PART VII.

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By J. W. COLLINS.

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I.—THE SQUETEAGUE OR "TROUT" FISHERY.

Squeteague or "trout" (Cynoscion regale and C. maculatum) are taken along almost the entire length of the Delaware coast, between Little Creek Landing on Delaware Bay and Fenwick's Island at the southern extremity of the State, but the special fishery for this species is confined to the locality between Cape Henlopen and Mahone's Creek light. South of the cape there is no organized fishing for trout, the few that are taken being captured incidentally in the seines and gill-nets of the fishermen which have been set for other kinds of fish. Thus we find that, in 1880, while only 10,000 pounds were caught south of Cape Henlopen, 2,608,000 pounds were taken by the fishermen along the shores bordering Delaware Bay. The trout fishery begins from the 20th of April to the first of May, and is generally pursued with great ardor for five or six weeks; in some places it is continued until the first of July; and at Lewes it is carried on to a greater or less extent until August, when the spot makes its appearance along the shores, and the fishermen then turn their attention to the capture of the latter species. Toward the latter part of June the schools of fish, which, previous to that time, have remained close to the beach, begin to move off into the deeper waters of the bay, where the temperature of the water is not so high as it is close to the shore. After this time the trout seldom approach close enough to the beaches to be taken in seines except at Lewes, and in consequence comparatively little is done after the first of July; occasionally a few fishermen go out in the bay in July, August, and September to fish with hook and line; but it rarely happens that many trout are taken. During the height of the fishing season the farmers of this region, as well as the professional fishermen, resort to the beaches nearest their homes to engage in the work, which is carried on both during the night and day, as circumstances may demand. With the trout are taken, in the seines and nets, more or less perch, rock, mullet, and flounders, and occasionally other kinds of fish, though it may be said that all of these form only a small portion of the sum total of the fish captured during the months of May and June, since it is estimated by the most competent authorities that from 90 to 95 per cent. of the fish taken at the various beaches along the Delaware Bay at this season are trout. The importance of this fishery to the State is considerable, a large portion of the farmers and laboring classes being thus supplied with food which is both cheap and wholesome.

1. FISHING GROUNDS.

The fishing grounds are the shoal waters bordering the numerous sandy beaches along the shores of Delaware Bay. These beaches are ridges or hammocks, varying from one half to two miles or more in length, slightly elevated above the surrounding and intervening swamps, and

with shores sloping gradually down to the water of the bay. The slope is so gradual in many cases, as, for instance, at Bowers' Beach, that the depth of water does not exceed 6 feet even at a distance of a mile from the shore. The different species of fish found in this locality approach close to these beaches in the spring, and can easily be taken by the fishermen, who set their haul-seines and gill-nets in depths of 6 to 8 feet of water.

The most important of the upper fishing stations are Kitt's Hammock, 25 miles northwest of Cape Henlopen (and 4½ miles south from Mahone's Creek light), and Bowers' Beach, situated between Murderkill and Jones' Creeks, some 2½ miles farther down the bay. Between Murderkill and Mispillion Creeks are the fishing stations of Shirley's Bar, the "Pier" and "Big Stone," while near the mouth of Broadkiln Creek is Slaughter Beach, another excellent fishing ground, 4½ miles distant from Lewes. The beach at Lewes, though secondary in importance as a fishing ground, so far as trout-fishing is concerned, is, nevertheless, taken altogether, the principal station along the bay, since the fisheries are carried on during the entire summer and autumn for the various species which can be found in this locality. The fishermen usually resort to the beaches nearest to their homes, all other things being equal. Thus, Kitt's Hammock is the favorite place for the Dover fishermen, as well as a portion of those from Lebanon and Magnolia. A few men from the two last-mentioned places, however, generally go to Bowers' Beach in the fishing season, which is also resorted to by the fishermen from Frederica; these, together with the local residents at the beach, making up the sum total of men employed in trout-fishing at that point. The residents of Milford Neck divide themselves between the two stations of Shirley's Bar and the "Pier." Some of them formerly carried on fishing at the "Big Stone," but so few fish have been caught in late years at this station that it was abandoned in 1880, no seines being set from the beach. The chief part of the fishermen from the village of Milford resort to Slaughter Beach, where also may be found, in the fishing season, the men who belong at Milton; the residents of Lewes, of course, being near one of the best fishing grounds in the State, have no occasion to go elsewhere to pursue their work. By this arrangement the men are enabled to go to their homes during the "slack spells," and when the weather is unfavorable for fishing operations. As a rule, they visit their homes at least once a week. After the trout leave the shoal water bordering the beaches and strike off into the bay, on Oyster Rock, so-called, the outlying shoals are the fishing grounds, where a limited number of this species is taken with hook and line, though it is but fair to say that no systematic fishery is carried on after the end of the seining season.

2. THE FISHERMEN.

The fishermen of Delaware are principally men who engage in other pursuits during a large portion of the year. Among their other employments agriculture may be reckoned as the chief. They engage in fishing, as a rule, only when it offers better returns than can be obtained elsewhere; but when the fish grow scarce, or the market dull, they return to their farms; or if they have no farms of their own they hire out with some one else, unless, indeed, they may be mechanics, in which case they seek such employment as they are best fitted for. Many farmers of this section own boats and fishing apparatus with which they procure supplies for their own tables, and frequently secure a surplus, which they sell; others belong to crews or gangs regularly organized for seining. These are the men who manage the large drag-nets. During the fishing season it is not at all an uncommon thing for the farmers to hire colored men to work on their land while they themselves engage in fishing. We are told by Mr. Hill, of Milford Neck, that many farmer-fishermen of that section make it a rule to do their planting first, after which they engage in fishing for trout, thus filling up the time which otherwise might be unoccupied. According to Mr. M. S. Van

Burkalow, of Magnolia, many of the fishermen at that place and adjacent towns work in the fruit-canning establishments from July to September, but in the spring nearly all of the farmers in that section catch fish, at least for their own use. At Milton, says Mr. J. D. Morris, the trout fishery lasts about five weeks, and during this period the men pursue it with ardor, devoting all their time to handling seines. Those who own farms hire some one, generally a colored man, to do the farm work while they are fishing. At Lewes thirty men make a business of fishing for trout from May 1 to July; in addition to these there are fifty others, one-fourth of whom are colored, who fish for pleasure or profit at odd jobs. Taking them altogether these semi-professional fishermen are employed about one half of their time in catching trout, using for this purpose seines, gill-nets, and, rarely, hook and line. Those fishing with hook and line in the spring do this only for pleasure, or to secure a supply for their own table. After the rush of the trout fishery is over the semi-professional fishermen, as we have seen, engage in other pursuits, leaving the professional fishermen to continue the work on a more limited scale. The latter, as a rule, peddle their fish in the villages and surrounding districts during the period between the 1st of July and November. The catch of trout, however, as has been previously stated, is very small after the 1st of August. A few colored men are engaged in the trout-fishery in the towns above Lewes. So far as we learn it would be a liberal estimate to say that more than five or ten per cent. of the fishermen were colored.

3. APPARATUS AND METHODS OF FISHING.

BOATS AND THEIR FITTINGS.—The ordinary sharp-bowed, wide-sterned, flat-bottomed skiff, or battean, known in other sections of the country as the sharpie, is the style of boat almost universally used in the Delaware Bay fisheries. These vary in length from 12 to 20 feet, and in value from $10 to $20. They are almost exclusively built by the fishermen themselves, with few exceptions propelled by oars, and are employed both in the gill-net and seine fisheries, the larger ones being used for carrying out the haul-seines. At Bowers' Beach, however, there are a few round-bottomed boats, such as are elsewhere described as the "gill-net shad-boats;" and at Lewes, also, there are a few of these, as well as a limited number of the New Jersey surf-boats, such as are in use at Long Branch. A full description of the various forms of boats may be found in the report on fishing vessels. It may, however, be well to say here that the sharp-bowed boat is propelled both by sails and oars, but the New Jersey surf-boat rarely has a sail.

SEINES, NETS, AND LINES.—There are several kinds of seines used in the trout-fishery by the fishermen of Delaware Bay, differing principally in length. They may be classified under three general heads: First, the large haul-seine, ranging from 75 to 150, or more, fathoms in length, chiefly employed in the trout-fishery, and managed by a crew of four to seven men. Second, the small haul-seines, from 40 to 70 fathoms long, frequently used both in fresh and salt water fishing, and managed by a crew of two to four men. Third, the "wade-seines," 30 to 40 fathoms long, operated by one or two men who have no boat, but wade out to the depth of 3 to 5 feet, setting the seine as they go, after which it is hauled on the shore. The large seines range from 6 to 9 feet in depth, while the smaller ones are rarely deeper than 7 feet. The mesh varies from 1½ to 2 inches.

According to Mr. D. R. Tomlinson, of Dover, the fishermen of that place use small seines, 40 to 45 fathoms long and 6 to 7 feet deep, for the capture of various species of fish, such as trout, shad, herring, rock, and perch. For the management of these seines they are each provided with a "shore-line" 50 fathoms long, and a "water-line" 100 fathoms in length. In addition to these nets the fishermen use, during the trout season, from May 1 to July 1, a number of large seines which are 150 to 175 fathoms long, 7 feet deep, having 2-inch mesh. These nets are provided with

a "shore-line," 75 to 100 fathoms long, and a "water-line," 200 fathoms in length. The average length of the seines used by the Dover fishermen is 75 fathoms, and the average value $50. We are told by Mr. Samuel Wyatt that the large seines used at Bowers' Beach are 150 fathoms in length, 100 meshes deep, the mesh being 2 inches in length, and that they cost about $150 each. For the management of these a crew of seven men is required. A smaller net is used in the trout fishery, averaging about 50 fathoms in length, and costing from $50 to $60; these have a crew of four men. At Milford the large seines average 100 fathoms in length. There are, however, here, fifty small seines, averaging 30 fathoms in length, and requiring from two to four men to handle them. Many of these are of the kind known as "wade-seines," and are owned chiefly by the farmers who use them to procure a supply of fish for themselves, selling any surplus they may obtain. The trout-fishermen of Milton, however, we are told by Mr. James D. Morris, of that place, rarely use a net larger than 60 fathoms in length, 100 meshes deep, the mesh being 2 inches, while the small seines are 25 fathoms long, 80 meshes deep, and cost $20, and the larger ones are valued at $60. The swiftness of the current at the lower end of Slaughter Beach, near the mouth of Broadkiln Creek, where the men from Milton carry on their fisheries, prevents them from using so large a seine as is employed by the fishermen farther up the bay. The largest haul-seines used at Lewes, according to Mr. J. A. Marsh, a fisherman of that port, are 65 fathoms long, 100 meshes deep, the mesh being 2 inches in length. The average value of these nets is $40, the small nets varying in length from 20 to 30 fathoms, and are worth about $40 each.

Gill-nets are used for the capture of trout along the shores of Delaware Bay, though very much less so than drag-seines. Mr. Tomlinson tells us that the Dover fishermen have (stake) gill-nets for the capture of trout, pike, mullet, catfish, perch, and rock. These nets are 25 fathoms long, on the average, about 6 feet deep, the mesh varying in size from 2½ to 3 inches. At Lewes, gill-nets are used quite extensively during the first weeks of the trout fishery. These are the same kind as those employed for the capture of spot, being from 13 to 20 fathoms in length (mostly 15 or 16 fathoms long), 15 to 40 meshes deep, the mesh measuring 2½ inches. A more detailed description of these gill-nets is given in the chapter on the spot fishery.

It has been stated that trout are only taken incidentally south of Cape Henlopen, principally in gill-nets. These nets, which are used chiefly for the capture of perch, bluefish, menhaden, spot, and other species, are from 15 to 40 fathoms long, about 4 feet deep, and usually a mesh of 3 inches. The hand-lines used in Delaware Bay for the capture of trout are exceedingly simple in construction. A small sinker of 2 to 4 ounces in weight is fastened to the end of a small line of suitable length; above the sinker are attached to the main line, at distances varying from 8 to 10 inches apart, two or three gangings about a foot in length; fastened to their outer ends are small-sized hooks similar to those used for catching mackerel.

METHODS OF FISHING.—The appearance of the trout is the signal for the assembling of the fishermen at the different fishing-stations to engage in the capture of this species of fish. This fishery, beginning, as has been mentioned, about the first of May, is actively prosecuted until the end of June, and in some localities continues until August. It has been stated that from four to seven men are required to manage a large seine. When the seine is to be set one of these men stands on the shore holding the end of a rope—the "shore-line"—which is attached to the end of the net that is first thrown overboard. The remainder of the crew go out in the boat with the seine to a distance equal to the length of the line, which may vary from 50 to 100 fathoms. They then set the seine in a semicircle, working down stream and gradually keeping farther away from the land. By this means the end of the seine farthest down stream is gradually reached. From this lower end a rope is run ashore and then the men land on the beach, dividing themselves into

two gangs, each hauling on a line until the seine is drawn to the shore and the fish are landed. The smaller-sized nets are set in a similar manner, though fewer men, of course, are required to handle them. The small "wade-seines" are usually set by a single man (sometimes by two), who wades out from the shore to a depth of three to five feet and places the net in a semicircle around the place where he supposes the fish to be, and then returning to the beach, draws the net to the shore, securing such fish as may have been encircled by it. As a rule, the fishermen set their apparatus by guess, rarely, if ever, seeing the fish in the water before putting out their seines. This is especially the case, perhaps, with those who use wade-seines, since they can be employed to advantage only when the water is turbid or after nightfall. According to Mr. James Lowry, of Milford, many of the farmers of that town who own seines go out in the evening, after finishing their work on the farm, and make a set with a wade-seine for the purpose of catching a supply of fish for themselves; though, in the event of their obtaining any more than they need for their own use, they usually sell them either to their neighbors or to parties who come from a more remote distance to supply themselves with this fish. The method of handling the seine all along the shores of Delaware Bay is essentially the same, though, owing to the strong current in some localities, the fishermen are obliged to use shorter nets than are employed at other places. Captain Fowler says that at Lewes three or four men compose a seine-gang, and usually these at the same time have both seines and gill-nets, working with the former during the day or when circumstances are favorable, and setting the gill-nets at night. In the vicinity of Kitt's Hammock the nets are "staked out," but farther down the bay, at Lewes especially, where gill-nets are principally employed during the first weeks of the trout fishery, they are set in a peculiar manner, which will be fully described under the head of the spot fishery. According to Mr. William T. Gray, of Blackstone, a common way of setting gill-nets for trout and other species in Indian River is to fasten their ends to stakes, which are driven in the muddy bottom of the river. The nets are separated from each other 15 to 20 fathoms, and are placed longitudinally to the stream. They are overhauled each morning. In fishing for trout with hook and line the fishermen usually anchor their boats on some favorite spot in the bay; and, having baited their hooks with soft crabs, which are very attractive to these fish, they lower the lines to the bottom, and, if the trout are at all abundant, it is but a little while before the fish begin to bite rapidly, and of course are quickly pulled in.

At Kitt's Hammock, Bowers' Beach, and contiguous fishing stations the large seines are put away after the last of June, though the smaller nets are occasionally used for the capture of trout, but at that season most of the fishermen are at work at other employments and there is but little systematic fishing done.

Mr. J. A. Marshall, of Lewes, says that the trout fishery begins there about the first of May, being carried on with gill-nets for nearly a month. At the beginning of June, and sometimes sooner, the fishermen commence hauling trout with seines, carrying on their operations principally during the night, though more or less fish are taken in the daytime, especially if the water is muddy or turbid. The principal part of the fishing is over by the beginning of July, though occasionally hauls are made with the seines until August, at which time the spot fishery begins, and trout are rarely taken thereafter. Large numbers of trout were caught in the pound which was built at Lewes in 1873–'74, but as a rule the fish were either let out or else thrown away after the sounds or air-bladders had been removed.

4. DISPOSITION OF THE CATCH.

At the beginning of the trout season many of the farmers from the interior of the State, residing in some cases a distance of 30 or 40 miles from the nearest fishing stations, drive to the villages nearest the shores of Delaware Bay, and frequently even to the beaches where fishing is being carried on. Here they remain until they are able to purchase a supply of trout, which they buy fresh as the fish are taken alive from the water. Having obtained a sufficient amount for their purposes at least for the day, they proceed to dress and salt them. In doing this they cut off the heads and tails; the viscera and air-bladders are removed, and the fish are then split, washed, and salted.

It is estimated by Mr. M. S. Van Burkalow, of Magnolia, who is interested in the fisheries and is an extensive buyer of trout sounds or air-bladders, that three-fourths of a pound of dried sounds may be obtained from a bushel of trout, and as sounds sell at a price ranging from 75 cents to $1 per pound, it is evident that the cost of the fish to the farmer is merely nominal, since he rarely pays more than 50 cents a bushel for the fish.

Having secured enough fish to last through the year, the farmer packs them on his cart and hauls them away to his home. In addition to the trout that are sold in the manner above described, many are disposed of to peddlers who resort to the fishing-stations to purchase their supplies, which they hawk about through the villages and adjacent farming districts.

Mr. Samuel Wyatt, of Bowers' Beach, says: "In the spring the fishermen sell their catch of trout to farmers from the interior towns, who, after buying their fish, dress and salt them for their own use. There are also twelve peddlers who buy trout and hawk them about the villages and farming districts. The average price for which the fish are sold is 40 cents per bushel."

It is estimated by a number of the most intelligent observers at the fishing stations that about three-fourths of the catch of trout is sold in a fresh condition to the farmers, and it is said that this species of fish constitutes an important part of the food supply of the rural population of Delaware. A comparatively small amount of trout is shipped to Philadelphia and other large towns, and a considerable percentage of the fish which are not sold in a fresh condition to the farmers and peddlers are salted by the fishermen and retailed to the country trade during the fall and winter. According to Mr. Tomlinson, 60 per cent. of the trout taken by the Dover fishermen are salted and disposed of in this manner at prices averaging $6 per barrel. Those that are sent away are generally packed in boxes with ice. In some of the larger villages ice is put up in winter if any can be obtained. At Milford, Mr. J. Lowry has two ice-houses, with a capacity of 1,000 tons each. In 1879 50 tons were sold to fishermen and fish peddlers, but in 1880 no ice was obtained.

Mr. Van Burkalow says nine-tenths of the trout are sold to farmers and peddlers, mostly in a fresh condition, and one-tenth shipped to Philadelphia.

Mr. J. A. Marshall, of Lewes, estimates the catch of trout by the fishermen of that place at 250,000 pounds for 1880. Of this amount, he says three-fourths are sold fresh to peddlers and farmers, and one-fourth salted by the fishermen, being afterwards sold to residents of the interior towns.

He also tells us that the men employed on the railroad at Lewes buy a good many fish, which they sell at the towns along the route. The price received for the fish is variously stated to be from 25 to 60 cents a bushel for those which are sold in a "lump" to farmers; but for such as are retailed by the fishermen themselves in the villages near the fishing grounds, the price is frequently 4 or 5 cents a pound.

5. FINANCIAL PROFITS AND SHARE.

As a rule, large seines are owned by the merchants of the different towns and by the wealthy farmers, but in some cases belong to the captains of the fishing gangs. The crews are shipped to manage these seines and receive a certain share of the profits, which vary considerably in the different localities, and also with the size of the seine. Mr. Van Burkalow tells us that the largest seines used at Kitt's Hammock and Bowers' Beach draw 40 per cent. of the gross proceeds. According to Messrs. Samuel Bethards and J. W. Sparry, of Frederica, one-half of the proceeds of the catch goes to the boat, seine, and captain of the seine gang, while the remainder is divided among the rest of the men, who, from the amount thus received, provide themselves with food. The average share of a man engaged in seine-fishing for trout for the four weeks between the middle of May and the 15th of June is $32. The average stock of one of the large seines at Kitt's Hammock and Bowers' Beach, during the trout season, is about $500, according to Mr. Van Burkalow; though we are told by Mr. Wyatt, who is engaged in fishing with a seine at Bowers' Beach, that the average stock of a seine is $800, of which the net draws two-fifths, and the remainder is divided among the captain and crew, who "find" themselves. There is usually no rule for the division of the catch of the smaller nets, since the men fishing with them share the proceeds equally, though in most cases a certain percentage is paid for the use of the net. At Milton the seine draws an equal share with the men; that is, if there is a crew of four men, the usual number fishing with a net, the owner of the latter, who is usually the captain of the gang, receives for its use one-fifth of the proceeds of the catch. Mr. A. Hill, at Milford Neck, informs us that the fishermen rarely make more than $18 in the four weeks during which they are employed in trout fishing, and thinks they have not exceeded that for the past ten years. This estimate, however, is so much smaller than that of the men actually employed in the fisheries that it is altogether probable it is far below the actual facts.

2.—THE SPOT FISHERY.

The second sea fishery in importance in Delaware is that for the capture of spot (*Liostomus xanthurus*), which are found along the entire coast-line from Dover to the southern limit of the State, though in some localities they are rarely taken. Mr. Van Burkalow, of Magnolia, states that spot have occasionally been caught as high up Delaware Bay as Kitt's Hammock, though never do they appear there in abundance, nor are they found at all plenty anywhere in the waters bordering the bay shore above Slaughter Beach. The fishermen of Milford, Milton, and Lewes engage in this fishery to a considerable extent from the first of August until the last of September, and, in some instances, we are assured that small numbers of this fish have been caught at Lewes even as late as the 10th of November. Farther south the spot are, as a rule, taken incidentally in the apparatus which is set in those waters for other species. An exception, however, may be made of the spot fishery of Ocean View, which, next to Lewes and Milton, has the largest catch of any town in the State. This place is favorably situated for the capture of this fish, which appears to be quite abundant from July to November in the lower part of Indian River. Though no systematic fishing is carried on at this season, there are still a number of men who go out with haul-seines once or twice a week, and nearly all the residents of the town find time for more or less fishing.

1. THE FISHING GROUNDS.

It has already been stated that spot occur in greater or less numbers along the Delaware coast from Kitt's Hammock to the southern limit of the State, but the fishing grounds proper for this species may be confined to narrower limits. Slaughter Beach, the beach at Lewes, the waters of Rehoboth Bay, Indian River and Bay, and the Isle of Wight Bay, may be said to constitute the fishing grounds where spot are taken by the residents of Delaware, though it may be here mentioned that the fishermen living in the southern part of the State sometimes go farther south, to Sinnepuxent Bay, or even, perhaps, to Assateague Bay. The fishing grounds north of Cape Henlopen have already been described in the discussion of the trout fishery. It needs, therefore, only to add here that south of Cape Henlopen the Delaware coast is composed of low, narrow, sandy beaches, which inclose the shoal-water of the lagoon-like bays, the names of which have already been given. But little fishing is done in Rehoboth Bay, though it is the largest in the State, being about 4 miles in the direction of the shore-line, and having an average width of 3 miles. Just south of Rehoboth Bay, however, and connected with it by a channel, is Indian River Bay, which is 6 miles long, east and west, and has an average breadth of 1 mile. A narrow inlet, having a depth of 6 or 7 feet, connects these sheets of water with the Atlantic, and through this opening large quantities of anadromous fishes and a somewhat smaller number of sea fish annually pass to and from the shelter of the bays.

2. THE FISHERMEN.

The fishermen who engage in the capture of spot are generally the same men who have been employed in the trout fishery in the spring, though the numbers are perhaps less. In the vicinity of Lewes and Milton a considerable portion of the men are professional fishermen. This is especially the case at Lewes, while at Milton, we are told by Mr. J. D. Morris, that of the forty men engaged more or less regularly in catching spot at Slaughter Beach one-half of them are farmers, who fish only for their own use, as a rule, selling any surplus they may obtain, while the remainder of the men fish rather irregularly, being employed alternately in fishing and other pursuits. The summer fishermen, south of Cape Henlopen, are usually semi-professional, or farmers, the latter fishing, as a general thing, only to obtain a supply for their own tables, while the former carry on their work in a somewhat erratic manner, engaging in fishing once or twice a week, or perhaps for one or two weeks in succession, and then being occupied the remainder of their time in other employments. According to Mr. William J. Parkhurst, of Dagsborough, all of the fishermen of that place engage in fishing at "odd jobs" during the summer, catching trout, spot, and other less common species, which they peddle through the towns in the immediate vicinity. We are told by Mr. H. H. Hickman, of Roxanna, that many of the farmers of that town own small "wade-seines," and that whenever they have time in the summer they go down to Indian River and catch some fish for their own use. If, however, they succeed in getting more than they need for themselves they load the surplus on a team and peddle it through the rural districts. Although there is a considerable quantity of fish taken in this manner by the twenty-eight men from Roxanna, who are thus occasionally employed, nevertheless they can hardly be considered as fishermen in the strict sense of the term, especially spot fishermen, since we are told that the latter species is not taken by them in large quantities, but rather incidentally with other fish in gill-nets and wade-seines. The same may be said of spot fishing at Williamsville, in the lower part of the State; a few are taken during the summer by the fishermen who follow gill-netting, and who are generally such men as depend wholly on fishing.

3. APPARATUS AND METHODS OF FISHING.

THE BOATS.—The boats used in the spot fishery are essentially the same as those used in the trout and other fisheries of the State, being almost wholly of the flat-bottomed sharpie pattern, varying in length from 12 to 20 feet, and almost without exception propelled by oars alone. These boats are simple in construction, and are usually built by the fishermen themselves at little cost.

SEINES AND NETS.—Wade-seines, varying in length from 16 to 25 fathoms, are used by the farmer-fishermen of Milford for the capture of spot. The haul-seines used at Millsborough, and in which spot are taken in connection with various other kinds of fish, range in length from 45 to 75 fathoms, are 12 feet deep in the bunt and 8 feet deep at the wings, and have a 2¼-inch mesh. The average length is about 50 fathoms, and the average value of nets in use—estimated by Mr. G. W. Johnson, of Millsborough—about $30 each. The largest seines used at Ocean View for the capture of spot and other fish are from 40 to 50 fathoms in length, while the wade-seines are from 15 to 20 fathoms long, 5 feet deep, and 2-inch mesh. The nets used for the capture of spot at Slaughter Beach by the Milton fishermen average 15 fathoms in length and 50 meshes deep, the mesh being 2¾ inches stretch-measure. We are told by Mr. J. A. Marshall, of Lewes, that during the season in which the fishery is carried on, there are in use at the Beach 250 gill-nets. These, as a rule, are about 15 or 16 fathoms long when hung, though a few of them are 20 fathoms long. The depth varies from 35 to 50 meshes, the latter being 2½ inches. The average cost of these is about $3. Mr. C. T. Burton, of Lewes, says: "We use white Northern pine floats on the spot gill-nets, these being placed 6 feet apart on the cork-line; the lead sinkers, which are attached to the foot of the nets, average 1 ounce in weight, and are placed 16 inches apart." The spot fishermen use two nets at a time, but they usually have four nets or more during a season, as one "fleet" of two nets will last only about a month.

The nets are injured very much at Lewes by crabs during the month of August. These crustaceans, known locally as the "cushion crabs," are very abundant at that season, and frequently become so badly entangled in the fine twine of which the nets are composed that the latter are often badly damaged and torn in the process of removing the crabs. The fishermen of Blackstone use gill-nets ranging from 15 to 40 fathoms in length, 4 feet deep, and a mesh of 3 inches. Various species of fish are taken in these, among which is the spot. The gill-nets in use at Williamsville for the capture of the various species of fish taken in that locality, among which a small quantity of spot are found, are 25 fathoms long, from 3 to 6 feet deep, and have a mesh varying from 3 to 6 inches; only the smaller-meshed nets are used in summer, principally for the capture of mullet and spot.

METHODS OF FISHING.—The methods of fishing with gill-nets for spot at Lewes and Slaughter Beach, 4½ miles farther up the Delaware Bay, are quite novel, and so far as we have been able to learn are not practiced in any other part of the United States. At Slaughter Beach stakes are driven into the muddy bottom of the bay at a distance of about 65 to 70 yards from low-water mark; these stakes being long enough so that their tops are above water even at high tide. To the upper end of each stake is fastened a single block through which is rove a line, the ends of the latter being bent together so that it will not unreeve. When the fisherman desires to set his net he bends one end of this line to the outer end of the apparatus and the other end of the rope is made fast to the opposite end of the net. By pulling on the rope the net is hauled out from the shore into the water until it reaches the stake, and the line now being hauled taut and fastened the net remains secure and straight in its proper place. When the fisherman desires to take the net on shore he simply slackens away on one part of the rope and hauls in on the other, thus

dragging the net to the beach and with it whatever fish may have been caught in its meshes. As soon as one net is taken in another is hauled out to take its place, unless, indeed, owing to the presence of daylight or other causes, it should not be necessary to continue fishing any longer. The same result is arrived at in a different manner by the fishermen at Lewes, who make use of an anchor instead of a stake for fastening their block to, but who haul their nets to and from the beach in precisely the same manner as here described. According to Mr. Morris, of Milton, the men fishing at Slaughter Beach with gill-nets join together in gangs of two for mutual help. When fish are abundant one of the men spends a considerable portion of his time in peddling the catch, which he carries in a wagon to the rural districts and villages, while the other man stays at the beach to prosecute the fishery, which he carries on night and day if circumstances are favorable, though, generally speaking, but little is done in the daytime. The nets are set on the fall of the tide, being put out three times before low water, on an average, but if fish are plentiful they are sometimes set as many as four times; if a scarcity of fish prevails, not more than once. The spot during its season is the principal fish taken, though at the same time bluefish, perch, and several other varieties of fish are caught, but usually in small quantities. At Lewes the fishermen generally form themselves into parties of four or five for mutual assistance. During the night they will go back and forth along the beach, from station to station, hauling in regular rotation the nets of each one of their number. When the net at one station has been drawn ashore, another set in its place, and the fish removed from the first and cared for, the men then move on a short distance to the next fishing berth, where the operation is repeated. When there is good fishing, and it is possible to do so, the nets are hauled every half hour or thereabouts. It frequently happens, however, during the month of August, that large numbers of crabs get entangled in the meshes of the nets, compelling the fishermen to spend hours in clearing these crustaceans from the fine twine, which is often much injured during the operations.

According to Mr. C. T. Burton, the best results are obtained immediately after easterly winds, which usually disturb the water sufficiently to make it thick and turbid with mud and sand; when it is in this condition the fish can be more easily captured than at other times. The fishery with gill-nets is carried on even when there is a strong wind and considerable surf on the beach. The nets are set chiefly at night; the first of the ebb tide being a favorable time for putting them out. The fishermen, having no camps or shelter of any account on the beach, when not busy in hauling and setting their apparatus, generally build a fire on the sand and lie down beside it. When the tides are not favorable for fishing or when the fish are scarce, the fishermen sleep by their fires, awakening whenever the proper time arrives for prosecuting their labors to advantage. Each man is provided with two nets for the "fleet," one of which is set in the water while the other remains on the shore to take its place at the proper time.

Some seven or eight of the Lewes fishermen, after spending the night in fishing for spot on the beach, frequently go to the breakwater and other parts of the bay where they catch blackfish, sheepshead, trout, and occasionally bluefish, with hook and line. For these fish they usually obtain a high price. South of Cape Henlopen the common method of setting gill-nets for spot and other species of fish is to "stake them out"; that is, to fasten them between stakes which have been driven into the muddy bottom of the bays and rivers. The nets are usually separated 15 to 25 fathoms from each other, and are set parallel to the course of the stream or current. They are overhauled each morning and the fish removed, though they may be left for days or weeks together to continue fishing. Excepting at Lewes and Slaughter Beach this style of setting gill-nets is quite general throughout the lower part of Delaware, from Dover down to Fenwick's Island. Nearly the same result has been obtained, so far as fastening the net is concerned, by the method adopted by the spot fishermen, though the details of handling the net differ very radically.

The method of setting the haul-seines in Indian River and Bay is as follows: The end of the first line, the "land rope," is left with one man on the shore and run out its entire length by the men in the boat, two of whom pull away with the oars, the other one paying away on the rope, which is from 150 to 200 fathoms in length. After the line is out the seine is set in a semicircle up or down the stream or bay as the tide happens to run; the last end of the seine being always carried out somewhat farther from the land than the end first set. The net being out, the "water-line" is then run to the shore and the men divide themselves up, two pulling away on the "land-rope" and two on the "water-line." After the ends of the seine have been drawn to the shore, two men take hold of the lead-line and two others pull in on the cork-rope. The net is then gathered in slowly, the foot-rope being hauled in more rapidly than the cork-line; hence when it reaches the dry beach the fish are finally turned out on the sand. The fish are rarely if ever seen before the seine is set, the fishermen putting their apparatus where they think the best results may be obtained. The wade-seines are set in precisely the same manner as has been described in the notes on the trout fishery.

4. DISPOSITION OF THE CATCH.

The fishermen of Milford occasionally take the spot, principally for their own use, but when a larger quantity than they need is caught they peddle them through the villages and rural districts in their immediate vicinity. The fishermen of Milton, who engage regularly in the spot fishery, as has been stated in another paragraph, form themselves into gangs of two each, one of these men making a specialty of peddling the fish which are caught by his partner. In this way two-thirds of the fish taken are sold in a fresh condition, while one-third is salted. According to Mr. Morris, the average price of the fresh fish at Milton is two cents per pound, while those which are salted bring $10 per barrel. All of the latter are sold to the country trade. It takes about 600 of these fish to make a barrel when they are salted. They are dressed in much the same manner as our common mackerel, being first split and then soaked in water for a considerable length of time until all the blood is removed, after which they are salted. At Lewes, Mr. Burton tells us, the fishermen take their catch to the village in the morning and peddle the fish out during the day, selling as many of the fresh ones as they can. When they get a surplus and cannot sell them fresh, the fish are salted down. Mr. Marshall, of Lewes, estimates that one-third of the catch at that place is shipped in a fresh condition to New York and Philadelphia, one-sixth sold fresh at Lewes and adjacent towns, and one-half salted and sold to the country trade. He gives the average price as eight cents per pound. The spot which are taken in the towns south of Cape Henlopen are either consumed by those who take them or are sold to the residents of the region near which they are caught. A small quantity are sold to the summer residents at Rehoboth Beach. The chief part of those which are peddled are disposed of in a fresh condition, but most fishermen and farmers salt down a quantity sufficient for their own use, which may vary from one and one-half to three or four barrels.

5. FINANCIAL PROFITS AND LAY.

The financial profits of the fishermen engaged in the spot fishery are difficult to determine, since the capture of the different species is so interwoven with each other that no reliable or accurate data could be obtained. We are told by Mr. Marshall that the average yearly stock of the professional fishermen at Lewes is about $175, and that of a man fishing at "odd jobs" would average about $50. It is perhaps safe to say that one-half or one-third of this amount would be earned in the spot fishery. As the fishermen own their nets, that is, those who use only gill-nets in

this fishery, they, of course, receive all the money which their fish may bring; therefore there would be no "lay" in the matter. Those, however, who employ seines, as some of the men do in Indian River and Bay, go on a lay something similar to those who engage in the trout fishery. In this case the seines are generally owned by merchants or by one of the fishermen, and the owner receives one-fifth of the proceeds for its use.

3.—THE ROCK AND PERCH FISHERY.

1. GENERAL REVIEW.

The fishery for rock and perch in Delaware, between Dover and the southern limit of the State, though unimportant in comparison with the great commercial fisheries of the other sections of the country, is, nevertheless, one of considerable consequence to the residents of this region, since this fishery is carried on almost wholly in the winter season, when the men who engage in it would otherwise be unemployed.

In former times, both rock and perch were much more abundant than at present; and above all, the fishermen, while agreeing in a general statement as to the abundance of fish in other days, look forward to the future with considerable apprehension, predicting a still greater decrease in the number of the fish than has already taken place.

Mr. G. W. Johnson, of Millsborough, says that about 1840 the fishermen used to haul large quantities of rock and perch in their drag-seines, frequently getting more than they could possibly find sale for. In such cases pens were built of pine logs on the banks of the river, in which the fish were kept alive until they could be sold. When a purchaser could be found, the fish were disposed of for any price that could be obtained. He also says that, about the year 1860, he has seen 7,000 pounds of these fish taken at one haul of the seine, the net being of the same size as those now in use by the fishermen at Indian River. The average winter's catch for a gang of four men, at that time, he thinks, would have been about 20,000 pounds.

Mr. E. W. Houston, also of Millsborough, states that there has been a decided decrease in the abundance of rock and perch in Indian River. In the winter of 1868 he knew of a catch of 20,000 pounds of these fish being made in one day.

Mr. Johnson tells us that weirs were formerly used to some extent on Indian River, for several years previous to 1873, but since that time there have been none built. These were made by weaving oak splints through stakes, forming a sort of basket-work when completed; the stakes were driven into the mud, thus forming a weir. These weirs were placed in about 6 feet of water at their outer ends, and the fish caught in them—among which perch and rock formed a considerable part—were taken out with a dip-net.

The catch of rockfish from Dover to Williamsville, in 1880, was 147,000 pounds, this amount being pretty evenly divided between the section bordering Delaware Bay from Dover to Cape Henlopen and that situated south of the cape between the latter and the boundary of the State. The total catch of perch in this region was 326,500 pounds, and of this quantity there was little difference in the catch between the two sections named above, there being, however, a few more taken south of Cape Henlopen than north of it. With the exception of Dover, the catch of rock and perch north of Cape Henlopen is comparatively small, these fish being taken incidentally in the seines and nets, which are also used principally for the capture of other species.

The season at which these fish are most abundant is from November to May, though there seems to be a considerable difference in regard to this between Delaware Bay and the region south of Cape Henlopen.

We are told by Mr. Tomlinson, of Dover, that rock and perch are taken there chiefly in the season from the middle of November to the 20th of March, but only few perch are caught in the early winter.

According to Mr. Houston, of Millsborough, the season for rock and perch begins in Indian River about the last of November and continues until the first of March, at which time, or soon after, herring "strike in," and the fishermen turn their attention to their capture. He says that rock and perch can be caught only during the most severe winter weather, at which time they move in bodies up the rivers and creeks; and, in consequence, the fishermen take them in considerable quantities.

Mr. D. B. Wilson, of Magnolia, says that perch come about the first of November and "school up" the creeks as soon as the weather gets cold.

2. FISHING GROUNDS AND FISHERMEN.

FISHING GROUNDS.—The fishing grounds for rock and perch are along the shores of Delaware Bay and the numerous streams emptying into the same below Dover, the waters of Rehoboth Bay, Indian River and Bay, and Isle of Wight Bay.

THE FISHERMEN.—As a rule, the majority of the fishermen are semi-professional, men who are employed in agricultural pursuits during the greater portion of the year, and who find time in the winter season to engage in this fishery. One authority tells us that the fishermen are nearly all farmers, who are engaged but very little in fishing during the spring and summer, simply to obtain a supply for their own use, but in winter they are more steadily employed in catching rock and perch, and also herring in the early spring. Mr. D. B. Wilson, of Magnolia, says that when there is a good prospect for catching fish the farmers go out on the river with their seines and nets, which they set as circumstances may determine. At other times they are idle or employed in working on their farms.

Five professional fishermen from Lewes go to Rehoboth Beach in the winter and fish in Rehoboth Bay for rock and perch, as well as eels, shipping the entire catch to New York.

3. APPARATUS AND METHODS OF FISHING.

BOATS.—The boats—of the ordinary flat-bottomed type—employed in the rock and perch fishery are the same as those which have been mentioned in the preceding chapters.

NETS AND SEINES.—The nets and seines in which rock and perch are taken having been fully described in the notes on the fisheries for spot and trout, it seems unnecessary to repeat the description here. It need only be said that rock and perch are taken in the same apparatus that is used for the capture of various species of fish which frequent this region.

METHODS OF FISHING.—The methods of setting and hauling the seines described in the notes on the trout and spot fisheries are essentially, in almost all cases, the same as are practiced in fishing for rock and perch. There seems, however, to be sometimes a slight difference made when the fish are found in narrow streams. In such cases the seine is stretched across the creek, from bank to bank, one end being somewhat farther up the river than the other; the ends of the net are then fastened to stakes on the banks of the river, and the fishermen go up stream, "whipping the fish" down by splashing with oars, and using other means of frightening them. When they have succeeded in driving the fish down against the seine the end farthest up stream is

loosened from the stake and carried to the opposite bank, and whatever fish have been inclosed are hauled to the shore.

The almost invariable rule for setting gill-nets has also been described in the notes on the spot fishery. When setting the seines it rarely, if ever, happens that the fishermen see the fish schooling. Long experience has taught them where and when it will be most desirable to use their apparatus. It frequently happens, therefore, that they make "water-hauls," but at the same time they are liable to obtain a considerable capture.

4. DISPOSITION OF THE CATCH.

North of Cape Henlopen a large percentage of the rock and perch taken are sold locally or disposed of by peddlers, or by the fishermen themselves to the inhabitants of the interior towns; the remainder is shipped to Philadelphia and New York. In the region south of Cape Henlopen, however, the reverse is the case, a large percentage being shipped to the city markets. At Millsborough, Williamsville, and some of the other towns, the catch is bought up by local dealers, who pack the fish in boxes, and send them away by rail to their agents and commission merchants in New York and Philadelphia.

Mr. E. W. Houston, of Millsborough, in 1880, handled 2,000 (?) pounds of rockfish, and 1,000 pounds of perch; all of which he shipped by rail.

Through the kindness of Mr. Custis Burton, the railroad agent and express agent at Millsborough, we have been enabled to state the exact amount of fish sent from that station for the different months, from December 1, 1879, to December 1, 1880:

Dates of shipment.	Pounds.
December, 1879	5,715
January, 1880	4,075
February, 1880	4,130
March, 1880	5,755
April, 1880	8,020
October, 1880	175
November, 1880	9,137
Total	37,007

The first shipment in the fall of 1880 was made October 28. The fish thus sent to market are rock, perch, herring, and eels. From October to March they were nearly all rock and perch, and in March and April mostly herring. No shipments of any kind of fish are made from April to October, as a rule. Sometimes the people send a small lot by express to their friends in the cities and towns along the line of the railroad, but none go to the markets. The shipments in winter are pretty equally divided between Philadelphia and New York, and a smaller amount goes to Wilmington and Chester.

4.—THE STURGEON FISHERY OF DELAWARE BAY.

1. STURGEON FISHERY AT BOWERS' BEACH.

According to Mr. Samuel Wyatt, a resident of Bowers' Beach, there is no one engaged in fishing for sturgeon from that place. There are, however, during the month of April twelve or fifteen vessels, ranging from 15 to 20 tons each, employed in the sturgeon fishery in that locality.

Five of these vessels, he says, belong to Philadelphia, four to Chester, and two to Penn's Grove. The hailing ports of the others are not known.

The sturgeon fishery off Bowers' Beach usually begins about the 1st of April, and continues until May, after which the vessels move farther up the bay. Each one of these vessels carries a crew of about six men, who, as a rule, live on board of their crafts, although some of them live in rough cabins built on the shore. The fishery is carried on wholly with gill-nets, which are set out in the bay across the tide, and allowed to drift with the current up and down the stream, as seems most desirable.

The average catch, Mr. Wyatt thinks, is about 1,000 fish to a vessel for the month of April. These are dressed, iced in boxes, and shipped in boats to Philadelphia, or sent across to Bayside, in New Jersey, where they are shipped by rail to New York. The roe is prepared on the vessels.