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REPORT
OF THE
Bureau of Shell Fisheries

For the Year ending October 31st,

1903.

EMBRACING THE ANNUAL REPORTS
OF THE
STATE OYSTER COMMISSION,
THE
STATE OYSTER COMMISSION FOR THE DISTRICT OF
OCEAN COUNTY
AND THE
OYSTER AND SHELL COMMISSION.

CAMDEN, N. J.:
SINNICKSON CHEW & SONS COMPANY.
1904

STATE BUREAU OF SHELL FISHERIES.

CHARLES R. BACON, Camden, Chief.

OFFICERS AND EMPLOYES OF STATE OYSTER
COMMISSION.

COMMISSIONERS.

EDWARD L. RILEY, Newport, Chairman.
EDMUND STITES, JR, Port Norris.
JEREMIAH N. OGDEN, Bridgeton.
WILLIAM DeGROFF, Keyport.

SUPERINTENDENT AND SECRETARY.

ALONZO T. BACON, Mauricetown.

SUPERVISING ENGINEER.

SAMUEL M. SHELDON, Millville.

SPECIAL OFFICER.

GEORGE C. BELL, Newport.

CAPTAINS OF GUARD BOATS.

JAMES BOYLE, Millville.
J. HAMMITT LAKE, Port Norris.

Office of Commission, Maurice River, New Jersey.
Days of Meeting, First Thursday in each Month.

STATE OYSTER COMMISSION FOR OCEAN COUNTY.

John T. Burton, President.....Tuckerton.
Ernest L. Worth.....Bayville.
Daniel T. Sooy.....New Gretna.
Edward A. Horner, Superintendent.....Tuckerton.

STATE OYSTER AND SHELL COMMISSION.

FIRST DISTRICT.

John B. Tilton.....Forked River.
Charles W. C. Bonnell.....Bayville.
Joseph K. Ridgway.....Barnegat.

SECOND DISTRICT.

Philip R. Sprague.....West Creek.
Josiah H. Gaskill.....Tuckerton.

THIRD DISTRICT.

George A. Mott.....Tuckerton.
Maja C. Mathis.....New Gretna.
Watson T. Sooy.....Green Bank.

FOURTH DISTRICT.

Elphra S. Sooy.....Pleasantville.
Walter J. Anderson.....Leeds Point.

FIFTH DISTRICT.

Robert R. Corson.....Palermo.
George Dickinson.....Erma.

SIXTH DISTRICT.

David Claypoole.....Cedarville.
Lewis F. Shropshire.....Port Norris.

REPORT.

DECEMBER 1ST, 1903.

The Honorable Franklin Murphy, Governor, State of New Jersey :

The State Bureau of Shell Fisheries herewith submits its first report, in pursuance of Chapter 265 of the Laws of 1903, approved by yourself, April 14th, 1903, which reads as follows :

“An Act creating a bureau of shell fisheries.

“Be it enacted by the Senate and General Assembly of the State of New Jersey :

“1. A state bureau of shell fisheries is hereby established ; the chief of said bureau shall be appointed by the governor for a term of four years ; his salary shall be twelve hundred dollars per annum, payable monthly by the treasurer on the warrant of the comptroller ; the chief of such bureau may employ such clerical assistance as may be necessary from time to time ; the several oyster commissions of the state shall file with such bureau a statement in detail, quarterly, and oftener if required, of the receipts and disbursements of their several commissions, and such commissions shall further report annually to the said bureau, on the first day of November, a summary of the work of the said commissions for the preceding year ; the shell commissioners shall in like manner report in detail all transactions of their several commissions ; the director of the New Jersey college-experiment station at New Brunswick shall annually file with said bureau a report of his experiments in the scientific investigation of oyster and clam propagation ; all recommendations and reports of said commissions shall be made to the chief of said bureau ; the said commissions shall forthwith on the granting of any lease or license transmit a memorandum or copy thereof to said bureau ; a copy of all maps and surveys of any oyster lands heretofore or hereafter to be leased or surveyed by said commissions for any purpose, and a copy of all maps and surveys of any grounds set apart for clamming

grounds, shall be filed forthwith with such bureau; the several oyster commissions, oyster superintendents and shell commissioners shall also file with said bureau, when required by the chief thereof, any other records, papers, writings or data pertaining to their several offices; an office for said bureau shall be permanently maintained at the state house, and there shall be kept at all times on file therein all the reports, surveys, papers and records aforesaid; it shall be the duty of the chief of said bureau to procure and compile statistics and information relative to the progress and development of the oyster and clamming industry in this and in other states and countries, and to secure and keep on file the laws of other states regulating such industries; the chief of said bureau shall make a report to the governor annually as of November first each year, and not later than December first annually, of the general condition of the oyster and clamming industry of the state and the transactions of the various commissioners aforesaid during the preceding year, and shall transmit therewith the reports and recommendations of the oyster and shell commissioners and the report of the director of the experiment station, together with such recommendations as said bureau may deem advisable to make.

"2. This act shall take effect immediately."

In the six months of the Bureau's existence it has been busy with the preliminary details and arrangements for securing a supervising scrutiny of the oyster and clam industry of the State. It has been somewhat hampered by the fact that it had to feel its way along certain lines and grasp new ideas and situations best calculated to meet the ends for which it was created. It desires to record that in the main it has had the hearty co-operation of all the members of the State Oyster Commissions, and it desires to express its thanks to those who have taken a hearty interest in advancing the Bureau's work.

The Bureau regrets to record that the Oyster and Shell Commission has not found it expedient to make prompt response to its requests for detailed reports of the Commission's operations. The Bureau is, therefore, unable to include in its first report all the information it would desire from that source. Such matter as has been reported by that Commission, however, is herewith submitted.

The Bureau views with considerable alarm the gradual depletion and impairment of the clam industry of the State. Year by year the

yield of clams seems to decrease. A few years ago clams brought but \$1.50 per thousand, but they now find a ready market at from \$4 to \$5. This is wholly due to their scarcity, and there would seem to be necessity for prompt action to restore the industry to its former extent and value. The output of clams for the State of New Jersey, amounting to more than half a million dollars in value, is entirely too large and too important to be overlooked.

The Bureau believes that experiments for the propagation of clams might be conducted with considerable profit to the State, and believes that such an experiment station as the biologist suggests might also include work for the restoration of the clam industry. From every point of the State come complaints of this decreasing clam output, and the Bureau would earnestly recommend action to meet the requirements of the situation.

The Bureau desires to call your especial attention to the report of Professor Julius Nelson, Biologist of the State Agricultural Experiment Station, who has for several years been engaged in scientific experiments for the artificial propagation of oyster seed. It is very gratifying to note that the professor has reached a point in his experiments which justify the claim that oyster seed can be artificially propagated to a sufficient quantity to meet all the demands of the oystermen of the State. It is necessary, however, to enlarge the scope of these experiments; to furnish larger and more comprehensive paraphernalia; to construct observation and experiment stations at various points, in order that the experiments already conducted may be pushed to their best results.

Unfortunately there has been a great lack of funds necessary to pursue this work along proper lines and to the best interests of the State and the industry. The last Legislature increased the appropriation for this work from \$200 to \$300; but unfortunately a prior law, which had not been repealed, prevented such an increase, and our State Comptroller was unable to see his way clear to granting the extra one hundred dollars. When the importance of this work is taken into consideration and viewed from all points, it can be readily seen of what vast benefit it will be if carried out to all possible results.

Professor Nelson suggests the enlargement of the work, now so promising for the future, but believes that an extension of the system of the experiments will demonstrate beyond all doubt the possibility of raising oyster seed sufficient to meet all demands. All that is

necessary is the proper facility for conducting the work. The Bureau would, therefore, earnestly recommend that the State Bureau of Shell Fisheries be authorized and empowered to secure the aid and assistance of a biologist, and that the appropriation for this work be so increased as to meet the requirements of larger and broader experiments along that line, and that the suggestions of Professor Nelson be carried out.

The Bureau suggests that more than one experiment station is absolutely necessary in order to make proper observation of the industry in the various waters under which oysters grow. The Bureau believes that Professor Nelson's suggestion for the construction of the house-boat, or floating experiment station, is a very good one, and should be adopted without hesitation. When it is considered that a great famine of oyster seed threatens the industry of the State; that it is shut out from all but one possible market for the purchase of seed, and that even that market may sooner or later be closed, the importance of carrying out this experiment will be at once apparent. The Bureau, therefore, earnestly urges the extension of this system of experiment, believing that it is full of promise for the oyster industry of the State.

It will be seen by the report of the Oyster Commission for Ocean county, that its work has been seriously retarded by an unintentional error of the last Legislature, in failing to make proper provision for the necessary survey of the waters under the Commission's jurisdiction. There have arisen, in consequence, some disputed questions of authority for the leasing of the grounds, that would probably not have arisen if provision had been made for the surveys. Otherwise the laws governing the industry in that section of the State seem to be working to the satisfaction of a large majority of those engaged in the industry.

There are still some considerable number of unsatisfactory points, however, which will need adjustment by the enactment of further laws upon the subject. The Bureau hopes to be instrumental in devising a bill for submission to the coming session of the Legislature, which will provide for a general State head, having supervision over the whole oyster and clam industry of the State. The belief seems to be general that some such organization will be ultimately necessary and for the best interests of the State and those engaged in the industry.

The present commissions are doing good and efficient work, gaining the confidence and respect of the great majority of those concerned with the planting and propagation of oysters, but it seems to be impossible to thoroughly and satisfactorily arrange matters to secure the unanimous approval of those directly interested.

There is now in the courts some litigation concerning leases of beds of the waters of Cape May county, final decision of which may go a long way toward determining the full and complete status of the State Commission's authority. There is also a case now in litigation concerning the desires of the State Commission to revoke licenses, and on that adjudication much depends. The Bureau is watching the outcome of these contests with great interest, and hopes that the final decision may be rendered in time to influence the consideration of the proposed bill for submission to the Legislature.

LOUISIANA PURCHASE EXPOSITION.

The Bureau, during the year, conceived the idea that an exhibit at the forthcoming Exposition at St. Louis, showing the extent of the oyster and clam industry of New Jersey, would be of considerable benefit to the industry. With that end in view it has been in correspondence with the several commissions, oystermen and others directly interested in the industry, with a view to arranging the exhibit in the best possible manner. It proposes to show, by photographs and paraphernalia, the workings of the oyster industry. It will have the co-operation of Professor Julius Nelson, Biologist of the State Agricultural Experiment Station, who has very ably conducted experiments along the line of artificial propagation of oysters. It is probable that the exhibit will include specimens showing the beginnings of oyster life and through the various stages of development. Of these experiments the report will deal more largely.

The Bureau believes that this exhibit will tend, largely, to educate many thousands of visitors to the great exposition who now have little or no conception of the vast magnitude of the oyster and clam industry. The Bureau also hopes that it will tend to create a new demand and open a wider market for the products of New Jersey's shell fisheries.

There are now shipped from various parts of the country, including a very small portion from our own State, large quantities of oysters out of the shell. These go to many points in the Middle West, and

the consumer has a very limited knowledge of the real luxury of oyster-eating as it is known in our own State. The oysters thus shipped in bulk have little of the flavor and taste that surround the bivalves fresh from the shell.

It is possible, also, that this exhibit may include oysters in the shell fresh from our State beds, so that many thousands may be enabled to get a sample of the luscious food so familiar to the people of the East. The idea of the exhibit is cordially indorsed by all those with whom the Chief of the Bureau has been in communication, and all agree that it will be of the utmost benefit to the industry. In this connection the Bureau consulted the State's Commission to the Louisiana Purchase Exposition, who gave it their cordial indorsement and support, setting aside an appropriation of \$500 to meet the necessary expenses.

ILLNESS FROM OYSTERS.

During the present fall the attention of the Bureau was called to several cases of what appeared to be well-defined poisoning from eating oysters. Investigation of the subject led to the apparently well-founded belief that the oysters had been impregnated with some poisonous substance. Traced to their origin, the oysters were found to have come from a part of Raritan Bay, and perhaps exposed to the waste waters from large copper works. It is believed that the water thus contaminated poisoned the oysters and made them unfit for food. The Bureau is still pursuing the investigation of this subject, and hopes, during the present year, to have thorough and scientific observation of all such matters.

It would be well in the line of the State's control of the industry to pursue this investigation with the idea and purpose of preventing such contamination. There are, in some parts of the country, oyster beds so situated as to be in danger of contamination by such wastes. In that case there is great danger of typhoid; but happily New Jersey is wonderfully free from such possibilities. The Bureau has heard that some of the State's beds lie within the zone of such danger, but there has been no authenticated cases directly traceable to such contamination.

The Bureau will deem it its duty to follow the investigation of this subject more fully and to be prepared, at all times, to make direct and positive statements regarding the existence of such dangers.

REPORT ON EXPERIMENTS IN THE ARTIFICIAL PROPAGATION OF OYSTERS.

JULIUS NELSON, PH.D.

Biologist of State Agricultural College Experiment Station.

The experimental work reported in the following pages was done under provisions of a legislative act as follows:

"1. The director of the New Jersey agricultural college experiment station, at New Brunswick, is hereby authorized to establish and maintain one or more stations for the scientific investigation of oyster propagation, said station or stations to be situate at some point or points in the oyster-growing sections of this state. The amount authorized to be expended under the provisions of this act shall not exceed the sum of two hundred dollars in any one year; *provided*, that no moneys shall be drawn from the treasury for the purpose of this act until same shall have been specifically appropriated according to law.

"2. This act shall take effect immediately. Approved March 21, 1901." (Chapter 99, Laws of New Jersey, 1901.)

In the winter of 1903, the Legislature increased the annual appropriation, making it \$300.

The Biologist of the Agricultural Experiment Station had previously (1888 to 1892) given considerable attention to the study of oyster propagation, and again in the summer of 1900 was engaged in this work, at the request of the members of the State Oyster and Shell Commission, and through special efforts in behalf of the cause of William H. Fischer, editor of the *New Jersey Courier*, Toms River.

The wording of the appropriation act was such as to imply that the money was for use in the Biological Department of the Agricultural Experiment Station; accordingly the biologist was placed in full charge of these experiments.

STATIONS ESTABLISHED.

The experimental work was inaugurated in the summer of 1901, at two points, viz., Barnegat and Tuckerton. At the former place, Captain Joseph K. Ridgway, President of the Oyster and Shell Com-

mission, put his house-boat at the service of the biologist, and at the latter, Mr. George A. Mott, Secretary of the Commission, threw an unusual amount of energy and enthusiasm into the work, and soon provided practical quarters for the use of the investigator for laboratory and for lodging purposes. These were necessarily quite modest in extent, owing to the limited means at command.

The expenses of maintenance include such items as travel, food, fuel, apparatus, labor, material, &c., so that very little could be devoted to establishing a really suitable laboratory building. In fact, were it not that the most expensive apparatus, such as microscopes and numerous accessories, as well as the services of the biologist, are given by the Agricultural Station, free of charge, to this work, the appropriation would be utterly inadequate to effect the results aimed at.

Though the Tuckerton station is difficult of access, being located in the midst of an extensive marsh five miles south of the town, the biologist soon learned that it presented unusual facilities for his work, because here he could obtain oysters that remained full of spawn for three complete months, whereas at Barnegat no suitable oysters were found after the end of June. For this reason, the Barnegat station has been used only in a secondary way, while the "Mott" station has been made the primary base of operations.

A third station is contemplated, located on the Mullica river, in connection with the oyster cultural operations of the Messrs. Sooy.

A FLOATING LABORATORY NEEDED.

But the proper use of these and other desirable localities requires that the apparatus which constitutes an essential laboratory, be installed in a floating workshop, similar to a house-boat, which can be moved from place to place as the work requires. The sum needed for such a plant as this would be but slightly greater than that required for one properly-equipped station. This would, moreover, be in effect the establishing of a really efficient station at any point where such a boat could come. There are, however, other reasons for urging the appropriation of a sum for this purpose, viz.: that some of the most essential problems connected with the oyster culture can be studied only on the natural beds themselves, it being quite impracticable to prosecute such studies from a station on the

land. Such a "boat laboratory" should not only contain the laboratory proper, but also the necessary dormitory and kitchen facilities. It will be better to provide a small motor launch for towing this whenever it is to be moved, than to provide it with its own motor—first, because of the inconvenience of having this extra apparatus on board; and secondly, because of the inconvenience of moving the entire laboratory when one wishes to make a temporary excursion to some distant oyster bed. Such short excursions and communication with the shore are most feasibly made in the small launch as a tender. The expense of maintaining such a laboratory would be only a little more than one station on shore.

OYSTER CULTURE METHODS AND CONDITIONS.

Oysters in a state of nature grow attached to some object, called "cultch." Our American oyster produces the male and female reproductive elements called "spawn," in separate male and female individuals. This spawn, as it issues from the oyster, looks like cream, and is usually called "milk" by oystermen. The female spawn consists of minute eggs, so small as to look like fine dust when diluted in water, whereas the male spawn consists of "sperms," each of which is at least a thousand times smaller than an egg. Each sperm is provided with a slender, lash-like propeller, by means of which it fastens itself upon the surface of the egg.

At one point where its shell is either thin or absent, the egg absorbs one of these sperms, and at once begins to develop into a little embryo oyster. In a few hours the embryo hatches as a swimming fry, and in a day or two the two valves of the oyster's shell appear. It now swims about, seeking for a proper place where it can cement itself fast. The shell grows rapidly, so that within a week the young oyster, now called "spat," becomes visible. In two or three months it has become young oyster seed, and in a year or so can be taken by the oyster tongs from its natural location or "bed" and transplanted upon ground where it will grow and fatten to a marketable size in three or four years. Oysters feed on microscopic organisms throughout life. On the natural bed the oysters are crowded together so as to interfere with each other's growth. So the seed secured there is "culled" and separated into single oysters, or into quite small clusters, that are scattered uniformly over a food-bearing area, or oyster plan-

tation. Such an area is usually not one where oysters will propagate naturally for one reason or another, the principal reason being, the absence of suitable objects upon which the young can fasten.

SOURCES OF OYSTER SEED.

On the natural bed the young fasten themselves upon the shells of their ancestors, dead or living, and when the oystermen tong off such oyster seed, naturally the shells to which the seed is fastened are removed also. Very young oysters cannot be torn from their cultch without injury. It follows that, after several years of tonging, the natural bed contains no more cultch, as well as no more spawning oysters. If cultch were present, a few spawning oysters, because of their immense fecundity, would soon restore the original number of oysters. For this reason the State provides for the planting of shells, as cultch, upon the natural beds.

In the shore waters of New York, Connecticut and Virginia, the planters have planted shells upon their oyster farms, adding spawning oysters, so that each oyster planter has artificially produced his own oyster seed. In New Jersey and Maryland the oyster tongers have regarded oysters thus produced as public property, and have been sustained in this view by law; therefore, our planters are forced to rely for seed on the natural beds, which are somewhat limited. Formerly, also, much seed was imported from the south, but the Southern States passed laws forbidding the exportation of their oyster seed, to protect their own planters. The amount of oyster seed produced artificially in New York and Connecticut waters is so great that the natural beds have not been drawn on to their depletion and they still furnish seed for export.

Our planters use a good deal of "East River" seed in addition to native stock.

There is no doubt that there would be no scarcity of seed in our State if our planters could be encouraged to raise their own seed by shelling suitable ground. But even under such conditions, seed would not be produced wherever such shells might be placed. We do not know why this is so.

Realizing this, our oyster planters have encouraged the scientific study of oyster development in providing for the work, as noted in the preceding pages.

SCIENTIFIC STUDIES OF ARTIFICIAL PROPAGATION.

A number of experimental studies have been made by different scientific investigators at several points along the coast at various times. Dr. Rice made studies at Cold Spring Harbor, L. I. Dr. Ryder experimented at points in Maryland, and later at Sea Isle City, this State. The writer experimented at Keyport, at Oceanic, on the Navesink, and in Virginia. The studies of the two first-mentioned gentlemen were unfortunately interrupted by their decease. The subject requires to be persistently followed out until a perfected system of artificial culture is evolved. This will necessarily require a number of years.

RECENT EXPERIMENTS.

Since undertaking these investigations under the recent law, the writer has contended, and is firmly convinced, that the best way to solve these problems is to study the natural history and physiology (ecology or biology) of oyster development. Accordingly, during the first season, he directed his attention specifically to the subject of egg fertilization; during the second season the early development of the embryo before the fry gets a shell was the special object of attention; during the last season, the efforts have been directed towards securing the best embryos with shells.

In previous seasons it was a rare occurrence that the eggs artificially fertilized developed so as to reach the shell stage, but now that matter appears to have been mastered, and the biologist is prepared to study the questions involved in the feeding of such embryos and giving them the best conditions for fixation to cultch.

The questions we have continuously asked are: What are the best conditions for the development of the fry as regards temperature, character of the water, character of the spawn, ventilation, light, manipulation, &c.? A host of conditions not present in nature arise under artificial manipulation, and these have to be adjusted so that the delicate fry shall not suffer.

Hundreds of experiments have been made and carefully observed, each lasting for several days. Hundreds of unforeseen difficulties have arisen and have been overcome—hundreds of new suggestions have appeared that must be tested. The work is unusually complex,

owing to the small size of these animals and the fact that the adults have to be opened, and so their lives are sacrificed at each experiment. Thus the study of the breeding of the domestic animals or plants.

We shall now indicate some of the more notable results of our investigations, referring those who desire fuller information to our detailed reports in the publications of the State Agricultural Experiment Stations.

THE SEED USED.

Northern and native oysters planted in our waters come into spawning condition in June and usually are through spawning early in July, whereas oysters secured from southern sources may be found "in spawn" at any time from June to September.

Sperms suitable for fertilizing the eggs must be in rapid motion when viewed with the microscope, and the eggs must be somewhat irregular in shape, approaching the pear-shape in southern plants. They must be neither very transparent nor very opaque. The nucleus should be central in position, and there must not be much granular material mixed with the eggs as they issue from the reproductive glands.

These qualities are shown only when the oysters are just ready to eject the spawn; this spawn is not all thrown out at once. Frequently a considerable amount is retained, which then undergoes dissolution and is transferred to other parts of the body, where it is transformed into fat. Sometimes there is no spawning at all, the entire contents of the reproductive gland becoming dissolved. Microscopic examination becomes necessary in that case to decide on the character of the spawn. Otherwise, a partly-spawned oyster is readily discerned by ordinary inspection. Eggs from such oysters will indeed develop, but the fry fail to reach the shell stage.

THE WATER USED.

The water must be of the best; only that coming into a creek on the highest part of the tide (the higher the better) is adapted for use in such experiments. It is also necessary to filter such water, that parasitic organisms and microscopic enemies may be excluded. Otherwise these are sure to multiply in the vessels and tanks during the course of the experiment and so destroy the embryos.

MANIPULATION.

Utmost speed in manipulation is necessary, as the eggs are very sensitive and begin to deteriorate at once after the oyster is removed from the water. A very small quantity of the male sperm is stirred into a tumbler of sea water, and then the eggs are added and stirred for ten minutes to effect impregnation. The water is then transferred to a flat dish, where the eggs are allowed to settle; then the turbid water is siphoned off and a new portion of water is added. This process is repeated several times, until the water remains clear. The washing of the eggs is then complete, and they are left in a dish, with occasional stirring, until free-swimming fry appear. These are then siphoned off, and the residue discarded. From time to time it may be necessary to remove any *debris* that may settle.

TEMPERATURE.

All the best results were secured when the temperature ranged near seventy-five degrees Fahr. Care should be taken that the water does not fall below seventy degrees nor rise above eighty degrees. For this purpose an incubator is necessary, as the night temperature frequently runs to sixty degrees, even when the day temperature may soar into the nineties. By day the pans containing the fry should be placed in water whenever the air temperature rises above eighty-five degrees. We used an incubator only near the close of last season's work, and its proper use and real influence has not been adequately determined.

VENTILATION.

Fresh air is a prime requisite as well as a fresh (not stale) condition of the water. Fumes of kerosene, naphtha, tobacco, &c., are highly injurious. Gases arising from fermenting seed also seem to injure the embryos. It will therefore be necessary, when planting these fry, to secure a location for the culch that shall exclude the action of stagnant water.

WIDER OPERATIONS FOR THE FUTURE.

The next step in our experiments will consist in studies on the fixation of the fry, viz., "spatting" or "spat" formations. This will not only be the most difficult part of all, but will call for more expensive operations than have hitherto engaged our attention. We shall begin in a small way, and carefully, step by step, work out the principles that govern this process. We have, as a preliminary step, constructed a broad ditch or "claire," whose muddy floor has been covered with sand, and which runs empty at each ebb-tide. If we simply placed the swimming fry in this, they would all be carried away with the ebbing current. It will be necessary to confine them by erecting a strainer-gate at the mouth of the claire. The fry are so small that they pass through the meshes of bolting cloth with facility, and, so far as our observations have gone, any cloth strainer that will hold them becomes clogged up by mud. A sand strainer gave good results in Dr. Ryder's experiments. We have yet to devise one that will let the water through with sufficient readiness and at the same time retain the fry. We have a heavier tide to deal with than did Dr. Ryder.

SCIENTIFIC OYSTER CULTURE IN FRANCE.

Progress in oyster culture in France has been the result of scientific experiments, conducted at government expense. The French oyster is quite unlike that of America. Whereas our species has separate males and females, in that species both male and female spawn are produced in every individual. The sperms alone leave each individual to enter other oysters, and fertilize the eggs within the body. The young develop in the gills under maternal protection; when ready to become "spat" they are thrown out and soon fix themselves to collectors. In France, scientific oyster propagation consists in placing collectors on the natural beds, which beds seem to be the only places where such spawn can be produced. After the young have grown to a sufficient size, they are removed from the collectors, and are reared and fattened for market in special claires, constructed so as to receive water only at the highest tides. In such claires their best food grows in great luxuriance. The question of claire culture for the adults, in our country, is still problematic, though doubtless it will be

developed in time. I expect to see our extensive salt marshes ditched for this purpose. Indeed, such has already been done by nature, the quickest growth being secured in such "creeks."

In conclusion, the writer must remind the reader that these investigations are still in their infancy, though it is several years since they were started. This work is one requiring considerable time. Only those who have intimately studied such problems by experimental processes can realize the multitudinous and complex questions that spring up for answer on every hand, at every step of the investigation.

Such details, though consuming the thought and time and energy of the experimenter, are rarely published, having relation only to the experience of the writer.

ANNUAL REPORT

OF THE

New Jersey State Oyster Commission.

For the Year Ending October 31st, 1903.

(23)

To the Bureau of Shell Fisheries of the State of New Jersey :

Pursuant to and in conformity with the provisions of the act of April 14th, 1903 (P. L. 1903, p. 709), the undersigned, the New Jersey State Oyster Commission, make this our annual report for the fiscal year ending October 31st, 1903.

RARITAN BAY.

By the act of March 25th, 1902 (P. L. 1902, p. 62), certain lands lying under the tidal waters of Raritan bay were added to the territory under the jurisdiction of this Commission, and its membership was enlarged to four.

The supplemental appropriation act of 1903 included the sum of \$1,500, for the survey of 3,000 acres of oyster grounds in Raritan bay, "provided, that the Commissioners shall advertise for proposals for making and completing said survey, and that no plans shall be adopted or contract awarded for this object without the approval of the governor."

Pursuant to this provision, this Commission duly advertised for proposals for making such survey and received two bids. One contained three alternative proposals, viz., \$2,600 for the entire work, or \$56 per day, or cost, plus 30 per cent. of cost. The other was to do the entire work for \$1,223, the bidder to furnish his own boat and instruments. Both bids were submitted to the Governor, who approved the bid of \$1,223 for the work, and the contract was awarded to Walter M. Sharp, C.E., of Bridgeton, N. J.

Eighty-two grounds were surveyed and leased.

Attempts to enforce the law in that locality have not been successful. One watch boat is employed.

DELAWARE BAY, DELAWARE RIVER AND MAURICE RIVER COVE.
I. NATURAL BEDS OR SPAWNING GROUNDS.

With respect to oyster culture, Delaware bay and river, in New Jersey, are divided into two parts by an imaginary line running direct from the mouth of Straight creek to Cross Ledge light-house, and commonly known as the "Southwest Line." North of this line are the spawning grounds or natural beds, where oysters naturally spawn and grow, and where, if undisturbed, they increase and multiply to a marvelous extent. The spawn or "spat" must attach and adhere to a clean, submarine object, however, or it is soon destroyed.

The most available substance for this purpose is the natural oyster rock and old shells taken from the natural beds. If these are removed and carried away, their place must be supplied by new shells, at enormous expense, or this industry in these waters will be lost to the people of the State.

Unless masquerading, as it frequently does, as a "Blue Point," the natural oyster is marketed only for planting.

The planting season is from April 1st to June 15th, in each year. During this period a fleet of 400 boats, employing at least 2,500 men, resort to these natural beds for the purpose of catching the young growth of oysters. These are then taken into the bay and cove, and thrown overboard or "planted" in deep water, where they remain for a period of two or three years, until they attain marketable size. They are again taken up in dredges, placed on floats in fresh water for a day or two and then marketed.

Oysters are caught in these waters by means of dredges. These are attached to long ropes and thrown overboard from the deck of a vessel while in the act of sailing, and by this means are dragged across the oyster bed. The dredge is a sort of flexible, metal, link bag, attached to a metal frame, which is supplied on its outer and lower edge with spikes or "teeth." These spikes dislodge the oysters from the beds, whence they pass into the bag as the dredge is drawn rapidly, and with great force, over the bed. When supposed to be filled, the dredge is brought to the deck, about midship, by means of a windlass, and the contents dumped upon the deck. The "catch" consists of old shells, oyster rock, coral sand and oysters. If an old shell has adhering to it a live oyster as large as a man's finger nail, it

is counted an oyster and not a shell. The "rough culling" is done at the winders. The usual process is to take up a shovelful out of the pile, throw the good oysters on the deck and the "trash" overboard. This rough culling is done by hand, and is only required by law to be done so closely that three bushels of oysters, taken from any portion of the load, shall not contain more than 15 per cent. of shells and refuse material. The good oysters, or "plants," are then shoveled back to other portions of the deck, or in cold weather, put in the hold. The process of dredging is continuous; the deck space at the winders is narrow, and each dredgeful is supposed to be culled as soon as dumped, and while the dredge is again being filled. The advantage to the dredger in failing to cull is that he thereby secures a greater quantity of shells, &c., to plant in deep water.

These natural grounds or beds occupy a territory of about 50,000 acres. Hundreds of thousands of bushels of plants are taken therefrom annually. Failure to enforce the law means the ultimate destruction of the beds.

During the year there have been two prosecutions for the violation of the "Rough Cull" law. In one case there was an acquittal by direction of the trial judge in Salem county.

The other prosecution was in Cumberland county. The defendant was convicted. His case is now before the Supreme Court on writ of error.

Lack of prosecutions does not indicate lack of vigilance on the part of the watch-boat. The use of the steamer "Cypher" has been a powerful aid in convincing oystermen that the "Rough Cull" law is wise and wholesome legislation.

Attention is specially directed to that portion of the report of the superintendent in which he recommends the proper cultivation of the Ledge and Egg Island beds.

There was a very light catch of spat this year in these waters. The same condition exists in Connecticut, Maryland and Virginia.

II. PLANTING GROUNDS.

These lie south of or below the southwest line and now comprise about 30,000 acres. There are 750 leases outstanding, embracing 1,300 grounds, ranging in area from 5 acres to 139 acres.

The prospects are favorable for an average crop. While the quality

is not quite so good as last year, we find very few dead oysters, so that the outlook for the coming year is most favorable for a large yield.

The market value of the average annual oyster crop of Cumberland county is about \$1,500,000.

During the year there have been four prosecutions for illegal dredging on these planting grounds, resulting in pleas of guilty, or in convictions, in every case. Some of the defendants have been sentenced to the State Prison and others have been heavily fined.

Generally speaking, the law has been well observed.

There has been some litigation over the right of this Commission to grant leases on the Cape May shore, the point of dispute being whether the grounds applied for embraced any commonly-known natural ground. The writs of *certiorari* which removed the proceedings of this Commission into the Supreme Court for review were dismissed at the November Term, 1903, and since that time this Commission has refused to grant new leases for such grounds.

There is a very general demand among the lessees of the planting grounds that the law should be so modified as to permit the use of mechanical motive power for the propulsion of boats and operation of dredges in catching and taking their planted oysters.

No valid reason can be advanced against this proposition, and, if confined to the planting grounds exclusively, this Commission recommends such change in the law.

III. POLICE REGULATIONS.

The steam watch-boat "Cypher" is this Commission's most powerful aid in the general enforcement of the law. She is a well-built wooden yacht, 60 feet keel, 65 feet over all, 16½ feet beam, depth 6 feet, draft of water 5 feet, equipped with a 125-horse-power engine, speed 12 miles per hour, under forced draft 14 miles.

She carries a powerful search-light, which enables the special officer to observe the movement of vessels within the radius of two miles. Capably operated, as she is, by Capt. George C. Bell, she has done more to enforce a wholesome respect for the oyster laws than all other influences combined.

In addition, this Commission employs two sailing vessels, each in charge of a competent officer, whose duty it is to patrol the waters not covered by the "Cypher."

IV. LEGISLATION.

The original "State Control" law was passed in 1899.

Since that time it has been amended and supplemented. In order to afford information to those interested in the subject, we respectfully recommend that the oyster laws of the State be carefully compiled by some competent person, and printed and circulated as a part of the report of the Bureau of Shell Fisheries. To this it would be well to add some notes of cases bearing on the subject. A general knowledge among oystermen of the exact provisions of the law would greatly aid in its enforcement.

As a whole, the amended law gives very general satisfaction. Some of its provisions are likely to be construed by the Supreme Court before the adjournment of the coming session of the Legislature, and if any of them are found deficient, application will no doubt be made to the Legislature for remedy.

The use of mechanical motive power on the leased grounds is so generally demanded that the passage of a law granting permission so to do would be advisable, but we respectfully urge that the operation of such a law, if extended to the natural beds, north of the southwest line, should be properly restricted so that said beds shall not be damaged or destroyed.

The item in the Supplemental Appropriation act of 1903, of \$9,000 for the use of this Commission, to purchase sundry riparian grants, was not used for the reason that only two grants were offered. The remaining grant, while of little or no value for public purposes, could not be obtained with the other two, within the limits of the appropriation.

The appropriation should be renewed and supplemented to the extent necessary to remove all possible claim to private ownership of the natural spawning grounds in Delaware bay.

V. RECEIPTS AND DISBURSEMENTS.

A statement of the receipts of this Commission for the fiscal year will be found in the report of the State Oyster Superintendent, annexed hereto and made a part hereof. This Commission disburses no moneys whatever. Its sole function, in that respect, is to certify bills to the

State Comptroller. Reference is hereby made to his report for a full, detailed statement of all expenditures for and on behalf of this Commission.

Dated November 2d, 1903.

Respectfully submitted,

EDWARD L. RILEY,
EDMOND STITES, JR.,
JEREMIAH N. OGDEN,
WM. DeGROFT,
Commissioners.

Report of the State Oyster Superintendent.

To the New Jersey State Oyster Commission:

GENTLEMEN—I herewith submit to you my annual report as Oyster Superintendent, for the fiscal year ending October 31st, 1903, made under and by virtue of the law commonly called or known as the "State Control" act of March 24th, 1899, and the amendments and supplements thereto, which law makes the Oyster Superintendent the collector of all revenues derived thereunder.

The following statement shows the gross receipts from all sources during the said fiscal year:

From licenses issued to vessels in Delaware bay.....	\$7,412 00
From leases issued for oyster grounds in Maurice River cove...	5,784 13
From licenses issued to vessels in Raritan bay.....	302 00
From leases issued for oyster grounds in Raritan bay.....	503 63
From fees collected for surveys made in Maurice River cove...	480 00
From sale of naphtha launch "Bay".....	390 00
From sale of boat-house.....	12 05
From sale of markers for oyster grounds in Maurice River cove.	1 54
Total receipts.....	\$14,885 35

As in my report of the year 1902, I desire to call attention to the fact that the receipts as above stated will not correspond with those shown by the State Comptroller's report.

This difference, or apparent discrepancy, is due to the fact that my report shows all moneys collected up to and including October 31st, while the Comptroller's report, which is made on October 31st, does not include the receipts for the month of October, which are remitted to him November 1st.

You will also notice that the receipts of the year just ended are somewhat less than those of the year 1902, both from licenses and leases, in both Delaware bay and Raritan bay. The cause for this is well understood by all engaged in the oyster industry, but the remedy therefor is not so well understood or clearly established, as it lies in the increase of seed oysters. To bring about such increase,

in a manner best calculated to benefit all persons engaged in the taking and planting of oysters in this State, is the problem to be solved.

As the doctrine of the greatest good to the greatest number is the only just solution of any question, I wish, with such purpose in view, to again urge upon the Commission the expediency and necessity of devising some way whereby the old Egg Island oyster bed and the Ledge bed, in Delaware bay, may be once more made productive. These beds comprise an area of about three thousand acres of shells, that, owing to some unknown cause, fail to catch spat and to produce seed, as was stated in my report of last year. The opinion of those who have made a study of cause and effect in oyster culture is that this failure of the shells to catch spat is due to a sediment or slime having at some time settled and fastened upon the shells, which prevents the spat from adhering, rendering those one-time valuable oyster beds unproductive. The opinion of those well informed by years of practical experience in oyster culture is unanimous, viz., that these beds can be made again productive by dredging the surface shells therefrom and transplanting them elsewhere on good bottom. This would also result in making an additional oyster ground, and the dredging and handling would clean the shells, and thus a two-fold benefit would be derived.

I would therefore suggest to the Commission the advisability of having an act passed by the next Legislature, empowering them to transplant the surface shells of the above-mentioned beds to such part of the Delaware bay or Delaware river, above the "Southwest Line," as may seem to them most likely to produce the desired results.

In closing this, my second annual report, I am pleased to be able to state that the year has been especially gratifying to me in the almost unanimous expressions of approval concerning the results attained since the oyster industry has been placed under State control. These expressions are largely based on the feeling of security the planter derives under the title granted him by the State for the grounds on which he has, in many cases, his entire financial savings.

Thanking you, gentlemen, for the uniform courtesy you have shown me, and trusting that I shall merit a continuance of the same, so long as I may have the honor to serve you as Superintendent, I am,

Most respectfully yours,

A. T. BACON,

State Oyster Superintendent.

Dated November 2d, 1903.

ANNUAL REPORT

YEAR ENDING OCTOBER 31ST, 1903,

OF THE

STATE OYSTER COMMISSION

FOR THE

DISTRICT OF OCEAN COUNTY.

The undersigned, members of the New Jersey State Oyster Commission for the District of Ocean county, appointed under the provisions of an act of the New Jersey Legislature, entitled "An act for the regulation and control of the taking, planting and cultivating of oysters on lands lying under the tidal waters of Ocean county, in the State of New Jersey," approved March 26th, 1902, submit their second annual report, appended to which will be found the report of the Oyster Superintendent.

During the past year the work of surveying the oyster and clam grounds has been prosecuted as fully as your Commission was able to do with the limited means at hand. The Legislature not having made any appropriation for this purpose for 1902, and the Commission having been put to extraordinary expense in other directions for the work that they were obliged to do, notwithstanding this fact the work accomplished has been very gratifying, and enough reports have already been received from various sections of the county to show that what has been done has been a success.

State control over the oyster grounds being practically a new feature in this county, a great many doubted if the grounds could be accurately surveyed and plotted on the map. The work of surveying and mapping has reached a stage where doubts of its success can no longer be entertained. Even the most pessimistic are compelled to acknowledge that what they formerly thought to be a questionable theory was, in fact, a practical problem solved.

The work attending the survey of all of the oyster grounds in the county is a far greater undertaking than many would imagine. There are three separate bays in the county under the supervision of the Commission, each with numerous tributaries and thoroughfares, each bay having about an equal acreage of available grounds for the cultivation of oysters. Before surveys of oyster lots can be made it is necessary to have applicants identify their grounds, as without such identification it is impossible to know to whom a given lot belongs. Notice is served upon applicants when the surveyor will be on their

ground and they are requested to appear. Here the difficulty arises. Many applicants disregard the Commission's request altogether, others plead an excuse, while only a few comply. This naturally retards the work of surveying very much, as without someone present to identify these grounds the survey cannot properly be made. Such negligence is largely responsible for the slow progress of this work. However, considering such obstacles, the Commission, through its surveyors, has made an excellent showing along this line.

One of the first provisions of the law is that clam grounds shall be set apart. This is as hard a problem as the Commission has been called upon to solve. The strength, financially and commercially, of the oyster and clam industries is about equally divided between the two, and just where the line should be drawn between oyster-planting ground and ground to be set apart as public clam ground, as clams grow in all parts of the bays, it was hard to decide. In many cases the clambers and oystermen claimed equal rights to the same bottom. The Commission recognized the equal importance of both industries and endeavored to act as impartially as was in their power. We flatter ourselves that we have in a large measure succeeded. There is no doubt that it will be necessary to change the boundaries between the two grounds at indefinite periods, as from year to year there is a change in the bay bottom, and such change may be more favorable to the growth of one product than the other.

We have endeavored to establish a system of patrol for the protection of oyster planters against the depredations of the so-called "free bottom" class, but, on account of the limited means we possess, we were unable to give the protection needed. The Legislature having again failed to make any appropriation, we were obliged to use a part of our incidental fund to cover this expense, and as a result were financially restricted, and have been, on this account, unable to give the protection the conditions warrant.

After a careful inspection of the bottom of Barnegat bay, we find that there are large natural seed-beds located there that should be set apart by the State for the purpose of propagating oysters exclusively. These beds are too valuable merely for the cultivation of oysters, and the Commission would respectfully recommend that these grounds be reserved as natural seed-beds of the State.

We endorse the recommendation of the Superintendent relative to the change in the law allowing the use of grounds for propagating as

well as cultivating oysters and clams, also that covering the license question.

In July the Commission caused the arrest of three persons for clamming on unleased ground. Indictments were found by the grand jury in September, and a day was set for their trial. Parties indicted certioraried the case to the Supreme Court. As this will doubtless establish the constitutionality of the law, all parties concerned await with interest the decision of the court in this matter.

We are thoroughly convinced that when at length the law has proved its working practicality, a general satisfaction will be apparent that at last the oyster and clam industries have received their merited recognition, and are so governed that they will thrive under the protection and control of the State.

We have audited and approved the following bills:

B. H. Crosby, office rent, printing and supplies.....	\$51 05
J. T. Burton, labor and material restaking clam lines.....	80 00
E. L. Worth, labor and material restaking clam lines.....	42 25
Daniel T. Sooy, labor and material restaking clam lines.....	75 00
E. Horner, Jr., books, postage and supplies.....	62 88
Soper & Hollingsworth, stakes	3 00
W. G. Burton, labor and boat hire.....	27 00
Chas. L. Worth, labor and boat hire.....	18 00
Hudson Gaskill, patrol service	106 64
Aaron Pharo, patrol service	80 00
Caleb S. Cranmer, patrol service.....	82 00
Lewis F. Driscoll, patrol service.....	50 00
Somers French, patrol service.....	60 00
Lydia Leek, clerical work.....	14 93
Ethel Steelman, clerical work.....	6 00

Superintendent's Report.

To the New Jersey State Oyster Commission, District of Ocean County:

GENTLEMEN—I herewith submit my second annual report for the fiscal year ending October 31st, 1903.

It was my desire, at the beginning of the present year, to have the survey of the oyster and clam grounds completed, that we might be in a position to show all parties concerned that the law is founded on a business principle. At first a great many baymen doubted if the survey would show the exact location and shape of their grounds, as a great many of their lots are irregular in shape, some having six and even eight corners. For this reason they doubted if the shape of such lots could be accurately taken and acreage given. The progress of the survey thus far made serves to dispel all such doubts, and those who have seen the maps say that the location and shape of their lots is just as they know it to be on the water.

At the last session of the Legislature your Commission asked for an appropriation for the purpose of carrying on the work of surveying the oyster and clam grounds as the law provides, but for some reason unknown to your Superintendent the appropriation was not granted. I have repeatedly talked with members of the Appropriation Committee, and as yet have not found one member of that committee who had any objection or did object to the reasonable request of your Commission; but, as already stated, it was not granted. For this reason the work of surveying has been very much impeded. To ask to have this work done with no available funds in sight was rather embarrassing. Finally the services of Messrs. Isaiah Cranmer, Robert F. Rutter, M. C. Mathis and Stokes Collins were secured, and the work of surveying began. Under existing circumstances fairly good progress has been made. We have about five thousand (5,000) acres of available oyster grounds in the county. The lots are, as a rule, small and irregular in their location, and at

times it is very difficult to locate them, as it is almost impossible to get the lessee on the ground at the proper time to show the location of his lot or lots. This handicaps the surveyors and causes a great deal of delay. However, considering the obstacles we have been obliged to overcome, we are well advanced in the work of surveying, and in the near future will be able to show all leased grounds in several bays and all vacant grounds suitable for leasing.

Last year being the first year of the present law, we were obliged, in the absence of a survey, to allow each lessee to estimate his own acreage and grant leases accordingly. All leases were dated August 1st, 1902, and we hoped and fully expected to have the survey completed in time to grant a valid lease at the expiration of each of the old leases, accurately showing the acreage in each lot and its exact location. The leases are now being prepared as fast as possible and will soon be ready for delivery. The law provides that I shall be the collector of all revenues and custodian of the same until such time as required to transmit same to the State Treasurer. The receipts for the year are \$2,310.50. Of this amount \$2,150.50 was received for ground rentals and \$160 for tongers' licenses. It is to be regretted that our survey is not complete at this time, in which case we could have renewed our leases, thereby making a much larger showing in revenues.

At the last session of the Legislature an appropriation was asked for for patrol service. This was also refused, thus placing the Commission in a position where they could not give adequate protection to lessees against those disposed to encroach on leased ground. However, a good system has been established in Great bay and a fairly good service in Tuckerton and Barnegat bays. Persons interested in the business have advanced the funds to defray this expense for the time being.

We are at present confronted with two opposing factions—one, the clammers, who claim that clams grow on all grounds under tidal water, and that the clammer has the right to gather clams wherever he finds them; the second, the oysterman claims that oysters grow naturally in all waters in the different bays of the county, and that he has a lawful right to gather them wherever found in season. To keep these classes from working on leased grounds requires constant patrol.

Under the present law no grounds can be leased for any purpose

other than the planting of oysters. I would recommend that that portion setting forth this clause restricting the leasing of all grounds except for the above purpose be revised, to allow the planting of shells in order to propagate oysters. Seed oysters are very scarce, and the price has reached the point where there is no profit to the planter in buying seed, planting and growing for market.

I desire again to call your attention to the unsatisfactory condition of the license question. The law incorporating this Commission provides for the issuing of a license to all persons engaged in the oyster business in the county at \$2.50 per annum. At the same time the act regulating the New Jersey State Shell Commission provides that they shall issue a license at the same rate, claiming it to be good in any county in the State, notwithstanding the repealer. (See Section Laws of 1902, and opinion of the Attorney-General, that the license of the New Jersey State Shell Commission did not apply in Ocean county.)

Pursuant to your instructions of the 3d of September, directing me to notify all persons holding or using unleased lands lying under the tidal water of Ocean county to vacate the same within thirty days from date of notice, I beg to inform you that I have so notified all persons known to me, and in most cases the time limit has expired. There are a number of persons who treat this notice with contempt and are still using said grounds and openly defying the law. I strongly urge you to take such action as will bring these offenders to justice. Without respect and obedience to the law regulating the oyster industry, and without exacting obedience from those inclined to disobey, will result in general dissatisfaction and disaster.

I wish to repeat the statement made in my previous report, that I am convinced that the principles of the law under which we are working are good, and after a practical working experience, and with the co-operation of both clammers and oystermen, the wisdom of the law will be fully demonstrated, and serve to put both the clam and oyster industry in this county on a business-like basis.

Respectfully yours,

(Signed) E. A. HORNER, JR.,

Superintendent.

Report of Engineer in Charge of Survey of Oyster Grounds

Situated in Great Bay, District of Ocean County, N. J.

*To the Honorable State Oyster Commission for the District of Ocean
County:*

GENTLEMEN—In submitting to you a report of the survey of Great bay, I am privileged to state that the work is nearing completion, and that, with the exception of a few grounds applied for, the bearings to all corners have been taken.

The clam ground was set apart last year, and general satisfaction seems to prevail as to the judgment of your Commission in making the division. Quite a few acres of vacant ground will be returned when the survey is completed, but considerable interest is being manifested in the prospective leasing of these grounds for clam as well as oyster privileges.

I would call the attention of the Commission to the necessity of providing substantial and permanent bench-marks at the ends of the base-lines from which the survey has been made.

Upon the careful preservation of these stations depends, to a great extent, the efficacy of the work and the ability in the future to re-establish or add to the survey with expediency and accuracy. I have placed at each angle in the base-lines a heart-cedar post, about three or four inches in diameter, and driven about five feet into the meadow, leaving a foot standing. These marks will no doubt last a considerable length of time, but there is nothing but the record of the field notes of the engineer to distinguish them, as they cannot be marked with any data.

I would suggest that the Commission consider the propriety of placing stone-markers at these points, to be marked with the initials of the distinguishing name of the station and the distance in feet from the preceding station.

The basic points from which the survey has been made are as follows:

- No. 1. Gravelling Point.
- No. 2. Watch Cabin Creek, distance 1,207.9 feet.
- No. 3. Stiles Oyster House, 1,200 feet.
- No. 4. Division Creek, 1,347 feet.
- No. 5. Cove Creek, 3,049 feet.
- No. 6. Big Creek, 2,200 feet.
- No. 7. Elder Creek, 2,000 feet.
- No. 8. Flat Creek, 1,500 feet.
- No. 9. Oyster Creek, 2,000 feet.
- No. 10. Capehorn Creek, 1,200 feet.

The distances given are from the preceding stations. The same should mark the survey of Big creek, but it will hardly be necessary to place stone-markers there, as the points are not so liable to be mistaken for other marks, or to become damaged or obliterated by ice, &c.

I have had some little difficulty lately from the fact that several large planters occupying grounds bounded by the shore line, placed their in-shore corners a slight distance from the bank when giving me the bearings of their lots. It seemed no more than just to them that they should do this, as the ground left next to the bank was not fit for planting purposes, and yet they have applied for the ground to extend to the shore. These places are generally used for culling grounds and to "lay out" culled oysters. In one or two instances these vacancies have been applied for, or at least I have been asked to survey them for other parties, and the holders of the lots object strongly, and in one case have asked for a resurvey extending to the shore. I would like the Commission to consider this question and give me a ruling upon it, so that I may know what to do in the matter.

I hope to be able in a few weeks to present to you the final report of the work as completed, and the map and prints of all oyster grounds applied for to date. Considerable delay has been caused by the dilatory tactics of applicants in appearing on the grounds to give the position of their corners, but this is being steadily overcome, and but few occupants of grounds in Great bay now will have their lands declared vacant by reason of failure to lease.

Thanking you, gentlemen, for the patience you have exercised and the assistance you have rendered, I am,

Yours very sincerely,

(Signed) M. C. MATHIS,

Engineer.

Report of the State Oyster and Shell Commission.

During the year ended October 31st, 1903, the Commission has purchased and spread in the several districts 75,895 bushels of shells at a cost of \$4,996.68. It has issued 423 tongers' licenses at \$2.50 each, making a total of \$1,057.50.

The Commissioners of the First district report a very poor season. As there was no catch of spat in 1902 the seed this year was very scarce. This year there was a fine catch, but, owing to the excessive rains or the oil which entered the bay after the tank steamer was wrecked on the coast, the spat nearly all died.

The Commissioners of the Second district report that they planted 7,715 bushels of shells at a cost of \$581.30 and have a fair catch of spat on them. The shells planted last year did not have a catch sufficient to turn them out to the public. As the Oyster Commissioners of Ocean county had leased nearly all of the natural grounds in the Second district, there were very few oysters caught on the grounds not leased by them.

In the Third district the work was very fair, and as nice a lot of as fine plants as were ever grown were taken from the grounds of the district. The catch this year is pretty general over the district and fairly good and of particular interest, as there are at least six different catches of spat, ranging in size from one and a half inches to one-eighth of an inch. From the present outlook there will be better work in the district another year than we have had for several years.

In the upper end of the Fourth district the conditions and prospects are about the same as in the Third district, but in the lower end of the Fourth district they are not so good. A small quantity of nice plants were taken by the tongers this year, but the catch of spat was light and late.

In the Fifth district about the same conditions prevail as in the lower end of the Fourth district.

From the Sixth district the Commissioners report that about 100,000 to 125,000 bushels of seed have been caught this year by the tongers. The catch of spat this year is not so good as last year, but it will make very good work another year.

Licenses for catching seed by the Ocean County Commission has caused no end of trouble and dissatisfaction by our people, and we would recommend that the law which authorizes the issuance of licenses by them be repealed.

The following shows the amount of shells purchased and spread in the several districts.

First District—10,900 bushels of shells bought at Oxford, Va., at a cost of \$916.50, and spread in Barnegat bay and Cedar Creek point. There was a fine catch of spat on these; also on the shells which were spread last year.

Second District—7,715 bushels of shells bought at Oxford, Va., and spread in Parker's cove (a part of Tuckerton bay). There was a fine catch of spat on these shells. Cost of shells, \$581.30.

Third District—15,000 bushels of shells bought around Great bay, Ocean county, from the oyster planters and near the vicinity to which they were spread, at a cost of \$750, and spread in and near Mullica river. There was a fair catch of spat on a part of these shells and a good growth of plants to be turned out.

Fourth District—15,000 bushels of shells bought around Great bay, Ocean county, and spread in the Mullica and Great Egg Harbor rivers, with a good catch of spat. The cost of these shells was \$750.

Fifth District—9,300 bushels of shells purchased at Oxford, Va., at a cost of \$749.88, and spread as follows: 2,000 bushels in Middle river; 2,500 bushels in Goshen creek; 4,800 bushels in Tuckahoe river. These had a fair catch of spat and a good prospect for plants this fall.

Sixth District—16,400 bushels of shells, purchased at Oxford, Va., at a cost of \$1,249, and spread as follows: 5,500 bushels in Nantucket creek; 2,500 bushels at the mouth of Back creek and 8,400 bushels on Ander's Ditch beds, Pepper bed and Bowy beds, at the mouth of Maurice river. There was a good catch on these shells.

(Signed) GEO. A. MOTT,

Secretary.

The Bureau regrets that it has not had the facilities for gathering accurate statistics of the oyster and clam industry of the State, but hopes that in the coming year it may be enabled to gather from the several districts full and complete information of the output and value of oysters and clams for the year.

The following tables, compiled from the reports submitted by the several Commissions, will give an approximate idea of the vast extent of the oyster industry of the State, and they are submitted herewith for the information of the general public and those engaged in the industry.

OYSTER BED LEASES.

Maurice River Cove.

Number.	LESSEE.	RESIDENCE.	Acreage.
	William M. Peace.....	Port Norris, N. J.....	110
	Harrison Hollinger.....	Port Norris, N. J.....	19
	Lemuel Turner.....	Dividing Creek, N. J.....	16
	Robert L. Bateman.....	Newport, N. J.....	49
	Alice M. Husted.....	Newport, N. J.....	13
	S. Douglass Haley.....	Mauricetown, N. J.....	67
	Harrison Sheppard.....	Mauricetown, N. J.....	176
	Benjamin Cruise.....	Mauricetown, N. J.....	140
	William T. Hinson.....	Mauricetown, N. J.....	15
	Eli W. Chance.....	Mauricetown, N. J.....	58
	Mark L. Orr.....	Dividing Creek, N. J.....	16
	John H. Orr.....	Dividing Creek, N. J.....	38
	Leaming Turner.....	Dividing Creek, N. J.....	23
	Henry S. Robbins.....	Port Norris, N. J.....	343
	Sheppard Robbins.....	Port Norris, N. J.....	77
	Clarence Robbins.....	Port Norris, N. J.....	103
	Frank Lee.....	Leesburg, N. J.....	20
	Warwick & Eldridge.....	Delmont, N. J.....	15
	George C. Peterson.....	Newport, N. J.....	78
	Henry C. Henderson.....	Leesburg, N. J.....	20
	Garrison & Buzine.....	Heislerville, N. J.....	50
	Ephraim Gandy.....	Dividing Creek, N. J.....	10
	Bell & Reeves.....	Newport, N. J.....	12
	William Chance, Sr.....	Leesburg, N. J.....	14
	Enoch Locke.....	Dividing Creek, N. J.....	91
	Harold Hinson.....	Mauricetown, N. J.....	51
	Ogden Gandy.....	Dennisville, N. J.....	59
	Ogden Gandy and David Vangilder.....	Dennisville and Leesburg, N. J.....	109
	Mark Townsend.....	Port Norris, N. J.....	162
	Nieukirk, Nieukirk & Hogate.....	Camden and Fairton, N. J.....	148
	James P. and Ray B. Nieukirk.....	Camden, N. J.....	62
	Robert T. and William C. Lore.....	Camden, N. J.....	166
	George Shaw.....	Dorchester, N. J.....	21
	George W. Westcott and James W. Tren- } chard..... }	Fairton and Bridgeton, N. J.....	130
	Whilden & Elmer.....	Fairton, N. J.....	72
	John H. Whilden.....	Fairton, N. J.....	10
	Evans, Evans & Evans.....	Millville, N. J.....	64
	Isaac Peterson.....	Mauricetown, N. J.....	81
	George Shropshire Estate.....	Mauricetown, N. J.....	10
	Edward Shropshire.....	Haleyville, N. J.....	84
	Anderson Hunter and Clarence Haley.....	Mauricetown, N. J.....	48
	Moses Bateman.....	Mauricetown, N. J.....	67
	Morton Bateman.....	Port Norris, N. J.....	133
	Henra A. Berry and Henry S. Robbins.....	Port Norris, N. J.....	68
	Lorenzo and John Donnelly.....	Heislerville, N. J.....	102
	Jonathan and Lilburn Cox.....	Leesburg, N. J.....	38
	Lilburn Cox.....	Leesburg, N. J.....	40
	Charles M. Downham.....	Cedarville, N. J.....	10
	David Robbins, Sr.....	Port Norris, N. J.....	194

OYSTER BED LEASES.

Maurice River Cove—Continued.

Number.	LESSEE.	RESIDENCE.	Acreage.
	Chew, Bateman, Henry & Hearn.....	Port Norris, N. J.....	34
	William V. Chew.....	Port Norris, N. J.....	10
	Moses Veal.....	Dividing Creek, N. J.....	11
	David K. Cruise.....	Dorchester, N. J.....	47
	John Evans.....	Millville, N. J.....	10
	Fithian & Sutton.....	Bridgeton, N. J.....	42
	E. J. Cook.....	Port Norris, N. J.....	60
	E. J. Cook and Stults Berry.....	Port Norris, N. J.....	25
	E. J. Cook and William Cobb.....	Port Norris, N. J.....	10
	Edward Cobb.....	Port Norris, N. J.....	10
	Theophilus Newcomb.....	Port Norris, N. J.....	43
	George Robbins, Sr.....	Port Norris, N. J.....	10
	Benjamin Sims.....	Cedarville, N. J.....	44
	Stowman & Polhamus.....	Dorchester, N. J.....	20
	Stults Berry.....	Port Norris, N. J.....	68
	Stites, Stites & Stites.....	Newport, N. J.....	18
	Charles and Philip Berry.....	Port Norris, N. J.....	78
	James Boyle.....	Millville, N. J.....	99
	Fayette Newcomb.....	Port Norris, N. J.....	57
	George Robbins, Jr.....	Port Norris, N. J.....	120
	William H. Pierce.....	Dorchester, N. J.....	27
	Pierce & Pennell.....	Dorchester, N. J.....	35
	Pierce, Pennell, Goff, Cruise & Godfrey.....	Dorchester, N. J.....	10
	Willis Hand.....	Leesburg, N. J.....	42
	Stacy Townsend.....	Leesburg, N. J.....	10
	Sherman Hager.....	Port Norris, N. J.....	78
	Ephraim Ernest and Elmer Mulford.....	Bridgeton and Cedarville, N. J.....	419
	William Joslin.....	Camden, N. J.....	12
	Charles F. Johnson.....	Cedarville, N. J.....	133
	Samuel and Oscar Moore.....	Port Norris, N. J.....	15
	Uriah S. Lee.....	Leesburg, N. J.....	86
	Jeremiah N. Ogden.....	Bridgeton, N. J.....	28
	Miles Gandy.....	Cedarville, N. J.....	111
	Swing & Bateman.....	Cedarville, N. J.....	93
	Eleazor Robbins.....	Port Norris, N. J.....	32
	Charles Tozeur.....	Delmont, N. J.....	12
	Alonzo T. Bacon.....	Mauricetown, N. J.....	38
	Compton & Russell.....	Leesburg, N. J.....	23
	Ethan Lore.....	Millville, N. J.....	75
	John T. Sharp and Geo. B. Schick.....	Port Norris and Camden, N. J.....	54
	John T. Sharp.....	Port Norris, N. J.....	11
	Edward Brandt.....	Fairton, N. J.....	15
	Peter F. Newcomb.....	Newport, N. J.....	94
	Newcomb, Newcomb & Newcomb.....	Newport, N. J.....	15
	James and Wilson Campbell.....	Newport, N. J.....	77
	Harris & Corson.....	Port Norris, N. J.....	16
	Frank Fidler.....	Dennisville, N. J.....	74
	Asa Smith.....	Leesburg, N. J.....	10
	Yadoc Sharp.....	Leesburg, N. J.....	67
	Charles E. Davis.....	Millville, N. J.....	56

OYSTER BED LEASES.

Maurice River Cove—Continued.

Number.	LESSEE.	RESIDENCE.	Acreege.
	Augustus Meerwald.....	Dennisville, N. J.....	173
	Albert G. Mulford.....	Cedarville, N. J.....	25
	Simpkins & Covington.....	Cedarville, N. J.....	87
	Arthur Windfohr.....	Bivalve, N. J.....	22
	William Land.....	Port Norris, N. J.....	10
	David Daniels.....	Bridgeton, N. J.....	42
	Archie Campbell.....	Port Norris, N. J.....	27
	David Rahr.....	Bricksboro, N. J.....	26
	Winfield A. Campbell.....	Bivalve, N. J.....	10
	George Gaskill.....	Port Norris, N. J.....	18
	Hearn & Company.....	Maurice River, N. J.....	26
	Margaret Hearn.....	Port Norris, N. J.....	162
	Joseph M. Garrison.....	Port Norris, N. J.....	15
	Silas Robbinson, Sr.....	Dividing Creek, N. J.....	14
	John A. and Howard Mintz.....	Dividing Creek, N. J.....	10
	Cosier, Cosier, Ware & More.....	Newport and Bridgeton, N. J.....	84
	Thomas Lee.....	Delmont, N. J.....	10
	James Mayhew and Sheppard Campbell.....	Cedarville and Newport N. J.....	121
	Thomas L. Dodson.....	Leesburg, N. J.....	191
	Willis Robbins.....	Port Norris, N. J.....	64
	Ladow & Bradford.....	Newport, N. J.....	61
	John T. Lake.....	Port Norris, N. J.....	140
	Henry Lake.....	Port Norris, N. J.....	247
	Henry Lake and Gus Jantsen.....	Port Norris, N. J.....	10
	James O. and Lewis Sheppard.....	Cedarville, N. J.....	189
	James O. Sheppard.....	Cedarville, N. J.....	166
	James O. Sheppard and John Brineshults.....	Cedarville, N. J.....	125
	William Veal and George N. Terry.....	Dividing Creek, N. J.....	91
	William Veal and Beriah Loper.....	Dividing Creek, N. J.....	93
	W. Linwood Foster.....	Delmont, N. J.....	31
	Lafayette Bailey.....	Dividing Creek, N. J.....	16
	A. J. and Smith Blackman.....	Port Norris, N. J.....	125
	Jeremiah Burk.....	Bridgeton, N. J.....	112
	E. B. Fleetwood.....	Dividing Creek, N. J.....	10
	Geo. W. and Wm. B. Sheppard.....	Cedarville, N. J.....	40
	Burnight, Stites & Stites.....	Newport, N. J.....	30
	Peter Campbell.....	Newport, N. J.....	64
	L. M. Ogden and Ephraim Mulford.....	Cedarville and Bridgeton, N. J.....	201
	Augustus Henry and Oscar Buzby.....	Port Norris, N. J.....	210
	John Sharpless.....	Leesburg, N. J.....	188
	Taylor, Buzby & Buzby.....	Port Norris, N. J.....	20
	William G. Robbinson.....	Dividing Creek, N. J.....	20
	Joseph D. Neal.....	Philadelphia, Pa.....	663
	William E. Fowler.....	Port Norris, N. J.....	216
	William E. Fowler and James Morris.....	Port Norris, N. J.....	13
	Joseph C. Chance.....	Leesburg, N. J.....	20
	Joseph S. Garrison.....	Dividing Creek, N. J.....	49
	Maurice A. Rogers.....	Camden, N. J.....	330
	Maurice A. and Thomas A. Rogers.....	Camden, N. J.....	48
	Maurice A., Thos. A. Rogers and John Carey.....	Camden, N. J.....	70

OYSTER BED LEASES.

Maurice River Cove—Continued.

Number.	LESSEE.	RESIDENCE.	Acreege.
	Maurice A., Thos. A. Rogers and Somers } Whilden.....	Camden, N. J.....	222
	Edward Allen.....	Port Norris, N. J.....	10
	Argus Ferguson.....	Leesburg, N. J.....	12
	Geo. Y. Schoch and William Bungate.....	Camden and Bridgeton, N. J.....	49
	Ephraim Harris.....	Port Norris, N. J.....	26
	Geo. Y. Schoch and Andrew Vail.....	Camden and Bridgeton, N. J.....	291
	Geo. Y. Schoch.....	Camden, N. J.....	39
	Oliver B. Webb.....	Port Norris, N. J.....	10
	John L. Shull.....	Newport, N. J.....	124
	John W. Harris.....	Leesburg, N. J.....	56
	Benjamin Joslin.....	Newport, N. J.....	48
	Richard Corson.....	Millville, N. J.....	20
	Charles and Thomas Bowker.....	Port Norris, N. J.....	73
	Amos and Jacob Pepper.....	{ Port Norris and Dividing } Creek, N. J.....	97
	James A. and A. B. Campbell.....	Newport, N. J.....	62
	James Campbell, Jr.....	Mauricetown, N. J.....	89
	S. Ware Sheppard and E. D. Sheppard.....	Newport, N. J.....	104
	Augustus Henry and Joseph Hilton.....	Port Norris, N. J.....	10
	William C. Hunter.....	Haleyville, N. J.....	53
	Thomas Warwick.....	Delmont, N. J.....	20
	James Campbell, Sr.....	Newport, N. J.....	135
	Aaron Hunter.....	Haleyville, N. J.....	17
	Smith Campbell.....	Dividing Creek, N. J.....	12
	Levi Robbins.....	Port Norris, N. J.....	108
	Henry Wallen and James A. Whitaker.....	Fairton, N. J.....	272
	Samuel Lee.....	Leesburg, N. J.....	40
	Chas. T. and Richard D. Sheppard.....	Newport, N. J.....	110
	William A. Lambert.....	Port Norris, N. J.....	30
	Sylvanus Ladow.....	Dividing Creek, N. J.....	40
	Zephaniah Joslin.....	Newport, N. J.....	15
	Lewis B. Newcomb.....	Cedarville, N. J.....	23
	Lucius Bradford.....	Newport, N. J.....	24
	Richard R. Smith.....	Leesburg, N. J.....	10
	Hall & Noble.....	Cedarville, N. J.....	39
	Albert C. Hagemann.....	Camden, N. J.....	84
	Charles L. Bradford.....	Newport, N. J.....	119
	Newcomb & Gaskill.....	Newport, N. J.....	49
	George Burt and R. L. Bateman.....	Cedarville, N. J.....	142
	Lewis E. Cosier.....	Newport, N. J.....	52
	J. Hammitt Lake.....	Port Norris, N. J.....	27
	Frazeur Whilden.....	Leesburg, N. J.....	13
	Luther Bateman.....	Newport, N. J.....	114
	Luther Bateman and Wm. H. Whilden.....	Newport, N. J.....	20
	Rebecca Bateman.....	Newport, N. J.....	60
	James A. Turner, Jr.....	Newport, N. J.....	12
	May Turner.....	Newport, N. J.....	16
	George N. Terry.....	Dividing Creek, N. J.....	16
	William F. Terry.....	Dividing Creek, N. J.....	10

OYSTER BED LEASES.

Maurice River Cove—Continued.

Number.	LESSEE.	RESIDENCE.	Acreege.
	J. Onens & Son.....	Port Norris, N. J.....	12
	J. Wesley Adams.....	Port Norris, N. J.....	29
	Lucius Yates.....	Port Norris, N. J.....	260
	Lucius Yates, Silas Hoffman and Sheppard } Robbins.....	Port Norris, N. J.....	187
	Lucius Yates, John Yates and William } Peterson.....	Port Norris, N. J.....	91
	William B. Peterson.....	Port Norris, N. J.....	14
	Elwood Bradford.....	Newport, N. J.....	16
	Daniel Bradford.....	Newport, N. J.....	58
	Hand & Berry.....	Port Norris, N. J.....	223
	Hand, Berry & Berry.....	Port Norris, N. J.....	213
	Hand & Campbell.....	Port Norris, N. J.....	49
	Hand & Lake.....	Port Norris, N. J.....	24
	Constant W. Hand.....	Port Norris, N. J.....	10
	Bateman, Diamant & Elmer.....	Cedarville, N. J.....	161
	Bateman & Emerson.....	Cedarville, N. J.....	39
	Butler Newcomb.....	Leesburg, N. J.....	50
	Samuel P. Fithian and Bloomfield H. Minch..	Bridgeton, N. J.....	188
	Edmund Stites, Jr.....	Port Norris, N. J.....	96
	Edmund Stites, Jr., and Frank L. Garrison..	Port Norris, N. J.....	17
	Edmund Stites, Jr., and William T. Collins..	Port Norris, N. J.....	90
	Edmund Stites, Jr., and William B. Newcomb.	Port Norris and Newport, N. J.	13
	E. Stites, Jr., E. Stites, Sr., Howard Stites } and George D. Newcomb.....	Port Norris and Newport, N. J.	192
	William B. Newcomb.....	Newport, N. J.....	45
	Peter C. Cosier.....	Newport, N. J.....	90
	Peter C. Cosier and James Gates.....	Newport, N. J.....	30
	Edward C. Robbins.....	Haleyville, N. J.....	37
	Hamill Ladow.....	Dividing Creek, N. J.....	10
	Gideon Bradford.....	Newport, N. J.....	10
	R. D. and Grant Lore.....	Cedarville, N. J.....	116
	Frank E. Howell.....	Dias Creek, N. J.....	28
	Charles M. Ingorsoll.....	Dividing Creek, N. J.....	14
	Walter C. Riffin.....	Port Norris, N. J.....	32
	Walter C. Riffin and Charles Riffin.....	Port Norris, N. J.....	61
	Edmund Stites, Jr., and James Boyle.....	Port Norris and Millville, N. J.	34
	James Peterson.....	Port Norris, N. J.....	22
	James Peterson and Timothy Bateman.....	Port Norris, N. J.....	148
	Sheppard Robbins and William Land.....	Port Norris, N. J.....	27
	Champion Cox.....	Leesburg, N. J.....	96
	Lafayette Henderson.....	Leesburg, N. J.....	42
	Augustus Barnhart.....	Cape May City.....	61
	Arthur Hinson and Walter Bateman.....	Mauricetown, N. J.....	81
	John Gaskill.....	Newport, N. J.....	21
	William T. Collins.....	Port Norris, N. J.....	16
	David Robbins, Jr.....	Port Norris, N. J.....	55
	Robert Bloxson.....	Port Norris, N. J.....	133
	Howard Sockwell.....	Port Norris, N. J.....	201
	Sheppard Campbell.....	Port Norris, N. J.....	14

OYSTER BED LEASES.

Maurice River Cove—Continued.

Number.	LESSEE.	RESIDENCE.	Acreege.
	Campbell & Robbins.....	Port Norris, N. J.....	10
	Harry M. Lee.....	Port Norris, N. J.....	61
	Charles M. Clain.....	Leesburg, N. J.....	26
	Elmer Spencer.....	Newport, N. J.....	28
	Covert & Lee.....	Leesburg, N. J.....	140
	William W. Cosier and Beriah Loper.....	Dividing Creek, N. J.....	10
	Wm. W. Cosier, Sunfield, Bacon & Robbins..	Dividing Creek, N. J.....	16
	Rickson Robbins.....	Camden, N. J.....	187
	M. L. Orr and Mintz.....	Dividing Creek, N. J.....	14
	Harry Ohara.....	Port Norris, N. J.....	21
	Harry Ohara and Willis Robbins.....	Port Norris, N. J.....	18
	Taylor & Robbins.....	Port Norris, N. J.....	30
	Polhamus & Polhamus.....	Leesburg N. J.....	10
	D. R. Lake and Thomas Earl.....	Port Norris, N. J.....	32
	D. R. Lake and Robert L. Lake.....	Port Norris, N. J.....	48
	Job C. Risley.....	Pleasantville, N. J.....	37
	Curtis Risley.....	Pleasantville, N. J.....	25
	Hammit L. Robbins Estate.....	Port Norris, N. J.....	76
	David B. Lake.....	Port Norris, N. J.....	48
	David Bailey.....	Port Norris, N. J.....	10
	Andrew Randolph.....	Port Norris, N. J.....	17
	Harrison Hand.....	Port Norris, N. J.....	37
	Hand & Riffin.....	Port Norris, N. J.....	40
	Chester & Lee.....	Heislerville, N. J.....	17
	John S. Chance.....	Heislerville, N. J.....	24
	Dayton Campbell.....	Port Norris, N. J.....	10
	Clement L. Campbell.....	Newport, N. J.....	46
	Frank M. Cobb.....	Cedarville, N. J.....	28
	Samuel Dillahay.....	Port Norris, N. J.....	39
	Morris Davis and Bloomfield H. Minch.....	Bridgeton, N. J.....	22
	Charles Edwards and Richard Garrison.....	Port Norris, N. J.....	43
	John Flynn.....	Camden, N. J.....	73
	Edward L. Riley.....	Newport, N. J.....	10
	Quincy L. Husted and Peter C. Cosier.....	Newport, N. J.....	25
	McClellan & John Hanners.....	Newport, N. J.....	26
	Edward Riffin.....	Port Norris, N. J.....	10
	Joslin, Newcomb, Cosier & Moncrief.....	Newport, N. J.....	35
	Gus. Jantsen.....	Port Norris, N. J.....	34
	Robert Jeffries.....	Port Norris, N. J.....	20
	Robert Jeffries and Ervin Snead.....	Port Norris, N. J.....	18
	Lewis F. Shropshire.....	Port Norris, N. J.....	24
	Charles S. Newcomb.....	Newport, N. J.....	35
	George W. C. Newcomb.....	Newport, N. J.....	30
	Newcomb, Newcomb & Newcomb.....	Newport, N. J.....	38
	George Pashley.....	Port Norris, N. J.....	10
	Zebulon Polhamus.....	Leesburg, N. J.....	133
	William B. Phillips.....	Port Norris, N. J.....	25

OYSTER BED LEASES.

Raritan Bay.

Number.	LESSEE.	RESIDENCE.	Acreage.
1	William Degroff.....	Keyport, N. J.....	89
2	Fred. Hammer.....	Keyport, N. J.....	29
3	J. G. Brown.....	Keyport, N. J.....	44
4	A. D. and James Bedle.....	Keyport, N. J.....	42
5	S. E. Anderson and Stephen Wood.....	Keyport, N. J.....	18
6	Mason Brothers.....	Keyport, N. J.....	14
7	B. D. Brown.....	Keyport, N. J.....	38
8	Herman O. Bauer.....	Keyport, N. J.....	19
9	Lorenzo Mason.....	Keyport, N. J.....	10
10	Charles Kellogg.....	Keyport, N. J.....	20
11	Abram D. Barnes.....	Keyport, N. J.....	28
12	William E. Woolley.....	Keyport, N. J.....	126
13	William Maurer.....	Keyport, N. J.....	66
14	Garrett E. Post.....	Keyport, N. J.....	83
15	Peter Durrea.....	Keyport, N. J.....	12
16	George Shaw.....	Keyport, N. J.....	16
21	Henry Bailey.....	Keyport, N. J.....	8
22	Theodore Poling.....	Keyport, N. J.....	16
27	Herman O. Bauer.....	Keyport, N. J.....	5
29	William Maurer (see Lease No. 13).....	{ Same party having two } leases, different grounds.. }	6
31	W. M. Mason and Fred. E. Post.....	Keyport, N. J.....	7
32	Mason Brothers (see Lease No. 6).....	Same party.....	6
33	Abram Huyler.....	Keyport, N. J.....	9
34	E. M. Decker.....	Keyport, N. J.....	8
35	Theodore Poling, Jr.....	Keyport, N. J.....	8
36	B. D. Brown (see Lease No. 7).....	Keyport, N. J.....	3
37	Charles B. Post.....	Keyport, N. J.....	9
39	E. M. Decker (see Lease No. 34).....	Keyport, N. J.....	9
40	Wm. E. Thistle and Asbury Poling.....	Keyport, N. J.....	7
41	Frederick E. Post.....	Keyport, N. J.....	7

BOAT LICENSES.

Raritan Bay.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
1	Tonging skiff.....	William Degroff.....	
2	Tonging skiff.....	William Degroff.....	
3	Tonging skiff.....	William Degroff.....	
4	Tonging skiff.....	William Degroff.....	
5	Tonging skiff.....	William Degroff.....	
6	Tonging skiff.....	Fred. Hammer.....	
7	Tonging skiff.....	Fred. Hammer.....	
8	Tonging skiff.....	Fred. Hammer.....	
9	Tonging skiff.....	Fred. Hammer.....	
10	Tonging skiff.....	James G. Brown.....	
11	Tonging skiff.....	James G. Brown.....	
12	Tonging skiff.....	A. D. & J. H. Bedle.....	
13	Dredging boat.....	A. D. & J. H. Bedle.....	Under
14	Tonging skiff.....	A. D. & J. H. Bedle.....	
15	Tonging skiff.....	A. D. & J. H. Bedle.....	
17	Tonging skiff.....	Anderson & Wood.....	
18	Sloop Dewey.....	Anderson & Wood.....	Under
19	Tonging skiff.....	Mason Brothers.....	
20	Tonging skiff.....	Mason Brothers.....	
21	Tonging skiff.....	Mason Brothers.....	
22	Tonging skiff.....	B. D. Brown.....	
23	Tonging skiff.....	B. D. Brown.....	
25	Naphtha launch, dredging boat.....	B. D. Brown.....	Under
27	Tonging skiff.....	Herman O. Bauer.....	
28	Tonging skiff.....	Lorenzo Mason.....	
29	Tonging skiff.....	Lorenzo Mason.....	
32	Tonging skiff.....	William E. Woolley.....	
33	Tonging skiff.....	William E. Woolley.....	
34	Tonging skiff.....	William E. Woolley.....	
35	Tonging skiff.....	William E. Woolley.....	
36	Tonging skiff.....	William E. Woolley.....	
37	Tonging skiff.....	William E. Woolley.....	
38	Tonging skiff.....	William Maurer.....	
39	Tonging skiff.....	William Maurer.....	
40	Tonging skiff.....	William Maurer.....	
48	Tonging skiff.....	Garrett E. Post.....	
49	Tonging skiff.....	Garrett E. Post.....	
52	Steamer Emma K, dredging boat.....	Garrett E. Post.....	16
62	Sloop J. B. Hillyer, dredging boat.....	E. M. Decker.....	9
69	Sloop Spray, dredging boat.....	Thomas C. Mason.....	Under
70	Steamer Four Sisters, dredging boat.....	W. W. Sofield.....	19
71	Naphtha launch Flora, dredging boat.....	William E. Woolley.....	Under

OYSTER BED LEASES.

Ocean County.

Number.	LESSEE.	RESIDENCE.	Acraage.
1	Samuel S. Anderson.....	Tuckerton.....	7
2	Horner & Austin.....	Tuckerton.....	16
3	Walter S. Allen.....	1
4	Walter Allen and Samuel B. Allen.....	New Gretna.....	6
5	F. Mathis, J. B. Allen and W. S. Allen.....	New Gretna.....	15
6	Winfield Allen.....	New Gretna.....	2
7	John Allen.....	New Gretna.....	3
8	Ernest Adams.....	New Gretna.....	1
9	Jos. B. Allen, Jr.....	New Gretna.....	3
10	Jos. B. Allen, Sr.....	Tuckerton.....	10
11	Urian Allen.....	New Gretna.....	4
12	Elmer Adams.....	Port Republic.....	5
13	Thomas Allen.....	New Gretna.....	3
14	Leonard R. Adams.....	New Gretna.....	1
15	Caleb L. Allen.....	New Gretna.....	6
16	John McAnney.....	New Gretna.....	2
17	W. E. Bouker.....	Barnegat.....	6
18	Fred. A. Bahr.....	Barnegat.....	2
19	Ezra Brown.....	West Creek.....	8
20	Charles P. Bunnell.....	Bayville.....	12
21	J. W. J. and J. P. Bunnell.....	Forked River.....	4
22	Alex. and Oscar Brinley.....	Lanoka.....	8
23	William Britton.....	Lanoka.....	5
24	Geo. H. Bryan.....	Toms River.....	3
25	S. C. Bailey.....	Toms River.....	5
26	C. W. C. Bunnell.....	Forked River.....	10
27	James D. Brown.....	Tuckerton.....	1
28	Martin Bunnell.....	Lanoka.....	2
29	William L. Britton.....	Lanoka.....	4
30	S. H. Bunnell and J. Everham.....	Lanoka.....	5
31	Charles P. Bartlett.....	West Creek.....	3
32	Calvin H. Bunnell.....	Bayville.....	2
33	J. H. Birdsall.....	Waretown.....	8
34	Joel H. Buckalew.....	Waretown.....	2
35	Leonard Blackman.....	Tuckerton.....	4
36	Moses H. Bunnell.....	Lanoka.....	3
37	Josiah Bennett.....	Tuckerton.....	2
38	Edward Thibault.....	Barnegat.....	3
39	Anthony Bouker.....	Barnegat.....	3
40	Thomas Birdsall.....	Barnegat.....	1
41	Jesse Birdsall.....	Barnegat.....	2
42	Thomas W. Birdsall.....	Barnegat.....	5
43	John T. Burton & Sons.....	Tuckerton.....	8
44	Henry A. Bates.....	Port Republic.....	13
45	Samuel G. Higbee.....	Port Republic.....	6
46	G. P. Bower.....	Tuckerton.....	2
47	J. Atwood Cramer.....	Beach Haven.....	2
48	Henry Coupirthwaite.....	Beach Haven.....	1
49	Geo. M. Cox.....	West Creek.....	4
50	Augustus E. Cranus.....	Barnegat.....	3

OYSTER BED LEASES.

Ocean County—Continued.

Number.	LESSEE.	RESIDENCE.	Acraage.
51	Alexander S. Chandler.....	Barnegat.....	1
52	Moses Cramer.....	Barnegat.....	6
53	Charles Cobb.....	West Creek.....	1
54	Jonathan Cox.....	West Creek.....	2
55	Oliver T. Cramer.....	West Creek.....	5
56	Charles E. Cox.....	West Creek.....	2
57	James R. Cox.....	Barnegat.....	3
58	John M. Cobb.....	Mayetta.....	3
59	T. F. Cobb.....	Mayetta.....	3
60	W. A. Cobb.....	Mayetta.....	2
61	Isaac J. Conklin.....	Mayetta.....	3
62	William E. Cox.....	West Creek.....	10
63	John Cornelius.....	Bayville.....	5
64	Fred. Corwin.....	Toms River.....	5
65	Geo. A. Cramer.....	Barnegat.....	2
66	Geo. Augustus Cramer.....	Barnegat.....	2
67	E. B. Camburn.....	Waretown.....	2
68	Henry A. Camburn.....	Waretown.....	2
69	U. S. Camburn.....	Waretown.....	2
70	Daniel Camburn.....	Waretown.....	2
71	Stanley Camburn.....	Waretown.....	1
72	Augustus E. Cramer.....	Mayetta.....	1
73	James H. Cramer.....	Mayetta.....	1
74	T. Frank Cramer.....	Mayetta.....	4
75	Mathias L. Cramer.....	Mayetta.....	6
76	James W. Cornelius.....	Bayville.....	8
77	Raymond Chadwick.....	Barnegat.....	1
78	S. R. Cramer.....	Cedar Run.....	4
79	A. S. Cramer.....	Cedar Run.....	4
80	John W. Cramer.....	Cedar Run.....	2
81	Samuel B. Cramer.....	Cedar Run.....	4
82	Arthur Cornelius.....	Bayville.....	5
83	James B. Cramer.....	Cedar Run.....	1
84	J. Clarence Cramer.....	West Creek.....	2
85	Fred. Cornelius.....	Bayville.....	10
86	J. Atwood Cramer.....	Beach Haven.....	1
87	Stacy G. Conklin.....	Staffordville.....	4
88	Samuel B. Conklin.....	Staffordville.....	4
89	C. R., C. H. & N. B. Cox.....	West Creek.....	1
90	C. R. & N. B. Cox.....	West Creek.....	11
91	Ashbrook Cramer.....	Mayetta.....	5
92	Lewis A. Cramer.....	Mayetta.....	3
93	Benj. Cramer.....	Mayetta.....	3
94	M. V. Clayton.....	Toms River.....	3
95	Geo. A. Cramer.....	Cedar Run.....	4
96	Levi Cramer.....	Cedar Run.....	5
97	Amariah Cramer.....	Cedar Run.....	4
98	Charles P. Conklin.....	Cedar Run.....	2
99	Lewis A. Conklin.....	Cedar Run.....	3
100	Thomas Cramer.....	Cedar Run.....	4

OYSTER BED LEASES.

Ocean County—Continued.

Number.	LESSEE.	RESIDENCE.	Acraage.
101	Walter H. Cramer.....	Cedar Run.....	4
102	Arthur J. Cramer.....	Cedar Run.....	1
103	Phineas H. Cramer.....	Cedar Run.....	5
104	Clarke A. Cramer.....	Cedar Run.....	3
105	Benj. R. Cramer.....	Cedar Run.....	3
106	Howard M. Cramer.....	Cedar Run.....	2
107	Raymond Chadwick.....	Cedar Run.....	1
108	Amariah P. Conklin.....	Cedar Run.....	2
109	John and Jonathan Cox.....	West Creek.....	15
110	Jos. T. Camburn.....	Waretown.....	2
111	Amos Crosta.....	Beach Haven.....	1
112	Oliver T. Cramer.....	Mayetta.....	2
113	Eugene F. Cramer.....	West Creek.....	2
114	Howard B. Cramer.....	Mayetta.....	2
115	Arnold Cramer.....	New Gretna.....	7
116	William E. Cramer.....	Manahawkin.....	2
117	Filmore Cavaleer.....	Port Republic.....	1
118	Gilbert Cavileer.....	Port Republic.....	1
119	Geo. O. Ditton.....	Lanoka.....	3
120	Reuben Driscoll.....	Tuckerton.....	5
121	Josephus Downs.....	Tuckerton.....	5
122	Harry L. Driscoll.....	Tuckerton.....	1
123	Abram Dorthiday.....	Barnegat.....	8
124	U. S. Driscoll.....	Tuckerton.....	3
125	J. Warthman Darby.....	New Gretna.....	4
126	Sadoc Estlow.....	Barnegat.....	10
127	B. A. Everham.....	Bayville.....	13
128	J. E. Everham.....	Bayville.....	10
129	George Everham.....	Bayville.....	5
130	Allen Fennimore.....	West Creek.....	5
131	Shotwell Frazer.....	Forked River.....	5
132	George W. Frazer.....	Forked River.....	6
133	Lewis D. Frazer.....	Forked River.....	6
134	Albinis Falkinburg.....	Barnegat.....	1
135	Abram Fort.....	Barnegat.....	1
136	Almont Grant.....	Bayville.....	10
137	S. F. Grant.....	Bayville.....	10
138	Nelson Grant.....	Lanoka.....	12
139	Jesse P. Grant.....	Lanoka.....	15
140	Herschel Grant.....	Bayville.....	15
141	Jennie Grant.....	Bayville.....	3
142	William F. Grant.....	Bayville.....	15
143	C. F. Grant.....	Bayville.....	5
144	Jos. B. Grant.....	Bayville.....	5
145	John F. Grant.....	Bayville.....	9
146	Walter Grant.....	Bayville.....	6
147	Wesley Grant.....	Bayville.....	5
148	William F. Gaskill.....	Tuckerton.....	3
149	Thomas Gavin.....	Beach Haven.....	1
150	Hudson Gaskill.....	Tuckerton.....	1

OYSTER BED LEASES.

Ocean County—Continued.

Number.	LESSEE.	RESIDENCE.	Acraage.
151	William R. Gaskill.....	Tuckerton.....	1
152	H. F. Gale.....	Tuckerton.....	3
153	William H. Gale.....	Tuckerton.....	5
154	Thomas J. Gaskill.....	New Gretna.....	9
155	James A. Gale.....	New Gretna.....	3
156	Charles W. Gaskill.....	New Gretna.....	1
157	Soper & Hollingsworth.....	Barnegat.....	37
158	Jos. Helfresh.....	Barnegat.....	5
159	Jos. P. Haywood.....	West Creek.....	13
160	Haywood & Rutter.....	West Creek.....	9
161	John Holmes.....	Forked River.....	8
162	Joseph Holmes.....	Forked River.....	8
163	Edward L. Holmes.....	Forked River.....	12
164	B. F. Holmes.....	Forked River.....	8
165	Nancy Heyers.....	Toms River.....	5
166	J. Rieden Horner.....	Waretown.....	2
167	Geo. W. Holman, Jr.....	Bayville.....	6
168	Stephen Holmes.....	Forked River.....	5
169	Rowley Horner.....	Tuckerton.....	1
170	Charles F. Huntly.....	Port Republic.....	2
171	James A. Hewett.....	Port Republic.....	1
172	Nelson Hewett.....	Port Republic.....	2
173	S. A. & G. A. Horner.....	Tuckerton.....	3
174	Parker C. Headley.....	New Gretna.....	2
175	Benj. F. Headley.....	New Gretna.....	1
176	William Hickman.....	New Gretna.....	3
177	Elizabeth Inman.....	Barnegat.....	11
178	Stephen Inman.....	Barnegat.....	2
179	Henry Iseman.....	Waretown.....	4
180	John F. Jones.....	West Creek.....	3
181	A. J. Jones.....	West Creek.....	2
182	A. H. Jones.....	West Creek.....	7
183	Howard Jeffrey.....	Lanoka.....	5
184	Isaac Jones.....	Lanoka.....	3
185	H. S. Jones.....	Beach Haven.....	6
186	Lloyd Jones.....	West Creek.....	3
187	Samuel A. Jones and Geo. W. Homer.....	Tuckerton.....	7
188	David E. Johnson.....	West Creek.....	2
189	T. C. Kelley.....	West Creek.....	19
190	Job S. Kelley.....	West Creek.....	1
191	John King.....	Barnegat.....	3
192	Geo. G. Kelley.....	West Creek.....	3
193	T. C. Kelley & Son.....	West Creek.....	13
194	James E. Kelley.....	West Creek.....	6
195	Henry Kelley.....	West Creek.....	2
196	Cornelius Kelley.....	West Creek.....	5
197	Alexis Kelley & Son.....	West Creek.....	15
198	Myles Kelly.....	West Creek.....	11
199	C. D. Kelley & Co.....	West Creek.....	11
200	C. D. Kelley.....	West Creek.....	12

OYSTER BED LEASES.

Ocean County—Continued.

Number.	LESSEE.	RESIDENCE.	Acreage.
201	Mannos Kelley.....	West Creek.....	6
202	H. F. Kelley.....	West Creek.....	6
203	J. H. Kelley.....	West Creek.....	3
204	Mrs. Sarah Kelley.....	West Creek.....	7
205	Eugene Longstreet.....	Briel.....	3
206	Mrs. Sarah Lamson.....	Mayetta.....	4
207	Bradford Lemunyon.....	West Creek.....	1
208	Hazelton Letts.....	Manahawkin.....	1
209	Samuel E. Loveland.....	New Gretna.....	1
210	Benj. F. Loveland.....	New Gretna.....	3
211	Jesse A. Loveland.....	New Gretna.....	4
212	Joseph A. Loveland.....	New Gretna.....	3
213	Jesse I. Loveland.....	New Gretna.....	7
214	Joseph A. Loveland.....	Port Republic.....	1
215	J. Reisly Leeds.....	Leeds Point.....	1
216	John A. Mills.....	Barnegat.....	2
217	Irving Malcom.....	Barnegat.....	2
218	Taylor Mathews.....	Lanoka.....	2
219	Ensign Miller.....	West Creek.....	3
220	Martin McCarthy.....	Lanoka.....	6
221	James T. Mills.....	Barnegat.....	2
222	Lewis Mitchell.....	Barnegat.....	2
223	Leslie Malcolm.....	Barnegat.....	5
224	Harry Marshall.....	Beach Haven.....	3
225	J. L. Marshall.....	Tuckerton.....	3
226	Geo. L. Marshall.....	Tuckerton.....	5
227	Geo. R. Marshall.....	Tuckerton.....	2
228	Noah Marshall.....	Tuckerton.....	2
229	Timothy McCarthy.....	Lanoka.....	6
230	William Mathis.....	Tuckerton.....	4
231	William Morris.....	Tuckerton.....	3
232	William R. McDonald.....	Tuckerton.....	3
233	Alvin Mathis.....	Tuckerton.....	3
234	J. Frank Mathis.....	Leeds Point.....	9
235	M. C. Mathis.....	New Gretna.....	5
236	D. E. Mathis.....	New Gretna.....	3
237	Lewis L. Mathis.....	New Gretna.....	2
238	Roy Mathis.....	New Gretna.....	1
239	Amos Newbury.....	Toms River.....	10
240	J. H. Potts.....	Beach Haven.....	5
241	J. Stevens and Thomas Lane.....	Beach Haven.....	4
242	Frank W. Pharo.....	West Creek.....	4
243	Oscar Packer.....	West Creek.....	6
244	Samuel Perrine and J. H. Perrine.....	Barnegat.....	18
245	Theo. P. Price.....	Tuckerton.....	3
246	A. W. Phoro and M. J. Berry.....	West Creek.....	3
247	A. W. Phoro.....	West Creek.....	8
248	Randolph Philips.....	Forked River.....	5
249	William L. Perrine.....	Barnegat.....	3
250	Redden N. Penn.....	Lanoka.....	3

OYSTER BED LEASES.

Ocean County—Continued.

Number.	LESSEE.	RESIDENCE.	Acreage.
251	Barzilla Pullen.....	Tuckerton.....	5
252	Newell Potter.....	Bayville.....	4
253	Robert T. Phoro.....	West Creek.....	2
254	Benj. Platt.....	Bayville.....	5
255	J. W. Parker & Bros.....	Tuckerton.....	29
256	Wilbur C. Parker.....	Tuckerton.....	5
257	William E. Phoro.....	West Creek.....	3
258	David Parker.....	Forked River.....	3
259	J. B. Tilton and Watson Penn.....	Forked River.....	10
260	Jos. Parker and Watson Penn.....	Forked River.....	10
261	George W. Peterson.....	Forked River.....	2
262	William W. Pitt.....	West Creek.....	4
263	Watson L. Phoro.....	West Creek.....	6
264	Edward F. Potter.....	West Creek.....	5
265	William H. Potter.....	West Creek.....	19
266	Samuel B. Parker.....	Tuckerton.....	4
267	Nelson Parker.....	Parkertown.....	1
268	John Ripley.....	West Creek.....	2
269	S. W. Rulon.....	West Creek.....	2
270	Warner H. Rider.....	Tuckerton.....	2
271	H. G. Rulon.....	West Creek.....	3
272	A. J. Rider & Sons.....	Tuckerton.....	10
273	H. W. Russell & Son.....	Barnegat.....	10
274	J. H. Rutter.....	Barnegat.....	7
275	John W. Rutter.....	West Creek.....	2
276	R. F. Rutter.....	West Creek.....	9
277	R. F. Rutter and Frank Sprague.....	West Creek.....	2
278	Jackson Rogers.....	Bayville.....	3
279	George Rogers.....	Bayville.....	2
280	Charles Ridgway.....	Barnegat.....	2
281	C. H. Russell.....	Barnegat.....	2
282	Hannah Russell.....	Barnegat.....	4
283	Benj. Riley.....	Tuckerton.....	1
284	L. D. Robbin.....	New Gretna.....	3
285	Oscar Ridgway.....	Barnegat.....	9
286	Edward B. Ridgway.....	Barnegat.....	11
287	Amos B. Ridgway.....	Barnegat.....	2
288	William J. Robinson.....	Barnegat.....	2
289	John W. Rutter.....	West Creek.....	1
290	Lewis G. Rossell.....	Tuckerton.....	1
291	Charles Robbins.....	New Gretna.....	6
292	Joel Sprague.....	Beach Haven.....	4
293	Joseph Sawyer.....	Tuckerton.....	8
294	Benj. S. Stiles.....	Tuckerton.....	11
295	W. L. Sopp.....	Tuckerton.....	3
296	W. L. Sopp and F. W. Leach.....	Tuckerton.....	2
297	H. W. Sopp and S. J. Hicks.....	Tuckerton.....	67
298	Charles H. Soper.....	Barnegat.....	11
299	Henry Soper.....	Barnegat.....	1
300	Josephus Seaman.....	West Creek.....	8

OYSTER BED LEASES.

Ocean County—Continued.

Number.	LESSEE.	RESIDENCE.	Acres.
301	H. W. and W. D. Sprague.....	West Creek.....	1
302	Henry Sprague.....	West Creek.....	2
303	Charles A. Stout.....	Bayville.....	7
304	Frank Sutton.....	Toms River.....	13
305	Elias Stiles.....	Tuckerton.....	7
306	Philip Sprague.....	Tuckerton.....	5
307	W. S. Seaman.....	West Creek.....	6
308	Charles M. and Thomas Sprague.....	West Creek.....	1
309	Charles E. Seaman.....	West Creek.....	7
310	Philip R. Sprague.....	West Creek.....	4
311	W. P. Seaman.....	West Creek.....	3
312	Frenian Stout.....	Bayville.....	5
313	Walter Sprague.....	West Creek.....	1
314	William D. Sprague.....	West Creek.....	1
315	Frank M. Sprague.....	West Creek.....	4
316	John F. Sprague.....	West Creek.....	4
317	Frank M. Sprague and J. F. Sprague.....	West Creek.....	3
318	George A. Seaman.....	West Creek.....	8
319	Reuben Sprague.....	West Creek.....	4
320	Abram B. Salmons.....	West Creek.....	1
321	F. and H. Stout.....	Bayville.....	5
322	William Stiles.....	Tuckerton.....	5
323	Willits Stiles.....	Tuckerton.....	9
324	James Sprague.....	Beach Haven.....	2
325	Sidney Stiles.....	Beach Haven.....	3
326	Edward L. Shinn.....	West Creek.....	1
327	Samuel E. Shinn.....	West Creek.....	5
328	Frank A. Shinn.....	West Creek.....	1
329	G. T. Shinn, Atty.....	West Creek.....	4
330	William J. Shinn.....	West Creek.....	1
331	Samuel E. Shinn and Henry S. Shinn.....	West Creek.....	1
332	Hazelton Seaman.....	West Creek.....	8
333	Harvey Stiles.....	Tuckerton.....	1
334	Henry P. Smith.....	Tuckerton.....	4
335	Clarence A. Seaman.....	West Creek.....	3
336	Geo. E. Salmons.....	West Creek.....	2
337	Edward W. Stiles.....	Tuckerton.....	5
338	Joel J. Salmons.....	West Creek.....	2
339	Howard Shinn.....	West Creek.....	2
340	Charles M. Shinn.....	West Creek.....	1
341	Thomas Shinn.....	West Creek.....	3
342	John L. Salmons.....	West Creek.....	3
343	Thomas O. Salmons.....	West Creek.....	4
344	Joseph E. Sopp.....	Tuckerton.....	20
345	Lewis Sprague.....	Tuckerton.....	4
346	Speck Bros.....	Tuckerton.....	50
347	Joel W. Salmons.....	West Creek.....	3
348	Edwin B. Sprague.....	Cedar Run.....	2
349	Frank A. Shinn.....	West Creek.....	1
350	G. Frank Shinn.....	West Creek.....	3

OYSTER BED LEASES.

Ocean County—Continued.

Number.	LESSEE.	RESIDENCE.	Acres.
351	Alfred Shinn.....	West Creek.....	3
352	John A. Shinn.....	West Creek.....	2
353	Harry S. Shinn.....	West Creek.....	16
354	Philip R. Sprague.....	West Creek.....	1
355	Samuel R. Shourds.....	Tuckerton.....	1
356	Benj S. Stiles.....	Tuckerton.....	5
357	Daniel T. Sooy and Sam'l S. Sooy.....	New Gretna.....	4
358	Thomas Taylor.....	Bayville.....	3
359	J. B. Tilton.....	Forked River.....	4
360	Charles L. Tilton.....	Forked River.....	6
361	Reuben Tilton.....	Lanoka.....	4
362	A. S. Tilton.....	Lanoka.....	5
363	Henry W. Taylor.....	Forked River.....	1
364	James Taylor.....	Forked River.....	1
365	Georgiana Taylor.....	Bayville.....	4
366	Walter Vaughan.....	Bayville.....	8
367	Benj. Vaughan.....	Bayville.....	3
368	Holmes Vannoté.....	Bayville.....	4
369	Charles Vanderveer.....	Bayville.....	10
370	Alfred Vantrunt.....	Bayville.....	5
371	George Wooley.....	Bayville.....	3
372	Isaac Worth.....	Lanoka.....	6
373	Daniel Wilbert.....	Forked River.....	10
374	William R. Worth.....	Bayville.....	5
375	Arthur Worth.....	Bayville.....	5
376	Charles Worth.....	Bayville.....	5
377	Ernest L. Worth.....	Bayville.....	8
378	Nelson N. Worth.....	Bayville.....	10
379	A. G. Wilbert, Jr.....	Bayville.....	10
380	Stratton Worth.....	Bayville.....	5
381	George H. Ward.....	Bayville.....	5
382	Frank Worth.....	Bayville.....	8
383	George Worth.....	Bayville.....	9
384	Harvey & West.....	Bayville.....	20
385	J. H. Wilkins.....	Forked River.....	2
386	B. B. Worden.....	Forked River.....	3
387	George E. Wallace.....	Forked River.....	3
388	John B. Wilbert.....	Forked River.....	3
389	Olof Wilkins.....	Forked River.....	2
390	John H. Wilson.....	Port Republic.....	1
391	Frank M. White.....	Tuckerton.....	3
392	Amasa Wilson.....	Port Republic.....	1

BOAT LICENSES.

Maurice River Cove and Delaware Bay.

Number of license	NAME OF BOAT.	MASTER.	Tonnage.
1	Sloop Two Friends.....	Roscoe Thompson.....	5
2	Sloop Leroy G.....	Daniel Gaskill.....	Under
3	Sloop E. C. Vannaman.....	Wm. C. Hunter.....	10
4	Sloop Mary Eliza.....	Wm. Land.....	6
5	Schooner E. S. & C. Guyant.....	Wm. Joslin.....	22
6	Schooner Falcon.....	Jacob Pepper.....	14
7	Sloop Hattie Jenks.....	Everett Moore.....	6
8	Schooner Lucy and Willie.....	Frazeus Whilden.....	9
10	Schooner Almedia.....	E. L. Cain.....	12
11	Schooner D. O. Davis.....	George H. Carey.....	14
12	Schooner Columbia.....	Wm. Veal.....	13
15	Schooner Richard Vaux.....	Leonard Swing.....	16
16	Schooner Jeremiah N. Ogden.....	Edward Newcomb.....	22
17	Schooner Henrietta C.....	Alonzo Burt.....	15
18	Sloop Lizzie.....	Charles Loper.....	5
19	Schooner H. H. Meakins.....	B. Frank Burt.....	11
20	Sloop Olive Mulford.....	Albert G. Mulford.....	7
21	Schooner Alice C. Ogden.....	J. Newton Woodruff.....	22
22	Schooner Maggie D.....	Lafayette Bailey.....	5
23	Schooner Mary F. Sheppard.....	Isaac Nugent.....	18
24	Schooner Jay.....	David Wallen.....	11
25	Schooner Maggie S. Myers.....	George Burt.....	14
27	Sloop Lizzie May.....	Harry Gates.....	5
28	Schooner Imp.....	Charles Bradford.....	5
29	Sloop Arthur B.....	H. E. Blizzard.....	Under
30	Schooner George Gandy.....	Zadoc Sharp.....	18
31	Schooner Jane A. Smith.....	Moses Bateman.....	9
32	Schooner Stanton.....	Wm. A. Diamant.....	12
33	Schooner Julia B.....	Isaac Hickman.....	16
34	Schooner M. D. and Belle Mulford.....	Wm. Bloxson.....	18
35	Schooner Grover Cleveland.....	Elmer Tarburton.....	22
36	Schooner Elvina E. Schoch.....	Robert Brant.....	14
37	Schooner T. B. Husted.....	Grant Lore.....	17
38	Schooner Caroline Mears.....	Alfred Westcott.....	20
39	Sloop A. M. Parris.....	Samuel Dillahay.....	Under
40	Schooner Virginia.....	Somers Whilden.....	21
41	Schooner Sallie E. Burton.....	Joseph Noble.....	14
43	Schooner William Dennis.....	Wm. Peterson.....	10
44	Sloop Lula and Bertha.....	Sylvanus Grace.....	7
45	Schooner Peter R. Paynter.....	James Moffett.....	16
46	Sloop Sarah Jane.....	Wm. G. Robinson.....	5
47	Sloop William Pollick.....	Edward Bradway.....	7
48	Sloop Relda.....	Irwin Snead.....	Under
49	Schooner Flying Fish.....	John C. Peterson.....	17
50	Schooner Richard Robbins.....	George Robbins, Jr.....	16
52	Schooner Roscoe S. Miller.....	Isaac Peterson.....	10
54	Schooner Charles Smith.....	Charles S. Newcomb.....	11
55	Schooner Mary and Margaret.....	John W. Berry.....	13
56	Sloop Mary and Ella Hager.....	Wm. H. Whilden.....	5
57	Schooner Henry S. Robbins.....	Henry S. Robbins.....	10

BOAT LICENSES.

Maurice River Cove and Delaware Bay—Continued.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
58	Sloop Mary Alice.....	Joseph G. Polhamus.....	7
59	Sloop Laurel.....	Zephaniah Joslin.....	8
62	Schooner Maggie Daniels.....	David Daniels.....	12
63	Schooner Rebe and Ella.....	Thomas Moore.....	9
64	Sloop Ella M.....	Sherman Hager.....	9
65	Sloop Claude.....	George N. Terry.....	6
66	Sloop Hattie B.....	Ferdinand Dalton.....	Under
67	Sloop Annie Neary.....	John E. Noble.....	5
68	Sloop Lucy Turner.....	Clement Lore.....	10
69	Schooner Paul C. Joslin.....	Harrison Joslin.....	18
70	Sloop Sallie R. A.....	Gibson C. Andrews.....	8
71	Schooner Elsie M. Riechert.....	Charles F. Johnson.....	9
73	Sloop Nettie May.....	Arthur Windfohr.....	6
74	Schooner Cashier.....	Harry Shull.....	15
75	Schooner Valentine Cosier.....	Lewis Cosier.....	14
77	Sloop Industrious Mulberry.....	Charles Fisher.....	5
78	Sloop Ray.....	David S. Garrison.....	6
79	Schooner Wm. C. Lore.....	Frank Hignutt.....	19
80	Sloop Rhoda and Florence.....	D. O. Taylor.....	6
81	Schooner Bertha and Stella.....	Benjamin Berry.....	14
82	Schooner D. C. Adams.....	Lewis Sheppard.....	19
83	Sloop Henry S. Lutts.....	Thomas Earl.....	6
84	Schooner New Jersey.....	Abdon Abbott.....	19
85	Sloop Florence May.....	Edward Allen.....	Under
86	Sloop Harriet E. Elmer.....	Dayton Campbell.....	7
87	Schooner Three Sisters.....	Charles G. McClain.....	14
88	Schooner Laura M. Buckson.....	Miles Gandy.....	17
89	Schooner Frank and Theresa.....	Uriah S. Lee.....	15
91	Sloop Effie E. Mace.....	Eli W. Chance.....	9
93	Schooner Dandy.....	Zebulon Polhamus.....	14
95	Schooner Albert G. Mulford.....	Jonathan Hartman.....	9
96	Schooner Charles L. Bradford.....	Charles L. Bradford.....	22
97	Sloop James Mulvey.....	Theophilus Newcomb.....	11
98	Schooner Maggie and Ruth.....	Otto Hannon.....	5
101	Sloop Eva M. Robbins.....	John Eagan.....	5
102	Schooner Josiah S. Newcomb.....	Peter B. Newcomb.....	21
103	Sloop Marie.....	Benjamin Burt.....	Under
104	Sloop Little Harry.....	Harry Sutters.....	Under
105	Sloop Ruby May.....	Albert Gaskill.....	Under
106	Schooner Katie Burton.....	H. H. Haggerty.....	18
108	Schooner Medora Francis.....	Wm. Miller.....	14
109	Schooner Addie S. Riffin.....	Walter C. Riffin.....	20
110	Schooner Bay Queen.....	Enoch Locke.....	11
113	Schooner Emma C. Lore.....	Walter Spence.....	10
114	Sloop George S. Jackson.....	Henry Nicholson.....	9
115	Sloop Melvin Bailey.....	David Bailey.....	Under
116	Schooner Sarah W. Mulford.....	Elmer Mulford.....	11
118	Schooner Amanda B. Lore.....	Quincy L. Husted.....	13
119	Sloop Mary L. Robbins.....	James Gates.....	8
121	Schooner John Bireley.....	Jacob Hague.....	17

BOAT LICENSES.

Maurice River Cove and Delaware Bay—Continued.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
122	Schooner James H. Nixon.....	Edward Shropshire.....	21
125	Schooner Lizzie J. Robbins.....	Edward C. Robbins.....	9
126	Sloop Lorella H. Sharp.....	Mahlon Harker.....	Under
127	Schooner Lucy.....	Thomas Simpkins.....	9
128	Sloop Trade Wind.....	Ephraim Gandy.....	Under
129	Schooner Dawning Light.....	James Campbell, Jr.....	16
130	Schooner Philip Ford.....	John F. Hogate.....	20
131	Schooner Andrew A. Lewis.....	Zebulon Polhamus, Jr.....	5
133	Schooner Daniel M. Bateman.....	Robert Bateman.....	10
134	Schooner Phoebe B. Townsend.....	Jacob Trout.....	14
135	Schooner T. O. Ladow.....	Lorensa Donnella.....	15
136	Schooner Volunteer.....	Charles Johnson.....	5
137	Schooner J. W. Finnimore.....	Wm. V. Chew.....	8
138	Schooner Belle.....	Silas Robbinson.....	9
139	Schooner Ida Marts.....	Wilbert Robbinson.....	14
140	Sloop Ella D.....	Harry Ohara.....	9
141	Sloop Edna and Zadoc.....	Zadoc R. Sharp.....	5
144	Schooner Ray R. Nieu Kirk.....	Eli Davis.....	20
145	Schooner Trio.....	George Westcott.....	9
146	Sloop J. S. Johnson.....	L. Bates Rowley.....	7
147	Sloop Sarah C. Lee.....	Daniel Lee.....	7
148	Sloop Glide.....	Stacy Townsend.....	5
149	Sloop Willie Russell.....	Whitefield Williams.....	7
150	Schooner Almira Cox.....	Lilburn Cox.....	10
152	Schooner Edna M. Lore.....	Wm. Sterling.....	21
154	Schooner Alice and Mary.....	R. W. Corson.....	13
155	Schooner Ellanora.....	Silas Hoffman.....	20
156	Schooner Cecelia B. Sheppard.....	Wm. Champion.....	18
157	Sloop Gertrude.....	Andrew Henderson.....	5
159	Sloop Mary Agnes.....	Leon A. Camp.....	Under
160	Schooner Luther Bateman.....	B. F. Bateman.....	21
162	Sloop White Squall.....	Wm. Pierce.....	9
163	Sloop Rosa B.....	Wm. Hinson.....	6
164	Schooner Pathway.....	Eleazer Robbinson.....	11
165	Schooner White Wing.....	John Lake.....	12
136	Sloop William B. Stites.....	Howard Soowell.....	12
167	Sloop Nancy L. Cosier.....	Harry Sutton.....	8
168	Sloop Annie Douglass.....	Harry Loper.....	7
169	Sloop R. & M. Corson.....	Nelson A. Newcomb.....	6
170	Sloop Walter E. Fisher.....	Richard Garrison.....	8
171	Schooner Martin Anderson.....	S. Ware Sheppard.....	20
172	Schooner Addie B. Robbins.....	David Robbins, Sr.....	22
173	Schooner General McClellan.....	Charles Riggins.....	14
174	Sloop James Howard.....	George Webb.....	6
176	Schooner Susie C. Raynor.....	Solomon Walls.....	18
177	Schooner Amanda Green.....	George Shaw.....	9
178	Schooner Vim.....	Mortimer Hughes.....	5
179	Sloop Trader.....	Horatio Sockwell.....	7
180	Schooner Marian Mayne.....	Stults Berry.....	10
181	Sloop Lucy Hopkins.....	Lucius Bradford.....	5

BOAT LICENSES.

Maurice River Cove and Delaware Bay—Continued.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
183	Sloop Dart.....	George Burnight.....	6
184	Sloop Robert Guy.....	James Boice.....	6
185	Sloop Helen Leaming.....	Gus. Bornhorst.....	9
187	Schooner Wood Duck.....	Richard Buckaloo.....	11
190	Sloop Linnet.....	Belford Gandy.....	Under
191	Schooner Araminta.....	Benjamin B. Cruise.....	15
192	Sloop Emily R. Green.....	William Abbott.....	8
194	Sloop Greyhound.....	Isaiah Warren.....	Under
195	Schooner Frances S. Dubois.....	Charles Berry.....	13
196	Sloop Edward C. Burton.....	Harry Hagerty.....	10
199	Schooner Marcus L. Godfrey.....	Elcana Gaskill.....	16
200	Sloop Birdie and Lottie.....	R. R. Smith.....	Under
202	Sloop Mattie B.....	Gideon Bradford.....	6
203	Schooner Anna M. Newcomb.....	Butler Newcomb.....	15
204	Sloop Amanda Stanley.....	Wm. Blizzard.....	Under
205	Schooner B. H. Minch.....	Powell Garrison, Jr.....	14
206	Schooner Cygnet.....	McClellan Hanners.....	9
207	Schooner David R. Lake.....	Harry M. Lee.....	15
208	Sloop Mary Emma.....	John P. Joslin.....	5
209	Schooner Ephraim Mulford.....	Ernest Mulford.....	20
210	Schooner Daniel Sharp.....	Oliver Goff.....	13
211	Schooner George Crist.....	Clement L. Campbell.....	14
212	Schooner George W. McCowan.....	Champion Corson.....	7
213	Schooner A. & E. Blackman.....	Smith Blackman.....	14
214	Sloop John Ruzby.....	Jacob Sutter.....	7
215	Schooner Robert T. Lore.....	Henry C. Smith.....	20
216	Sloop Frank V. Bateman.....	Aaron S. Hunter.....	7
217	Schooner Kate and Sarah.....	Gilbert Stites.....	9
218	Schooner Sallie and Ceola.....	Wilson Campbell.....	20
220	Sloop Friendship.....	James Hoffman.....	5
221	Schooner Charles A. Covert.....	Steelman R. Lee.....	20
223	Sloop Mary C. Sharp.....	Maurice R. Lee.....	8
224	Schooner Elvina English.....	Wm. A. Vall.....	17
225	Sloop Augusta.....	Charles Garrison.....	Under
227	Schooner Mary W. Mears.....	Peter C. Campbell.....	21
229	Sloop Gypsy.....	Harrison Hand.....	10
230	Sloop Sherman.....	Charles Tozour.....	7
234	Sloop Idelia.....	Joshua Clark.....	5
235	Sloop Warren R. Miller.....	Joseph Garrison.....	5
237	Schooner Mary J. Robbins.....	David Robbins, Jr.....	13
239	Schooner Anna Worrell.....	Wm. Hoffman.....	20
240	Schooner William H. Berry.....	Wm. H. Berry.....	16
241	Schooner Sarah A. Melson.....	Wm. Husted.....	14
243	Sloop Trilby.....	Charles Foster.....	Under
244	Sloop George and Morton.....	Gus. Jantson.....	10
245	Sloop Lark.....	Lysanda D. Corson.....	Under
250	Schooner Samuel Lake.....	Lemuel Bradford.....	15
251	Sloop Starlight.....	George C. Bell.....	10
253	Schooner R. and A. Smith.....	Walter Warwick.....	15
255	Schooner Prize.....	George C. Peterson.....	18

BOAT LICENSES.

Maurice River Cove and Delaware Bay—Continued.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
257	Sloop Sarah Cox.....	Thomas Warwick.....	6
258	Sloop Belle J. Trout.....	Arthur Hinson.....	5
259	Sloop Lena T. Bateman.....	Theophilus M. Husted.....	9
260	Schooner Pearsoll.....	Hiram Blizzard.....	10
261	Sloop Addie P.....	Charles Shropshire.....	Under
262	Sloop Water Lily.....	Moses Veal.....	7
265	Sloop Henry Kreiner.....	Ephraim Harris.....	6
266	Schooner Steelman R. Lee.....	Frank V. Lee.....	10
267	Sloop Thomas S. Lee.....	Samuel Lee.....	6
268	Sloop Shamrock.....	Horatio Emerson.....	6
269	Sloop Jennie M. Chance.....	Anderson Hunter.....	8
272	Sloop May Bateman.....	James A. Turner, Jr.....	9
277	Schooner Hannah Mulford.....	Leaming Turner.....	11
278	Sloop I. T. Nichols.....	George Pashley.....	5
280	Sloop J. S. Ingersoll.....	John H. Orr.....	8
281	Sloop Mary A. Bickley.....	Wm. L. Foster.....	8
283	Schooner Walter M. Johnson.....	Ernest Sutton.....	15
285	Sloop Pilot.....	Americus Bateman.....	Under
286	Sloop Freda C. Naylor.....	Wm. Bidwell.....	6
287	Sloop Kensington.....	George H. Walls.....	10
288	Schooner Hattie R. Johnson.....	Jeremiah Burk.....	18
290	Sloop Blackbird.....	Elmer Spencer.....	Under
293	Schooner Etta B.....	Charles R. Boyle.....	17
296	Sloop Callena.....	Robert O'Neil.....	7
297	Sloop Hannah B. Gibson.....	Frank L. Garrison.....	8
299	Sloop Ida May.....	George Phillips.....	6
300	Schooner Samuel C. Jacoby.....	John H. Hanners.....	22
302	Sloop Hattie M. Mills.....	Asa Smith.....	7
303	Schooner Charles T. Sheppard.....	Archie Campbell.....	8
305	Schooner Hannah and Ida.....	Wm. B. Newcomb.....	26
306	Schooner Julia H. Newcomb.....	George W. C. Newcomb.....	21
307	Sloop Edward D. Potts.....	R. L. Smith.....	5
310	Schooner Jennie Reeves.....	John Pierce.....	11
312	Sloop Mattie Holly.....	Smith Bagg.....	Under
314	Sloop Edison.....	Andrew Randolph.....	8
315	Schooner Rebecca T. Brunyate.....	John T. Sharp.....	12
316	Schooner Anna M. Robbins.....	John Brineshults.....	14
317	Schooner Tidal Wave.....	George D. Newcomb.....	18
318	Schooner Nellie and Mary.....	James Peterson.....	13
319	Schooner M. F. Howlett.....	John Toohy.....	15
320	Schooner Roxanna Hand.....	Nathan Stites.....	11
321	Sloop Emily.....	Wm. B. Nixon.....	5
322	Sloop Rollin S.....	David K. Cruise.....	8
324	Sloop Fortescue.....	Zaccheus Joslin.....	Under
327	Schooner Lady of the Lake.....	Wm. S. Davis.....	13
328	Sloop J. S. Penny.....	A. S. D. Howell.....	9
331	Sloop Lizzie and Mabel.....	George Hollinger.....	Under
332	Schooner C. W. and S. Peace.....	Andrew J. Bailey.....	13
333	Sloop Harry and Ralph.....	L. C. Hand.....	6
335	Schooner Gratitude.....	Robert Bloxson.....	14

BOAT LICENSES.

Maurice River Cove and Delaware Bay—Continued.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
336	Schooner Clipper.....	Thomas E. Morris.....	13
337	Schooner Boyd N. Sheppard.....	Harrison Sheppard.....	21
340	Schooner A and E. Whitaker.....	Henry Wallen.....	12
341	Schooner North Star.....	Albert Sharp.....	16
343	Sloop John W. Paul.....	John Broadwater.....	5
344	Sloop Hunter.....	Curtis Risley.....	7
345	Schooner Hattie B. Robbins.....	Levi Robbins.....	11
346	Sloop Julia A. Reid.....	Wm. Cobb.....	6
349	Sloop Mattie B. Sheppard.....	George Sheppard.....	9
351	Sloop Two Davids.....	Mark L. Orr.....	6
352	Schooner J. O. Smith.....	Wm. T. Collins.....	10
354	Sloop William J. Bryan.....	Warrie H. Snell.....	8
356	Schooner Carrie Haley.....	Douglass Haley.....	8
357	Sloop Maud M. Robbins.....	Henry A. Berry.....	7
358	Schooner John B. Hagemann.....	Daniel C. Garrison.....	17
359	Schooner Lillie C.....	Cornelius Chester.....	9
361	Schooner Addie Wesley.....	J. B. Fithian.....	5
365	Sloop L. Drew.....	Sylvanus Ladow.....	5
366	Schooner Francis L. Dow.....	Beriah Loper.....	9
367	Sloop Sabrina.....	Frank Bechtel.....	8
368	Sloop J. Gordon.....	George Crowen.....	6
369	Schooner Michael Martin.....	John Tweed.....	20
372	Sloop Hattie B.....	Ethan Lore.....	7
376	Sloop Gracie.....	Halleck Sharp.....	7
377	Schooner James P. Nieu Kirk.....	Addie B. Newcomb.....	15
378	Sloop C. and H. Elmer.....	John H. Whilden.....	6
379	Sloop J. F. Armstrong.....	Frank Risley.....	Under
380	Schooner Katie C.....	John Bloxson.....	16
381	Schooner Mary Ann.....	Edward Reed.....	11
382	Sloop Thistle.....	Powell Garrison, Sr.....	Under
384	Sloop Ann Virginia.....	Smith Campbell.....	6
385	Sloop Eva.....	Harry Ludlam.....	Under
386	Sloop Geranium.....	Thomas L. Dodson.....	7
387	Sloop L. E. Wallace.....	Henry Henderson.....	8
388	Sloop Helen Hurd.....	David Rahr.....	7
389	Schooner Freeman.....	Edward Evans.....	7
391	Sloop Fawn.....	Henry Bornhorst.....	7
392	Schooner Martha Ann.....	Augustus Meerwald.....	10
393	Schooner John J. Howlett.....	John P. Mullen.....	23
394	Sloop Sylvan Dell.....	Edward Riggan.....	8
396	Schooner Eden.....	Frank Barnes.....	30
397	Sloop Howard T. Leach.....	George M. Blizzard.....	6
399	Sloop Sylvan Dall.....	Gilbert Lore.....	Under
400	Schooner Anna W. Neal.....	Elmer Bateman.....	9
401	Schooner Annie Cooney.....	Philip Lynch.....	16
403	Sloop Walter H. Hensin.....	Harold Hinson.....	9
405	Schooner Mabel Lore.....	Robert Corson.....	10
406	Sloop H. K. Mulford.....	Frank Pepper.....	9
407	Sloop Laura May.....	George Warren.....	Under
408	Sloop Charles M. Howell.....	Wm. W. Cosier.....	8

BOAT LICENSES.

Maurice River Cove and Delaware Bay—Continued.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
411	Schooner Harry and Charlie.....	Charles A. Covert.....	9
412	Sloop Golden Light.....	Joseph Hilton.....	9
416	Schooner Ward B. Smith.....	Job C. Risley.....	12
418	Sloop Laura G.....	Samuel Errickson.....	8
419	Schooner Samuel Cottingham.....	John Loper.....	5
422	Sloop Una.....	Robert Risley.....	7
425	Sloop Bessie and Lizzie.....	Willard McDaniels.....	Under
426	Schooner Sunlight.....	Stetson Campbell.....	17
427	Schooner Harry and Willie.....	Champion Cox.....	8
428	Sloop Harriet E. Lowndes.....	Lemuel Turner.....	7
429	Sloop Lena and Lina Cosier.....	Charles Pettit.....	5
430	Sloop Beulah and Mary.....	Edward Brandt.....	7
431	Sloop Sophy and Ina.....	J. Wesley Adams.....	6
434	Sloop Knight.....	Joseph Dorrell.....	Under
436	Sloop James H. Turner.....	Charles M. Ingorsoll.....	5
438	Sloop Emlen Hughes Green.....	Richard Abbott.....	5
439	Schooner Forrest G. Howell.....	George Gaskill.....	14
441	Sloop Lillie Anderson.....	Wm. Phillips.....	12
448	Schooner John S. Myers.....	Frank Johnson.....	15
450	Schooner Mattie Flavel.....	James Anold.....	22
451	Sloop Excel.....	Reeves Douglass.....	5
458	Schooner Harriet H. Lippincott.....	Jesse Gaskill.....	17
459	Schooner Seaman's Bride.....	James Carey.....	17
462	Schooner William Shriver.....	William Perry.....	10
465	Sloop Restless.....	John Harris.....	8
466	Schooner Agnes.....	William Scull.....	15
468	Schooner Wm. B. and Wm. J. Carlisle.....	John Sharpless.....	13
471	Schooner M. H. Howlett.....	James Lodge.....	19
472	Sloop Sea Bird.....	Harry Warren.....	Under
473	Schooner Helen and Sallie.....	Charles Bowker.....	11
475	Sloop Mary E. Adams.....	Lewis B. Newcomb.....	5
478	Sloop Bicycle.....	Benjamin Joslin.....	8
485	Schooner H. L. Steelman.....	George Terry.....	11
488	Sloop Sarah B. Chance.....	John S. Chance.....	6
492	Schooner Doris.....	Samuel Walls.....	15
499	Schooner M. P. Howlett.....	John Flynn.....	31
501	Sloop Flora Vangilder.....	Wm. Parker.....	7
516	Sloop Francis J. Campbell.....	Clarence Williams.....	7
526	Schooner Minnie McDorman.....	Charles McDaniels.....	5
530	Sloop Annie and Maud.....	George Henderson.....	5
532	Sloop Rhoda and Edith.....	Wm. Dalson.....	Under
557	Sloop Sallie C.....	Jacob Hitchner.....	5
561	Schooner Lizzie J. Weaver.....	Addison Lore.....	23
562	Sloop Samuel Hanners.....	Samuel Hanners.....	6
563	Sloop Edward and Jennie.....	Peter Wilson.....	Under
568	Sloop Brown and Morris.....	Wm. S. Moore.....	Under
572	Sloop Shad Skiff.....	Wm. Gaskill.....	Under
574	Sloop Mattie.....	John H. Taylor.....	6
576	Sloop Shad Skiff.....	Jesse Barratt.....	Under
581	Sloop Thelma.....	Richard Robbins.....	Under

BOAT LICENSES.

Maurice River Cove and Delaware Bay—Continued.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
582	Sloop Emma and Mary.....	Edward Irelan.....	Under
583	Sloop Mail.....	Samuel C. Lake.....	8
585	Sloop Friendly.....	Gilbert F. Holmes.....	10
588	Schooner Village Belle.....	Thomas Lilliston.....	14
590	Sloop Florence.....	John Foster.....	Under

BOAT LICENSES.

Maurice River Cove.

Number of license.	NAME OF BOAT.	MASTER.	Tonnage.
402	Scow	John Bevis	Tonging
564	Scow	J. B. Fithian	Tonging
566	Scow	D. W. English	Tonging
567	Scow	Howard Sutton	Tonging
569	Scow	James Conover	Tonging
570	Scow	John Matthews	Tonging
571	Scow	H. D. Conover	Tonging
577	Scow	Thomas Henderson	Tonging
578	Scow	Caleb Matthews	Tonging
579	Scow	Samuel Bristol	Tonging

TONGERS' BOAT LICENSES.

Ocean County.

Number of license.	NAME.	RESIDENCE.	Tonnage.
1	Geo. Quinn	Tuckerton	
3	William Hulse	Bayville	
4	Ernest L. Worth	Bayville	
5	Theodore Chamberlain	Bayville	
6	William Britton	Bayville	
7	Lewis Q. Worth	Bayville	
8	Newell Potter	Bayville	
9	Jesse Grant	Bayville	
10	Herbert Grant	Bayville	
11	Frank Worth	Bayville	
12	Hamilto Vanderveer	Bayville	
13	Reuben Potter	Bayville	
14	Vernon Sutton	Bayville	
15	Nelson Worth	Bayville	
16	John H. Potter	Bayville	
17	Harry Vanderveer	Bayville	
18	C. F. Grant	Bayville	
19	Charles Chamberlain	Bayville	
20	Benjamin Platt	Bayville	
21	Joseph H. Everham	Bayville	
22	Arthur Worth	Bayville	
23	Garfield Worth	Bayville	
24	Clarence Worth	Bayville	
25	Charles Worth	Bayville	
26	Stratton Worth	Bayville	
27	John Cornelius	Bayville	
28	John Wright	Bayville	
29	Holms Vannote	Bayville	
30	Samuel Taylor	Bayville	
31	Fred. Cornelius	Bayville	
32	William Grant	Bayville	
34	John Grant	Bayville	
35	William R. Worth	Bayville	
36	Nathan Jeffrey	Bayville	
37	Edward Grant	Bayville	
38	Geo. Rogers	Bayville	
39	Jesse Rogers	Bayville	
41	Redden Penn	Bayville	
42	Isaac Worth	Bayville	
43	Harry Worth	Bayville	
44	George Foster	Lanoka	
45	Westley Grant	Bayville	
46	Walter C. Clayton	Toms River	
47	David Parker	Forked River	
48	Joseph Parker	Forked River	
49	William Brinley	Lanoka	
50	Alexander Brinley	Lanoka	
51	M. V. Bunnell	Lanoka	
52	B F. Lane	Lanoka	
53	Reuben Tilton	Lanoka	

TONGERS' BOAT LICENSES.

Ocean County—Continued.

Number of license.	NAME.	RESIDENCE.	Tonnage.
54	Walter Vaughan.....	Forked River.....	
55	Watson Penn.....	Forked River.....	
56	Thomas R. Bowen.....	Absecon.....	
57	William Brown.....	Forked River.....	
58	J. H. Bunnell.....	Forked River.....	
59	John Rosenkohn.....	Forked River.....	
60	Martin McCarthy.....	Lanoka.....	
61	Timothy McCarthy.....	Lanoka.....	
62	Moses Bunnell.....	Lanoka.....	
63	Ephraim Bunnell.....	
64	Stanley Wilbert.....	Forked River.....	
65	John Holms.....	Forked River.....	
66	F. M. Holms.....	Forked River.....	
67	William Chamberlain.....	Forked River.....	
68	Jesse Taylor.....	Forked River.....	
69	Juni Taylor.....	Forked River.....	
70	E. P. Hyers.....	Island Heights.....	
71	Fred. Corwin.....	Toms River.....	
72	William F. Wilbert.....	Forked River.....	
73	Stacy Wilbert.....	Forked River.....	
74	Samuel F. Britton.....	Bayville.....	
75	William L. Britton.....	Bayville.....	
76	Frank Penn.....	Forked River.....	
199	John Cobb.....	Mayetta.....	
200	Jerry Gaskill.....	Mayetta.....	
101	William F. Gaskill.....	Tuckerton.....	
102	James D. Brown.....	Tuckerton.....	
103	Hudson Gaskill.....	Tuckerton.....	
104	Charles Carhart.....	Tuckerton.....	
105	Barzilla Pullen.....	Tuckerton.....	
106	Alexis Stiles.....	Tuckerton.....	
107	Willits Stiles.....	Tuckerton.....	
108	E. A. Gale.....	Tuckerton.....	
110	Samuel Carhart.....	Tuckerton.....	
111	James L. Marshall.....	Tuckerton.....	
112	Geo. L. Marshall.....	Tuckerton.....	
113	Noah Marshall.....	Tuckerton.....	
114	Geo. R. Marshall.....	Tuckerton.....	
115	C. W. Marshall.....	Tuckerton.....	
116	Solomon Marshall.....	Tuckerton.....	
117	Madison Marshall.....	Tuckerton.....	
118	Samuel J. Smith.....	Tuckerton.....	
119	Joseph P. Smith.....	Tuckerton.....	
120	William A. Mathis.....	Tuckerton.....	
121	Charles R. Mathis.....	Tuckerton.....	
122	John W. Rutter.....	West Creek.....	
123	Frank Holman.....	West Creek.....	
124	Samuel S. Anderson.....	Tuckerton.....	
125	William Gale.....	Tuckerton.....	
126	Harry Jones.....	Tuckerton.....	

TONGERS' BOAT LICENSES.

Ocean County—Continued.

Number of license.	NAME.	RESIDENCE.	Tonnage.
127	Ernest Smith.....	Tuckerton.....	
128	Walter L. Sapp.....	Tuckerton.....	
129	William A. Morris.....	Tuckerton.....	
130	Howard Parker.....	Tuckerton.....	
131	William E. Gale.....	Tuckerton.....	

BUREAU OF SHELL FISHERIES.

The Bureau submits herewith a report of its financial transactions for the six months ending October 31st, 1903.

Appropriated for Salary.....	\$600 00
Office furnishings, supplies, clerical assistance and incidentals.....	300 00
Total.....	<u>\$900 00</u>

Drawn for Salary.....	\$600 00
Stationery, office supplies and blank-books,	142 25
Clerical help.....	52 00
Postage.....	6 00
Incidentals.....	16 31
	<u>817 06</u>
Balance.....	\$82 94

Respectfully submitted,

CHAS. R. BACON,
Chief of Bureau.

