First Annual Report of the Atlantic County Mosquito Extermination Commission. 1913

1913

No. 613 BARTLETT BUILDING
ATLANTIC CITY, NEW JERSEY
THE ATLANTIC COUNTY
MOSQUITO EXTERMINATION
COMMISSION

WM. EDGAR DARNALL, M. D., President,
Atlantic City, N. J.

WILLIAM M. POLLARD, M. D., Vice-President,
Atlantic City, N. J.

EDWARD GUION, M. D., Secretary-Treasurer,
Atlantic City, N. J.

CLYDE M. FISH, M. D.,
Pleasantville, N. J.

CLARENCE GARRABRANT, M. D.,
Atlantic City, N. J.

A. J. RIDER,
Hammonton, N. J.

HAROLD I. EATON, Chief Inspector.

FRED. A. REILEY, Assist. Chief Inspector.
Outlet Ditch 20 Inches Wide, near New Pipe Line, Southeast of Pleasantville
INSPECTORS

District No. 1—First Ward, Atlantic City,
   P. W. H. MULVEY.

District No. 2—Second Ward, Atlantic City,
   L. W. SCHEINCK.

District No. 3—Third Ward, Atlantic City,
   MARVIN LEEDS.
   JAMES LEEDS.

District No. 4—Fourth Ward, Atlantic City,
   CARL R. WOODWARD.

District No. 5—Ventnor, Margate, Longport,
   H. F. KRAMER.

District No. 6—Pleasantville, Northfield, Etc.,
   J. W. MARTZ.

District No. 7—Hammonton,
   CHAS. DAVENPORT.

District No. 8—Absecon and Egg Harbor City,
   S. A. LUTZ.

District No. 9—May's Landing,
   CHAS. ABBOTT.

District No. 10—Port Republic, Oceanville, Etc.,
   THOS. C. TURNER.

District No. 11—Somers Point, Linwood,
   Scullville, Etc.,
   W. A. SMITH.

____________________

ANNA M. HOGAN, Stenographer.
Meadow Drained in Ventnor
New Brunswick, N. J.,
April 29, 1913.

To the Board of Freeholders of Atlantic County.

Gentlemen:—In accordance with Section 4 of Chapter 104, Laws, Session of 1912, I submit a detailed estimate of the moneys required for the ensuing year and a plan of work to be done and methods to be employed.

**MONEYS REQUIRED.**

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<tr>
<th>Item</th>
<th>Amount</th>
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<tr>
<td>Chief Inspector</td>
<td>$1,800.00</td>
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<tr>
<td>Secretary-clerk</td>
<td>1,200.00</td>
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<tr>
<td>Office rent</td>
<td>500.00</td>
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<td>Office furnishings and supplies</td>
<td>400.00</td>
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<tr>
<td>Printing of reports and circulars</td>
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<tr>
<td>Apparatus (tools, sprayers, wagons, tanks, etc.)</td>
<td>1,100.00</td>
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<tr>
<td>Labor and materials (contracts, sub-inspectors, laborers, oil, etc.)</td>
<td>20,000.00</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$26,000.00</strong></td>
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**PLAN OF WORK.**

The Atlantic County Mosquito Extermination Commission shall meet regularly on the third Monday of each month, and at any other time on the call of the President. Citizens of the county may present communications to the commission relative to its work at any regular meeting.

It shall be the business of the secretary appointed by this commission and working under its direction: to keep the minutes of each and every meeting of the commission; to attend to all correspondence; to arrange and file all reports, maps and other documents; to receive, present to the commission and keep careful account of all bills and payments; and to conduct a campaign of education for the purpose of informing the public of Atlantic County in the aims, methods and results of mosquito extermination work. It
The Manahan Ditching-Machine at Work in Ventnor
shall further be the business of the secretary to prepare on request of the commission reports of progress of such nature and extent as the commission shall direct.

It shall be the business of the chief inspector appointed by the commission and working under its direction to divide the county into a sufficient number of districts that a sub-inspector can cover each with the exception of one smaller than the rest, which the chief inspector shall himself handle. It shall further be the business of the chief inspector to keep the commission thoroughly informed in the needs of the actual work of control and to that end he shall present a report of progress to each regular meeting of the commission and at any other time the commission shall request it. The chief inspector shall be responsible to the commission for the actual work of suppression.

METHODS OF WORK.

The methods of work shall be left largely to the judgment of the chief inspector and will include filling, draining, cleaning, stocking with suitable fish, oiling, screening and emptying the various breeding places of the mosquito within the limits of Atlantic County.

(Signed) JACOB G. LIPMAN,
Director.
Meadow Drainage East of Pleasantville
THE Atlantic County Mosquito Extermination Commission received its appointment on May 7th, 1912. This was too late, according to the law, to enter the budget on the tax assessment, the result being that nothing could be accomplished during 1912.

The budget of expenses was then prepared and submitted to the Director of the State Experiment Station, in compliance with the statute, and by him transmitted to the Board of Freeholders in time to be approved by them January 1st, 1913. The Board of Freeholders, however, at this time, did not thoroughly understand the situation and the budget was deferred until a future time.

The mosquito question was so new to the community at large and so little understood by the public in general, that the Commission then decided to enter upon a campaign of education. The matter was brought before eighteen different civic bodies of the County and City in the form of addresses, lectures and lantern demonstrations. In this work we were assisted most ably by Thomas J. Headlee, Ph. D., our State Entomologist, who was untiring in his efforts to help us and to whom we acknowledge our indebtedness. In every instance, as soon as the matter was thoroughly explained to these organizations, and they were shown the benefits that would accrue in the raising of real estate values, etc., they, without exception, gave us their hearty approval and endorsement. These organizations included Women's Clubs, Borough, Township and City Councils, Boards of Health, Medical Societies, Business Men's Associations and Hotel Men's Associations. The result was that at the April meeting of the Board of Freeholders the budget was finally passed.

The Commission then found itself confronted with a new obstacle in obtaining money for the work of the present
Breeding Pools Drained
year, inasmuch as the moneys to be collected from the tax assessment did not become due until December 21st, 1913. This matter was again laid before the Board of Freeholders who generously gave the Commission a guaranty certificate that the taxes would be collected, and $26,000 applied to the Mosquito Commission, and on this certificate the Commission was enabled to borrow money from the banks.

The Commission was fortunate in securing the services of Mr. Harold I. Eaton, as Chief Inspector. Mr. Eaton in the few months of his work has demonstrated his ability not only as an able sanitary engineer but as an executive officer. He had spent three years in the Panama Canal Zone under Colonel William C. Gorgas and came to us thoroughly equipped for the work. He immediately organized a corps of twelve inspectors and a house to house canvas was made throughout the whole County to find out and clear up all local breeding places.

The Commission was handicapped during the present year by the fact that breeding of both the house mosquito and the salt marsh mosquito was already far advanced, and they were breeding in enormous numbers before it was possible for any active steps to be taken, yet in spite of this fact, the culex pipiens or house mosquito was soon brought under control and kept under control fairly well during the whole summer.

In the upper part of the County where not much trouble is experienced from the salt marsh mosquito, as in the neighborhood of Hammonton, mosquitoes have been practically exterminated altogether.

By far, the greater problem in this community is the culex sollicitans, the mosquito which is bred on the salt marshes. It was well into August before it was possible to make a start on the marsh work by reason of the time consumed in advertising for bids, assembling equipment and other details necessary to carry on the contract for ditching and draining. In spite of this fact, 400,000 feet of ditching have been accomplished in two contracts aggregating $10,000.
Meadow Drained at Margate City
The State Experiment Station, working under a State appropriation, entirely separate from the County Commissions, generously came to our aid and has put $10,000 worth of work in Atlantic County. Another contract of 400,000 feet amounting to an additional $10,000 will be let in December. Thus the whole work accomplished for this season will amount to about $30,000.

It is realized that this first year's work of the Commission is but a beginning. The proposition of ridding this community of the culex pipiens, or house mosquito, is controlled with comparative ease by the dilligent work of the inspectors but the culex sollicitans, or salt marsh mosquito, is the great problem of Atlantic County.

There are 53,431 acres of salt marsh land in Atlantic County, all of which must have attention, and when we think of this enormous area to be drained and ditched, we realize how extensive is the work we have begun. Yet what has been accomplished already, starting as late as August, for this year, and after the mosquito season was in full swing, encourages us to believe that if we can obtain funds fast enough, the work can be prosecuted to a successful termination within a reasonable length of time. If this work can be actively carried on through the coming year, the worst breeding places will be eliminated to such an extent that the denser portion of the population of the County, including Atlantic City and the Shore Road, will be largely freed from the mosquito pest.

Too much importance can not be placed, however, on the necessity of a much larger appropriation of the State moneys for the coming year, so that this work can go on unhampered to rapid completion. The amount of money provided by the tax budget of the County is fixed by law and can only amount to a certain figure, therefore, any increase in the amount of money available for the work of mosquito extermination must come from the State appropriation. If the work is to be accomplished rapidly and brought to an issue satisfactory to the people of this County, it means that we will have to look to the State for a more generous fund. With sufficient money to carry forward the plans al-
Pools Drained North of the Meadow Boulevard
ready mapped out by the Commission, it is safe to say that in a year or two more, Atlantic County can publish to the world that it is free from the mosquito pest.

In this connection, we wish to acknowledge the splendid support given the Commission, in the campaign of publicity, by the Atlantic City Daily Press, the Evening Union and the Atlantic City Review, as well as the various organizations which endorsed the movement.

WM. EDGAR DARNALL,
President.
REPORT OF THE TREASURER
TO DECEMBER 1, 1913

RECEIPTS.
May 26th, 1913—Guarantee Trust Company...... $1,000.00
June 16th, 1913—Guarantee Trust Company...... 3,000.00
Aug. 30th, 1913—Guarantee Trust Company...... 2,000.00
Sept. 2nd, 1913—Union National Bank............ 5,000.00
Nov. 3d, 1913—Guarantee Trust Company...... 1,200.00

$12,200.00

DISBURSEMENTS.

SALARIES:
Chief Inspector................................. $1,141.34
Assistant Chief Inspector.................. 350.00
Stenographer................................. 350.00
Inspectors...................................... 2,619.00
Laborers........................................ 106.00

$4,566.34

OILS:
Pure Oil Company.............................. 73.60
M. L. Jackson & Son......................... 3.30
Baker Bros.................................... 1.20
Sundry purchases by inspectors.............. 4.68

82.78

HORSES AND WAGONS:
Eldredge Express Co......................... 12.99

TOOLS AND IMPLEMENTS:
Baker Bros.................................... 1.40
H. E. Trotman................................. 30.15
C. B. Porter Co.............................. 19.50
## MOSQUITO EXTERMINATION COMMISSION

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<td>Currie Company</td>
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<td>V. B. Giffin &amp; Son</td>
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### OFFICE EXPENSE:

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<td>Del. &amp; Atlantic Tel. &amp; Tel. Co.</td>
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<td>The W. G. Bartlett Company</td>
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<td>Guarantee Trust Company</td>
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<td>Stamps &amp; Stamped Envelopes</td>
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<td>Maps &amp; material for mounting maps</td>
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<td>Office Supplies</td>
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<td>Miscellaneous</td>
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<td>Chas. E. Henkelman</td>
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<td>Dungan, Fry &amp; Spence</td>
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<td>E. G. Shreve</td>
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<td>Edward Waldmayer</td>
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<td>Underwood Typewriter Co.</td>
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<td>H. I. Eaton</td>
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<td>J. Rosenbaum &amp; Son</td>
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<td>Braunstein Dry Goods Co.</td>
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<td>Shaner &amp; Knauer</td>
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<td>Old Post Office Garage</td>
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<td>Muller Bros.</td>
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<td>Van Sciver Co.</td>
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<td>C. G. Braxmar Co.</td>
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<td>E. Dietzgen</td>
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<td>Library Bureau</td>
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<td>Schudlenfrei Dry Goods Co.</td>
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### SALT MARSH DRAINAGE:

<table>
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<tr>
<th>Vendor</th>
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<tbody>
<tr>
<td>United States Drainage &amp; Irrigation Co.</td>
<td>4,793.67</td>
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</table>
Atlantic City Daily Press ........ 28.60
Atlantic City Evening Union .... 15.08
Atlantic City Lumber Company . 5.88
State Gazette Publishing Company . 14.56
Atlantic City Review .............. 14.04

4,871.83

INTEREST AND DISCOUNT:

Printing:
Muller Bros. ....................... 113.25
Shaner & Knauer .................... 21.50

134.75

Miscellaneous:
William Lewis Company ............ 20.00
Dr. C. M. Fish (Expenses) ....... 13.50
A. J. Rider (Expenses) ............ 22.34
Dr. Edward Guion (Expenses)..... 5.00
Dr. W. E. Darnall (Expenses) .... 5.75
Inspectors Expenses ............... 78.06

144.65

Total Disbursements ............... $11,729.41

Cash Balance December 1st, 1913:
Bank Balance ...................... 466.24
Petty Cash Fund ................... 4.35

470.59

$12,200.00

E. GUION,
Treasurer.

Note:—A payment of $4,460 is due the U. S. Drainage and Irrigation Co. on January 2nd for the cutting of 200,000 lineal feet of ditching.
THE Atlantic County Mosquito Extermination Commission started active work for the season of 1913 by employing a Chief Inspector with authority to employ as many inspectors and laborers as should be found necessary to carry on the work. An office was rented and furnished, a stenographer was employed, and inspection work in Atlantic City started on June 4th.

FRESH WATER WORK.

Although it was somewhat late in the season for starting this work, very few places were found breeding and the work was well in hand when the heavy breeding started. The breeding was very light until the middle of July when it was found that pools and containers which had formerly contained no eggs or larvae were now well supplied. Heavy pipiens breeding continued throughout the summer, reaching its maximum about the middle of September when it commenced to diminish.

An average force of eleven inspectors was used for the entire County, distributed as follows:—

Atlantic City, 4.
Ventnor, Margate, Longport, 1.
Pleasantville, Northfield, 1.
Absecon, Egg Harbor City, 1.
Port Republic, Oceanville, etc., 1.
Somers Point, Linwood, Scullville, etc., 1.
Hammonton, 1.
May’s Landing, 1.
Salt Pond at High Tide. The Ditches Admit the Small Fish which Feed on Mosquito Larvae.
An inspector was assigned to each ward in Atlantic City and each ward inspected about every twelve days. On account of the large size of the fourth ward and the number of breeding places, this schedule was found impossible and special inspections were made to obtain the necessary frequency of inspections.

Very few fresh water breeding places, either natural or artificial, were found in the lower end of Absecon Island, viz: Ventnor, Margate and Longport, and the inspector in this district was laid off on September 1st.

Fresh water work in the County outside of Absecon Island consisted mainly of house to house inspections and in several of the districts, Somers Point, Absecon, Port Republic and May's Landing, very few pipiens breeding places were found. The large fresh water cedar swamps throughout the County, contrary to popular belief, are absolutely free from mosquito breeding. The results obtained from inspections of these the past season verify the inspections of the State Inspectors made during the past ten years. Only two small swamps were found breeding during the season, one in Gravelly Run and one in Port Republic and both contained culex sylvestris. They were treated with oil as it was found inadvisable to drain them.

Egg Harbor City and Hammonton were found to contain more pipiens breeding places than any of the other County districts. Egg Harbor City has numerous cess-pools, pit closets and street gutters with standing water and breeding was very heavy in these, necessitating frequent oiling. Hammonton is farther from the salt marsh than any other Atlantic County town and the elimination of pipiens there consequently meant comparative freedom from mosquitoes of all kinds. Excellent results were therefore obtained and were obvious as there were only occasional influxes of culex sollicitans from the salt marsh. A small swamp near the Park, southeast of the City, was drained at a cost of $50.00 and breeding eradicated.

A complete record of all inspections was kept and a card for every house in the County filled out stating the
<table>
<thead>
<tr>
<th>Location</th>
<th>No. of Inspections</th>
<th>Barrels and tubs</th>
<th>Open Drains</th>
<th>Cisterns</th>
<th>Manure Pits</th>
<th>Other Receptacles</th>
<th>Water in Cellars</th>
<th>Water under houses</th>
<th>Swamps</th>
<th>Pools</th>
<th>Low Lots</th>
<th>Water in Yards &amp; Alleys</th>
<th>Out Houses</th>
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<td>Atlantic City, Ward 1</td>
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<td>May's Landing</td>
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<td>Hammonton</td>
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<td><strong>245</strong></td>
<td><strong>52</strong></td>
<td><strong>89</strong></td>
<td><strong>331</strong></td>
<td><strong>28</strong></td>
<td><strong>235</strong></td>
<td><strong>2</strong></td>
<td><strong>154</strong></td>
<td><strong>110</strong></td>
<td><strong>141</strong></td>
</tr>
</tbody>
</table>

**Report of Atlantic County**
conditions in the house and on the premises. When any probable breeding place was found, a duplicate card of a different color was made in the office and on each subsequent inspection the condition found and the means taken to eliminate the breeding was noted. In cases requiring the action of the Board of Health, a complaint card of that Board was filled out and sent to the Health Officer.

Among the inspectors employed on Absecon Island were three college students who did very satisfactory work from June to September, when they were obliged to return to college. The breeding reached its maximum in September and the departure of the above inspectors necessitated the employment and training of two new men to fill the vacancies in the two worst districts. In the future, when college students are employed they should be accepted only upon the condition that they remain in the service at least until October 1st, and preferably to Oct. 15th.

The number of inspections made, breeding places found, etc., is shown in the table on the opposite page.

SALT MARSH WORK.

At a meeting of the Commission in June, it was decided that as much of the annual appropriation as possible be devoted to draining the meadows of Atlantic County, and the amount available for this purpose was estimated at from $12,000 to $14,000. The State Executive Officer in charge of Mosquito Work was present at this meeting and agreed to expend about $23,000 of the State appropriation on the salt marsh drainage in Atlantic County during the year.

In view of the extensive areas to be drained, it was decided to do the first work in those portions most affecting the populated sections, viz: Absecon Island and Pleasantville, etc. The State Inspector and the Chief Inspector of the Commission having made inspections at different points in the County selected for the State work the strip of meadow land northwest of Atlantic City, Ventnor, Margate and Longport, lying between Absecon Island and the
Making the Second Cut in a 20-Inch Ditch with the Skinner Ditching Spade
Beach Thoroughfare and south of the meadow Boulevard. This contract was let early in August to J. P. Manahan for $10,000 and work started about August 15th. Two power machines and a gang of spade operators were employed and have now completed about 75% of the work.

The area selected by the County to drain was along the mainland southeast of Pleasantville between the Old Turnpike and Lake's Bay to Jonathan's Thoroughfare including the strips between the Boulevard and the Penna. Railroad and between the Penna. R. R. and the Reading R. R. Bids were received on July 23rd for 200,000 lineal feet of ditching and the contract awarded to the United States Drainage & Irrigation Company, the lowest bidder, at 2\%\c per foot. Work was started August 3rd and the contract completed October 15th.

After 100,000 feet had been installed in the above named area, it was found that the area immediately to the north was breeding more mosquitoes than the area mapped out to be drained and the work was shifted to that section where the remainder of the ditches were dug. This area consists of about 850 acres lying between the Reading R. R. on the south and the Pennsylvania R. R. on the north and is bounded on the west by the mainland and on the east by Jonathan's Thoroughfare. It is triangular in shape and is covered only by extraordinary high tides on account of the railroad embankment on the north and south. It has several outlets under the railroads, such as Adam's Ditch, Elder Creek, Jonathan's Thoroughfare and Fish Creek, but these are not of sufficient size to permit of a large range of the tides in the enclosed area. The pools are consequently unstocked with fish and larvae were found in nearly all of them.

It should be stated here that a great part of the salt marsh in Atlantic County has been found completely free of mosquito breeding during the entire summer. These sections have been found to be those which are low enough to be covered by tides very little higher than an average high tide. These tides bring in killifish and other min-
Driving the Spade Down
nows which remain in the pools during the summer keeping them free of mosquito larvae. The Islands between Atlantic City and the mainland are of this kind and also the meadow land along the bays. Toward the upland the meadow is higher and here the most breeding is found.

The Atlantic City Country Club in Northfield has banked in about 400 acres of meadow land in Northfield, putting sluice gates in the outlets. The area is not adequately drained, however, and the sluices are not large enough. The meadows are never submerged by the tides and there are consequently no fish in the pools, which breed culex solicittans prolifically. It resembles the above mentioned triangular area between the Pennsylvania and the Reading Railroads in its condition and in the number of mosquitoes it breeds. It will be necessary to have the Country Club meadows thoroughly drained before any relief along the Shore Road can be obtained.

On October 7th, the Commission received bids for the cutting of 200,000 lineal feet of ditching and the United States Drainage & Irrigation Company was again the lowest bidder, the price being 2.23c per foot. The contract was awarded to them and work started on October 20th in the meadows south of Absecon and on both sides of the Pennsylvania R. R. It is planned to drain on this contract the worst breeding places along the mainland between Absecon and Somers Point. It will not be enough to accomplish it all but the worst places will be attended to before breeding starts in the Spring and a new contract can then be let.

FUTURE WORK.

The working force now consists of one Chief Inspector, one Assistant Chief Inspector, one stenographer and two inspectors. One of the inspectors will be retained several weeks longer to look after the fresh water breeding places in Atlantic City in order to make the number of hibernating adults as small as possible. The Assistant Chief Inspector and one inspector will be used on the meadow work as long as it may last. Maps will be made during the win-
ter showing the breeding places in Atlantic City and maps of the ditches installed on the meadows will be made. Fresh water inspection work will be started as early in the Spring as is found necessary and the work continued throughout the summer.

In Spring a new contract for meadow drainage should be let and the remaining breeding places along the Shore Road between Absecon and Somers Point drained. The meadow drainage can then be extended to the southwest along English Creek, Great Egg Harbor River and Tuckahoe River from which large influxes of culex sollicitans are now received. These River meadows are bad breeding areas and will have to be drained before the County will be free of mosquitoes. The Mullica River meadows on the northeast are also a source of countless sollicitans but they do not affect Absecon Island and the Shore Road as much as the above mentioned meadows. Hammonton and Egg Harbor City receive mosquitoes from the Mullica River as well as from the Great Egg Harbor, and the Mullica River meadows will eventually have to be drained.

Respectfully submitted,

HAROLD I. EATON,
Chief Inspector.