PART XV.

FISHERIES OF THE GULF OF MEXICO.

By SILAS STEARNS.

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PART XV.

FISHERIES OF THE GULF OF MEXICO.

A.—GENERAL REVIEW OF THE FISHERIES OF THE GULF STATES.

194. EXTENT OF THE FISHERIES.

INTRODUCTORY REMARKS ON THE FISHERIES AND FISHERY RESOURCES OF THE GULF COAST.—Almost a third part of the entire coast of the United States, excluding the Territory of Alaska, borders on the Gulf of Mexico, the waters of which, under the benign influences of a tropical sun, teem with an almost endless variety of animal life. Nowhere do the rich Southern fauna find a more genial habitat, and in few localities could man levy upon the sea a heavier tribute of delicious fish and mollusks to supply his table. But, strange as it may appear, the fisheries of these 1,550 nautical miles of coast line fall short in value of those of the single State of New York by $450,000; and the States of Massachusetts, Oregon, and Maine have fisheries, respectively, five times, four times, and thrice as great as those of the entire American coast of the Gulf.

Among the Gulf-bordering States, Florida holds the first rank, the people of its western shores taking marine products to the value of $426,527. To Western Florida the entire sponge fishery of the United States is confined, and over $200,000 per annum accrue to her citizens from this source alone. This State also excels all others in the extent and value of its mullet fisheries, while Louisiana holds the same pre-eminence with respect to the shrimp, of which species Texas also obtains a goodly share.

Returning again to the Gulf coast as a whole, it will be observed that the principal products are oysters, sponges, groupers, mullet, shrimp, and red-snappers. These are named in the order of their monetary importance, the value of the oysters taken exceeding by over 35 per cent. that of any other species obtained by the Gulf fishermen, although very insignificant when compared with the production of the oyster industries of many of the Atlantic States.

It is to be hoped that the inhabitants of these shores will soon awaken to a realization of the store of wealth which beneficent nature brings to their very feet; if they do not, others will step in before them and bear away the first-fruits, for these well-nigh limitless sources of material prosperity cannot much longer remain unnoticed. When there shall be a fuller knowledge of the importance of these resources and better facilities of transportation have arisen, the fisheries of the American side of the Gulf of Mexico will take an enormous stride and compete even with those of enterprising New England.

STATISTICAL RECAPITULATION.—The following statements give the statistics of these fisheries for the year 1880, and on the subsequent pages will be found a detailed account of their present condition:

Summary statement of persons employed.

Persons employed.	Number.
Fishermen	4,382
Shoremen	749
Total	5,131

Detailed statement of capital invested and apparatus employed.

Apparatus specified.	Number.	Value.
Vessels (3,009.86 tons)	197	$308,051
Boats	1,252	50,173
Other apparatus, including outfits		52,823
Canneries and other shore property		134,537
Total		545,584

Detailed statement of the quantities and values of products.

Products specified.	Pounds taken.	Value to fishermen.
Bluefish	44,250	$885
Crabs	324,000	8,100
Crawfish	24,000	800
Green turtle	234,000	9,120
Groupers	1,764,000	141,120
Mullet	2,217,750	*a* 108,421
Oysters	4,051,075	313,200
Pompano	14,212	1,421
Red snappers	1,463,293	66,757
Shrimp	1,171,500	69,300
Sponges	207,000	200,750
All other species	12,026,150	307,670
Total	23,561,210	1,227,544

a Including 13,325 dozen roes, worth $5,867.

B.—THE FISHERY INTERESTS OF WESTERN FLORIDA.

195. STATISTICAL RECAPITULATION.

Summary statement of persons employed.

Persons employed.	Number.
Fishermen	1,936
Shoremen	176
Total	2,112

Detailed statement of capital invested and apparatus employed.

Apparatus specified.	Number.	Value.
Vessels (2,152.97 tons)	124	$272,645
Boats	743	15,558
Other apparatus, including outfit		21,823
Canneries and other shore property		52,537
Total		362,563

Detailed statement of the quantities and values of the products.

Products specified.	Pounds taken.	Value to fishermen.
Bluefish	44,250	$885
Green turtle	180,000	7,200
Groupers	1,764,000	141,120
Mullet	2,028,250	*a* 102,721
Oysters	410,200	10,950
Pompano	14,212	1,421
Red snappers	223,293	8,932
Sponges	207,000	200,750
All other species	3,505,130	90,840
Total	8,376,335	564,819

a Including 13,325 dozen roes, worth $5,867.

196. THE FISHERIES OF KEY WEST.

ADVANTAGES OF KEY WEST FOR A FISHING STATION.—That Key West should be an important fishing community is quite natural from its geographical position. It is a coral-limestone island, situated far from the mainland, almost entirely surrounded by reefs of coral which afford shelter for myriads of fishes and their food, and its proximity to the water of the Gulf Stream causes a congenial temperature for most of the southern forms of marine life. Key West is equally convenient to the fishing-grounds in winter, when fish are likely to be away from the coast and near the edge of the Gulf Stream, and in summer when the fish are near the shore. The larger fish, living at or near the bottom, can always find harbor and food among the reefs; and the smaller ones are equally well situated in the still shoal water between this key and those to the immediate east. The fishing grounds for smacks in search of large fish, such as the grouper and red snapper, are chiefly north of Key West and the Florida reef, along the mainland shores, and about the western end of the reef, in the vicinity of the Tortugas. The vessels engaged in the sponge fishery find grounds among the reefs eastward from Key West to Cape Florida and off the Florida coast from Anclote Keys north to Saint Mark's, and the fishing grounds for the smaller fish lie near and around Key West. Key West derives great advantages from being convenient to the large markets of Havana and New York. The former is only a fourteen hours' sail and the latter is directly and frequently communicated with by steamships.

DESCRIPTION OF FISHING VESSELS.—The Key West market fishery is carried on by a fleet of vessels and boats which fish on the coral reefs at the edge of the Gulf Stream, usually at a distance of 5, sometimes 10 miles from Key West.

With the exception of two vessels sloop-rigged, all the larger smacks engaged in the fishery from the port of Key West, are schooner-rigged. These smacks may be divided into two classes: those built in Connecticut, and those built at Key West in imitation of New England fishing vessels. The Key-West-built vessels are considered much more durable than those which come from New England, which, however, they resemble in general appearance. The various kinds of wood obtained in the South are regarded as being much better adapted for use in the construction of vessels for Southern waters—being less liable to decay—than those from which the New England vessels are made. The arrangement of the wells in these smacks is the same as that followed in the boats engaged in the New York market fisheries. A Key-West-built vessel of 40 tons costs about $10,000.

LAY.—With the exception of two vessels, the crews of the smacks fish on shares. The owner of the vessel receives 40 per cent. of the gross proceeds of the catch, and out of that he pays 40 per

cent. of all bills for port charges, food, and apparatus, the last two being furnished by the owner previous to the sailing of the vessel. The crew receives the remaining 60 per cent. of the gross proceeds, from which they pay 60 per cent. of all the bills for port charges, food, and apparatus, dividing the remainder among themselves. The captain, in addition to his share, receives from the owner 5 per cent. of the total paid to the owner, or, in other words, 2 per cent. of the gross stock of the voyage. Some shippers, instead of receiving this 5 per cent., are paid by the owner a certain amount per month, generally about $15.

BOATS IN MARKET FISHERY.—The boats used in the Key West market fishery are, with few exceptions, built upon one model and adopt a uniform style of rig; that of the sloop. The mast is placed well forward so that the jib, which is a small sail, can be furled during heavy winds without affecting the management of the boat. The mainsail, which has no gaff, runs up to a point at the masthead, and is of the shape known as "leg-of-mutton sail." The foot of the mainsail is cut convexly,* and is fastened to the boom only at the extreme ends, leaving the "roach" to hang below the boom. It is thought that a sail cut in this manner conduces to the greater speed of the vessel. In rough weather the jib is not used, and is of but little consequence at any time.

In all there are about forty boats, manned by seventy-five men. The average length is about twenty-four feet, with a width of eight or nine feet and a depth of four or five feet.

All of these boats are provided with wells. This provision is absolutely necessary in hot climes in order that the fish may be brought alive to market. They are built very sharp on the bottom, with large draught, so that the hull may be submerged to such a depth as to afford a supply of water in the well sufficient for the preservation of the fish. These boats have but little shear; they are made with raking stems and sterns and a deep keel. They draw more water aft than forward. The interior of the boat is divided into three compartments. In the bow is a cabin or "cuddy," in which dry clothes and spare gear are kept. The entrance to this cabin is through a small hatch just aft the mast. Next comes the well, occupying about one-fifth of the entire length of the boat. Last in order is the "cockpit," which is of the same width as the well, extending to within a few feet of the stern.

As a rule these boats present but a rude appearance and furnish little evidence of fine workmanship. They are very strong and seaworthy, and answer admirably their purpose. They are purely Bermudian or Bahamian in type, and many of them have been brought over on the decks of vessels from the Bermudas, and some few have sailed across to Key West from the Bahamas.

These boats are employed in the fisheries throughout the year. The men fish in them at a distance of from one to four miles from shore with hand-lines. The fish caught represent all the common species of these waters. The average value of each day's catch for the whole year is $1 for each man. Of course, on some days one man will take enough fish to realize from the sale of them as much as $20. During several weeks in the year the fishing is extremely irregular on account of rough weather.

The proceeds of the catch are divided into a certain number of shares, one of which belongs to each fisherman, one share being given to the owner of the boat. There is no distinction in the share of the captain and that of any one of the crew.

SEINES.—There are three seines in use at Key West throughout the year. Their average length is 45 fathoms and depth 12 feet, with a mesh of 1 to 1¼ inches. From four to six men are required to haul a seine of these dimensions. The catch includes all the common species, of which, on an average, half a barrel to the seine is taken each day. The yearly average catch for each seine amounts to 150 barrels, worth $1,500.

* A sail whose foot is thus shaped is called by the sailors a "roaching sail."

PRODUCTS.—The fleet of boats comes home at night and lies at the wharf until morning, when the sale of fish takes place.

The species most esteemed for its food qualities is the "grunt," next to which comes the "small snapper," of which there are several kinds; groupers, and moonfish. All palatable fish sell readily. The prices obtained vary greatly, being high when fish are scarce and low when plentiful. The average price per pound is about 5 cents. Turtles brought to this market in the shell are sold for 4 cents a pound. This price varies but little.

The favorite baits are crawfish and conchs. The crawfish is preferred to all others and is found in the crevices among the rocks or on the sand-flats about Key West. Conchs are found on the shoals about Key West or on the reefs outside. Sometimes, when the fishermen have used up all their bait, they dive to the bottom, frequently 5 fathoms deep, and bring up conchs. While the fishermen are engaged in fishing they often scatter broken crawfish, by which method they attract the fish to the surface. All unmerchantable fish are thrown back into the water. Great quantities of kingfish are taken at certain times—generally most abundant during "northers"—by trolling lines as the boat sails. A good day's catch is 100 small fish or 25 kingfish. Sometimes, however, more than twice that number are taken.

DISPOSITION OF CATCH.—The object of this boat fishery is to supply the people of Key West with fresh fish, which are sold alive at the wharves from the boats. When an unusually large amount has been taken into the market a portion of the catch is bought by the fishing smacks and taken to Havana, where they are disposed of. As soon as the fish are sold, which is usually the case by 9 o'clock in the morning, the fleet of boats starts in different directions for the reefs of coral which extend along the edge of the Gulf Stream. Sometimes these boats go ten miles from Key West to fish, but usually not over four miles. When they reach suitable fishing grounds they anchor and commence work.

"BAITING UP."—Here, as also at the Bahama Islands, a curious method is adopted for the purpose of insuring a good supply of fish at any given spot. This is called by the fishermen "baiting up," and is performed thus: A large supply of crawfish, having been collected by the fishermen, is mashed up into a pulpy mass called "chum," which is then placed in ordinary gunny-bags and carried to the selected spot where the bag is placed in the water. The bait in one bag will last several days, oozing out but slowly, and thus attract the fish. When the fishermen come back to this spot, four or five days later, they usually find a plentiful supply of fish in good condition.

HAVANA MARKET.—It has been already stated that the larger class of smacks take fish to Havana. At that port there is a great variation in the price paid for fish, ranging from 4 to 20 cents a pound. The original price was 50 cents apiece for all groupers and snappers weighing over 5 pounds, those of less weight counting two for one. From 1850 to 1860, 12, 15, and 20 cents a pound were paid, but the trade was crippled during the war and never regained its former standard. After the war the price fell as low as 4 cents a pound. The period during which this low price was paid was of but short duration. The fishermen refused to carry their catch there unless the value was increased, in consequence of which the Cubans agreed to take all that could be brought for 8 cents a pound. For a few months, during 1874, the price rose to 12 cents a pound, after which it fell to the old price, 8 cents, at which it still remains.

There are no duties on the fish carried alive to that port, but the port charges and other expenses average nearly $100 a trip for each smack.

197. THE FISHERIES OF MONROE, MANITEE, AND HILLSBORO' COUNTIES.

TOPOGRAPHY OF THE REGION.—The extreme southwestern coast of Florida is an almost uninhabited section, seldom visited and but little explored. Viewed from the sea the coast appears high and the coast-line seems to be without a break, but upon closer examination the coast-line proves to be cut up into countless numbers of small, low, mangrove-covered islands. In most places the country is broken up into this form by shoal lagoons for a distance of 5, 10, and even 20 miles inland. The seaward sides of these islands generally have narrow beaches of white sand, overgrown with sedge, according to the degree of their exposure to the waves. The Gulf waters touching this coast are extremely shoal, being only 10 or 12 feet deep at about an equal number of miles from the land. The soil is generally good, the climate almost unexcelled, and fish and game abound, but settlers find the constant presence of tormenting insects and the extreme seclusion unbearable. Higher up the coast the waters of the Gulf become deeper, the islands larger and higher, and are formed of sand which is blown into exposed places, where it forms into dunes. The upper portions of the bays along the coast preserve the shallowness of the water and the small size of the islands noticed above as occurring off the coast of Monroe County. In these shoal waters are found, as will be seen in the history of the fisheries, immense schools of mullet, the shoal water affording almost inexhaustible feeding grounds which are exceptionally free from predaceous fishes. Between Charlotte Harbor and Sarasota Bay the coast is bold, with a broad sand-beach, and is covered with a thick growth of tall pines. At Palmasola and Sarasota Bays the shores are higher and drier than at any point farther south, and are heavily wooded with palmettos and mangroves on the islands and with pines on the mainland. The outer sides of the islands are sandy and hilly. Outside of the channel the waters are rather shoal. The Little and Big Sarasota Bays are connected with each other, and, by means of Palmasola Bay, also join Tampa Bay. On the shores of these bays many fruit-growers from the West and North have settled.

FISHERIES OF CHARLOTTE HARBOR.

FISHING STATIONS OF CHARLOTTE HARBOR.—In Monroe County there are no fishing stations worthy of notice. The first four on the coast and on the islands off Manitee County are: Captiva, on Captiva Island; two at the north end of Lacosta Island, near Boca Grande, carried on by Spaniards, and one at the northern end of Gasparilla Island. These fisheries are all carried on in Charlotte Harbor. They are engaged in supplying the Cuban market, and the methods of fishing, style of buildings, mode of curing the fish, &c., are much the same as at the Sarasota Bay fisheries, concerning which all details will be given, and from which a correct idea may be easily formed of the arrangements and methods followed out at the Charlotte Harbor fisheries, when no differences are specially noted.

The profits of the fishing at these four stations have been diminished both by the political troubles in Cuba and by the glutting of the Cuban markets. The stations are all occupied every year, but seldom by the same parties. The Gasparilla fishery is an exception; this one is carried on by Beacon Brothers, and managed by Captain Beacon. The money made by the fishermen is less than in former years, when both fish and roes were worth more; yet, even with the present prices the men do well, if the business is properly managed. The trade with Cuba is now more extensive than formerly, more parties being interested in the work. It was reported that Spaniards had come from Cuba and fished in the bays under the Spanish flag. This was false. Sometimes, however, Cuban smacks fished off the coast, but were quickly prohibited by the revenue officers.

Captain Beacon thinks that the supply of mullet has in no way diminished, and that they are as plentiful as they have ever been. Many experiments have been made at these stations, resulting very often in failure. The men engaged there of course profit by the accumulated experience gained by the exertions of others. The buildings are now of a more permanent character, and, if possession can be obtained of the islands or ground which the stations occupy, this trade will probably increase and assume an important shape.

CHARLOTTE HARBOR FISHING BOATS.—There is a peculiarity in the Charlotte Harbor boats. They are built so as to carry a large load in very shallow water. They resemble, in some respects, the lap-streak boats of Maine. In fact they are a kind of lap-streak boat, having planks of cedar or white pine, knees and timbers rather large and of oak, and fastened with galvanized iron. Their usual length is 24 feet, and their width 8 feet. In shape they are somewhat awkward, being full at bow and stern, flat-bottomed, stem and stern raking, and quarters overhanging. They are, however, able boats, and well adapted for the work. Besides carrying a large seine and six men, they will carry 65 tubs of mullet. While fishing they are rowed by two or four men, the captain standing in the bow to guide with a pole. These boats are made to order in New York, and cost $150. There are not over a dozen on this coast, and these are continually changing hands. Each of these four fisheries has two boats and two seines.

CAPTIVA FISHING STATION.—At the Captiva fishing station, managed by Captain Pierce, of Key West, are thirty fishermen. All of them are "Conchs," natives of the Bahamas, or Americans. The seines are 120 and 100 fathoms long, and each is 18 feet deep. The stretch of mesh is 2½ inches. During 1879, 3,000 quintals of salted mullet and 225 quintals of dried mullet roe were sent from the Captiva fishery to Cuba.

FISHING STATIONS ON LACOSTA ISLAND.—At Lacosta fishery No. 1 are twenty-six fishermen, all Spaniards from Cuba or Key West, excepting one American. José Sega is the captain. The two seines at this place are each 100 fathoms long, and 24 and 18 feet deep, respectively. The stretch of mesh is about 2 inches. In 1879 1,500 quintals of salted mullet and 120 quintals of mullet roe were sent to Cuba from this station.

At Lacosta fishery No. 2 are twenty-four men, all Spaniards, excepting one American, as at No. 1. Captain Papy commands the station. The two seines used here are 100 fathoms and 75 fathoms long, and 16 and 12 feet deep, respectively. From this place 2,100 quintals of salt mullet and 250 quintals of mullet roe were shipped to Cuba in 1879.

GASPARILLA FISHING STATION.—At the Gasparilla fishery, managed by Captain Beacon, are thirty fishermen, either Conchs or Americans from Key West. The Conchs here, as elsewhere, are very ignorant, and are the drudges and laughing-stock of the others.

From Gasparilla, in 1879, 2,500 quintals of salted mullet and 200 quintals of mullet roe were shipped to Cuba. In 1877, 2,400 quintals of salted mullet and 175 quintals of dried roe were shipped, and in 1878, 2,600 quintals of salted mullet and 300 quintals of dried roe.

The seines here are 80 and 60 fathoms long, and 24 and 18 feet deep, respectively. The stretch of mesh is about the same as that of the others already mentioned.

SEINES.—The seines above referred to, and varying considerably in size, require from four to twelve men each to handle them. The fishing is carried on from the middle of August to the middle of January, and the variety chiefly taken is mullet. Ten to twenty thousand fishes are frequently taken at a haul. More are often surrounded by the seine than can be hauled out. There is no bag or pocket to these seines, and therefore they are hauled out on the beach.

LAY.—The "lay" arrangement at the Gasparilla fishery differs from that at the other three fisheries. At the first-named fishery all the gear and the carrying vessel belong to one company,

the Beacon Brothers. This company, having provided the outfit, receives 35 per cent. of the catch and pays 35 per cent. of all the bills. The other 65 per cent. is divided equally among the two captains and the crew, who pay the remaining 65 per cent. of the bills. At the other three, the two Spanish fisheries on Lacosta Island and the Captiva fisheries, their vessels are hired, and this arrangement is in practice. The bills are paid from the total proceeds and the remainder is divided thus: Vessel, 20 per cent.; fishery, 15 per cent.; and crew, 65 per cent. The crews in either case receive the same.

DISPOSITION OF CATCH.—The prices obtained in Cuba for the fish are: Salted mullet, 3½ cents and 4 cents a pound; dried mullet roe, 3½ cents, 4 cents, and 4½ cents a pound. The duties on the fish and roes amount to $1.40 on the quintal. The markets to which shipments are made are Havana, Matanzas, Cardenas, and Sagua la Grande.

FISH-CURING.—The curing of the fish is thus effected: On one side of the table are the "splitters," ten in number; on the other side are seven men arranged as follows: The second and third men from either end remove the gills and entrails; they are the "gillers." The end men scrape the black lining from the inside, and the fourth or middle man is an expert, who takes out the spawn; he is called the "spawner." Five of the splitters, as they finish splitting the fish, throw them in a pile to the gillers, who do their work and turn the fish with spawn over to the spawner, and those without spawn to the scraper. As soon as the spawn is removed, the fish go to the scraper and by him are finished with, so far as dressing them is concerned. The fish are now thrown into a trough of salt water and allowed to remain in soak until they are all split, when they are removed to be salted and packed away. The salting process is described below in the paragraphs on the Sarasota fisheries.

The roes, noticed by the writer at the Spanish fisheries in process of being dried, were maggoty, but the fishermen seemed to think they were all right, remarking that that condition was "nothing unusual." At the other two fisheries the roes were in excellent condition, clean and sweet. Their fish and roes were superior to those at the Spanish fisheries. The process of drying roes at these four fisheries was the same as that adopted at the Sarasota fisheries, and which is described below in detail.

FISHERIES OF SARASOTA BAY.

FISHING STATIONS OF SARASOTA BAY—The next group of fisheries are those of Sarasota Bay, comprising Hunter's Point fishery, Roberts fishery, and Sarasota fishery. The first named is on the dividing line between Sarasota and Palmasola Bays. The buildings there are owned by Sweetzer & Thomson.

At Hunter's Point are eighteen fishermen. Many are natives of the Bahamas, and are called here, as also at Key West, "Conchs"; the rest are Americans. The men employed in carrying to market the fish which the regular fishermen catch are counted as belonging to the fishery gangs, and receive either a share of the catch or wages.

SEINES AT HUNTER'S POINT.—At Hunter's Point fishery there are two seines in use. One of them is 100 fathoms long and 16 feet deep, with a 2-inch mesh, requiring eight men to handle it. The other is 75 fathoms long, 12 feet deep, and has a mesh of 1¼ inches stretch. Four men handle this net. These seines are used in October, November, December, and January. Mullet is the fish most largely taken. In 1879, 10,000 pounds were caught at a haul. The catch is frequently so large that the fish cannot all be saved. In one instance the fish carried away the seine from the men.

HUNTER'S POINT FISHING BOATS.—The boats used in this fishery are larger and of a better

build than those of the average size. They are of two sizes, the larger ones used by the men while handling the seines, and the smaller ones serving as tenders to the former. The seine-boats are 26 feet long and 7 or 8 feet wide. They are built as flat as possible on the bottom, but retain the form of a round-bottom boat. The bow in these boats is very sharp; the stern wide and overhanging on the quarter. The wood of which they are made is strong, but light. Their carrying capacity is very great, and they are well adapted for their work. The smaller boats are about 16 feet long.

HUNTER'S POINT CAST-NETS.—Of the two kinds of cast-nets—the "bag" and the "bail"—so generally used on the west and southwest coasts of Florida, the "bail" net is in more general use at Hunter's Point and at all other fisheries mentioned in this section. This net is circular in shape, with a diameter of 12 or 14 feet. Leads are strung at equal distances around its edge, and in the center is a horn ring, through which a cord may play. From the end of this cord (which is the hand-line), and inside of the net, radiate ten or twelve smaller cords or bails, which are all fastened to the lead-line at regular distances. This style of net is always free from tangles. When it is to be thrown, it is lifted by the center, the leads thereby coming together and giving the net a cylindrical appearance. The hand-line and a portion of the net is gathered in the left hand, the lead-line being held in the teeth and the majority of the leads in the right hand. In launching, both hands are swung from the left side to the right; at the same time a quick turn is given to the body in the same direction. If the net is well thrown it will strike the water flat at a distance of 12 or 15 feet from the "caster." As soon as the leads reach the bottom the net is hauled in by jerks on the hand-line, this having been retained in the hand of the fisherman. There is no trouble in hauling up this kind of cast-net, as there is in the case of the bag-net, which will be described in speaking of the fisheries where that type is in favorite use. In the case of the "bail" net, the net has only to be raised by the horn ring when the leads have sunk, and with it is raised whatever may be caught. The cast-net is used only in shoal water. Its value ranges from $5 to $15, dependent upon size of mesh, material used, &c. The average size of mesh is 1 inch, and cotton twine of nine threads is preferred.

BUILDINGS, ETC., AT HUNTER'S POINT FISHERY.—The Hunter's Point fishery, one of the most important on the coast, is prosecuted with a special view to supplying the Cuban markets. The arrangements are very complete. The building where the fish are cured and stowed is about 30 feet long by 12 feet wide, and is built out from the shore on piling. There are two other rooms: One, built of boards, is used as a kitchen and dining-room and dwelling for the captain's family; the other, a palmetto-thatched shanty, is used by the men as a sleeping apartment. Among the apparatus owned here are seine-reels, frames on which to dry mullet-roe, and machinery for hauling up the boats from the water.

The buildings at all the fishing places on this coast resemble each other, with the exception that at different places their relative positions and sizes may be changed.

Flocks of turkey-buzzards hover about these buildings and feast on the decomposed fish-refuse when carried out into the woods or back of the ranch.

MULLET.—The fishermen at Hunter's Point were found to be obliging and ready to give all the information they possessed. Their knowledge of the habits of the mullet appeared somewhat limited, only three or four months being passed by the men at the fishery. Their captain was then absent in Key West.

The present abundance of mullet is considered equal to that in former years, the 1879 catch being considered larger than for four or five years past. When leaping from the water in great numbers, they make a noise like the sound of thunder; this continues day and night.

LAY.—At this fishery, as at all others engaged in supplying the Cuban markets, the "lay"

arrangement is as follows, subject to slight variations: After all bills have been paid, duties, tonnage, fees, provision bills, salt-bills, &c., the owners of the fishery apparatus receive 15 per cent., the owners of the vessels employed in taking the fish thence to Cuba, 20 per cent., and of what is left, each fisherman receives one share; the boys, if any, are allowed only half a share. The captain receives a share and a half. The general complaint is that there is no money to be made in the business and that the fishermen always come out in debt. The vessel's expenses are quite heavy and are paid from the common stock; but undoubtedly more profit is realized by the vessel than by any of the men engaged in the fishery or the owner or owners of the apparatus. The continued political troubles in Cuba have injured these fisheries, for the Cubans have no money, and so, to save themselves from being worsted, imposed heavy duties on all imports.

CUBAN MARKET.—The market prices in Cuba are as follows: Salt fish, 4 cents a pound, or $4 a quintal. This price has not varied for several years, but is not more than two-thirds of what it was six years ago and before that time. Mullet roe, dried in Cuba, 50 cents a dozen. This price has not varied for the last six years. The duty on salt fish imported into the Cuban markets is $1.40 a quintal. The principal markets are Havana, Matanzas and Cardenas, and occasionally Sagua la Grande. Some of the dealers buy fish by the vessel load upon arrival. An average load for a fish-carrying vessel is 300 to 400 quintals.

METHOD OF CURING MULLET-ROES.—The mullet-roes are thus cured: Having been collected from the fish in a vat with a weak solution of brine over them, and allowed thus to remain over night, the roes are taken out the next morning and carefully spread on boards in the sun. After one day's exposure other boards are laid on the roe. They are now between boards and in a shape which will admit of rapid handling in case of rain. If the sun is shining brightly and there is a good breeze, a week will suffice for the roes to become dry and thoroughly pressed. Afterwards they are handled in baskets, tubs, &c., and are sent to market *en masse*. There is a greater demand for mullet-roe in Cuba than Florida. If a spawning fish is bruised or otherwise injured in the seine the roe is worthless, turning a dark-red color. Again, if too much salt is put upon a spawning fish at first, the sac cracks and the eggs are burned out on being exposed to sun and pressure. Rain is injurious to mullet-roes, hence the threat of a shower causes much uneasiness in a drying camp.

KENCH-CURING OF MULLET.—The method of curing mullet, known as the "kench-curing," and referred to in the section on the Charlotte Harbor fisheries, is practiced at Hunter's Point fishery, Roberts's fishery, and Sarasota fishery. The treatment of the fish at any of these places is thus described: The fish, when taken from the boat, are carried to the cleaning-house and piled on the floor near the cleaning-table. There are two, four, or six splitters, who first take the fish in hand and split them from nose to tail through the back. These men shove them along to others who "score" or cut them along the backbone, removing gills and entrails. Other men are ready to give them the finishing touch by scraping out the black stomach-lining. They then pass the fish to the salting-table, where they are rubbed with Liverpool salt, after which their insides are filled with it and closed up, leaving the natural shape of the fish. There are others, men or boys, employed in packing the fish away as soon as they are salted. They are packed in regular order, heads out, in one corner of the house, and, when the pile becomes large, present a most peculiar appearance, resembling a work of masonry more than anything else. On the occasion of a big haul, especially, is great life and activity displayed at a fishery, all hands, and as much help as can be temporarily secured from the surrounding country, being kept busy until the fish are all packed away. At such times the cleaning is first performed, then the salting, unless the haul be enormous, in which case a large number, instead of all, are cleaned before any salting is done. By

reason of the difficulty encountered in procuring all the help necessary in case of an exceedingly large catch, thousands of fish are often wasted, one-fifth, perhaps, containing spawn. Before going to sleep, 50 barrels, however, are often cleaned and packed away after the boats have returned from the day's fishing. The first fish, thus carefully put up, are in a first-class condition for any market. It is only in the warmest weather of August and September that the mullet are known to rust or turn red.

A peculiar feature in the Cuban markets is that the people prefer to buy fish with their heads on. At the fisheries where the fish are treated in this way no barreling or brine-salting is done.

ROBERTS'S FISHERY.—Roberts's fishery is situated on Sarasota Bay, at Big Sarasota Pass. It is managed by Mr. Roberts, of Key West, who supplies the Cuban markets. At Roberts's fishery about half the twenty-two fishermen are Conchs, the others come from Key West, and are mostly of American birth. As at Hunter's Point, the men on the carrying-vessels are regarded as forming part of the fishing gang.

The two seines in use at Roberts's fishery are respectively 110 and 75 fathoms in length and 16 and 10 feet in depth, with meshes respectively of 2 and 1¼ inches. The former requires eight men; the latter, four. Several hauls with the seine have proved larger than twenty-two men could split, in consequence of which large numbers were spoiled. One haul contained at least 20,000 fish.

The boats used here are similar to those in use at Hunter's Point.

The bait-net is also preferred here to the bag-net, as at Hunter's Point.

The fishing is a success, although the buildings, &c., may not be quite so conveniently arranged as at Hunter's Point. There are three houses built of poles, with palmetto-leaf thatching. In one of these buildings the fish are cleaned and stored. The second is used as a kitchen and the third for sleeping-quarters. The apparatus is practically similar to that at Hunter's Point.

SARASOTA FISHERY.—In the vicinity of the last-mentioned fishery is Sarasota fishery. This is managed by six men, Americans, all of whom are equally interested. Their fish are sold only in the home markets.

At this point there is only one seine in use. This is 75 fathoms long and 15 feet deep, with 1¼-inch mesh. The boats used are of a smaller type than those already alluded to.

Here, as at the other smaller fisheries, 30 per cent. of the proceeds is given to the fishery, and the other 70 per cent., after paying for salt, provisions, &c., is divided equally among the men.

The price of fish in the home markets is 3 or 4 cents apiece, or $6 a barrel. Mullet-roes sell for 25 cents a dozen.

FISHERIES OF PALMASOLA BAY.

FISHING STATIONS OF PALMASOLA BAY.—TYLER FISHERY.—The first fishery in Palmasola Bay, as one travels north, is called the Tyler fishery and is the smaller of the two situated on this bay. Here three men, Sharpe, Tyler, and Doane, fish entirely with cast-nets; their catches are small and their requirements correspondingly few. They fish for several months and catch quite sufficient for their own use and have a few barrels to sell. Throughout this bay there is a great deal of cast-net fishing; few, however, prove more remunerative than to supply the fishermen with food.

PICKLE-CURING OF MULLET.—At this place and Bishop's fishery, next in succession, a peculiar mode of preserving fish is practiced. The fish are split as for kench-curing, and after being washed are packed away in large barrels, dry-salted. In a few days they have made their own brine, and with some of it are finally packed away in barrels made of cypress wood and so

sent to market. Several specimens of fish thus cured were badly treated; they were haggled with knives, did not have the black stomach-lining removed, and were made more disgusting by the unclean brine. These fish are sold to inland settlers all over the State of Florida.

BISHOP'S FISHERY.—The latter of the two fisheries on Palmasola Bay is named Bishop's fishery, being managed by a man of that name. The fishermen, five in number, are all Americans.

One seine is used here; it is 60 fathoms long and 12 feet deep, with 1¼-inch mesh. Four men are required to handle it.

The only boat here is a flat-bottomed one. The conveniences for handling and curing the fish are very limited.

At this place are a couple of palmetto shanties, one of which is used as a kitchen, and the other as a sleeping apartment, in which also they clean and store the fish.

The fish put up here are barreled for home use only. The market prices are the same as at Sarasota.

FISHERY AT PALM KEY.

APPALACHICOLA FISHERY AT PALM KEY.—At the north end of Palm Key, or Anna Maria, is the Palm Key fishery, called also the Appalachicola fishery. In 1879 it was occupied by men from Appalachicola; hence the latter name. They had a shanty for storing and cleaning the fish, and a smaller one which they used as a kitchen. The men lived on board the vessel which accompanied them. In this gang were seven men; their boat and seine were much smaller than those in use at other fisheries near by.

MULLET-CURING AT PALM KEY.—Their method of curing was similar to that practiced at Appalachicola, but differs from the methods used in South Florida. As soon as cleaned, the fish having been split down the back, beheaded, and washed, they are dry-salted and packed in large pork or beef barrels, in which they are allowed to remain several days. They are then taken out and carefully packed in the white-pine barrels of Boston manufacture, furnished at Appalachicola by Mr. Murat. The brine, which has formed around the fish while in the pork barrels, is placed in a large kettle, boiled and strained until it is quite clear and pure, having been separated from the bloody and slimy matter which comes from the fish. As soon as cold, this clarified brine is poured into the box in which the fish are packed.

The Appalachicola fishermen are noted for their neatness and dispatch in handling salt-fish, and their crew at this place is no exception to the rule. In 1879 the mullet appeared to avoid the north end of Palm Key, where they usually collect in large numbers, and therefore the men had no chance to exhibit their skill and speed just referred to. In three months of that year they only put up 35 barrels of fish.

The amount of fish caught here is included in the statistics of the Appalachicola fisheries.

FISHERIES OF TAMPA BAY.

FISHERIES OF TAMPA BAY.—The shores of Tampa Bay differ but little from those of the bays lying to the south. The waters are deeper and broader, and therefore the shores more generally terminate in sandy beaches and little bluffs, where the waves and currents have acted with unusual force. There are some points where the features of the coast off Monroe County are reproduced, the shoals extending a considerable distance into the bay, the shores being cut up into small, low, mangrove islands, separated by shoal channels of water. The land is everywhere covered with a dense growth, in the dry places, of pines, oaks, palmettos, and other trees peculiar to the climate, and in the wet places, of mangroves, for the most part. About the lower part of the bay, and

touching the Gulf, are several quite large sand islands. These are flat and bear a growth of palmetto and pine trees and coarse grass. On the shore of Tampa are more people than on any other part yet mentioned. Tampa, at the head of the bay, is a thriving town, and the northeastern and southwestern ends are quite thickly settled. Only two individuals were found who caught more fish than were necessary for their own food. These were Mr. Deshong, who lives at the head of Tampa Bay, and Mr. C. S. Jones, living at Catfish Point.

MULLET-FISHING AT TAMPA BAY.—Mr. Deshong has been living on the bay for thirteen years, and has fished every season for mullet. He uses a small seine and gill-nets. In 1874 he salted 150 barrels of mullet. Fish were then very plentiful, and there was a good demand for them. In 1876 he put up 130 barrels; that year fish were not so abundant. In 1877 he packed 50 barrels; fish were scarce that year. In 1878 he also put up 50 barrels; during that year fish were a little more plentiful than in the previous year. In 1879 he only packed 28 barrels; fish were very scarce and the demand was limited. He put up his fish in cypress-wood barrels and half-barrels, and sold them to the inland settlers, either direct or through the Tampa storekeepers, at the rate of $7 a barrel.

Mr. Deshong estimates that 100 barrels of fish are annually salted about Tampa Bay. Mr. Jones's opinion is that this estimate is twice too large. In speaking of the increase or decrease in the abundance of fish in Tampa Bay, Mr. Deshong says that several species, daily under his notice, have been decreasing in numbers steadily for the last five or six years. The mullet comes under this head. He thinks that the amount of spawn wasted with the mullet that are caught influence this decrease, and that the fish are frightened off by those fishing for them. Like many other fishermen on this coast, he is confident that many kinds of fish have lately been less abundant. Under that head comes also the white perch (*Roccus americanus*).

In past years it has been the practice of Mr. Deshong every year to stop up the creeks and bayous with gill-nets and seines, thereby catching nearly every fish in them. He still tries the same expedient, but seldom succeeds in catching more than his family can eat at one meal. This sad truth is realized all over the bay.

SHARK AND PORPOISE FISHING AT TAMPA BAY.—Mr. Deshong has also been engaged in shark-fishing, and from him the following facts relative to that pursuit were learned:

The winter and spring months are the best, for then the sharks are very fat. The fishermen provide themselves with an able and stout yawl-boat, a lily-iron, lances, coils of line, and large kettles. They then start for some point where sharks are known to be abundant. The boat carries three men, two to row and one to stand in the bow and strike the fish. When a shark comes near the boat it is harpooned with the lily-iron, and the line is kept taut, lest it should be bitten off. When able to pull the fish alongside of the boat the men kill it with a lance. The sand or yellow sharks and the leopard-sharks are full of fight, and, when large, are difficult to manage. The other kinds give but little trouble.

Porpoises are often struck, and, although very powerful and tenacious of life, are easily handled and brought within reach of the lance. Mr. Deshong has caught 25 or 30, large and small, in a day, but 8 or 10 is an average day's catch. A medium-sized shark will yield 2 or 2½ gallons of oil from the liver and fat stomach coating; very large ones have been known to yield 10 gallons from the liver alone. Their bodies are not used, except to bait up others with. Mr. Deshong says that their flesh is watery, and, when allowed to dry, leaves but little bulk. Sharks kept for several days in alcohol shrivel up until nothing is left but the skin and frame. Five or six weeks in a season is about the limit of time during which this business is carried on. The average produce of oil for that period is about 300 gallons.

POUND FISHING AT TAMPA BAY.—Statements made by Mr. Jones on certain points connected with fish and fishing in Tampa Bay will now be given. He has the only pound owned on the Gulf coast. It is a small, crude affair, but does duty for cast-net and seine in providing Mr. Jones with all the fish he requires for his own consumption, and leaving some for sale. The pound is made from piles, boards, and small poles. The piles are driven as near as convenient to each other, the spaces being filled with boards, strips, or poles, this making a strong, solid wall. The "leader" is 100 yards long, running out over a sand-shoal in only 2 feet of water at ordinary tides. The "bowl" or "heart" is V-shaped, and is 20 yards across the arms and 30 yards long, and is set in water only a few inches deeper than the leader. The entrance to the heart is a foot wide, and in the outer corner of the heart is another partition and entrance leading into a small pocket where the fish are supposed to finally stop. When this pound was first set, fish would not approach it, but when the stakes had become covered under water with barnacles and oysters, the fish collected about it in considerable numbers. He states that all the common fish in the bay now enter his pound; and small red-snapper and small jew-fish have occasionally been found in the pocket. The largest catch made by him consisted of 300 mullet in one night; all of them were in the pocket. An average night's catch brings him a dozen or two fish of various kinds. Sheepshead, redfish, and salt-water trout seem to enter this pound more readily than any other fish.

Many old fishermen have stated that mullet would not enter such an arrangement, but will, when they strike the leader, turn away. It is thought that if Mr. Jones was in a position to experiment in deeper water the results would be very satisfactory. Mr. Jones does not attempt to barrel any fish, but sells them kench-salted to any who come for them. He sells annually from 2,000 to 3,000 fish, for each of which he receives about 3 cents. He also thinks, with Mr. Deshong, that many fish, and among them mullet, are yearly decreasing in numbers. He makes particular mention of the white perch, saying that they will not take the hook in Tampa Bay.

198. THE FISHERIES OF HERNANDO AND MARION COUNTIES.

TAMPA BAY TO CEDAR KEYS.—The coast between Tampa Bay and Cedar Keys is but thinly settled, there being no large towns, and is, on that account, not remarkable for its fishermen. Indeed, the native fishermen are so few and so unsuccessful in their attempts that we have confined our remarks on the fisheries of Hernando and Marion Counties to those fishermen who come there from other places for the purpose of fishing. It would be difficult from a passing glimpse to learn who they were, whence they came, or how many fish they had caught, inasmuch as gangs are constantly cruising along the coast engaged in fishing, here one week and there the next, just as the abundance of the fish may warrant. They have complete outfits for their work, sometimes living ashore in camps, but more frequently on board the vessel which brought them, which same is used in taking away their fish. The number of these gangs varies with the season. Appalachicola generally sends one or two vessels to this district; Cedar Keys one or two, with ice on board so that the fish may be preserved fresh, and Key West usually sends several with the object of salting the fish for the Cuban markets. It is here reported, as on the coast of Manitee County, that smacks from Havana under the Spanish flag sometimes fish for mullet about Anclote Keys and Boca Ceiga Bay. We could not find any such vessels or any person who is positive that the vessels in question were Spanish. The amount of fish caught and cured on this part of the coast by men from Appalachicola, Cedar Keys, and Key West, as well as the capital invested, &c., appears in the accounts for those places.

FISHING STATIONS OF BOCA CEIGA BAY.—On the coast at the south of Hernando County is

Boca Ceiga Bay, which, after leaving Tampa Bay, is the first point where fishing stations are found. The fishermen here come from Key West and sell their fish to dealers in the Havana trade. There are two stations, one at Turtle Crawl Point and the other at Pass à Goille. These are not permanently occupied; they are visited only during the mullet season in the fall. They are conducted in better style than those farther up the coast and the fish are much more neatly cured. The fall mullet at Boca Ceiga are unusually large and fine, and are far superior to those at Crystal River and vicinity or at Cedar Keys.

The statistics relative to the fishing at the two above-named places, Turtle Crawl Point and Pass à Goille, will be included with those for Key West.

CLEARWATER HARBOR.—Following the coast northward, the next indentation of any importance is Clearwater Harbor, which is a long, narrow sheet of water lying between a chain of islands and the mainland. The Gulf, outside of this harbor, becomes shallower than at Tampa Bay. Inside the harbor also the water is very shoal, the channel affording the only passage for large boats. The islands forming the sea barrier are the only ones in the harbor, and these are low and sandy, bearing a scrubby growth of palmetto and mangrove trees. The mainland is probably one of the highest points on the whole southern coast of Florida. It rises quite abruptly from the water's edge and is heavily wooded with pines, oaks, &c. The soil is good, and a great part of the land along the shore, which is quite thickly peopled, is under cultivation.

At the southern end of the harbor there is living a man named Kilgores, who is as much a professional fisherman as any on the coast. He has a house and farm, and, being located at a good point, is able to combine farming with fishing. In the mullet season he employs several men to assist him in working his seines, salting, &c., and they do much better work than is done at any of the fisheries immediately to the northward. Their nets and modes of fishing are the same as at Crystal River and vicinity, but the fish are handled more carefully during the process of curing, and are therefore far superior both to keep and eat. The fish are sold to the country people, either kench-salted, at 3 cents apiece, or are put up in barrels with brine and sold at $6 a barrel. In 1878 Mr. Kilgores put up 45 barrels of mullet. The salt used by him is procured from Tampa or Cedar Keys; he pays $2 or $2.50 a sack for it.

ANCLOTE KEYS.—The next fishing point is Anclote Keys. Behind the Keys is a favorite resort for Key West smack fishermen, spongers, turtle and "salt-fishermen," and every year one or two gangs of the last are stationed there. In 1879 there was a vessel from Appalachicola and one from Key West fishing for mullet there, but they came and went with so little ceremony that it would be difficult to learn much of their success. The Key West spongers have a series of sponge crawls, some eight or ten, at the North Anclote Bay, and the harbor is much used by smack fishermen in bad weather.

HOMOSASSA AND CHESSEHOWISKA RIVERS—On the Homosassa and the Chessehowiska Rivers no fishing, except with a few cast-nets (and that by non-professional fishermen), is done. At Bay Point a few fish are caught with cast-nets and an old seine, the total catch of both cast-nets and seine probably amounting to 25 or 30 barrels in a season. These fish are sold to farmers who come prepared to cure their own fish and sometimes also to catch them. The farmers also buy from fishing boats or vessels that chance to pass by.

CRYSTAL RIVER FISHERY.—Next in order comes the Crystal River fishery, situated on Crystal River Bay. Here two and sometimes three seines are used. The object of this fishery is to obtain a supply of fish for the country trade and for their own use, and the mode of carrying it on is similar to that at Chambers's Mill, next to be described. The fish are either carried up the

Crystal River to the inland settlers, or are exposed for sale at the fishing station, which is just at the mouth of the river. About 60 barrels of mullet are here salted annually.

CHAMBERS'S MILL FISHERY.—A few miles north of the mouth of the Crystal River, on the coast of Hernando County, is found the last fishing station before Cedar Keys is reached. This station is behind the Crystal River reef. There has been a saw-mill at this point, and the fishery is known as the Chambers's Mill fishery. It is used every season, sometimes by one party, sometimes by another.

There is in use at Chambers's Mill a seine 70 fathoms in length, handled by four or five men. Fishing is carried on there through October; seldom later, as by that time they have used up all their salt and money, or credit for provisions. The men composing the crew work for a share of the catch. The object of this fishery is the same as that of the fishery at Crystal Bay. The curing at Chambers's Mill is a second-rate operation. This place is not of much importance as a fishing station, but it is a good spot, and is annually visited. Cedar Keys men stop here for a few weeks as a rule. The average amount put up by the natives is about 25 barrels. These are sold at $5 a barrel cash, or $6 and $7 a barrel in trade.

TOPOGRAPHY OF THE REGION BETWEEN CLEARWATER HARBOR AND CEDAR KEYS.—Between Clearwater Harbor and Cedar Keys the land is low, in some places swampy, and everywhere heavily wooded. The sea between the above points is shoal, only 12 or 14 feet deep at as many miles from land. The sea bottom and several small islands near the coast are of coral limerock. This formation is also prominent about the rivers, entering the sea between Clearwater Harbor and Cedar Keys, for some distance inland. The coast and coast islands are covered with mangroves and sedge, but a few miles inland palmettoes, oaks, and pines take their places.

THE "BAG" CAST-NET.—Between Clearwater Harbor and Cedar Keys, as also from the Mississippi to Appalachicola Bay, the "bag" cast-net is used in preference to the "bail" cast-net described and already stated as being in use from Clearwater Harbor to Key West. Its preference is also apparent at and in the vicinity of Saint Mark's.

The "bag" cast-net is described as being a net, circular in shape, 12 or 14 feet in diameter, having leads strung on its edge at equal distances, and in the center a stout cord is attached. On the under or inner side of the net, just inside of the leads, is a series of tangling lines, which form pockets wherein the fish become fouled.

199. FISHERIES OF CEDAR KEYS.

SEINE FISHERY AT CEDAR KEYS.—Off the coast of Levy County, immediately north of Hernando County, and running parallel with the coast line, are the Cedar Keys. The fisheries carried on from these Keys are very extensive. There are two hundred and sixty professional fishermen employed throughout the greater portion of the year. The fishing, which is prosecuted in spring, summer, and winter, is called "bottom fishing," probably because nearly all the fish are taken below the surface. The methods employed differ altogether from those used in the mullet fishery. In the fisheries of the three seasons above named very little gill-netting is done. The quantity of fish caught by their use would not be sufficient to satisfy the dealers. The adoption of seines is therefore greatly urged. There are twenty-eight seines in use, averaging about 80 fathoms in length. They are about 12 feet long in the bag. The average stretch of mesh is about 2 inches. From four to six men are required to handle one seine, dependent, of course, on the size of the net and the nature of the bottom over which the net is to be dragged. These seines are used from December to May, inclusive. The fish caught are of such varieties as are usually seen in the mar-

kets. The daily catch of a seine is estimated at 233 fish, placing the annual catch at about 41,000 fish. No fish-pots or baskets are in use at this place. The webbing, out of which the seines are made, is of northern manufacture, but the lines, leads, &c., are prepared by the man who is to use the net. In the boat are four or more men, with the seine, the captain standing in the bow, watching for fish. One man is perched on the net, holding one end in his hand, and ready to jump over with it at a word from the captain. The boats have already been described.

The most common way of fishing is to set the net around holes or deep places which appear likely to contain fish. Such hauls are sometimes very productive. From the uncertainty attending this mode of fishing they are called "blind hauls." The winter fishing is almost entirely carried on in this manner, for the fish are then huddled together at the bottom, the surface water being too cold for them.

In spring schools of migratory fish appear, and at that time "blind hauls" are not made, for sufficient quantities can be caught from among the schools in clear water on the sand-flats. Gill-nets are not used extensively in the spring, but are universally employed in the fall months, when the mullet fishery is being prosecuted. As the weather becomes warmer and the demand for fish decreases, the nets and seines are laid by, one by one, until but one or two remain in use, fishing for the Cedar Keys local trade, or perhaps to supply a few neighboring towns.

Until the last six years seine fishing was considered impracticable in this vicinity, and then it was undertaken as a matter of necessity rather than of choice. There are but few places where the bottom is not more or less covered with "coon" oysters, sharp rocks, or a dense growth of weeds. The "coon" oysters are as sharp as razors, and so are the rocks in some spots. It would seem ridiculous to drag a seine over such a bottom and expect to find the net worth anything afterward. The grass and weeds are also great obstacles, for they raise the lead-line and thus give the fish a chance to escape; or, if the net is heavy enough to pull up the weeds, they would accumulate to such an extent as to render dragging an impossibility. In spite of all these difficulties seines are successfully used. Good judgment is necessary and heavy lead-lines are requisite.

GILL-NET FISHING FOR MULLET.—In the months of October, November, and December, when the roe-mullet are running, they are the only object of the fisheries, and all fishermen, excepting the oystermen, are engaged in their capture. The gill-nets, so extensively used in this fishery, were introduced by Northern men about six or eight years ago. They are of Boston or New York manufacture, and are made of light cotton twine, hard laid, six threads. There are sixty-five stationary gill-nets in use. Their average length is about 75 fathoms and depth 10 feet. The average stretch of mesh is 3 inches. They are in use for six months, from September to February, inclusive. Each boat takes charge of one net. The average daily catch of the gill-net is placed at 85 fish, and the same for the year at 17,000. Nets made of linen are considered inferior to those made of cotton, because the linen is said to rot much quicker. Many of the fishermen object to the manufacturer's plan of mounting the nets with double lines for the corks and leads, and therefore buy the material, but make the net to suit themselves. Each man, of course, has his peculiar ideas of the way in which the nets should be made, so there are always slight, but generally inconsiderable, differences in the nets of different men.

This kind of fishing is done only at flood-tide, which occurs as often in the night as in the day. At the first of the flood the boats start out; in each boat is a net and a man. The men fish in pairs, so that the schools may be the more readily surrounded, or a channel may be stopped up with greater ease and dispatch. This plan benefits both men. Sometimes there are three or four boats in company surrounding a school. In such cases, also, all are benefited, being jointly able

to catch more than they could if they were fishing separately. In some instances they miss their fish, and the loss is as general as the gain might have been. One man, Lewis, has six or seven helpers, and is very successful, catching more fish than any other united band of the same size. His men fish on shares, each receiving an equal amount at the end of each week. Another man, employing a number of helpers, is stationed at the mouth of a creek where mullet are very abundant. At high-tide, when the fish are likely to be inside, he runs a couple of gill-nets, amounting to nearly 200 fathoms, across the mouth of the creek. At low tide, when the flats are bare, excepting in the channels or holes, he drags all the imprisoned fish out with a small seine. These, together with what were gilled in the net, constitute nearly all the fish that were in the creek at the time of the setting of the nets.

The gill-nets being made of light twine are badly torn every day, especially those that are left standing a long time in the water. Large fish do much damage to the gill-nets, but crabs are the worst enemies. These climb up the nets, biting the twine as they go. A rent several feet in length is thus frequently made by them. On the shoals and reefs about the islands mullet are caught, whose movements are to an extent dependent upon the changes of the weather; at times they are most abundant offshore, at other times, most abundant inshore, and again plentiful everywhere. The boats being swift sailers, a large expanse of water may be searched in a day with the prospect of delivering the fish in a good condition at night.

DISPOSITION OF CATCH.—The fish are turned over to the dealer, who counts the mullet and weighs the "bottom fish," namely, all other marketable kinds of fish. Settlements are made every Saturday night. The fish are sold fresh, only those that remain over being salted. The demand for fresh fish is good, and the difference in the price does not pay for salting. The greater part of the salt fish which appear in the Cedar Keys market comes from more southern fisheries, the remainder being those which are salted lest they should spoil. They are packed in rough boxes and barrels and are seldom prepared with brine. Those that are shipped go to the poorer classes in the interior. For salted mullet the fishermen receive 2 or 3 cents apiece.

The fish not to be salted, after having been washed in icewater, are packed away with ice in barrels, tierces, and hogsheads. Mullet in their season are bought for so much each, small ones being counted as two for one, or three for two, as the size may be.

"Bottom fish" include the varieties known as spotted trout, sheepshead, red fish or channel bass, sailor's choice, grunts, flounders, crevallé, blackfish, and all other common food-fishes. These are bought and sold by the pound. Choice fish, such as pompano, Spanish mackerel, and bluefish, are also bought and sold by the pound, but for a somewhat higher price than the more common kinds.

The hogsheads in which the fish intended for shipment are packed will hold 500 or 600 mullet, or 700 or 800 pounds of "bottom" fish. A tierce will hold half as much as a hogshead, and a barrel half as much as a tierce. Wooden heads are put on all the packages. Shipments are made by express. Savannah is one of the principal markets; some shipments are made to all the largest towns of Georgia and Florida and to New York.

OYSTER BEDS.—Several years ago there were some very prolific oyster beds at Cedar Keys; these are considerably reduced in importance on account of their having been exposed to cold weather. About one hundred men are employed in this fishery, using fifty boats. The oysters are all sold to the fish dealers at Cedar Keys, who ship them in shell to the interior in barrels. The tongs are the only implements peculiar to the business, but need no description, being similar to those used at other places. A few pairs of cheap tongs of inferior material have been tried and

condemned. The oystermen prefer to pay a high price and obtain the best article. These are steel-toothed and cost $9 a pair.

MARKET PRICES.—The Cedar Keys market prices are: For large roe mullet, fresh, 2 cents each; salt mullet, each, 2½ cents; choice fish, 3 cents a pound; bottom fish, 2 cents a pound; turtles (elsewhere discussed) not exceeding 40 pounds, 4 cents a pound; and oysters, 50 cents a barrel. The above are the prices paid to the fishermen. The dealers' prices are now given: Large roe mullet, fresh, 4 cents apiece; salt mullet, 3 and 3½ cents apiece; choice fish, 5 and 6 cents a pound; "bottom fish," 4 cents a pound; turtles, 8, 10, 12, and 15 cents a pound; and oysters, $1 a barrel. The prices for fish four or five years ago were about one-fourth more than at present.

200. THE FISHERIES OF LA FAYETTE, TAYLOR, AND JEFFERSON COUNTIES.

MULLET-FISHING.—Along the coast of Florida between Cedar Keys and Saint Mark's there are no good harbors or large settlements; the land being low and swampy, is hardly habitable. There are a few places where fishing is carried on by men coming from the interior. No attempt is made to catch any other fish than the mullet, which, in its best season, is as plentiful here as at other places along the coast.

The men who carry on this fishery, owning the boats, nets, salt, and provisions, are the most thrifty class of planters, living inland along the rivers. They fish through October, November, and perhaps a part of December. Their object is mainly to get a good supply of fish for their own use and a few over for sale. The crews are of the poorer classes, generally white, who are quite ready to work a couple of months to secure a small supply of salt fish for their families.

The points near the river mouths, which are known to be in or near the path chosen by the spawning mullet, are the places where the fishermen pitch their camps.

Such are the fisheries of Suwannee River, Blue Creek, Finhalloway River, Enconfina River, and Ocilla River, at which last-named place are two fishing camps.

Those who use gill-nets have a certain spot for camping grounds, but fish anywhere within several miles of their camps.

For seine-fishing suitable points are selected, called "seine-yards"; at these alone do the seine-fishermen fish. These seine-yards are more fully described in the section upon the fisheries of Ocklockonee Bay. The apparatus, consisting of boats and nets, is in every way similar to that in use at Saint Mark's and vicinity, with the exception that the seines used at the fisheries, now being discussed, are smaller and made of lighter twine than those in use at Saint Mark's. The lack of means is the only reason for this difference. The methods of catching and curing the fish are also the same as at Saint Mark's.

PRODUCTS OF THE FISHERY.—The majority of the fish are subjected to the operation of kench-salting alone. Some few are packed with brine in cypress-wood barrels, the object of this being the preservation of the fish for a long time. The fish salted are roughly handled and unskillfully treated. Their appearance is other than clean and wholesome.

At one time there was quite an extensive trade in these fish; but the low price for which fresh fish can always be obtained, coupled with the slovenly manner in which the fish were sent from these points to market, has had the effect of cutting it down, so that now but few are sold.

In 1875 the catch was double that of 1878, fully one-half being sold for cash or exchanged for groceries. Since 1875 the amounts have been annually smaller. When "salted" fish are sold they bring 3 cents apiece.

The following is a fairly correct estimate of the amount of mullet caught and cured at the above named places in 1878. Probably three-fourths of the sum total were eaten by the fishermen and their families, not more than one-fourth being sold:

Place.	Barrels.
Suwannee River	35
Blue Creek	55
Finhalloway River	28
Enconfina River	56
Ocilla River	42
Ocilla Slue	21
Total	237

According to the above proportion, this would give about 59 barrels as the number sold, and the remainder, 178 barrels, as the amount consumed by the fishermen.

201. THE FISHERIES OF WAKULLA COUNTY.

SAINT MARK'S RIVER.—The principal fisheries of this county are carried on at the mouth of the Saint Mark's River. Ten miles above this point is the town of Saint Mark's, situated at the junction of two streams, which rise but a few miles above the town. These are fresh water streams, deep, pure, and clear. The average temperature of the water in the summer is about 70° Fahr. Many salt water varieties of fish have been observed at Saint Mark's, such as the sheepshead, sailor's choice, mullet, and silver gars. There are no white shad in either of these rivers.

All the fishing which is prosecuted by the fishermen of Saint Mark's is carried on at the mouth of the river which is formed by the combined streams above mentioned, and to which the name of Saint Mark's River is still preserved. At this point, *i. e.*, the mouth, the water is always salt. The shores are low and weedy here, as they also are throughout the coast-line of the entire bight, called Appalachee Bay. The water is shoal for several miles out into the bay, only 3 fathoms being found at a distance of 4 or 5 miles out directly opposite the mouth of the river. On either side the water is only half that depth, and continues so for a long way farther out. On these shoals all the fishing is done with either gill-nets or hook and line for sheepshead and sea-bass, or, as the people there call them, "blackfish."

On the west side of the mouth of Saint Mark's river are many shoal bays. Journeying westward, they are met with in the following order: Goose Creek, Purity Creek, Spring Creek, Skipper Creek, Oyster Bay, Dickinson's Bay, and Ocklockonee Bay. These are all bays of considerable size, and are, without an exception, very shoal, and therefore very difficult of navigation, except with a flat-bottomed boat. The water in these bays is quite fresh at low tide and brackish at high tide, and has a rise and fall of about three feet.

METHODS EMPLOYED AT THE SAINT MARK'S FISHERY.—The number of professional fishermen at Saint Mark's is twenty; nearly every one of them is American born, white or colored. The most profitable season at this place for fishing is the summer, for then the coast is teeming with all kinds of salt-water fishes. Immense schools of bluefish, Spanish mackerel, jackfish or jurel, and cavalli are then passing by. The fishing is carried on as long as practicable, until about the beginning of June.

During the warmer months in which fishing is done the well-boats are used with very great success. Many of the twenty boats at Saint Mark's are provided with these wells. All the boats are flat, sharp skiff-boats, from 18 to 20 feet in length and 6 in width. They are of the same model

as those built at Ocklockonee Bay, and are roughly made of pine or cypress boards. The well is simply constructed: a portion of the boat, about 4 feet of its length, 2 feet forward and 2 feet aft of midships, is tightly partitioned off from the rest of the boat from side to side. If the boat has a center-case the well is built around it, holes an inch in diameter being bored through the case as well as through the bottom in order to allow a free circulation of water. When the well is not being used boards are laid over it.

The gill-net season is divided into three parts: The mullet fishing, from September to some time in December: the bottom-fish season, thence till some time in March; and the summer season, comprising the months of April, May, June, and parts of September. There are twenty gill-nets in use, all of which are stationary; their length averages 125 yards. The average depth is 8 feet and stretch of mesh 3½ inches, or 1¾ inches from knot to knot. As above stated, they are used throughout the entire fishing season, which means, whenever fish can be profitably caught and shipped without spoiling. The principal kinds of fish usually taken in the gill-nets are mullet, sheepshead, trout, redfish, and bluefish. The average catch for each boat is estimated at 100 pounds, or 15,000 pounds per annum. No seines are owned or used at Saint Mark's.

MULLET FISHING AT SAINT MARK'S.—When the mullet are beginning to appear in schools on the coast in September, all arrangements are made by the fishermen for their capture. The outfit is simple and but little time for preparation is necessary. One man, usually the owner, goes in a boat and handles one piece of a gill-net. Fishing is done only at high tide, and the fishermen take advantage of that flow of the tide which takes place ten or twelve hours before the train comes. All start to the fishing grounds together; upon arrival they pair off. When a school is sighted in shoal water, two fishermen row so as to inclose the fish between their boats. They then row their nets out in opposite directions so that when both nets are out there is a man at each of the two points where the nets come together. The catch is equally divided. The fish are taken to town in wells or in the bottom of the boat without any other attention being paid to them than that they are covered with canvas.

In warm weather, if fishing in the daytime, the fish sometimes spoil, and in such weather it is safer to split and salt them on the fishing grounds. For that purpose knives and salt are carried. A colored man, named Thomas Ellisen, contracts for all the fish caught and agrees to receive and pay for all the fishermen bring, in whatever condition they may be, provided only that they are delivered to him at the appointed time, and, also, that the fishermen must not go out fishing sooner than twelve or fifteen hours before the train is expected. While fishing for mullet, trout and redfish are often taken; these are sold with the mullet.

WINTER FISHING.—In the winter months, such fish as redfish, trout, sheepshead, and bluefish—in fact, any fish except mullet—are here, as at other points, called bottom-fish, because they keep more closely to the bottom during those months. They are taken on the same grounds as the mullet, but the plan of fishing is somewhat different. The gill-nets are set either across a channel or around a deep hole and the fish are frightened into it by splashing the water with poles. Good catches are often made in this manner, especially of redfish and trout. In winter it is better to carry the fish dead than attempt to keep them in a well. These fish are sold at Saint Mark's to Mr. Thomas, a dealer, who ships them on ice.

OYSTER BEDS.—At Saint Mark's there are many worthless oyster reefs, and only one or two whose oysters are marketable. These profitable beds are situated about 5 miles west of Saint Mark's light-house, near Shell Point. The beds are small and the oysters of ordinary size. In this fishery there are but four men at present employed. They own two boats. The oysters are sold to saloon keepers in Tallahassee and in many of the towns of Georgia. The oyster boats are the

same as those used in gill-net fishing, except that they are a little larger and are provided with a sail. The tongs are the only peculiar piece of apparatus used by the oystermen. Two pairs in use at this place in 1879 were wooden imitations of the iron ones usually seen in the market. The handles were, of course, made of wood and were perfectly straight. On the larger and heavier end of these was bolted, at right angles, a piece of oak or other hard wood, about 2 feet long and 2 inches in width and thickness. These pieces formed the back, or jaw, and through them iron spikes were obliquely driven to form teeth. Between October 1, 1878, and April 1, 1879, 1,000 bushels of oysters, valued at 50 cents a bushel, were shipped from this place.

DISPOSITION OF PRODUCTS.—Nearly all the fish shipped from Saint Mark's in a fresh condition are put on ice. The dealers at Savannah agree to pay so much per pound for the fish and furnish ice in which to pack them before shipment. This ice is shipped by rail in hogsheads and tierces, holding from 300 to 500 pounds each. The ice is shipped three times a week, that being as often as the train runs between Saint Mark's and Tallahassee. When the train arrives at Saint Mark's it finds the fishermen and oystermen assembled with their products, which need only to be iced in order to be ready for shipment. The fresh fish from boats either with or without wells are weighed or counted and are then packed in old flour barrels with several layers of broken ice between and a quantity of ice on the top. The packages are finally covered with a gunny-bag which is nailed down securely. If, as is often the case, the ice does not arrive, the fish are split and salted on the spot, reserving a few, if the weather is cool, to be sent to Tallahassee without ice. All responsibility on the part of the fishermen ceases as soon as the fish are on board the train.

At any time when there is likely to be a call for salted fish, men are hired and the process of splitting and salting is quickly performed. In this shape they are allowed to remain until sold, when they are counted, packed in boxes 2 or 3 feet square, and shipped off. These fish, being the largest ones and carefully salted, present a very inviting appearance. The shed in which the fish are packed is the property of the railroad company and is used by the fishermen free of charge. There is but little expense attending this branch of the fish trade and it is estimated that $200 a year will cover the expense of salt, and of hiring men to do the splitting and salting.

The principal markets for the fish caught at Saint Mark's are Tallahassee, Ancilla, and Monticello, Fla., and Savannah, Ga. The greater portion of the fish goes to Savannah.

The prices obtained by the fishermen for their fish during the last three years were: For fresh fish, 3 to 4 cents a pound; and for salt fish, 5 cents a pound. Before that time the prices were as follows: Fresh fish, 2 to 2½ cents a pound; and salt fish, 3 cents a pound. The skipper aims to clear 2 cents a pound on all fish, fresh or salt. Mullet are never weighed but are counted, each fish being considered as 1 pound. In this way the purchaser in buying a large quantity gains an immense advantage. Sometimes many of the mullet thus sold in a lot weigh 4 pounds each. All other kinds are weighed and sold by the pound. The present price of oysters to the oystermen is 50 cents a barrel. The shippers receive 75 cents a barrel.

In the deep shoal bays enumerated above as lying to the west of the mouth of Saint Mark's River, the mullet fishery is the only one worthy of special consideration.

THE FISHERIES OF OCKLOCKONEE BAY.—Ocklockonee Bay is everywhere cut up with large reefs of "coon" oysters which are worthless and are an obstruction to navigation. The other bays are avoided on account of the mud flats. Fish of all kinds seem to be abundant and the section generally is believed to be a splendid one for all fish which go into fresh water to spawn, such as redfish, menhaden, cavalli, and trout. At those points where small fresh water streams enter into the bays the bottom is covered with weeds and grass and occasionally a coarse sponge may be seen. There are not a great many people living on the shores of these bays, but they are found up

the rivers and creeks where the land is rich enough to allow them to carry on a small plantation successfully. Even those whose living depends entirely on fish and sponges prefer to spend their leisure time on the banks of these little creeks and rivers.

In Ocklockonee Bay there are quite a number of men who are engaged in the sponge fishery, and also several small schooners which are in the trade and belong to parties in the neighborhood. These vessels are registered at Appalachicola or Saint Mark's and their whole business is done at those places. The men employed on these or Appalachicola vessels are numbered in the report of Saint Mark's or of Appalachicola. Those of the sponge fishermen who are engaged in the mullet fishery in its season, are the only professional fishermen who are engaged in the mullet fishery for less than its entire season; all others who fish for mullet are the farmers. These farmers are the genuine Florida "crackers" and, with but few exceptions, are a wretched lot of men. They are lazy, ignorant, and unhealthy, not having proper food, or taking proper care of their persons. In the fishing season there are about one hundred and twenty persons engaged at the various stations on these bays.

The mullet season begins in October and ends in December. During October and November gill-nets are used, and in December both gill-nets and seines. It is only at certain points that mullet are easily obtained by the use of seines. By continued experiments these spots have been decided upon. No one is allowed to fish on the ground usually occupied by another without his permission. The owner of a good fishing station either fishes there himself or rents it out to some one who will give him a share of the catch. Not more than one seine is used at one station, but the seiners often allow one or two crews with gill-nets to fish from their station for the sum of $5 per season for each net. It frequently happens that a station may not be suitable for seining but excellent for gill-netting. At Dickinson Bay there are four gill-net stations; at Ocklockonee Bay there is one seining station, which is also used by gill-netters; at Skipper Creek are two seining stations; at Spring Creek are three gill-net stations; at Purify Creek, two gill-net stations; at Shell Point, one fine seining station; and at Goose Creek are two seining stations and one gill-net station.

FISHERMEN OF OCKLOCKONEE BAY.—The fishermen live in a small, roughly made shed, occasionally provided with a chimney and fire-place, with no other floor than the dirty sand on which it is built; no table at which to eat; no bunks or other arrangements for sleeping; no dishes or any accommodations which give the slightest suggestion of comfort. These dwellings are merely a shell, in which there is a confusion of barrels of salt, barrels of fish, fishing gear, and a lot of uninviting-looking men. The fleas can be both seen and felt. The food of the men is of the poorest quality and not as abundant as they desire. They sometimes take a few raw sweet potatoes out in the boat with them as a luncheon. Such food is calculated to make them thin and unhealthy.

GILL-NET FISHING AT OCKLOCKONEE BAY.—Those fishing with gill-nets, as before stated, go to the fishing grounds first, because they can fish profitably when the seiners cannot; and they, therefore, make a much longer season than the seiners. Two men constitute a crew for a boat; each boat carries one net. At the commencement of the season the mullet are found only in small schools, feeding on the grassy shoals. All the fishing is then done at high tide, be it in the night or day. The usual method is to hem in a school so that they run against the net, and gill themselves. This is somewhat strange, for when interrupted by a seine or even a single line, they invariably jump out of the water over the obstacle. From one hundred to three hundred fish are called a good catch for one net at a tide. Sometimes, when two crews are fishing together, both nets are run around the same school of fish, each crew taking only those fish which are found in its own net.

Speaking generally, the catch is divided into thirds, one of which the owner of the boat and net draws, each of the crew taking one of the remaining two-thirds.

SEINE FISHING AT OCKLOCKONEE BAY.—The seining crews arrive at their station in October, and are then provided by the owner of the station or his representative with fishing gear, salt, and food. The whole crew, consisting of ten or twelve men, is then generally hired by the month. Only one seine is used at a station, and that is permanently arranged so as to be hauled only in front of the station. This hauling place, before alluded to in this chapter, is called a "seine-yard." In fine weather, when the fish may be expected in shoal water along their shore, the seine is kept all ready half-set in the yard. The net is set straight out from the shore until the bag is reached, and then the boat containing the other half is fastened to a buoy, which is moored there for the purpose. When a school of mullet approaches and finally comes within the radius of the seine, the seine-boat is quickly unmoored and rowed to the shore. If the haul is a success, the next operation is that of hauling the net and fish ashore. These hauls are never so large as at many other places on the coast, and from 25 to 75 barrels are considered a large catch. Many other kinds of fish are of course taken with the mullet. The valuable ones are saved for food, and such fish as sharks and alligator-gars, and porpoises are killed, and either buried or utilized for their oil, which, as manufactured at these stations, is a very inferior article.

DESCRIPTION OF APPARATUS.—A short description of the boats and nets will not be out of place. The seines are made in Boston or New York and shipped here by freight via Savannah. They are all of strong cotton twine, and are coated with tar, which is obtained from the native pines. The style of knot used, manner of mounting, and forms of floats and leads are the same as those in use on the Atlantic coast. The nets are from 100 to 120 fathoms long, and from 16 to 20 feet deep at the bag. The wings at their extremities are, of course, much shorter. One of these nets, well taken care of, will last for three or four seasons, and costs, when new, about $1.20 a fathom.

The gill-nets are also made in the North. They are of light cotton twine, generally of 12 threads, 50 fathoms long, and 8 or 10 feet deep. They have a mesh of 3 inches in length, or 1½ inches from knot to knot. They cost about 50 cents a fathom. When not in use the gill-nets are either spread out on the grass or are rolled up on large reels, which are built at the water's edge for the purpose. These reels are easily made and are the most convenient and effective arrangement that can be had for drying nets.

The boats used by both gill-netters and seiners are long, sharp, and flat-bottomed. They average 20 feet in length and about 6 in width. They are roughly built of pine or cypress boards, and are not calculated to last more than one or two seasons. They are not calked or painted, a coating of pitch taking the place of both. They cost, when new, $10 or $12.

When the mullet are running it is necessary to have a lookout stationed at a point whence the fish can be seen for a great distance. For this purpose a kind of observatory is built on the highest land near the shore and station. This building is 20 or 25 feet high and commands an excellent view of the shores for half a mile either way.

DISPOSITION OF THE CATCH.—The disposition of the fish when caught will now be treated of. The object of most of these fishermen is to provide themselves with food for the winter, and to obtain some ready money by selling what they can spare to the Georgian and interior Floridian planters, who come as regularly to the coast every year as the mullet do. When the gill-netters begin fishing none of the planters have arrived, and all fish caught in October are dry-salted and carelessly packed in old boxes or barrels for home consumption, or are held until the customers arrive. The roes in these fish are undeveloped, and are, therefore, not often saved. Soon after

this primary stage of the season the farmers begin to arrive at the fishing stations with their teams and sometimes their families. Some of them bring 25 or 50 sacks of salt to exchange for fish, or to use in preparing fresh fish themselves. Others bring country produce, and a few bring nothing but money. They all have their favorite trading stations, at the most popular of which it is said not to be uncommon to see 100 or 120 teams drawn up at a time. When a haul is made with the seine, or when a gill net crew comes in, all these people flock down to the shore and buy the fish at so much apiece, or make some arrangement for a certain number salted.

During the season there are often weeks when the mullet do not come into shoal water, and not unfrequently two weeks pass at the height of the season without any great amount of mullet being taken. Then, again, with a change of weather, they come within reach in such numbers that there is not a sufficient force of men to handle them before they have all passed, and the fishing for that season may be said to be over. It is said by several of the leading men that the supply falls short of the demand.

The fish are dressed here as at Appalachicola and Saint Andrews, hereafter to be described. None are brine-salted or shipped in tight packages. The cured fish which were examined at these places—provided that they were fair samples, and there was no reason to suppose that they were not—were far inferior to those cured at Appalachicola, where they presented a clean appearance and looked as though they were intended for food.

All the salt used here in the curing of the fish comes from Georgia by teams, or from Tallahassee. It costs the fishermen $2.50 or $2.75 a barrel, delivered at their stations. It is a fine quality of Liverpool salt. There have never been any salt works at these bays.

The catch of a seine will average 150 barrels per season at these points, and of a gill-net 20 barrels a season. It is estimated that the fish will average in value $5 a barrel. Out of the proceeds must be paid the cost of the salt, and the wages of the men and their food, for idle days as well as busy ones. Twelve to fifteen dollars a month are the usual wages paid to seiners. The results of different years vary but little.

The fish are sold mostly by the individual, or by the lot, when fresh. For fresh mullet in the "round," as it is called, 2 cents each are paid; for "dry-salted"—those which have lain several days beneath a sprinkling of salt—from 2 to 4 cents, according to size, are paid.

202. THE FISHERIES OF APPALACHICOLA.

COMPARATIVE SCARCITY OF FISH IN APPALACHICOLA BAY.—Although situated off that part of the Gulf coast which is being constantly passed by migratory fishes, and is so largely frequented by more southern species of fish, Appalachicola Bay and the adjoining waters of Saint Vincent's and Saint George's Sounds are without any abundance of the former or extensive variety of the latter. This is probably due to the freshness and muddiness of the water, for which two reasons are offered in explanation: First, the Appalachicola River, a river of considerable size formed by the junction of the Chattahoochee and the Flint Rivers, is constantly discharging its waters, fresh and muddy, into Appalachicola Bay at a point 8 miles distant from the sea; and, second, the water which flows westward through Saint George's Sound bears with it the emptyings of all the rivers in the bight extending from Saint Mark's to Cedar Keys. The freshness and thickness of the water in Appalachicola Bay can hardly be attributable to any other causes. In this bay, although it is but a poor summer resort for most of the sea fishes, some species—the greater part of which are anadromous—thrive, and at certain seasons are very abundant.

MULLET FISHERY OF APPALACHICOLA.—At Appalachicola there are one hundred and sev-

enty-five professional fishermen. There are thirteen fitters and owners, and three dealers, who, for the most part, provide the fishermen with salt for the curing of their fish.

The mullet fishery of Appalachicola claims the greater part of our attention in dwelling on the fisheries of Franklin County. In this trade no large boats or vessels are used, and only one style of small boats, and by the aid of these the seines and gill-nets are carried and set. These boats are of about the same model as the "dingy" boat used in sponge fishing, but are much larger, being often 20 or 22 feet long, with 6 or 7 feet beam. The forward part is decked over, and wash-boards on either side are run aft to the stern. This decking has, like that of many small open yachts, a high combing on its edges around the cockpit. These boats are propelled with oars and sail. The sail is of the lateen pattern, being a triangular sail arranged with a long yard and a very short and stubby mast. Rigged in this manner the boats are very fast sailers and are easily managed.

Of such boats there are ten engaged at Appalachicola in the salt-fish trade, where also they were built and are owned. The material used in their construction is much the same as that of which the "dingies" are made. When examined closely, they look rough and plainly show poor workmanship. The same may be said of all the boats and vessels made in this neighborhood. When complete, these boats are worth $100 each.

There are twelve or fifteen seines at Appalachicola, but some of them are old and unfit for use. Ten only, one for each boat, are used in the fisheries. The men who own the nets also own the boats. The seines range from 75 to 150 fathoms in length, and from 10 to 16 feet deep, with a mesh of 2, 2¼, or 2½ inches long. These nets are brought from Boston, unmounted as a rule, as the fishermen prefer to hang their lead-lines according to their fancy. When complete, the net entire costs at a rate of $1.25 a fathom. It is estimated that there are 1,000 fathoms of seine in use by Appalachicola fishermen.

Gill-nets are but little used here; not more than three are hauled by men who make a business of putting up salt fish. All the gill-nets are stationary, and are about 100 fathoms long and 6 to 10 feet deep, with a 3-inch mesh. These, also, are of Boston manufacture, and cost, when ready for use, 50 cents a fathom. One hundred fathoms are in use.

Some of the crews of fishermen are stationed at regular fisheries, while others move from place to place in the bay, putting up the fish, sometimes in camp and sometimes on the wharves in town.

There are two fisheries, occupied every year, which deserve special attention: one, owned by a man named Pickett, is at the mouth of Crooked River, on Saint George's Sound. This is the best fishing station in the vicinity, for when the fall run of mullet comes into the bay it will surely pass that point. The other is at Cat Point, a few miles east of Appalachicola; this, although a fine station some seasons, is not so reliable as Pickett's.

In September and the first part of October, the boats, seines, and other gear are overhauled and supplies of salt and barrels are procured. Then all the crews go to their camps at their respective stations in order that all shall be in readiness when the mullet come.

At the fisheries, or regular stations, eight or ten men are engaged, and at each of the others roving gangs of four or five constitute a crew.

In the latter part of October and in November the mullet are running and the fishermen are then busy. Sometimes two or three weeks are passed in waiting for the fish to come along, but if the station is a good one the fishermen do not go away nor lose confidence in the advent of the fish sooner or later. When they arrive they sometimes come in such numbers that one or two hauls constitute the catch for that season. From 20 to 150 barrels are caught at one haul of the seine, and with larger seines twice or three times that amount could be taken, for the fish often come in

schools 1 to 3 miles long and 400 to 500 yards wide. As soon as one of these large hauls is made all hands are busy cleaning and salting. The fish are first beheaded, then split down the back, scored under the backbone, and, finally, washed clean, all blood, fragments of entrails, &c., being carefully removed. They are then packed in pork barrels, kept for the purpose, with plenty of salt sprinkled over them, and are thus allowed to remain several days, after which they are taken out and nicely packed in the packages, described below, with an abundance of boiled pickle over them.

Any roe of good size found when splitting is carefully saved and packed up in pickle in quarter barrels or kits. In this way a great many barrels are put up in a season. The heads of the mullet are also saved and boiled for the oil which they contain. In 1878 two barrels of oil were obtained in this way at Pickett's fishery. It is, however, said to be of poor quality, and therefore is not valuable.

At the end of November, by which time the fall run is over, the crews carry their fish to town, and, having sold and settled up, scatter until the next season. It is seldom that any other fish are so abundant that they would sufficiently remunerate these crews were they to remain at the fisheries after the mullet season is over.

From 200 to 500 barrels of mullet are caught by one gang in a season. In 1878 the catch amounted to 300 barrels. The value of this quantity was $1,275, selling at the rate of $4.25 a barrel. As soon as the catch is turned over to the dealer a settlement is made. First of all he deducts the amount of his bill for salt and provisions, and then gives each man his share in money, or, as is usually the case, in provisions for his family. The boat and seine have an equal share with the men; therefore, if there are ten men in a crew, there must be a division of that which is left, after said deductions are made, into twelve equal parts. The men engaged in these fisheries clear from $50 to $100 in a season. Those crews which have no regular station get what they can out of the mullet run and then fish through the months of December and January for bluefish, sheepshead, redfish, &c., which they put up in the same style as mullet. In April and May one or two crews fit out for the pompano fishing, and go to Saint Joseph's Bay (a large bay 25 miles farther west) for that purpose. The pompano are salted, as are the other varieties. There is always good sale for the pompano, and the supply falls short of the demand.

FISHING SEASON.—The last of May is the extreme limit for salting fish. It is affirmed that fish cannot be prepared with salt in summer so as to remain sweet any great length of time.

In order that no mistake may be made, we here state that the same crews are not fishing throughout the entire fishing season, from October until May. Those who fish at the regular stations are through their work by the 1st of December, after which, as stated above, the men scatter and work at various occupations until the following October. The small cruising gangs, already alluded to, fish for mullet only as long as there is any chance of success, and then break up, only, perhaps, to form another crew in a few weeks, when they start after some other kind of fish that may be running at that time or may be unusually abundant in the vicinity. February and March are the poorest months for the fishermen, and very few who fish then have any success. The only kinds then found are small schools of redfish, bluefish, and sheepshead. The fishermen, of course, prefer a mild season, as then, especially if there is a prevalence of light southerly winds, all kinds of fish come into shoal water in abundance, and also the migratory kinds appear some weeks earlier in the spring. If, on the other hand, the season is stormy, the fish are, for the most part, driven into the deep waters of the sea and bay.

GILL-NETS.—The gill-nets are used by men who stop in town. They use the same kind of boat as the seiners. Two men can handle one of these gill-nets and cure all the fish which they can catch. But little can be caught in them until the water becomes cold (which condition may

be said to last from December until March), when the fish retire to the deep water or among the thick grass. The method of using a gill-net is to set it around a hole or grassy place and then, by splashing with a pole, frighten the fish into the inclosure. The catch thus effected is never large. There are only three equal divisions, however, to be made of the catch, namely, one to the owner of the boat and net and one to each of the two men; consequently, the men often make more money in this way than in seining, in which latter business so many shares must be taken out of the proceeds of the catch.

DISPOSITION OF THE CATCH.—The packages used for "putting up" the fish are of white pine, either barrels, half barrels, quarter barrels, or kits; these come by freight from Boston. Formerly cypress packages were used, but were discarded because they were not so neat or cheap as those of pine. With the freight included, these barrels, half barrels, quarter barrels, and kits cost, respectively, $1.00, 65 cents, 45 cents, and 30 cents.

In the fishing outfit salt is a very important item. To salt one barrel of fish properly, about one-third of a sack, or one bushel, is needed. This salt is bought chiefly of Mr. Murat, the principal dealer in salted fish, at the rate of $1.50 a sack. Other provision dealers supply salt to the fishermen who do business with them. When a person is fitting to go on a fishing expedition he first makes a verbal contract with his dealer to take all his fish. The dealer furnishes the packages and promises to pay so much for the fish, generally from $4 to $4.50. The fisherman buys the salt. Mr. Murat controls the bulk of the trade by furnishing in advance salt, barrels, and provisions. The fish are shipped by river to nearly all the towns and cities of Georgia and Alabama, in which States his traveling agent procures orders throughout the fishing season.

Mullet, bluefish, sheepshead, and pompano are certainly very attractive looking fish when properly prepared in pickle. They are said to be superior in flavor to the mackerel which have been in the southern markets during the past few years. Mr. Murat warranted his fish to remain sweet for a year. This business of salting has grown immensely during the last five years, having been taken up by a most enterprising set of people. It promises to become a business of much greater importance. Mr. Murat says that for the past five years the number of barrels of salt fish shipped from Appalachicola has averaged about 1,000 barrels a year, thus, at $5 a barrel he has shipped off $25,000 worth of fish in that space of time. He now receives $7 a barrel, the fish delivered on board of the boat.

As the majority of the inhabitants of Appalachicola are fishermen, to some extent, it is not to be expected that there is a very large trade in fresh fish. Those who are not occupied at all on the water find leisure to fish sufficiently to supply themselves with fish for their own consumption, when fish are very abundant. A few fish are offered for sale on the wharf every morning: sheepshead, trout, mullet, redfish, small "grass-fish," and frequently fresh-water fish from the rivers above, such as black bass, perch, bream, &c. The salt-water fish are caught during the night in cast-nets and the fresh-water fish with hook and line the day before. The sale does not exceed a barrel a day, and they sell for very little.

During the fishing season (fall and winter) one or two of those crews which are engaged in salting fish secure several hundred pounds of ice from Columbus or Chattahoochee; this ice they use to preserve such mullet, sheepshead, &c., as they intend to ship back on the boat which brings the ice. The fish thus shipped are packed in flour barrels with broken ice, and a sack is then nailed over the top. Twelve or 15 barrels are often sent to Eufala, Ala., and Bainbridge and Columbus, Ga. If the means of transportation were surer or more regular, a much larger trade of this kind would be carried on.

The fishermen receive $5 or $5.50 a barrel for all good food-fishes delivered on the steamboat, packed carefully. They clear about $3 on a barrel. Last winter, in this trade 450 barrels, worth $1,350, were packed and shipped.

THE OYSTER INDUSTRY.—This neighborhood has been highly favored with a large number of beds furnishing oysters of large size and fine flavor, which are easily procured and distributed by means of river steamers from Appalachicola, through a wide area inland. Besides a number of large reefs in Saint George and Saint Vincent Sounds and Appalachicola Bay, there are scattered all through the deeper waters a great many small beds. The depth of water here averages 7 feet, and it is brackish and full of sediment. The oysters from these beds are of superior flavor; there are few better in any part of the Gulf.

The reefs, or beds, are only an hour's sail from town; therefore the outfits or preparations for a trip need not be very great. When the tide is high the boat anchors over a bed, on which there are from 5 to 10 feet of water, and both men use tongs to bring up the oysters with. As each tongfull comes up, the worthless ones are culled out and the good ones are thrown into the hold. The tongs in use here are made of iron, some galvanized and some not, in the same shape as those used on the Chesapeake. With these tongs, on a spot where the oysters are abundant, and need but little culling, two men can put 50 barrels of good oysters into the hold in one day.

If the tide is very low, as is the case during "northers," the boat is run aground on an oyster-reef, a gangway plank is placed over the side, and the oysters are picked up by hand and carried aboard in tubs. Oystering in this manner is said to be harder and slower work than tonging them. When the boat is loaded she goes to town, and, if there be a steamboat there, the oysters are turned over to the dealer on board of her; if not, they are not delivered until one does come. The oysters sell for 50, 60, and 75 cents per barrel, all ready for shipment, that is, in barrels and covered with gunny sack at the top; but the oystermen seldom get barrels or sacks, which have to be furnished by the dealer, at the rate of 10 cents for sacks and 20 cents for barrels, leaving the oysterman but 20, 30, or 45 cents per barrel for the oysters. It sometimes happens that barrels cannot be bought for any price at Appalachicola, and immense quantities of oysters must either be thrown away or lie over until barrels can be brought from neighboring towns. There are four steamboats running on this river in the winter, two of which carry the mail; but it frequently happens that the mail is not received here for two or three weeks, and large amounts of oysters and fish have to be thrown away in consequence. A few vessel loads of oysters are taken to Saint Mark's during the winter, but it is a trade of not much consequence. The shipping season lasts from November to April.

The boats in use are all small sloops of 20 or 25 feet length, carrying each two men. Last year (1878) there were twenty of these boats engaged in the oyster fishing. With their outfit of tongs, &c., they are thought to be worth about $2,500. Between forty and fifty men are engaged in this business, out of which they make but little more than what they spend for food while earning it. If two men who are running a boat have a good contract with the dealer, good wages can easily be made; but if they have no contract they are obliged to cut the prices down in order to sell at all, and also are kept lying at the wharf about half their time. From $5 to $8 per week, therefore, is an oysterman's wages when working.

The principal dealer at Appalachicola states, that he and other dealers there shipped up the river, during the winter of 1878–'79, 15,000 barrels. These, at the rate of 30 cents a barrel, yielded to the oystermen $4,500. In addition, owners of vessels disposed of about 2,000 barrels at Saint Mark's at 50 cents a barrel, equal to $1,000. The total value of the trade that winter, therefore, was

$5,500. It is only within five years that the trade has approached even this amount. Now it is improving, and new markets, such as Eastern Florida towns (by steamer and rail), are opening.

203. FISHERIES OF SAINT ANDREW'S BAY.

HISTORY AND EARLY CONDITION OF THE FISHERIES.—The fisheries of Washington County are twofold in their history. Both past and present, however, were, and are carried on in the waters of Saint Andrew's Bay, the capital for the prosecution of the same being furnished by parties living in or near the city of the same name. The past fisheries, dating from the year 1850 to the year 1863, which was the year of the bombardment of Saint Andrew's city, will be treated of first.

Between 1850 and 1860 Saint Andrew's was a lively, active place, containing at least 1,200 or 1,500 people. There were saw-mills in operation and shipping was carried on to an important extent. The city in summer was visited by many people from Alabama and Georgia, who, of course, circulated money in the place. There, as in nearly every seaport town, fish formed the chief article of diet. As the place became more thrifty and continued to grow in size, the demand for fish increased in proportion. At this early stage of its history a large quantity of salt fish was sold to the planters living in the interior of Alabama and Georgia, and this trade was of no little importance to the fishermen. The fishing then, as now, was done entirely with the drag-seines, which were from 50 to 75 fathoms in length, and from 6 to 12 feet deep, having a bag in the middle, at which point the seine attained its greatest depth. This net is described above on p. 550. In setting these seines sharp and flat-bottomed boats were used. Four or five men handled one seine, which was attended to from a single boat. The captain stood in the bow, guiding the boat by means of a pole and watching for signs of the approach of fish. These boats were often rowed along the bay shore, over the best fishing grounds at a venture, dragging the seine over a spot known as a good fishing ground without any fish having been seen. This was called a "blind" haul. In winter two or three barrels were considered a fair day's catch; in spring, about twice that amount, and in fall as many as the boat could carry in one or two journeys—perhaps 25 or 30 barrels.

The greater part of these fish were salted; for this purpose such fish as Spanish mackerel, jurel, pompano, trout, redfish, sheepshead, bluefish, and mullet were selected. The majority of other varieties were given away or fed to the hogs. For convenience in salting, small sheds were built. These were 15 or 20 feet square and were provided with benches on which to clean the fish; they also contained salt-bins and troughs in which to mix the pickle or soak the fish. The manner of dressing the fish was as follows: Two persons at the head of the bench cut off the heads and shoved the fish along to another pair who split them down the back and then passed the fish to others who removed the entrails, blood, &c. In this operation men, women, and boys helped. The fish were then ready for salting. The head fisherman usually performed this operation, for the amount of salt used depended largely upon his skill and care. When dry salted, the fish were allowed to remain for two or three days in that condition, after which they were taken out and packed away nicely in barrels and half barrels with plenty of pickle. Each barrel would hold certainly 200 pounds, and the fish were guaranteed to remain sweet and good for at least one year. The barrels were, and are now, made and provided by a cooper who lives near the bay and combines this work with that of farming.

The principal market for these fish was in the interior. Some of the fishermen preferred to carry the fish to market themselves, but the majority sold them at their own doors. Those who chose the former plan would start up the country with their barrels of fish loaded on an ox-cart

and stop at every town and plantation until all their fish were sold. This mode was much more profitable to the fishermen than the other, for, of course, if the buyers sent after the fish, they did not expect to pay as much for them as they would if they were delivered at their houses, and the value of the time spent in peddling the fish was not considered, for the summer months in that region were of but little practical use to the professional fisherman. When several wagons had preceded a later comer, it was frequently necessary to go as far as Columbus, Georgia, before selling all the fish. The best inland customers were planters, who bought the fish to feed to their slaves, whose diet was half bacon and half fish.

After the fish caught by a crew were sold, the division of the proceeds was made. The seine and boat drew one share, the captain two, and each of the crew one. Some men from Alabama not accustomed to fishing, but owners of a fishing outfit, would often hire by the month captain and crew to fish for them during the season. For such work there was no regular proportion paid, but the men who were hired usually managed to make more than they could have made had they been fishing on the ordinary plan. There were at least two crews of this kind here in the year 1879. Of the crews working on shares, there were only five in 1879, but when the war broke out there were many more. Some of these were not fishing for market, but in order to catch fish for their own consumption.

It was impossible to find out the exact amount of fish taken and the number of boats employed between 1850 and 1860; an estimate has been made which, owing to the care taken in forming the same, is probably not far from correct. The total number of barrels of fish salted and sold at Saint Andrew's Bay and vicinity is reckoned at 21,000. The fish included in this estimate were such as have been already named in this section, and, with the exception of pompano, were of equal value. The pompano were then much more plentiful than now, and even at the present time they form one-eighth of the total catch of fish.

Value of the Saint Andrew's fisheries for the ten years from 1850 *to* 1860.

Kind of fish.	Barrels.	Price per barrel.	Value.
Pompano	2,625	$10	$26,250
Mullet, &c	18,375	8	147,000
Total value			173,250

It is readily seen that the 21,000 barrels above given is in the table divided thus: One-eighth pompano and seven-eighths mixed fish.

PRESENT FISHERIES OF SAINT ANDREW'S BAY.—In the year 1863, as above stated, Saint Andrew's city was bombarded and destroyed by the Federal gun-boats, as also were the fisheries and salt-works about the bay. This event, and the continued presence of the gun-boats, stopped all fishing in this bay until after the close of the war. The fishermen still resident were without outfits; the greater part of them had heard of or experienced better fields elsewhere, and had gone away. In a few years after this the poorer classes of the inland country began to call on those living at the bay for fish, for which they paid by giving in exchange sirup, corn, sweet potatoes, &c. The new class of fishermen was formed from the people who, since the war, had come there for the purpose of farming. They found but a scanty living and were only too glad to be thus called on by those living in the interior of the country for fish. Those who were able to buy seines, did so immediately, and every spring and fall they spent two or three months in fishing, the profits of which exceeded those realized from farming for the remaining nine months of the year.

There are now some twenty-five or thirty families near the bay, out of which number about thirty-five men and boys fish during the season for a livelihood. None fish throughout the year. Among these few people many nations are represented: There is a Dane, a German, an Irishman, a Scotchman, a Spaniard, and there are also three Englishmen; the rest of them are Americans and negroes. As a class, these fishermen are a hardy set. Socially, they are very hospitable in their manner to a stranger, always entertaining him as well as their mode of living will permit. The astonishing feature is that men who have traveled, and have, therefore, seen something of the world, should settle down to lead such a lazy, shiftless sort of life. Their homes, often containing but two rooms, are the regular "Hoosier" log cabins; in these live the fishermen, their wives, and children. Life in one of these houses must be truly miserable, suggesting naught but poverty and laziness. The women, all of whom are natives and of the most ignorant class, are as intellectually inferior as they are superior energetically to the men. Considering how few advantages these women have, their conduct of the household affairs reflects great credit upon them. The children seem to be smart and intelligent until they reach maturity, at which stage they either fall into the careless habits of their fathers, or, if girls, take upon themselves the drudgeries of a mother and wife. Near the bay there is no school, but those who can afford to do so send their children to the county school at Marianna; few being able to do this, the majority of them grow up in painful ignorance. The same is the case for the most part with their religious instruction, as there are no regular services held near the bay and none of the people there profess any religion.

The fishing trade has gradually been improving since the war and has now regained its former position. The same kinds of boats, seines, &c., are used as of old and the fish are cured in the same way as they formerly were. The fresh-fish trade, however, has not amounted to much, except in 1876, when about two thousand pompano were sold to smacks belonging to Pensacola and Mobile for 8 cents apiece.

Instead of the fishermen peddling their fish through the country, as was once the custom, the planters now come to the bay and carry home a mixed load of fish and oysters.

In 1878, 555 barrels of fish valued at $3,470 were sold from the bay. In addition to this, 1,500 barrels of oysters were sold at 50 cents a barrel, making the total value of fish and oysters $4,220.

The oyster beds are scattered all over the upper parts of East, North, and West bays, and are most abundant in the deep and open water. These oysters are the favorites of the Georgia inland towns, where they chiefly find their way.

204. FISHERIES OF PENSACOLA.

FISHERMEN AND APPARATUS.—The only fishing town in Escambia County is Pensacola, the fisheries of which are of great importance. The red-snapper fishery has been elsewhere detailed and is here omitted.

The professional fishermen of Pensacola number seventy-five, and are either creoles or negroes. With them fishing is an hereditary profession. But few vessels belong to Pensacola. The smacks are of New England build and the two or three small vessels which carry ice were built at Pensacola or Mobile. The boats used by the seine fishermen are of the open yawl pattern, 22 feet long and 6 feet wide. They resemble the boats carried on large schooners and other merchant vessels. They are propelled chiefly by oars, of which two or three pairs are used. In addition, they carry small sprit-sails when long trips are to be made.

There are ten seines in use at Pensacola for one-half the year and five during the other half. Their average length is 75 fathoms, with a depth of 12 feet. The length of mesh ranges from 2 to

3 inches. Four or five men are required to manage a seine. The fish taken are pompano, bluefish, mullet, redfish, spotted trout, Spanish mackerel, sheepshead, and many other kinds of shore fishes. The average annual catch of a seine here is estimated at 1,000 barrels.

FISHING BY PILOTS.—The pilots living near the mouth of the harbor, whose daily duty it is to go to sea to look for vessels in need of pilots, own four or five open boats. They generally catch with hook and line and bring home in the evening large loads of fish. These boats are very small, not over 16 feet long, and carry a crew of four or five men. The boats are anchored on the "snapper banks," some 6 or 8 miles from Pensacola Bar. Their daily average catch is placed at 500 pounds, and this would amount (for five boats fishing two hundred days in the year) to 500,000 pounds of fish. These fish are sold at the navy-yard, or to the dealers at Pensacola.

THE SALT-FISH TRADE.—The salt fish trade at Pensacola has been of no importance since the close of the war of the rebellion. For twenty years, from 1840 to 1860, a flourishing trade of the kind was prosecuted by New England fishermen who spent the winters on the coast of Florida. They traded with the planters of Alabama and Georgia. When this trade was most prosperous, about 700 or 800 barrels of fish were annually sent inland, and, as good prices were paid, such a trade must have represented $8,000 or $10,000 per annum. *Now*, there is but one man, Captain Leonard Distin, at Choctawhatchee Inlet, who puts up salt fish. He has been in the trade from its start and is well informed on the subject. Much of the information acquired concerning the fishermen of Pensacola has been given by him. He now puts up about 50 barrels a year, receiving small prices, part of which he is forced to take in country produce. The principal kinds of fish salted are sheepshead, bluefish, pompano, redfish, mullet, sea trout, and Spanish mackerel.

FRESH-FISH DEALERS.—At Pensacola the only dealers are the Pensacola Ice Company and W. C. Vesta, the former of which is the older and larger firm, having been in the business seven or eight years. Their trade has increased year by year. This company owns a large packing-house with good arrangements for handling fish, ice-boxes capable of caring for 25,000 pounds of fish. Connected with the packing-house is the ice-house with its conveniences for handling ice.

The dealers do not keep fish on hand for a long time, not more than four or five days at any time. They pack the fish in barrels to be shipped into the interior, and in casks to go to New Orleans. For two winters the Pensacola Ice Company ran refrigerator cars, loaded with fish, to all points on the railroad as far north as Cincinnati, where they were reshipped in barrels to more distant markets, but the high rates of the railroad company brought that business to a close.

LAY ON VESSELS.—On vessels where the crew are fishing on shares, the following is the understood arrangement regarding the division of the proceeds of the catch: The vessel receives 40 per cent., 5 per cent. of which is paid by the owner to the captain. The crew receive the remaining 60 per cent. which, after store expenses, &c., have been paid, they share equally, captain and men. The owner pays dockage bill and bills for the vessel's gear. When crews are paid wages, the captain receives $75 to $100 a month; the mates, $40 to $50 each; the cook, $30; and each of the crew, $20 to $25. In this case the owners pay all bills.

LAY AMONG THE SEINE-BOAT CREWS.—In the seining boats the proceeds of the catch are divided into equal shares, the boat and seine taking one each, and each of the crew one. The seiners are never paid wages.

THE OYSTER INDUSTRY.—The oyster season here begins in September and ends in April. The banks worked (only with tongs) lie in Escambia Bay, and are scattering and very poorly stocked—not so well as formerly. The absence of shell-heaps on the adjacent shores show that the Indians did not resort to this for a supply of molluscan food to any great extent.

The boats serving here are open, flat-bottomed, roughly-made skiffs, not exceeding 24 feet in

length, cat-rigged or sloop-rigged. Two men form the crew, and consider from 5 to 12 barrels a load, satisfying themselves with one trip per week. As there are about seven boats, an averaged estimate of the season's total production would give about 2,500 bushels. The selling price being only 35 or 40 cents per bushel, the cash proceeds will hardly exceed $1,000, to be divided among about fifteen fishermen. A system of sharing is in vogue, by which the proceeds of each day's catch are divided into equal thirds between the boat and each of the two men who constitute her crew.

The catch at Pensacola often fails to supply the local demand, and additional oysters are obtained from Mobile and Saint Andrew's Bay. Nothing of consequence has been done here in oyster-culture.

STATISTICS OF THE FISHERIES.—In the Pensacola fisheries $5,300 are invested in vessels, boats, and seines. To this sum may be added $1,200, which represents the amount invested in shore apparatus.

A bunch of fish weighs from 20 to 25 pounds. These bunches were sold wholesale from 1850 to 1860 at $2 to $2.50 apiece. From 1860 to 1870 the value per bunch was $1.50 to $1.75, and from 1870 to 1880, $1.25 to $1.75. The former retail prices of salt fish, packed in brine in barrels, at Pensacola, were, per barrel: Mullet, $10; sheepshead, $10; bluefish, $12; pompano, $12; hard-tails, or jurels, $10; redfish, $10; Spanish mackerel, $12.

The present wholesale prices are $1 per bunch of 25 pounds, or, by weight, 3½ cents per pound for all fish under 7 pounds, and 25 cents apiece for all fish weighing 7 pounds and over.

The present retail prices of salt fish, packed in brine in barrels, are, per barrel: Mullet, $7; sheepshead, $7; bluefish, $8; pompano, $9; jurel, $7; redfish, $7; Spanish mackerel, $8.

The present price of oysters in the shell is $1 a barrel.

The total value of the yield of the Pensacola fisheries, from January 1, 1877, to January 1, 1878, was $23,970.84 for 555,977 pounds of fish. For the next twelve months it was $22,638.43 for 660,154 pounds of fish.

C.—THE FISHERY INTERESTS OF ALABAMA.

205. STATISTICAL RECAPITULATION.

SALT-WATER FISHERIES OF ALABAMA.

Summary statement of persons employed.

Persons employed.	Number.
Fishermen	545
Shoremen	90
Total	635

Detailed statement of capital invested and apparatus employed.

Apparatus specified.	Number.	Value.
Vessels (317.20 tons)	24	$14,585
Boats	119	10,215
Other apparatus, including outfits		7,000
Canneries and other shore property		6,400
Total		38,200

Detailed statement of the quantities and values of the products.

Products specified.	Pounds.	Value.
Mullet	125,000	3,750
Oysters	731,500	44,950
Red snappers	360,000	12,825
All other species	2,325,000	57,750
Total	3,541,500	119,275

206. FISHERIES OF MOBILE AND VICINITY.

THE UNION FISHERY COMPANY.—In the year 1873 great energy was displayed by some of the citizens of Mobile City, whose object it was to form a company for the purpose of buying up and preparing for sale all kinds of fish taken along the shores and in the public waters of Alabama. Notice of this intention was given in the Montgomery Mail, under date of December 11, 1873. It reads thus:

"UTILIZING THE FISHING PRIVILEGES OF THE STATE.—A company of citizens, most of them well known and highly respected, have organized themselves, as the law directs, into a private corporation, under the name and style of 'The Union Fishery, Salt, and Manure Manufacturing Company,' for the purpose of taking and preparing for consumption and sale all kinds of fish, oysters, and other shell-fish along the shores and in the public waters of Alabama, and for the further purpose of manufacturing oil and commercial manures from said fish. They have the further purpose of manufacturing salt along or near the shores of the State by solar evaporation or otherwise. They design all of these articles for private use and for sale in the public markets. The incorporators are James W. Coleman, Francis W. Dansby, Smith D. Hale, James H. Houston, Cary G. Thomas, Robert Christian, and Daniel C. De Jarnette. The capital of the company is $2,800,000."

That the citizens of the State of Alabama were anxious that such a company should be formed, whereby the State revenue would be enlarged, is evident from the following:

"We understand that a bill has been or will be reported to the legislature, in which the rights and privileges of this company shall be defined. It is time that the State of Alabama should be drawing a considerable revenue by taxation in the shape of a royalty on her extensive fishing, salt, and fertilizing wealth. Such a company as 'The Union Fishing and Salt and Manure Manufacturing Company of Alabama' might be made, by a proper bill, a source of considerable revenue, all of which is now lost to the State, and we trust that a bill, properly guarded, such as is now sought by this company, may become a law. The State wants every dollar of tax, and all the revenue it can possibly raise, by means which will not further incumber the farming interests of the commonwealth."

LOCATION OF THE CITY.—Mobile, the only town of Alabama extensively engaged in the fisheries, is situated at the mouth of Mobile River, on Mobile Bay, 28 miles from its junction with the Gulf of Mexico.

FISHERMEN.—More than one-half of the professional fishermen of Mobile are employed in the oyster business. Forty gather oysters, and one hundred and thirty-five carry them to market. There are twenty smack fishermen and one hundred seine and gill-net fishermen. At the oyster-canning establishments one hundred and fifty men are employed.

APPARATUS AND METHODS.—The fishing smack in use in these Southern waters having been described, it is here only necessary to say that there are but two of them at Mobile, and they are of New England build.

At Mobile there are twenty stationary gill-nets, whose average length is from 30 to 50 fathoms, and depth 6 to 12 feet. The mesh of their central web measures 2 to 2¼ inches, and their outer web 12 inches. These are in use for nine months of the year, from September to May. The principal varieties caught in them are mullet, trout, redfish, sheepshead, pompano, croakers, and other bay fishes, and black bass, bream, and perch from the fresh and brackish bayous. Each boat carries from one to four of these nets, according to the size of the boat and of the nets. The average catch for one net is 100 pounds a day, that is, one basket, making the annual catch 24,000 pounds.

There are fifteen seines, averaging in length 60 to 100 fathoms, and in depth 10 to 12 feet. The average stretch of mesh is 1 to 1½ inches. Four or five men are required to each seine. These nets are used chiefly in summer when the fish are schooling. In them all kinds of bay fish are caught, but no fresh-water varieties. The average annual catch of each is 35,000 pounds.

There are two distinct fisheries, the catches of which are brought to Mobile—the open sea hook-and-line fishery and the inside net fishery. The former of these has already been detailed in the paragraphs on the fisheries of Pensacola, since the smacks fishing for the Mobile market form a part of the Pensacola fleet of fishing boats.

THE INSIDE-WATER FISHERIES.—In the inside-water fisheries an open yawl-boat, about 20 feet long, is used. The net may be seine or sections of trammel-netting. Those who use trammel or gill nets fish about the marshes at the mouth of the Alabama River. They camp anywhere along the shore, and are gone from one to six days. The result of their trip is as uncertain as is the length of the time for which they may be absent.

They work their trammel-nets thus: When a school of fish, or, more generally, a good feeding place, is found, the nets, in one, two, or three sections, are placed around the fish or the likely spot, and the fishermen beat the water inside the nets, in order to frighten the fish so that they will run against the net and become entangled. Large fish are caught by the outer web of the net, while the smaller ones are gilled or entangled in the inner web of small mesh. Trammel-nets are never dragged as seines are.

Another method of using these nets is to set three or four sections from the shore outward in a straight line, and to leave them so set for several hours. Bottom fish, such as redfish and trout, are the principal kinds taken in this way. Set-nets do not, however, work well in these waters, for as soon as a fish which has been caught in the net is dead, the alligator-gars, small sharks, and crabs, which are always present in large numbers, begin to eat it, and while doing so often cut holes in the net. Trammel fishermen usually carry cars with them. In these they keep all the uninjured fish alive.

The seine fishermen go much farther from the city than the gill-netters, for by so doing they find better places at which they can drag their seines, and probably also a greater abundance of fish. These fishermen camp along the shores from Bon Secour Bay, which is to the east of Mobile Bay, to the Chandeleur Islands, fishing at one place one week and at another the next week. Some of these men have small farms near to the fishing grounds, and thus combine fishing with farming. They display but little energy in their work, and consequently make a poor living at it. In the day-time they fish for school fish and in the night for bottom fish, doing neither when there is no supply of ice at hand or some safe mode of sending their fish to market. One or two small vessels carry fish from the camps to the city. These are not the only means whereby the men can transport their fish to market, for there are oyster-boats, smacks, and steamboats constantly passing.

DISPOSITION OF CATCH.—The kinds of fish which they catch are always sold by the basket,

holding about 125 pounds. The price per basket varies from $2 to $20—the former when fish are plentiful, and the latter price when the reverse is the case.

Most of these inside-water fishes are bought by J. F. Maybury & Co. and by F. Kuppersmith, who ship them inland. Some are also bought by the marketmen, who retail them in the Mobile market-house.

Very few of the fish which come to Mobile are iced. The market-men only ice them when they have a larger amount than can be sold off immediately or when they have a supply of snappers for shipment. At such times they pack the fish in rough boxes or in barrels and intersperse broken ice. Maybury & Co. is the only firm which has regular ice-boxes or handles any large amount of iced fish. They own boxes enough to pack away 10,000 or 15,000 pounds of fish. They also have an arrangement for freezing fish, but it does not work well in so warm a climate where in the transit the fish may thaw out; so the arrangement is seldom used. The plan of it is similar to some of the Northern freezing houses, and is as follows: In a large box made of matched boards, with charcoal-lined walls, is a zinc cylinder which is filled with finely-broken ice and salt. When fish are to be frozen they are piled around the cylinder, and the box is then shut up tight. There is no really first-class establishment for icing fish in Mobile.

LAY ON VESSELS.—The crew on a fishing smack fish on shares. They pay the provision bills and receive 60 per cent. of the proceeds of the trip. The captain, who receives an equal share with the rest of the crew, also receives from the owner or owners 10 or 15 per cent. of his or their share, which is the remaining 40 per cent. of the proceeds of the trip.

THE OYSTER BUSINESS.—About one hundred and seventy-five men are engaged in gathering and hauling oysters to market. They own sixty-two vessels and boats, and sell the oysters to the Mobile dealers. The boats are small, open, flat-bottomed, of the simplest and roughest style. The tongs are those in ordinary use. The knives for opening them are of steel, with heavy flat handles and wide, thick blades, rather more rounded than pointed at the end.

On the oyster-carrying vessels, where there are but two or three men as crew, the profits are divided as above described on the fishing smacks, excepting in a few cases where the captain is the owner and may prefer to pay his crew wages, $20 and $25 a month.

The "gatherers" of oysters are independent, selling whatever they catch at the regular rate of 10 cents a box or 40 cents a barrel.

The oysters that are brought to Mobile are obtained from natural and artificial beds in Mobile Bay. Those from the natural beds are called "reefers," which are slightly inferior in size and quality to those from the artificial beds, which are called "plants." They are obtained in a portion of the bay called the "gully"; the only place where they are naturally abundant. The planted oysters are originally obtained from the salt water, near Cat Island, between Mobile Bay and Biloxi, Miss., and are deposited in front of the oysterman's land.

The State laws provide that any settler on its bay shores shall have the right to use for oyster culture the water surface in front of his lands from low-water mark 600 yards outward.

About thirty vessel-loads, or more than 2,500 bushels, are usually planted at first on new grounds, and are allowed to remain two years before they are gathered up to be sold. The next and following times that deposits are made it is not necessary to plant as many as at first; for there are many small oysters that escape the tongs which will soon grow large enough for market.

It is calculated that in two years the small salt-water oysters will have so grown in size and so increased in numbers that there will be about twice as many as when transplanted; but this ratio can hardly be depended upon, for it often has been proved that, to realize an increase of 50 per cent., the location and circumstances must be most favorable.

Oysters as taken from salt water are in very poor condition, but in an incredibly short time, in fresh or brackish water, they become large and fat. Still there are times, when the bay is almost purely fresh, that certain injurious qualities in it (perhaps from the extensive swamps) either destroy oysters or turn them so red that they are unfit for market. Invertebrate animals are probably the cause of many oysters being killed, though the oystermen seem to be ignorant of it. Drum-fish are also very destructive.

Besides the "reefers" and "plants," there is a kind of oyster called here "sharpers," from the fact that the ends of their shells are unusually sharp. They are a natural-growth oyster of very large size (shells averaging 8 or 10 inches long) and superior flavor, that are found growing separately along the bay shores, not far from the place where "reefers" are gathered. "Sharpers" are always in demand, though there is some objection to them on account of their being so hard to open.

"Reefers" and "sharpers" are caught by men who follow no other pursuit, and who are a quite distinct class from the oyster-boatmen. They have small, flat-bottomed skiffs of the roughest description, in which they go "a-tonging," two men occupying a boat and taking turns at tonging and culling. As fast as the stock is culled it is placed in shallow, oblong boxes holding one-fourth of a barrel each, and in these measures is sold to the boatmen or carriers at the rate (during the winter of 1880–'81) of 10 cents a "box," or 40 cents a barrel. The carriers having obtained a load for their sail-boats, proceed at once to the city and deliver them to the dealer, by whom they are employed to buy or with whom they have contracts. The measure, in this transaction, is the same box as before, but the price has nearly doubled, holding all last season at 75 cents a barrel. While the gatherers are paid per measure for what they catch, the profits of the boatmen are divided among the crew by a "lay" arrangement of sharing, by which the crew pay provision bills and receive 60 per cent. of the proceeds. Of the owner's 40 per cent. remaining, the captain gets 10 or 15 per cent. additional. In a few cases the captains own their vessels, and prefer to hire their crew at $20 or $25 a month. There are only two or three men in the whole crew of an oyster-boat.

The oysters, having been deposited in a pile in the dealer's warehouse, are next taken in hand by the "openers," who are placed in a circle around the pile, each with his stool, bucket, and oyster-knife. These men are principally negroes and creoles of the worst character, who find it hard to obtain other employment. Still they are very expert at opening oysters, and often make fair wages. The knives used by them are all of steel, about 6 inches long, with heavy, flat handles, and wide, thick blades, rounded at the end. To open an oyster it is held in the left hand, lower shell down and lips outward, and the shells are quickly pried open at the hinge, the upper shell being thrust off. One more stroke severs the oyster from the lower shell, and into the bucket it goes, liquor and all. Some kinds of oysters cannot be easily opened in this way, so they are broken first on the lip edge and entered from that side with the knife. The majority of Mobile oyster openers are very quick while opening either of these ways, but are probably more practiced in the first. The shells are thrown one side in a pile, and the "openers," if left to themselves, will throw away many good, unopened oysters, in order to hasten through their barrel, if they are opening by the barrel, or to get rid of small oysters, if they are opening by the gallon; therefore it is necessary to have a man employed to watch them and prevent this waste.

When an "opener" has filled his bucket he takes it to a clerk to be emptied into a strainer, when the oysters are measured and placed to his credit.

The customary price paid for opening oysters is 35 cents per barrel, or 20 cents per gallon. At certain times of the year a barrel of oysters in shell will yield more opened oysters than at others;

for instance, in the fall hardly 2 gallons are obtained, while in the winter and spring 2 to 3 gallons are taken from one barrel.

As soon as the oysters have been opened, measured, and drained of their liquor, they are emptied into a large vat that has a strainer-like bottom and are kept cool by means of ice until needed for shipment or canning. To be shipped to any place not far inland they are usually placed in cans varying from 1 to 10 gallons, according to the order, that are not hermetically sealed, but are kept in contact with ice. To be shipped to more distant parts they are placed in square cans, containing from 1 quart to 1 gallon, and are hermetically sealed. This manner is more costly to the purchaser, but is the safer way, for oysters so put up will keep a long time.

Pickling oysters has been of some importance here, but there is very little done at it now. The method of treatment was, first, to steam the oysters, and then to place them in small, square tin cans with spiced vinegar, the cans afterward being soldered up air-tight. It is said that this business failed because of much poorly prepared goods being put on the market. In pleasant weather, when the gatherers can work and the boats can easily get to the city with large loads of oysters, the Mobile market becomes overstocked, and it is then difficult to dispose of the catch at any price; but in stormy and cool weather the market is good, for then but few boat-loads come in, partly owing to real difficulties and partly to the indolent indisposition of the oystermen to work when discomfort attaches to it.

The oysters of Mobile Bay have a high reputation for excellence. The water and soil of the bay, particularly in the eastern arm, called Bon Secour, seem especially well adapted to their growth. The planting-beds are all higher up, where the seed thrives better than below.

THE GULF OF MEXICO OYSTER COMPANY.—Early in 1880 a new concern, to be known as the Gulf of Mexico Oyster Company, began oyster canning and shipping at Mobile, for though their factory was many miles distant, at Scranton, Miss., yet the officers were in Mobile, and the business contributed to the city. About ninety to one hundred hands, of all ages and sexes, are employed. These live in a little village, which the company has built for the purpose, in the neighborhood of their factory. While this company does something in the fresh-oyster trade, their main business is in cooked and canned oysters, which are steamed and sealed in substantially the same way as at Baltimore. One specialty, however, is the putting up of canned fried oysters, after the following patented method:

From the supply vat, where they are kept cool, the oysters are taken and rolled in meal and fine cracker-dust, and then are dropped, a gallon at a time, into a large kettle of hot fat, which is a mixture of lard, tallow, and stearine, where they are allowed to fry crisp and brown. Next, while still hot, they are packed in small, flat, square tin boxes of about a quart capacity, and the unoccupied space is filled with hot fat. The opening in the top of the box is round, and has a cap to fit, which is firmly soldered down, making the box air-tight. Afterward these boxes are labeled and packed in cases, a dozen boxes in a case. It is asserted that oysters prepared in this manner sell readily in all parts of the country, and the demand is much larger than was at first expected.

The "cove oysters" of this company are simply fresh oysters hermetically sealed in cylindrical cans.

The capital stock of this company is $25,000. (Another company has recently been projected with a capital stock of $50,000.) Though the capacity of the Scranton factory is no less than 30,000 one-pound cans per day, the product at the time of my visit had been insignificant, owing to various delays in getting well under way. The company will also can shrimp, fruit, and vegetables in season, so that not all the force, capital, and fixtures can be credited to oysters alone; and, inasmuch as operations have only begun, I have not added these figures to my totals. The stock which

they receive for canning is the wild "reefer" oyster, that grows in immense profusion all along the coast of Mississippi.

STATISTICS OF THE FISHERIES.—In the fisheries of Mobile it is estimated that there are $25,500, in all, invested; $22,500 in the fisheries proper, and the other $3,000 in the oyster business.

The market prices paid to the fishermen are, for red snappers, groupers, &c., 3 or 4 cents a pound; for mullet, trout, redfish, &c., $2 to $15 per basket, equal to about 2 to 15 cents a pound. The oysters range from 75 cents to $1.75 a barrel, "reefers" selling for 75 cents a barrel; small "plants" and "sharpers," $1; plants, $1.50; selected plants, $1.75.

D.—THE FISHERIES OF MISSISSIPPI.

207. STATISTICAL RECAPITULATION.

Summary statement of persons employed.

Persons employed.	Number.
Fishermen	110
Shoremen	76
Total	186

Detailed statement of capital invested and apparatus employed.

Apparatus specified.	Number.	Value.
Boats	58	$4,600
Other apparatus, including outfits		1,600
Canneries and other shore property		2,600
Total	58	8,800

Detailed statement of the quantities and values of the products.

Products specified.	Pounds.	Value.
Mullet	1,500	$60
Oysters	175,000	10,000
All other species	612,000	12,480
Total	788,500	22,540

208. GENERAL DESCRIPTION OF THE FISHERIES.

MEN AND METHODS.—The majority of the three hundred fishermen on the coast of Mississippi are engaged in the oyster business and fish for the New Orleans market, using boats and nets belonging to that city. Sixty more are engaged in fishing and oystering for Mississippi dealers.

There is only one fish dealer in the State, and he is the station agent at Biloxi.

There are four seines owned in the State which are used by professional fishermen, and the number of trammel or gill-nets thus used is seven. The seines are used about the islands and shoals and the trammel nets in the rivers, bayous, and bay channels. Those fishing for New Orleans, Mobile, or their town market, fish chiefly with seines, and, for the most part, catch redfish, trout, mullet, sheepshead, drum, and croakers. Those fishing for the inland shippers use

trammel nets, in which they catch fresh-water fish, such as black bass, perch, and bream. All of these are on this coast called "green-fish."

DISPOSITION OF THE CATCH.—The salt-water fishermen charge such high prices for their fish that only a very few are shipped inland from the coast. At their rates the fish cannot be shipped inland cheaply enough to compete with Pensacola prices. Such is not the case with the fresh-water catches which come from the bayous and streams. These fish are sold at so much per "hand," or "bunch," according to the quantity to be sold. The fishes are strung together with fibers of palmetto leaf into bunches containing about 5 pounds. These are usually called "hands," four of which are tied together to make the "bunch" proper. These "bunches" are sold wholesale for $1 to $3 each, according to the abundance of fish at the time. The trammel fishermen average about six of these bunches a day, and the seine fishermen about twice as many.

The season for shipping fish inland does not exceed five months out of the year, and during that time there are many days on which no fish are caught. The amount shipped to New Orleans by fishermen from that city amounted in 1879 to an average of 2 barrels a day, or about 108,000 pounds per annum. A great many fish shipped for New Orleans are landed at Biloxi, Pass Christian, and Bay Saint Louis. The fish intended for Mobile are principally landed at Pascagoula.

OYSTER FISHERIES.—There are eighten oyster boats belonging in this State and seven oyster-dealers. The supply of oysters is obtained from the natural reefs all along the marshes about the Chandeleur Islands. The oysters are very large and abundant, but are not always as good as they might be, even in the season. They have been improved by having been transplanted into brackish water near Biloxi and Pascagoula. The boats carrying oysters to market are all small, carrying a crew of two men. Here the boatmen gather the oysters, and in some cases open them for the dealer. Oystermen receive 75 cents a barrel for oysters in the shell delivered at the dealer's wharf, or else 35 cents per hundred opened. If sold to the dealer unopened the latter pays a shucker at the rate of 75 cents for opening a thousand oysters. Oysters to be shipped inland from the coast markets are opened and placed in 5 and 10-gallon baskets and sold invariably by the count. There are forty men and about eighteen boats engaged in gathering and bringing to market. The boats make two, sometimes three trips a week. At Pascagoula are two oyster-shippers; at Ocean Springs, one; at Biloxi, three; Mississippi City, one. During 1879, 18,920 gallons, at 35 cents a gallon, were shipped inland. Total value, $6,622.

E.—THE FISHERY INTERESTS OF LOUISIANA.

209. STATISTICAL RECAPITULATION.

Summary statement of persons employed.

Persons employed.	Number.
Fishermen	1,300
Shoremen	297
Total	1,597

Detailed statement of the capital invested and apparatus employed.

Apparatus specified.	Number.	Value.
Vessels (539.69 tons)	49	$20,821
Boats	165	4,800
Other apparatus, including outfits	.....	18,000
Canneries and other shore property	.....	50,000
Total	.....	93,621

Detailed statement of the quantities and values of the products.

Products specified.	Pounds.	Value.
Crabs	288,000	$7,200
Crawfish	24,000	800
Green turtle	30,000	1,200
Mullet	55,000	1,650
Oysters	2,065,000	200,000
Red-snappers	900,000	45,000
Shrimp	534,000	41,760
All other species	3,100,000	95,000
Total	6,996,000	392,610

210. THE FISHERIES OF NEW ORLEANS AND OTHER PLACES.

FISHERMEN.—There are on the coast of Louisiana three hundred and thirty-two professional fishermen, of whom one hundred and twenty-nine are engaged in the oyster business. Of the remainder, one hundred and eighty-eight ply the seine and gill-net, and the other fifteen are smack fishermen.

APPARATUS.—The seines and gill-nets are used to catch the small inside-water fishes and those of the sea that are found along the shores. In different localities they are set with different objects in view. Along the outside shores of the islands which separate Mississippi Sound from the sea, and about the Chandeleur Islands, seines of medium size are used to catch the passing shoals of bluefish, pompano, Spanish mackerel, bonito, &c., while among these islands small seines and trammel-nets are employed to catch the so-called "bottom fish"; these have already been specified. They are found at the bottom feeding among the grass and weeds. There is also the lake and bayou fishing, carried on in Lake Pontchartrain, in winter only, and in the many bays and coves in the extensive marshes of this neighborhood at such times as fish are very abundant, but on account of extremely shoal water, muddy bottom, and the numerous chances of the escape of the fish, the nets used at other places would be of little service here, and for that reason long, shallow, and lightly weighted seines are prepared, and these can be successfully dragged through such places. In some of the deeper bayous and lake channels trammel-nets are used with good results. Seines and casting-nets are used in the shrimp fishery.

The net fishermen are stationed at different points along the coast from Mobile Bay to the western extremity of the Louisiana coast. Some have their homes on islands near the fishing grounds, while the majority of them camp at various points throughout the fishing season. For the transportation of their catches they depend upon railroads, passing steamboats, and oyster-boats; occasionally they have a boat engaged for the purpose. The greater part of their fish go to market on ice; those, however, caught near home are sent without any preservative.

SHRIMP.—The shrimp fishery and canning industry are of great importance. They are described in another section of this report.

CRABS.—The mode of catching crabs is very simple; they are picked up by hand-net or scoop-net along the beaches of the outside islands, and from among the grass in the marshes. A long line, perhaps measuring 200 fathoms, is sometimes used, to which shorter lines are attached at intervals. To the end of each of these short lines is fastened a piece of bait. The long line is then stretched along the water's edge and the baited lines are thrown into the water. The crab, having caught hold of the bait with its claws, is pulled up softly and slowly and is landed by means of a dip-net.

CRAWFISH.—Crawfish are also picked up from among the sedge grass, along the lake and canal shores and on the levees. It is said that they are very plentiful at such places, and that great quantities of them can be secured without much trouble. The crawfish live in little holes in the muddy banks, and, it is reported, build a sort of chimney of mud over and around the hole.

TURTLE.—Now and then the seine fishermen catch a green turtle or a "loggerhead," which they send to market, but very few of these are caught in the year. Some few fresh-water turtles are also taken, as, for example, the "mobilian" and "soft shell" and occasionally a snapping-turtle.

THE NEW ORLEANS MARKET.—In New Orleans there are twelve markets where fresh fish are retailed. The most important of them all is the French market, for there all the fish intended for distribution among the smaller dealers are sent. The other markets are supplied from the French market, but few of them do any business. They are under the control of the city, whose property they are. The city rents the stalls at from 50 cents to $2 a day, dependent upon the situation of the market and of the stall to be rented. The city is also responsible for the cleaning of the markets after business hours. In most of the markets the fish stalls are few and in the most secluded corners. In the French market, however, more space and better advantages are given to the fishmongers. In the French market are two dealers—Bartholomew, Tallon & Co., and Felisado & Co. They each have several stands, upon which are displayed quite a large amount and variety of fish on the best market days. How and whence these fish come into the hands of these dealers will now be explained. The sea fish (red-snapper, grouper, &c.) come by rail from Pensacola and Mobile packed with ice in hogsheads. They are caught chiefly by New Orleans smackmen, who find it more profitable and satisfactory to deliver their fish in this way. The supply of these fish is kept up throughout the year, but in summer the demand is not so great, and consequently less are shipped. The small fish already specified and the smaller fresh-water fish come from different parts of the Mississippi and Louisiana coasts, where they were caught in seines and trammel-nets.

Some fish come iced in barrels and some from the nearest points by rail without ice. Railroads, steamboats, sailing vessels, and "luggers" are all media through which these fish arrive at market. Each lot comes consigned to a particular dealer, or is sent in fulfillment of a contract. Snappers are sold by the fishermen at so much for a "bunch," weighing 25 pounds; bayfish at so much a "hand," consisting of four small bunches, with an aggregate weight of about 20 pounds. Spanish mackerel, bluefish, and other choice varieties also sell by the "hand," but at a very much higher price than the common varieties command. Pompano alone are sold by the count, or so much apiece.

Many of the fish are in a very bad condition by the time they reach the market stand, and nowhere else would they be allowed to be placed on the stalls and sold, as they are day by day, to people who know nothing about fish, and therefore buy ignorantly. The small fish caught in the vicinity of the Mississippi marshes are really in very fine condition on the stalls, and are far superior to the same class of fish found on other parts of the Gulf coast. The reason, probably, is, that on the Florida coast, for instance, these small fish cannot find convenient food and are much worried

by destructive fishes, such as the shark, alligator-gar, and crevallé; they are, therefore, in a thin and poor condition for market. It seems as if some secluded spot were necessary for their attaining the greatest perfection, which they *do* find among the Mississippi marshes. Here, too, are more favorable conditions of water and better food.

Besides these salt-water fishes there are some brackish-water species—the black bass, perch, and bream—which are taken in the trammel-nets and seines in marshy bayous along with salt-water fish, with which they are shipped and sold.

Some fresh-water catfish and "buffaloes" also appear in the markets. They are chiefly caught by negroes in traps or by line up the river and its tributary streams. This is of small importance, and cannot be included as one of the regular fisheries. The few shad found in these markets come from Charleston, S. C. The demand for them is small.

The crabs are sent to market alive and in that way are sold. The marketmen pay 50 cents a basket for them; a basket is supposed to contain five dozen. Few crawfish are seen in the markets, being not thoroughly appreciated, and other fish being much more abundant. The men who gather the crawfish receive 40 cents a basketful. These crustaceans are chiefly used for soup.

Part of the fish, &c., come to the retail merchant and part to consignees who receive them at the French market for distribution among the smaller dealers. The work, on the part of the stall fishmongers, of buying stock for the day and preparing their stalls commences at midnight, so that they may be ready at an early hour for customers. Many of these stall fishmongers have no storehouses in which to keep their fish, but depend on the larger dealers, such as Bartholomew, Tallon & Co., for their daily supply. Only five dealers pretend to keep a supply of fish independent of other dealers. As a rule, fish, &c., sell for about twice as much at retail as the fishermen receive for them. The fish are not sold at retail by the pound, but at so much each. Shrimp are sold at so many handfuls for so many cents. Crabs sell by the dozen, small turtles by the piece, and large ones by the pound. Crawfish are sold in the same way as shrimp.

A very small portion of the fish sold in New Orleans is eaten by the citizens. The trade is principally with the hotels, restaurants, steamboats, and the shipping, so that, really, strangers and travelers are the chief consumers of fish at New Orleans. It seems as though those of the population who are able to buy fish care nothing for it, while, at the present prices, those who would eat fish cannot afford it.

THE OYSTER-TRADE OF NEW ORLEANS.—At New Orleans centers the most extensive oyster-trade of the Gulf of Mexico, and some of the stock sold in that city is of very high quality. There is no locality in the whole United States where the business presents so many picturesque features, and the oyster-landing at the levee is one of the most spirited and entertaining sights of the many half-foreign pictures to be got in that polyglot city.

The market is supplied with oysters from an extent of coast comprising the whole water-front of both Mississippi and Louisiana, and embracing numerous tonging-grounds. The great majority are taken from the natural and luxurious growth of the "reefs," but the transplanting and consequent improvement of oysters is being more and more engaged in. The delta of the Mississippi River forms a partition between the two classes of oysters and oyster-localities tributary to New Orleans—a distinction which is perpetuated in the city markets. The first of these divisions to be considered, is that which lies eastward of the delta, extending from Lake Borgne, Point a la Hache, and the Chandaleur Islands to Pascagoula and the end of Mississippi Sound. Though the Chandaleur Islands, and some other points, produce an oyster of good reputation, the general quality and size of the stock from this eastward portion is inferior to that from the western district. They are used for cooking chiefly, and it is this stock which is being bought by the canning com-

panics lately started in the city. The best grounds seem to be the Chandaleur Islands, Bayou Muscle, Bayou Boulfen near Mobile, and the shell-bank outside of Biloxi. "The Bayou Muscle oyster is peculiar. It is large, very black, and the shells are covered with hair and barnacles. The Boulfens are round, rich, and fat, and sell very high." The Picayune stated that thirty boats came to the city from Biloxi and along the sound, in the winter of 1879–'80, but this seems to have understated the case, for our careful inquiries registered fifty boats of 5 tons and upward, and two hundred boats of less than 5 tons, as trading along the eastern coast; many of these, however, are otherwise engaged during a portion of the year. The boats are generally small, rarely having more than two men.

Turning to the district west of the delta, we find that oysters are procured from all the marshes and bayous, nearly as far as Galveston, Texas. The Picayune, in an article during the winter 1878–'79, gives a fair account of this source of supply, as follows:

"This portion of our State seems best suited to the propagation of the best, and Bayou Chalons, Four Bayous, and Fontenelle are known only for their oysters. Yesterday a representative of the Picayune, in order to place before its readers something more definite than the confused ideas generally prevailing about our oysters, visited a number of veterans in the trade. Even among them there is still some confusion regarding the merits of certain oysters, but what was agreed upon by all was taken as the basis of what we give.

"There are engaged in the business of supplying the city about one hundred and twenty luggers, with a carrying capacity each of 75 to 100 barrels. From Barataria, which comprises Bayou Cook, Chalons, and Four Bayous, there are eight, making at least one trip a week. From the Southwest Pass, Salina, or the Salt Works below Fort Jackson, about thirty boats. From Timbalier, including Bayou Cyprian, Fontenelle, and Lake Peliot, about fifteen. These vessels, and the labor at the fishing banks, give employment to over four thousand five hundred men. * * * There has been a general impression here that Bayou Cook furnishes our best oysters, but that little water course has long since given up its natural supply, and those that are now received from there are only a few that are planted.

"Our best oysters come from Bayou Chalons, Four Bayous, Bayous Fontenelle and Cyprian, and a small supply from Lake Peliot. These rank the highest and are called the first-class. The Bayou Chalons oyster is a large, long oyster, with a clean shell; the Four Bayous are middling, round, and firm; the Bayous Fontenelle and Cyprian are small, hard, and round, and much preferred by connoisseurs. The Lake Peliot is a round oyster, very fat and salt, and on account of the hardness of its eye preferred for frying. The second-class oysters are the Timbaliers, where they are taken from the reef, not the one planted in the bay. They are in bunches and are long. In the same class are the Salinas, or those taken at the Salt Works near Fort Jackson. They are what are called the 'summer,' and by restaurateurs the 'kitchen' oyster. They cook well, but are not as rich in flavor as those of the first-class. At the Southwest Pass, proper, all the bivalves are dead now, but near there, at East Bay, they have a very good kind, with a light-colored shell and very white inside. Then there are the Great Lakes, from the vicinity of Fort Livingston, near Grand Terre. Although the supply is not very great there is always a demand far them, as they have a peculiar flavor."

METHODS OF GATHERING OYSTERS.—Most of the oysters brought to New Orleans are from naturally growing, uncultivated reefs, with which the whole coast is barricaded, and to which, in a large measure, it owes its preservation from the teeth of the ocean. These reefs are ridges of oysters, packed one above another, each generation supported on the compact and dead shells of the preceding. In general the oysters are found not singly but in great clusters, some of which

are half as large as a barrel. When gathered in this shape there is a great waste of young oysters, for those that are attached to the large ones are not separated until after the boat has left the grounds or is at town, when they are thrown away as useless. At certain stages of low water such oysters as these can be picked up by hand. In other places, ordinarily in the open bays, oysters are found in a more scattering condition, but are more readily gathered and require less culling. In most cases they are procured with oyster-tongs from the lugger, as she lies at anchor over the bed. One man uses the tongs while the other culls them; or, if there are three in the crew, two use tongs and the third culls for both.

This is the method with all the smaller boats which tong their own cargoes. They have to go far from home, and often the men do not get home once a week, or even every two weeks, and must lie exposed to many hard storms, both when at the reefs and in going back and forth the 40, 60, or 100 miles to market. The owners of the larger vessels, however, generally buy their cargoes direct of the men who live in the vicinity of the reefs, and by making more trips, having fleet vessels, can in a season make considerable money. In the summer time, those who have been prosperous sometimes take their vessels down the river about 65 miles, and pass through tortuous channels into Mississippi Sound, and lay up for the summer season in the vicinity of Biloxi, Mississippi.

There is a "lay" system in vogue in many of these boats for the distribution of profits, by which the boat and each man receives an equal share, after the bills are paid.

The number of boats bringing and catching oysters in this region is counted at two hundred and five, of which forty are of over 5 tons burden. Their business is mainly done during the winter, and in summer they are largely engaged in transporting fruit from the coast plantations to the city, though some "lie up" for repairs.

These oyster-vessels are all of one class and are known, from their Mediterranean rig, as "luggers." They are in model much like the common light-draft American center-board sloops, and vary in size from 16 to 40 feet in length, the largest measuring about 8 tons. They are further described in another section of this report.

THE OYSTERMEN.—In going to the lower coast, writes Mr. Ainsworth, the luggers run down the Mississippi generally for about 60 miles, and then through smaller outlets and bayous into Grand Lake Bayou and the various grounds on the coast. The men who are employed in this fishery, and also the sailors who own the luggers, are almost altogether Italians and Sicilians, generally of a low order. Their swarthy faces, long, curly hair, unfamiliar speech, and barbaric love of bright colors in their clothing and about their boats, give a perfectly foreign air to the markets. There is not an American style of rig seen, nor hardly a word of English spoken, in the whole gayly-painted oyster fleet of Louisiana.

OYSTER-CULTURE.—Oyster-planting amounts to very little along the coast now under view, and what is done is of the simplest character. I can form little notion of its extent or the number of planters. The reef-oysters are taken from the natural beds by tongs in June and carried up the half-fresh bayous, or inshore, where they are laid out between tides until time to sell them in the fall. This improves them somewhat, but seems to be chiefly serviceable in making them more readily accessible for market, and so saving time. The Picayune said that in 1878 4,500 men were employed in making and assisting in making such transplantings.

OYSTER MARTS IN NEW ORLEANS.—There are three separate landing places and marts for oyster-boats in New Orleans, the Old Basin, the New Basin, and the French market levee.

To the Old and New Basins (chiefly the former), in the rear of the city, reached by canals from Lake Pontchartrain, come the boats from the eastward, bringing "lake" and "reef" oysters, gen-

erally of inferior quality, and intended to be sold to the canning establishments, or to be opened for cooking purposes. The boats average smaller than those used in the river westward, and usually carry only two men. The price of the oysters—frequently measured out in quarter-barrel boxes similar to those in use in Mobile—depends upon the state of the market as governed by the supplies received from the West, and often goes down to 50 or 60 cents a barrel, at which price there is no profit, and the oystermen stop running until a rise occurs. The average price, however, is said to have been $1.50 per barrel last winter; and 65,000 barrels are said to have been the total of receipts on this side of the city. This would equal about 170,000 bushels, at 39 cents a bushel. The men who bring oysters from the eastward say they must have higher prices than formerly, on account of the growing scarcity of oysters, and the longer time it takes to get their load. Many more are oystering now than before the war.

At the levee opposite, or just below the famous old French market, is the other and greatest oyster landing place, mustering about two hundred and five boats, with six hundred and fifteen men or more in the crews. The estimate of annual receipts there at present gives 50,000 barrels, or 125,000 bushels, commonly sold at $2 to $3.50 per barrel. All of these come from westward of the delta, and being larger and finer are, as a rule, bought by the saloons and restaurants, and served to their customers on the shell.

WHARFMEN ON THE LEVEE.—A peculiar feature of the business on the levee consists of an organization of wharfmen, who form a species of close corporation to do the work of carrying the oysters from the boats to the wagon of the purchaser, who pays them 15 cents a barrel for the service. The boatman having sold his cargo, he then has no further concern; his boat being taken in charge by the carrier, who might be called a 'longshoreman, and who delivers all the oysters and sweeps the vessel and puts her in proper condition for the crew. While there is no society of these carriers, strictly speaking, they manage to make their business a close corporation, since no one is allowed to discharge a cargo of any kind from the luggers—oysters, oranges, or fruit—except one of the members of the body. There is a man who is called the foreman, who receives all the money for the carriers and who divides the proceeds equally among the different carriers, but just how this is regulated, as well as many other of the details of this quasi-organization, is kept as mysteriously secret as possible. The body is an old one and now consists of about fifty men in all, mostly Sicilians and low-grade Italians, and, as near as I can judge, the annual receipts for the carriers amount to about $35,000, levied on the oysters, oranges, melons, and various fruits. Some years ago the city designated a man to act as foreman, and he held the post for 22 years, not giving it up until his death, when he was succeeded by his son, who now has the place. The system is beginning to be felt as an unwarrantable incubus on the trade, and a monopoly which should be opposed. In consequence it doubtless will soon be broken up, and each purchaser will land his own oysters, or the boatmen deliver them to the wagons at less cost than now. The levee is leased by the city to a firm, which collects $20 a year wharfage from the luggers.

SHIPMENTS OF OYSTERS FROM NEW ORLEANS.—The shipment of oysters inland from New Orleans has hitherto been of very small account, and principally of fresh oysters. Now, however, at least two canning establishments have been started in the city, which make a large item in their general preserving business of cooked and hermetically sealed oysters, prepared substantially as in Baltimore. Several brands have been put upon the market with good satisfaction, selling at $2.50 per dozen two pound cans for first quality, and $1.80 for second, and at $1.10 for one-pound cans. About $100,000 worth of these canned oysters are said to have been put up during 1880, nearly all of which were taken by the trade of the city and immediate neighborhood.

The capital invested is, perhaps, $75,000, but is applied to shrimp, lobster, and fruit canning as well as oysters. In these establishments only about thirty male adults are employed, the openers being girls, about 100 in number, all white and chiefly German and American in nationality, who are paid from 4 to 6 cents for each kettleful, a "kettle" holding two quarts. Work is irregular, because of the difficulty of getting oysters in sufficient quantity and when needed (owing mainly to the indisposition of the oystermen to work in bad weather), and the total earnings of the openers and employés during the "oyster run" in the factories, will probably not exceed $20,000. These factories have not been long enough in progress to furnish more exact information than is here given. Their capacity is far in advance of their present product, and they anticipate a highly successful future, confident that they can secure the trade of the Lower Mississippi Valley, to the exclusion of oysters canned in northern cities.

STATISTICS.—In the fisheries of New Orleans it is estimated that $38,360 are invested. The average price here paid to the oysterman is $1.25 a barrel. The yield of the New Orleans oyster fishery for 1879 was estimated at 116,100 barrels, valued at $145,125.

F.—THE FISHERY INTERESTS OF TEXAS.

211. STATISTICAL RECAPITULATION.

Summary statement of persons employed.

Persons employed.	Number.
Fishermen	491
Shoremen	110
Total	601

Detailed statement of the capital invested and apparatus employed.

Apparatus specified.	Number.	Value.
Boats	167	$15,000
Other apparatus, including outfits		4,400
Canneries and other shore property		23,000
Total		42,400

Detailed statement of the quantities and values of the products.

Products specified.	Pounds.	Value.
Crabs	36,000	$900
Green turtle	24,000	720
Mullet	8,000	240
Oysters	669,375	47,300
Shrimp	637,500	27,540
All other species	2,484,000	51,600
Total	3,858,875	128,300

212. GENERAL DESCRIPTION OF THE FISHERIES.

FISHERMEN.—On the coast of Texas there are 290 professional fishermen. Of this number 126 are seine fishermen and 165 oystermen.

APPARATUS.—The boats used on this coast, both for fishing and oystering, are very roughly and simply built. Those used for carrying fish and oysters to market are sloop-rigged, flat-bottomed boats, decked over forward and aft, but open in the center where the cargo is stored. They are built as flat and beamy as possible in order that they may float in the very shoal water so common in all the bays on the coast of Texas. They average 24 feet in length and 8 in width, and draw but a few inches of water. It is to the decided interest of the fishermen not to allow their boats to register 5 tons, for, by so doing, they escape the duty which otherwise would be imposed by the custom-house officers. Besides these boats, the seine-fishermen have smaller boats with which they lay out their seines. They are built on the same model as the sloops and are similar to those in use on the Florida coast. These latter boats are so roughly made that they are not deemed worthy of receiving a coat of paint, and, as a substitute, a covering of coal tar is smeared over them.

There are 42 seines in use. Their average length is 100 fathoms, and their depth 5 feet, with an average mesh of 1 inch. Each seine is handled by three or four men. The nets are in use for about nine months of the year, from September to May. Redfish, sheepshead, and sea-trout are chiefly caught. The annual catch of each seine is 20,000 pounds.

OYSTERMEN.—There are some oyster beds on the coast, employing, as before stated, one hundred and sixty-five men, who own fifty-five boats and sell their oysters principally at Galveston.

RELATIVE IMPORTANCE OF THE FISHERIES.—There is comparatively very little done in the fishing business on the Texan coast, and very little variety in the modes of fishing or in the variety of the fish caught. Fishing at sea with hook and line for the deep-water fishes, such as red snappers, groupers, &c., has never been attempted by Texan fishermen, although there is every reason for supposing that such an experiment would be successful, as the above named species are known to occur off the coast. Nor have the attempts at sea-beach seining been very great, partly because the same kinds of fish which can be caught there are found in greater abundance in the bay waters, and partly because the seines used in inside waters are not suitable for fishing in the surf outside. Consequently there are but few of the deep sea fish and of the migratory coast species to be found in the Texan markets. Among the common Gulf fishes wanting, the following are the most conspicuous: Pompano, which are but very rarely taken; bluefish, these are extremely rare; Spanish mackerel, taken occasionally with hook and line; red snappers, these are never brought to the markets; groupers, all kinds of this fish are unknown to the majority of the fishermen; and bonito, which are almost unknown.

APPARATUS AND METHODS.—In the vicinity of Galveston the seine-fishermen work steadily from September until May for fish, devoting the summer months to the capture of shrimp. At other points on the coast the seiners are not professional fishermen, but are farmers and men who fish for their own provision when other work is not pressing. The seines are of peculiar shape, as the water is very shoal and the bottom muddy. There are no leads or weights attached to the bottom lines of the net, as before noticed; they are set from small boats, and these act as tenders to the sloops which carry the fish to market.

A gang is absent about a week on a trip; its success is varied; sometimes 20 barrels are brought home and again only 1 or 2. Those fishing for the Houston market make daily trips.

At Indianola and Matagorda Bay are several crews of Galveston fishermen; these send their catches home twice a week by the steamers plying between those points.

Gill-nets are never used on this coast, the seine being the only contrivance that has ever proved a success. A pound net was brought to Galveston from New England and was thoroughly tested. It proved a complete failure, for the crabs, &c., destroyed the netting faster than it could be repaired. The parties who made this experiment—Messrs. Sadler and Murnur—think that a pound constructed of wire netting would pay. At present the Galveston dealers find it difficult to fill their orders received from the inland country, and the packing establishments have the same trouble.

In Galveston Bay fish are quite scarce, while at Matagorda Bay, where there are only a few fishermen and nets, they are plentiful. The negroes and boys catch some fish from the wharves with hook and line or with cast-net. These are sold about the adjacent town or village, and, if summed up, would, in the course of a year, amount to a considerable number.

The fish markets are supplied entirely by seine-fishermen, who fish in the bayous and bays. The principal kinds of fish caught are redfish, sheepshead, sea-trout, mullet, and croakers. The redfish are the most abundant and appear to be the favorite food-fish of the State. They remain in the shoal water throughout the year, and at certain seasons are in most excellent condition.

OYSTER FISHERIES.—The oyster supply at Galveston and a few other points on the western part of the coast is very good, and the oysters are of very fine quality. In the north and eastern parts of the bay the oysters are unfit for the market, being small and poor, but in the west arm of the bay they are unsurpassed.

The inferiority of the oysters in some parts is supposed to be the result of very sudden and decided changes in the character of the water; that is, from clear salt water to muddy fresh water, and *vice versa*. Until a few years ago all Galveston oysters were liable to these changes. Since the canal was cut from Brazos River to the west arm of Galveston Bay, the stream of fresh water constantly flowing into the bay has preserved at that point an equality in the character of the water which has effected a great improvement in the quality of the oysters at that point. The whole supply now comes from west bay, and there is said to be an abundance for years to come. In Matagorda Bay oysters are not found in any great abundance, excepting in the extremities farthest removed from the mouth of Colorado River, whose waters are impregnated with a yellow mud which is considered detrimental to the growth of oysters. Yet in some places quantities of fine oysters are to be found. These points are seldom visited by oystermen, there being no regular trade at the villages near by. Farther down the coast plenty of oysters may be found, but there is only in that region a small demand for them. Nothing has been done on this coast towards the cultivation of oysters.

At Galveston oysters are brought to market in small sailing vessels of 2 or 3 tons measurement. Three men accompany each boat. The oysters are gathered by means of tongs, which are the only instruments used. They are sent to the dealers in barrels. Some few are shipped inland out of the shell, in tin cans, and a few to the nearest places in the shell. The supply at this market does not meet the demand.

LAY.—Among the seine fishermen the proceeds of the catch are divided into equal shares, the seine and boat receiving one share and each man one share; there being usually four men in the crew, the proceeds are divided into five equal parts. Oystermen work on a similar "lay"; their boats, however, receive a full share, and the tongs and full outfit are furnished as a part of the boat.

STATISTICS.—It is estimated that $9,000 are invested in the fisheries, $10,000 in the oyster business, and $12,000 in packing establishments; this gives as the total sum invested $31,400.

The fishermen receive from 3 cents to 5 cents a pound for their fish, and the oystermen, on an average, $1 a barrel. Green turtles sell at 3 cents a pound, and shrimp at 25 cents a bucket. The canning of shrimp at this point is elsewhere described.

213. PROFESSOR JORDAN'S ACCOUNT OF THE FISHERIES OF GALVESTON AND VICINITY.

APPARATUS AND METHODS.—There are in Galveston about fifty boats and ten "wagons" engaged in the capture of fish and shrimp. Some of these are idle from time to time, so that an average of perhaps forty are steadily employed.

The boats are all, or nearly all, of the "Italian" style—the deck half covered. They are all cat rigged, and range in size from about three-fourths of a ton to 1½ tons. None of them are specially adapted for rough water, and they do not venture outside the bay, except in very calm weather. There was formerly a single "lateen" or "lugger-rigged" boat here, but the style has been discarded.

The fishing is nearly all done by means of seines, and these seines are very shallow, ranging from 4 to 7 feet in depth, and probably not averaging over 5 to 5½. The net is not "paid out" from the boat in most cases, but is taken out by wading and hauled in over shallow sand-flats. As a result, only species remaining very close to shore are usually taken, and there is therefore very little variety in the markets. The boats go to various distances from 1 to 30 miles from Galveston, the best fishing grounds *now* being around the west end of the island of Galveston, nearly 30 miles from the city.

The "wagon-fishing" is chiefly done on the south coast of the island, in the surf. The wagon is used to haul the nets out from town and to bring back the fish. The nets are put out by wading in the shallow surf. Most of the fishing from the boats is done in the latter half of the night; from the wagons, in the afternoon.

Occasionally hand-fishing is done on the sand reef outside the bay, and a few red snapper, jewfish, and similar species are taken here. In the summer, Spanish mackerel are taken with hook. There are also numerous persons, chiefly negroes, who fish with hand-lines in the surf, using mullet as bait. They catch redfish (*Sciæna ocellata*), *Arius felis*, and *Menticirrus littoralis* chiefly, the redfish being always the species desired. Casting-nets (circular, with a lead-line around the outer margin) are occasionally used, but chiefly to secure mullet as bait. No gill-nets are in use. There was formerly a pound-net, but the large fish, sharks and tarpum (*Megalops*), tore it up so much that it was removed.

FISHERMEN.—About one hundred and fifty men in Galveston are employed more or less regularly as fishermen. Nearly all are of the race known here as "Dagoes," men from the Mediterranean (Genoa, Palermo, Malta, Trieste, Dalmatia, and Greece). There are two Americans, and so far as known to me, no negroes and no persons from northern Europe. Most of them work on shares for the owners of the boats and nets. In some cases, the boat takes two shares and each of the two fishermen one.

PRODUCTS.—A fair estimate of the total annual catch at Galveston is 300,000 to 350,000 pounds. A little less than half of this (150,000 pounds) is brought into the fish market in the morning and sold, wholesale and retail, at an average price of 7 cents per pound. About as much more is shipped into the interior of Texas on ice. Some 2,000 pounds a week are received on the

steamers from Indianola. Most of this is also shipped into the interior, but little coming to the Galveston market.

The fish brought to the market are placed on the stalls by the fishermen and are soon bought up at prices varying with the supply, by a number of Italians known as speculators, who sell them to the public; all left unsold at 9 o'clock a. m., being put on ice till the next day. The demand and supply are far greater on Sunday and Friday than on the other days of the week, and very small on Saturday and Monday. The species seen in market in spring are the following, given in order of their abundance:

Sciæna ocellata. Redfish of the Colorado. (Up to 38 pounds.)
Cynoscion maculatum. Speckled trout.
Mugil albula. Mullet. (Little esteemed.)
Pogonias chromis. Drum. (Cheap.)
Bairdiella punctata. Yellow-fin.
Micropogon undulatus. Croaker; ronco.
Diplodus probatocephalus. Sheepshead.
Liostomus xanthurus. Flat croaker.
Pomadasys fulvomaculatus. Pigfish.
Menticirrus alburnus. Whiting.

The above of daily occurrence.

Tylosurus longirostris. Needle-fish.
Paralichthys dentatus. Flounder. (Mostly speared.)
Arius felis. Sea-cat.
Ælurichthys marinus. Sea-kitten; blue-backed cat. (Rarely except by negroes.)
Menticirrus littoralis. Surf whiting.
Chætodipterus faber. Half-moon.
Trygon sayi. Stingaree.
Diplodus rhomboides.
Centropomus undecimalis. Robalo. (A magnificent fish when baked.)
Trichiurus lepturus. Silver eel.
Hemirhamphus unifasciatus. Smear.
Clupea chrysochloris. Skipjack.
Brevoortia patronus; and other fish little esteemed, occasionally brought in, as also sometimes different river fish.

To this list the pompano, the Spanish mackerel, the crevallé, and some species of eel are to be added in summer.

STATISTICS FOR DIFFERENT LOCALITIES.—At Indianola, on Matagorda Bay, are some seventy-five to eighty fishermen, who take about 200,000 pounds of fish yearly, nearly half of this being shipped by steamer to Galveston, the rest being consumed in Indianola or sent by rail into the interior.

At Rockport and Corpus Christi Bay some fishing is done, perhaps 50,000 pounds per year.

At Brazos Santiago, on Laguna Madre, a number of men fish for the markets of Brownsville and Matamoras, about 100,000 pounds being taken yearly.

From Brazos Santiago, the robalo (*C. undecimalis*), which is there one of the most important food-fish, is often sent by steamer, on ice, to Galveston. It reaches a weight of 20 pounds, and is justly prized.

There is no fishing of importance elsewhere on the coast of Texas.

The total catch at the various places is as follows:

Location.	Pounds.
Galveston	300,000
Indianola	200,000
Corpus Christi	50,000
Brazos Santiago	100,000
	650,000

Value, as sold by fishermen, $32,500.

There are also some 100 pounds of shrimp taken daily at Galveston. The oyster trade is also important.