summer resorts, any balance being reserved for home trade.

The capital invested in East Greenwich in 16 sail-boats, 12 row-boats and fixtures for clamming, 75 dredges, 4 seines, 11 gill-nets, 100 fyke-nets, and fish-houses, is $5,190. The catch is valued at $12,500 and includes 6,000 bushels of scallops, 4,000 bushels of clams, 5,000 pounds of eels, and 125,000 pounds of fresh fish. The number of persons employed is 50.

E.—GENERAL FISHERIES OF WASHINGTON COUNTY.

101. FISHERIES FROM WICKFORD TO NARRAGANSETT PIER.

WICKFORD.—Wickford is a small place, situated on the west side of Narragansett Bay, 12 miles northeast from Newport, a steamer from the latter port connecting with a branch of the Shore Line Railroad to this port.

A small amount of fishing is carried on in cat-rigged boats and skiffs by hand-line fishermen; also by nets and traps. Four heart-pounds are set on the west side of the bay, north and south of the harbor. They are fished from the 1st of May until November. Boats fish all over the bay, and during a small part of the year outside for cod. Eels are found plenty, and are taken by traps and spears. Fyke-nets are mostly fished during the winter; the leading catch by them is flounders.

The leading catch by the traps is squeteague, tautog, butterfish, and scup; the scup are not as plenty here as at the lower end of the bay. A few Spanish mackerel are caught. The catch is sold to Providence, Newport, and the near home local trade. Lobsters are mostly sold to the numerous summer hotels and local trade. Quite an amount of refuse fish are caught, consisting of menhaden, skates, and sculpins. These are all saved and sold to farmers for fertilizing, selling for 25 cents a barrel.

Lobsters are taken from February until the next winter about Dutch Island, and in all the inlets on both sides of the bay as far north as Hope Island. The ledges in the middle of the bay are excellent lobster grounds. The flatfish fyke-nets catch some, but the modern lobster-pot is generally used, and also the old-fashioned hoop-net, made from the iron hoop of a barrel, to which is fastened a net-bag. About one hundred and fifty pots are in use. Refuse fish, called "shuck-fish," are used for bait. Crabs are also caught, either by the use of "bow," "dip," or "crab" nets, from June until August. Eels are taken by the use of pots and spears.

Trap-nets are diminishing in number, there being now only four in use. They are supposed to have aided most materially in diminishing the supply of fish.

The investment in this place in nets, traps, boats, and fixtures is $2,425. The production is worth $5,700, and consists of 198,000 pounds of fresh fish, 160,000 pounds of refuse fish, 10,000 pounds of eels, and 15,000 pounds of lobsters. The number of persons employed is 20.

DUTCH ISLAND AND SAUNDERSTOWN.—At Dutch Island Harbor and vicinity three trap-nets are owned, two of which are set in the harbor and the other at Beaver Head from the middle of April to the 1st of September. They have been in use since 1871, and are set in 18 feet of water. The leaders are 75 fathoms long. The mesh in the leader is 5 inches, and in the bowl 2¾ inches. The tunnel-mouth is 6 feet wide. To aid in lifting the traps three "trap-boats" are used. These are worth $25 each. Frequent repairs, owing to ravages of storm and tide to the nets, are necessary, and cost about $50 to the net per annum. The nets used here are similar in shape to those at Wickford. The offal fish caught in the traps are used as bait for lobsters.

Only one gill-net is used here; this is 75 fathoms long, with a 4-inch mesh. It is used through June and July. Bluefish and a few squeteague are caught. This net is also used as a shore-seine.

In April and June a few eel pots are fished on the east side of the island in Sheffield Pond. From the harbor to Whale Rock some lobster-pots are set.

The hook-and-liners fish from April till December; in September they chiefly seek cod and tautog; at other times bluefish and sea-bass, which latter is here called "bluefish."

During the past eight years the catch of young fish has been increasing, while that of mature fish has been steadily decreasing.

The fishermen here, as in most of the places already alluded to, do not confine themselves to fishing. They act as pilots, dig clams, and do anything whereby they may improve their financial condition.

Most of the fish are shipped in boxes to New York, Newport, and Philadelphia. The lobsters are sent to Newport and Philadelphia. The price paid for a box containing 400 pounds of fish was, in 1879, only 60 cents. The next year there was an improvement.

The capital invested in boats, nets, traps, and fixtures is $2,877, and the product is worth $1,715.

Saunderstown lies on the coast exactly opposite Dutch Island. Three bass traps, but no gill-nets or seines, are used here, one on the west side of Dutch Island, one at South Ferry, and one at Casy Point. They have been in use for five years, and are set in 17 feet of water from April to November. The mouth of the tunnel is only 24 inches wide. In them are caught striped bass,

tautog, flat fish, squeteague, and a few shad, but no scup. The bass are caught only in the fall. Some lobsters are taken, and hook-and-line fishing is followed to a small extent.

NARRAGANSETT PIER.—At Narragansett Pier no traps are used. Four gill-nets and two seines are fished about a quarter of a mile from the pier, during June, July, and August. Menhaden are caught almost exclusively. Ten men are engaged here for about half their time. One man catches lobsters. The traps south of this place are supposed to prevent the fish from coming further north and are therefore looked upon with jealousy. The fishermen are less energetic than some years ago; were it not for this, it is thought, a great deal more might be done in the fishing industry. The hotel is said to require four times the amount of fish taken by all the fishermen. Between this place and Rocky Point, a distance of 6 miles, twenty men follow fishing, setting trawls for cod during the spring and fall, gill-nets for bluefish and squeteague during the summer, also setting 150 lobster pots about the ledges along the sound.

102. POINT JUDITH TO PAWCATUCK RIVER.

POINT JUDITH.—In the rear of this promontory lies Judith Pond, 6 miles long and 1 mile wide; the water is brackish and is from 8 to 12 feet deep. Formerly oysters were very plentiful, 10,000 bushels having been taken out in 1870. The mouth of the pond has become so filled up that now no oysters are to be found, the water having stagnated for want of free circulation. The bass fishery has, on that account, also failed. Ten thousand dollars have been realized by one owner on the capture of bass. Now that business is entirely at an end. A small outlet still permits the entrance of alewives. The fishing is carried on from December to June by farmers, mechanics, and fishermen. Last spring (1880) smelts were a little more abundant. Perch are still taken in large quantities. Most of the fishing operations are conducted by the use of fifteen seines; traps being out of the question where the fish average so small. The average length is 100 fathoms, depth 18 feet, and mesh from 1½ to 2 inches. In winter heavier seines are used, requiring six men to haul. Perch and some bass are then taken. Twelve years ago 198 barrels of bass were taken at one haul. In spring the catch is confined to alewives of which 2,000 barrels were taken in 1880. The alewife seine has a light thread and is handled by three men. Smelts are taken from February until the end of March.

One hundred and fifty eel-pots, like small fyke-nets, are set in spring and fall, being baited with crabs.

The investment here in seines, eel-traps, boats and fixtures, is $3,375, and the value of the product, which consists of 500 bushels of clams, 2,000 barrels of alewives, 60,000 pounds of smelts, 60,000 pounds of perch and flatfish, and 4,000 pounds of bass, is $10,800. The number of persons employed is 60.

FISHERIES OF CHARLESTOWN, QUONOCHONTAUG, AND WARD'S PONDS.—In Charlestown Pond six pounds and six shore-seines are used; in Quonochontaug Pond, three pounds and two seines; and in Ward's Pond, three pounds and two seines. Herring, bass, perch, flounders, eels, and some smelts are caught. Charlestown Pond is the largest, being about 6 miles long, and a maximum depth of 15 feet. The water is quite salt. About forty boats are used by the pound-fishermen. These boats are of all sizes and shapes, and are worth $20 each. The pounds are set from the middle of April until the early part of June. Some also are set in the fall. Four men work in a gang. The pot is usually about 30 feet in diameter. These nets are set in shallow water. The seines average 80 fathoms each in length, 18 feet in depth, with a 1¼-inch mesh, and are

worth $80 each. They are used from November until June, eight men to the seine. There are also fifteen fyke-nets set inshore. The same kinds of fish are taken in pounds, seines, and fykes.

Most of the fish, one-half of which are herring, are shipped to New York. The remainder are eels, perch, flatfish, and bass. The herring are salted, dried, and smoked, and are retailed at 1 cent each. Four days intervene between the capture and sale of the herring.

Menhaden fishing in this vicinity was commenced thirty years ago, and has been increasing ever since. Until 1870 bass fishing was good, but it has been partially destroyed by the steamers fishing with purse-seines. Sixty barrels of young bass have been taken at one haul, and the whole lot consigned to the oil-works.

ROCKY POINT AND SANDY POINT.—At Rocky Point, a small place on the waters of Long Island Sound, there is one square trap used, employing six men and stocking about $2,500 annually. Sandy Point is the dividing line between the sound and Little Narragansett Bay. In the sound, between Rocky and Sandy Points, one hundred and two men find employment in the fisheries, twenty being hook-and-liners, forty-two pound-netters, and forty seiners.

Six pound nets are set in from 20 to 30 feet of water east and west of Watch Hill, during May. Scup and mackerel are taken. The leaders range from 200 yards to half a mile in length. The size of the pound is about 40 feet by 60 feet. The mesh in the pounds is 1½ inches, in the leaders 2 to 2¼ inches.

Five seines, averaging 100 fathoms each, of 25 feet depth and 1½-inch mesh, are used, each requiring eight men. In the fall these seines are set for bass, in the spring for scup. They haul the seines in May and October. Formerly $1,000 was regarded as an average year's earnings for the owner of the net by the capture of bass alone.

The boats used by pounders and seiners are not fitted with sails; they are called "double enders," and are about 18 feet long.

Hook-and-liners catch cod, haddock, bluefish, blackfish, bass, and squeteague. In the fall only the first two species mentioned are caught. All the scup, bass, and bluefish are sent to New York Some of the cod was cured, but most of it sold green.

LITTLE NARRAGANSETT BAY AND PAWCATUCK RIVER.—The varieties of fish caught in Little Narragansett Bay and Pawcatuck River are scup, eels, flounders, smelts, menhaden, bluefish, weakfish, shad, backies, and alewives.

Pound-nets are set west from Watch Hill Pier to Sandy Point Channel, and on the north from Stonington to the mouth of Pawcatuck River, and for a distance of three miles up the river. It is claimed that these pound-nets kill forty young fish for each one fit for market. If this be true, then the fisheries must decrease in importance, inasmuch as the pound-nets are increasing in number every year.

Of the seventeen pound-nets now in use six are in the river and eleven in the bay. They are set between the first and the middle of September, and remain down until the ice forms too great an obstruction. Some few remain down throughout the winter. They are seldom set in spring. Three men are required to lift a trap. These traps are from 25 to 40 feet in diameter, 6 to 12 feet deep, with a leader from 25 to 200 yards in length. The mesh is so close that none but the smallest fish can possibly escape.

Four shore-seines, called also bass-seines, averaging 100 fathoms in length and 22 feet in depth, with mesh from 1½ to 2 inches, are in use. From six to eight men are required to haul one of these seines; bass, weakfish, and shad being the principal species caught.

One or two gangs of gill-nets, altogether about 2,000 fathoms in extent, are also fished for bluefish in summer and fall.

There are fully fifty fyke-nets employed. These are set thus: At about the center of one side of the heart of a pound-net a hoop-fyke is attached, opening into the heart; when the net is lifted, instead of "bunting" the net toward the further end of the bowl and then bailing the fish out, as is usually done, they are driven into one of the hearts, and thence into the fyke; the end of this is lifted into a boat into which the fish are emptied. The mesh in these fykes is very fine. Fyke-nets are also set all along the shore in shallow water, and catch chiefly bass, flounders, and perch.

There is no hook-and-line fishing of importance. Eel-pots are set all along the river. In 1879 probably $900 worth of eels were taken.

The capital invested in the fisheries of this district is about $8,500, and the number of persons employed is 75. The products are valued at about $8,000.