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Sixth Annual Report

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Mosquito Extermination
Commission



Union County, N. J.

1917

Sixth Annual Report

**Union County
Mosquito Extermination
Commission**



Union County, N. J.

1917

The Union County Mosquito Extermination Commission

MEMBERS:

JOHN M. WHITON, President,
Plainfield, N. J.

JAMES S. GREEN, M. D., President,
Elizabeth, N. J.

W. C. HOPE, Treasurer,
Roselle, N. J.

L. J. RICHARDS, Secretary,
Elizabeth, N. J.

FREDERICK W. SELL, M. D.,
Rahway, N. J.

WILLIAM J. LAMSON, M. D.,
Summit, N. J.

STAFF:

RUSSELL W. GIES, Superintendent.

W. E. CLUM, Temporary Chief Engineer.

INSPECTORS:

District No. 1—Charles Brown

Paul Lukens

District No. 2—Frank Putnam

Henry R. Hubbard

District No. 3—J. W. Knox Clark

H. A. Stine

District No. 4—Thomas Duggan

Lester V. D. Chandler

Edward Durand

District No. 5—Philip Brenner

A. Markthaler

Edmund Skillen

Charles M. Platz, Salt Marsh Inspector

District No. 6—William H. Mahnken

Elmer Packard

Sarah Ehrenberg, Stenographer and Bookkeeper.

Sixth Annual Report

— of the —

Union County Mosquito Extermination Commission

Elizabeth, N. J., October 31, 1917.

To the Director of the New Jersey State Experiment Station
and Board of Chosen Freeholders of Union County:

Gentlemen:

Complying with the provisions of Chapter 104, Laws of 1912, of the State of New Jersey, entitled: "An Act for the Establishment of County Mosquito Extermination Commissions and to define their Powers and Duties", the Union County Mosquito Extermination Commission herewith presents the following as its Sixth Annual Report for the period from November 1, 1916 to October 31, 1917.

To fill the vacancy caused by the resignation of Dr. Frank C. Ard of Plainfield, former President of the Commission, Supreme Court Justice James J. Bergen, presiding over the courts of Union County, appointed Mr. John M. Whiton, of Plainfield, and reappointed Mr. William C. Hope, of Roselle, and Dr. William J. Lamson, of Summit, as members of the Commission for three years.

In general the work of the Commission has been conducted in the same manner as last year, and has consisted of the maintenance of a close inspection to locate and control all breeding places of mosquitoes, the permanent abatement of as many of these as possible by drainage and filling, the control by oiling of all breeding places as a temporary measure, and the carrying on of as much educational work as possible to get the aid of the people of Union County in keeping their own premises free from breeding places.

The successful results of the organized campaign to control mosquitoes in New Jersey and elsewhere has been followed by widespread work against mosquitoes in many sections of the country during the year. The United States government has already started to carry on thorough mosquito fighting measures on a large scale around all Army camps where our soldiers are in training as a measure of comfort and prevention of malaria and yellow fever. The State of California

has passed a law creating mosquito abatement districts in the State, in New York State, the Nassau County Mosquito Extermination Commission is at work and New York City continues to make a regular appropriation for the fight on the mosquito. Portions of Massachusetts, Connecticut, Rhode Island, Philadelphia, Pa., Wilmington, Delaware, Maryland, Virginia, South Carolina, Georgia, Alabama, Arkansas, Tennessee, Illinois, St. Paul, Minn., and Toledo, O., are also at work this year and more communities will be taking up control measures next year.

Our report for last year called attention to the more widely spread distribution of the fresh water swamp mosquito, *Aedes Sylvestris* and the investigations carried on so far indicate that this variety is breeding in many different kinds of places and far more extensively than before, indicating a change in the breeding habits. As this species is capable of traveling a considerable distance, the problem of freeing a community of it is a difficult one and will require more detailed investigation, particularly as to its control during periods of rainy weather. The Commission has started investigational work in our own County and is working in cooperation with adjoining counties and the New Jersey State Experiment Station in the matter.

The Commission would again point out the need of draining the series of fresh water marshes along the upper Elizabeth River in Union Township which under certain conditions throw out large numbers of mosquitoes in to thickly settled communities nearby. As it is hard to control this breeding by oil, the matter was taken up with the County Attorney at the beginning of the year, and at his suggestion a request made to the Board of Chosen Freeholders for a special appropriation of \$16,000.00 the estimated cost of drainage of this area, so that work could be started at once. As the Board of Freeholders did not care to make the appropriation this year the matter of eliminating this large mosquito breeding area will have to hold over till further times.

The early completion of the Rahway Valley Trunk Sewer, the plans for which are rapidly being formulated, will improve conditions in Springfield, western Union Township, Cranford, Kenilworth, Garwood and Rahway, by removing the large

number of open house drains and reducing the amount of pollution of ditches and streams in the area, conditions which tend to stimulate mosquito production. The Commission has also volunteered to help in the matter of the Roselle-Linden trunk sewer arranging through the cooperation of the two municipalities for a small committee to act as umpire to adjust the distribution of costs on an equitable basis, so that this much needed sewer can be built soon.

The Commission has seldom had sufficient funds to pay for the entire costs of extensive drainage work inland but its policy has been to contribute one-third of the cost of such drainage work and the property owner two-thirds, the work being done under the supervision of the Commission. Good cooperation has been secured under this policy, but in order to get still wider cooperation and to clean up an entire district at one time, the Commission has made an offer to each Board of Health in the County to pay one-third of the cost of the necessary drainage work in their respective municipality if the local Board of Health would guarantee the payment of the other two-thirds by arrangements made with the property owner affected. Most of the Boards of Health have expressed approval of this plan, enabling a community to be rid of all the permanent mosquito breeding areas with one-third of the expense borne by the County.

To sum up the results of the work of the year, it can be said that the house mosquito, *Culex Pipiens*, the kind usually troublesome indoors, was with very few exceptions practically absent from the county throughout the entire summer; the number of new cases of malaria from malarial mosquitoes exceptionally few; the salt marsh mosquito troublesome outdoors only in Elizabeth and nearby for a period of about three weeks during the early summer from one brood which got out from the Great Island section, and in Rahway from the Mexican Oil Company section of Carteret marsh, where the drainage work had not been finished in time, the remainder of the County being free; the fresh water swamp mosquito scattered throughout the county but not troublesome except in the extreme eastern and western boundary sections of the county during the first or rainy portion of the season.

The details of the various branches of work done during the year are taken up in the report of the Superintendent and Executive Officer, which is included as part of this report.

The Commission wishes to thank the officials of the various municipalities and boards throughout the County, the State Entomologist, the citizens of the County and the newspapers, all of whose cooperation throughout the past year has been most helpful.

Respectfully submitted,

The Union County Mosquito Extermination Commission.

Frederick W. Sell, M. D., President
James S. Green, M. D., Vice-President
W. C. Hope, Treasurer
L. J. Richards, Secretary
William J. Lamson, M. D.
John M. Whiton.

Report of the Superintendent

October 31st, 1917.

To the Members of the Union County Mosquito Extermination Commission:

Gentlemen:

The following report is made covering the work done under your direction during the last year. As much of the work is along lines which have been explained in detail in preceding reports and with which you are familiar, that portion will not be discussed again here, but simply the summary given.

THE MOSQUITO SEASON.

The inland woodland swamps and pools were found breeding more heavily than usual early in the spring of 1917 but were oiled wherever breeding was found in April and early May, and few mosquitoes reached the wing stage from this source.

On the other hand the usual May brood of salt marsh mosquitoes was almost absent, particularly on the diked meadows, although other parts of the State in the areas not under organized control had large breeds mature to cause annoyance.

In June heavy rains began and continued with little interruption to the end of July. The low lying tract of meadow around Great Island was flooded with the storm water from the Elizabeth sewers, and as the power dredge of the Commission had not yet been able to clear out the outlets sufficiently to run off this water a portion of a brood reached the winged stage, in spite of the temporary oiling done under the direction of the meadow inspector.

At the same time the Carteret Meadow south of the Rahway River threw off the first of 3 broods which matured in the area around the Mexican Oil Company, where the drainage had been destroyed by the new road and other filling of this Company. The Company spent \$1000 to have this area ditched by the Middlesex County Mosquito Extermination Commission and the latter part of the summer the city of

Rahway and other sections previously infested partly from this source, ceased to be troubled with mosquitoes.

The fresh water swamp mosquito, *Aedes Sylvestris*, which had not been present up to June 15, increased during this rainy period in the areas previously mentioned, showing a distinct concentration in the Passaic Valley at Summit and New Providence and along the edge of the meadow in the eastern part of the county. In the balance of the season which was dry chiefly worn specimens in decreasing numbers were taken in the weekly night collections of the inspection force.

Report of the Treasurer

November 1, 1916—November 1, 1917

RECEIPTS

County Collector	\$27,000.00	
County Collector, refund of unexpended balance		
December 31, 1916	601.88	
Interest	24.32	
Drainage Receipts	1,541.10	
Grasselli Chemical Co.	500.00	
Miscellaneous Receipts	189.25	
Total Receipts for year		\$29,856.55
Bank Balance, November 1, 1916	326.82	
Petty Cash Fund Balance	50.00	
Total Cash on Hand November 1, 1916		376.82
Total		\$30,233.37

DISBURSEMENTS

ADMINISTRATION:

Necessary Expenses of Commissioners	16.70	
Administration and Engineering Salaries:		
Chief Inspector and Executive		
Officer	\$2,450.00	
Assistant Chief Inspector	116.00	
Stenographer and Bookkeeper	744.34	
Draftsman	404.00	
		\$ 3,714.34
Administration—Personal		
Expenses	135.58	
Office, Printing, Supplies,		
and Expenses	553.75	
		\$ 4,420.37

INSPECTION:**Permanent Inspectors' Salaries:**

Permanent Salt Marsh	
Inspectors' Salaries	\$ 830.80
Permanent Inland Inspectors'	
Salaries	1,874.30
	<u>\$ 2,705.10</u>

Temporary Inspectors' Salaries:

Temporary Salt Marsh	
Inspectors' Salaries	\$ 239.25
Temporary Inland Inspectors'	
Salaries	2,289.52
	<u>\$ 2,528.77</u>

Inspectors' Expenses:

Traveling	\$ 255.30
Miscellaneous	74.47
	<u>\$ 329.77</u>
	<u>\$ 5,563.64</u>

**PERMANENT ELIMINATION OF
BREEDING PLACES: SALT MARSH
DRAINAGE:****Salt Marsh—Old Work:**

Maintenance: Dikes and Tide	
Gates, Labor and	
Transportation	\$ 40.32
Material	3.38

Maintenance—Ditching:

Labor and Transportation	1,304.91
	<u>\$ 1,348.61</u>

SALT MARSH: New Work

Labor and Transportation on	
Dikes and Tide Gates	\$ 430.84
Material—Dikes and Tide Gates	331.04
Labor—New Ditching and Ditching	
Improvements	516.43
Material—	
Dredge Construction and	
Equipment	4,220.72
Dredge Operation	2,025.59
	<u>\$ 7,524.62</u>
	<u>\$ 8,873.23</u>

**PERMANENT ELIMINATION OF
BREEDING PLACES: INLAND
DRAINAGE:****Inland—Old Work:**

Labor and Transportation	\$1,867.76
Material	9.81
	<u>\$ 1,877.57</u>

Inland—New Work:

Labor and Transportation	\$3,235.38
Material	135.83
	<u>\$ 2,371.21</u>
	<u>5,248.78</u>

**TEMPORARY ELIMINATION OF
BREEDING PLACES:**

Oiling:

Fuel Oil and Larvicide	\$ 773.99	
Inspectors' Purchases of Oil	11.47	
		\$ 785.46
Labor for Applying Oil		340.54
Wagon Hire for Applying Oil		375.45
		<u>1,501.45</u>

EQUIPMENT:

Automobile:

Gasoline	260.43	
Oil	4.55	
Tires	219.73	
Accessories	13.82	
Replacements and Repairs	143.25	
License and Insurance	57.50	
Storage	148.25	
		\$ 847.53
Motorcycle—Upkeep64
Bicycle—Upkeep		165.21
Tools		128.92
Boots		204.08
Office Furniture and Typewriter		32.67
Miscellaneous Equipment		425.24
		<u>\$ 1,804.29</u>

EDUCATION:

Convention and Conferences	165.95	
Educational Pamphlets	20.00	
Lectures	86.56	
Annual Reports	192.63	
		<u>465.14</u>

GENERAL EXPENSES:

Auditor	75.00	
Miscellaneous	155.50	
		<u>230.50</u>
Returned to County Collector—		
Unexpended Balance, Dec. 31, 1916		601.88
		<u>28,709.28</u>

CASH BALANCE—October 31, 1917:

Bank Balance	\$1,519.09	
Petty Cash Fund	5.00	
		<u>1,524.09</u>
Total		<u>\$30,233.37</u>

Note:

The following bills are outstanding subject to correction:

The Hayward Co., Dredge Construction	\$654.38
Heidritter Lumber Co., Salt Marsh Maintenance	269.41
New York Telephone Co., Office Expense	19.00
Elizabeth Automobile Co., Automobile Storage	22.50

\$965.29

W. C. HOPE,
Treasurer.

COMPARATIVE RESULTS FROM NIGHT COLLECTIONS OF MOSQUITOES ON THE WING—

1916 and 1917.

1916			1917		
Kinds of Mosquitoes	No.	% of Total	Kinds of Mosquitoes	No.	% of Total
A. Sollicitans	199	18%	A. Sollicitans	190	15%
A. Cantator	54	5%	A. Cantator	65	5%
A. Taeniorynchus	0	0%	A. Taeniorynchus	0	0%
Total Salt Marsh			Total Salt Marsh		
Mosquitoes	253	23%	Mosquitoes	255	20%
C. Pipiens	91	8%	C. Pipiens	158	12%
Total House			Total House		
Mosquitoes	91	8%	Mosquitoes	158	12%
A. Perturbans	5	.4%	A. Perturbans	3	.2%
A. Canadensis	23	2%	A. Canadensis	14	1%
A. Sylvestris	663	59%	A. Sylvestris	837	64%
Total Swamp			Total Swamp		
Mosquitoes	691	62%	Mosquitoes	854	67%
A. Punctepennis	3	.3%	A. Punctepennis	2	.2%
A. Quadrimaculatus	0	0%	A. Quadrimaculatus	1	01%
Total Malaria			Total Malaria		
Mosquitoes	3	.3%	Mosquitoes	3	.3%
Other kinds of			Other kinds of		
Mosquitoes	81	7%	Mosquitoes	3	.3%
Total number of			Total number of		
Mosquitoes	1119		Mosquitoes	1289	
Total number of			Total number of		
Collection Stations ..	574		Collection Stations ..	483	
Average catch at each			Average catch at each		
Station	2		Station	3	

ORGANIZATION.

The small force of three permanent men was increased gradually during the spring and summer to eleven regular inspectors, one of whom was detailed for salt marsh work, one on investigational work, chiefly of an educational nature. On one afternoon each week all inspectors were detailed to make a general salt marsh inspection.

The inspector was in entire charge of his district, supervising all various kinds of work necessary, with a varying number of laborers and oilmen under his direction. As the residents of the county learn to keep their backyards free of breeding places less and less yard inspection is necessary and only one yard inspection was made during the year.

It was hard to get enough help of proper kind as both skilled and unskilled labor was very scarce during the summer. Because of this scarcity it was not feasible to build up the complete emergency force necessary in wet weather as was contemplated.

THE RESULTS OF THE INSPECTIONS ARE AS FOLLOWS:

Inspections made November 1, 1916—November 1, 1917.

District No.	Vats Bbls. etc.	Wells & Cess- pools	Cellars	Street Gutters	Sewer Basins	Manure Pits	Pools	Ponds	Swamps	Brooks	Rivers	No. Yard Inspect'ns	No. Misc. Breeding Places
—1													
Summit	31	10	13	1	150	0	61	25	19	7	2	2450	241
New Providence Boro. and Township	67	13	12	18	0	1	60	7	139	12	0	512	206
—2													
Plainfield	48	83	3	5	205	1	27	1	61	4	0	6832	950
Fanwood Boro. and Township	44	9	1	12	0	0	158	6	178	4	0	2662	676
—3													
Westfield	30	9	6	9	36	1	80	2	140	8	0	1204	311
Springfield	18	6	1	6	0	0	12	0	31	7	1	390	7
Mountainside	8	3	1	3	0	1	27	1	34	1	0	71	76
—4													
Rahway	136	19	15	6	60	0	37	2	40	8	0	3819	258
Linden Boro. and Township	24	1	13	216	0	0	147	2	126	7	0	1162	345
Clark Township	10	7	2	12	0	0	18	3	68	2	1	119	34
—5													
Elizabeth	153	17	24	21	935	4	321	41	165	11	2	9165	1287
Union and Hillside Township	81	31	22	16	0	10	184	13	148	13	0	548	649
—6													
Cranford	12	9	6	8	0	0	14	0	16	6	0	983	31
Garwood	26	15	9	21	0	0	19	0	11	2	0	293	27
Roselle	12	19	11	17	0	0	22	1	73	7	0	927	73
Roselle Park	19	5	1	3	25	0	13	1	17	7	0	926	32
Kenilworth	13	1	0	3	0	0	11	1	12	2	0	186	11
Total	732	257	140	377	1411	19	1121	106	1278	108	6	30251	5314

Grand Total of Breeding Places Found During the Year—5,536

Total Number of Inspections—35,455

SALT MARSH WORK.

The cleaning of all ditching obstructed with sod or mud was begun on the salt marshes in March and continued as labor was available. Approximately 250,000 feet was cleaned out, most of it on the North Elizabeth Meadow. Owing to scarcity of labor, however, not all of the cleaning that was necessary was done, and these portions will be cleaned first during the coming year.

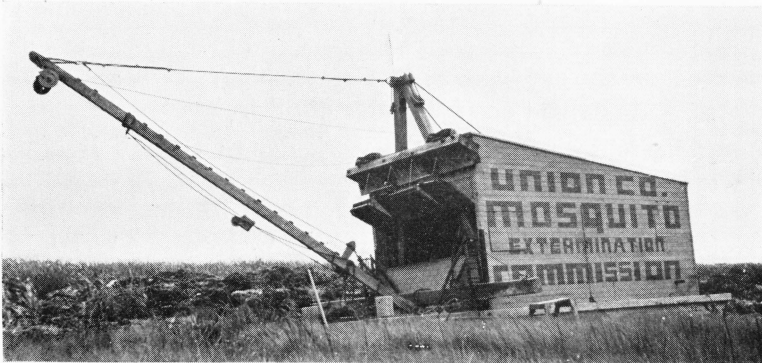
On North Elizabeth Meadow the tide gate work mentioned in our last report was completed by the construction of three gates along the north side of Great Ditch, east of the Central Railroad of New Jersey, and one gate on Newark Bay, as shown on the map in the 1916 report. This has shut in from flooding by the monthly high tides about 1300 acres of salt marsh, and the results of this work showed in the very slight amount of mosquito breeding that took place on this meadow east of the Central Railroad of New Jersey. The maintenance of the ditching on this area, particularly the larger outlets which can be cleaned next year with the new power dredge, will continue to keep this meadow in good condition.

West of the railroad, in the 1000 acres between Elizabethport and Newark, the sluice gates and dikes installed in 1915 by the Commission, kept the meadow fairly dry during the season. But little breeding took place except in the rainy period of the summer, when the monthly high tide coincided with the height of this rainy period and the obstructed outlets could not carry off the water fast enough. Fifteen barrels of oil were used to check this brood in the Great Island section.

The contract for the dredge machinery, including a 10 horse-power Fairbanks-Morse heavy duty kerosene engine, operating a nine cubic foot orange peel bucket, was let to the Hawyard Company of New York and delivery was made and the dredge assembled on the scow in May. The scow was made by the Johnson Shipyards Corporation of Staten Island. The need of this equipment for cleaning out the larger outlet ditches was fully explained in last year's report.

The dredge was started at work at the foot of Schiller

Street, Elizabethport, in Great Ditch, cleaning out a section of this badly sewage-obstructed outlet creek on which the drainage of the entire southern portion of this meadow west of the railroad depends. This creek had become so filled with mud and sludge as to be absolutely inadequate to drain the area as it was only about fifteen inches deep and eight feet wide. It was cleaned to a uniform depth of five feet and width of thirteen feet. As soon as the men became familiar with its operation the dredge was run two shifts a day—sixteen hours—by August first had cleaned 6,035 lineal feet to Great Island Road representing 12,080 yards of material moved at a cost of about 13 cents per yard. At this point work on the dredging had to be discontinued because of the stoppage of funds.



No. 1. Showing full front view of dredge boat ready for work.

There still remains the construction of two drainage canals south of Great Island, the dredging of upper Woodruff's Creek north of Great Island, Manahan Ditch, and several creeks east of the railroad, and on Linden Meadow, work which will be continued as soon as funds are available. Detailed estimates on this work have been prepared, aggregating 53,000 lineal feet of dredging or about 75,000 cubic yards to be moved.

South Elizabeth Meadow was not a heavy breeder this year as all mosquito larvae located were promptly oiled and the ditching maintained on the meadow.

Late in April the Meadow Inspector found about forty acres of Linden Meadow at the new West Works of the Grasselli Chemical Company breeding heavily because of the drainage being cut off by new construction work, but the Grasselli Company promptly put at our disposal a large force of men and the trouble was remedied. This Company has also contributed \$500.00 for the construction of a new sluice gate to partially shut in 225 acres of this meadow between Wood Avenue and Pyles Creek, the gate being built by the Commission during the latter part of the summer. The Central Railroad Company will complete the sluice-gating of this area by changing the trestle bridge on the Sound Shore Railroad south of Grasselli to an iron culvert bridge, with gate being on the outer end, to benefit mosquito control in this section.

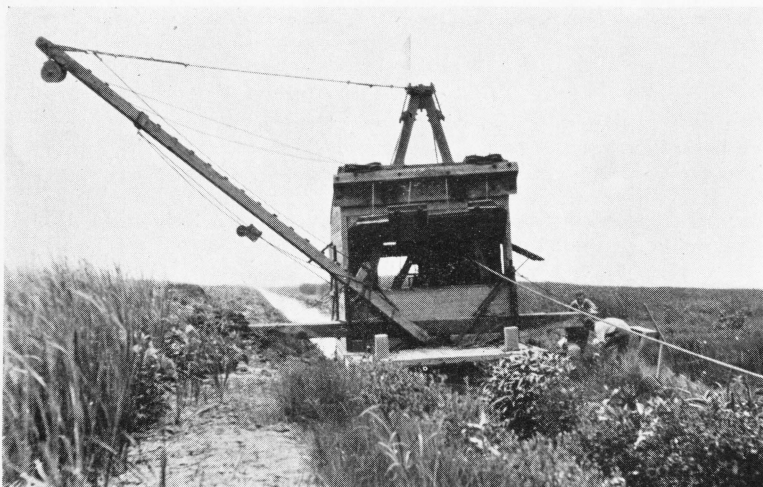
At present the Commission is operating or maintaining for mosquito control on the 4000 acres of salt marsh in the county approximately one million feet of ditching, eighteen sluice gates, and one and one-half miles of dikes.

The following shows the work done on the Salt Marsh in 1917.

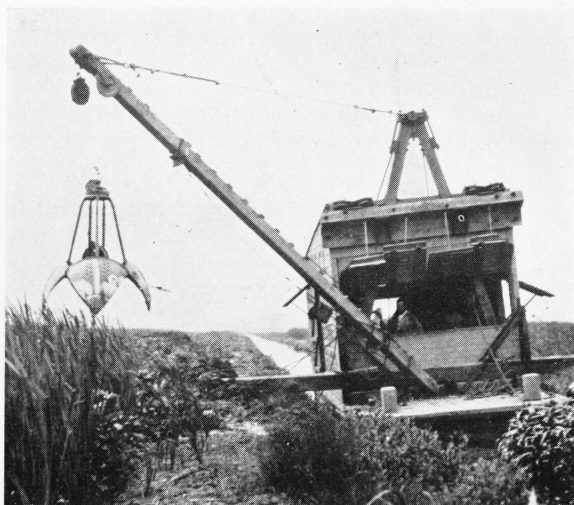
North Elizabeth Meadow, East of the C. R.	19,941 feet
South Elizabeth Meadow	2,400 "
Linden Meadow	35,600 "
Total	57,951 feet

Total feet of ditching put in by Commission to date:

North Elizabeth Meadow, East of C. R. R.	392,415 feet
North Elizabeth Meadow, West of C. R. R.	208,698 "
South Elizabeth Meadow	67,026 "
Linden Meadow	308,121 "
Grand Total	974,260 feet



No. 2. Shows side view of dredge boat excavating 13 foot ditch $5\frac{1}{2}$ ft. deep.



No. 3. Also side view of dredge boat cutting channel 13 ft. wide in Great Ditch in North Elizabeth meadow.

INLAND WORK.

Labor scarcity again handicapped the work of the Commission during the year, but the ditching on the various swamps, pools and ponds which have been abated by the Commission and numerous property owners in past years was maintained during the year and considerable new work done. At the present time approximately nineteen hundred such places in the county have been drained or filled, more than a hundred of which were abated during the year. The bulk of these places have been done either wholly or in large part at the expense of private owners.

The action of the Linden Township Committee in placing a gang of men at the disposal of the Commission during the summer for the abatement of mosquito breeding places in road gutters and other township property is particularly commendable, and it is hoped other communities will aid in the same way.

During the summer letters and return postals have been sent to 400 contractors in Union County asking that the Commission be notified of any surplus paving dirt, ashes or cellar excavation dirt which could be utilized for filling any nearby holes, pools or swamps.

The oiling of all stagnant water breeding places in the County has continued as usual, the various places being coated with a film of oil every ten days or two weeks. As many as nine wagons and gangs of men for distributing oil have been used at one time.

EDUCATIONAL WORK.

Realizing that the success of the campaign of mosquito control depends to a large extent on the full cooperation of the people of the County, the effort has been made to get this cooperation in every way possible. The newspapers published in every municipality have carried stories and articles during the year, meetings of various boards and other organizations have been attended wherever time permitted, and the following lectures, illustrated with lantern slides or moving pictures about the mosquito control have been given during the year through the cooperation of the organizations mentioned:

ILLUSTRATED LECTURES GIVEN

1917.

Columbian Club	Elizabeth, N. J.
Mt. Olive Church	Plainfield, N. J.
Mens' Club Presbyterian Church	Cranford, N. J.
Parent Teachers Association, McKinley School	Westfield, N. J.
High School	Garwood, N. J.
Parish House	Scotch Plains, N. J.
High School (in cooperation with N. J. State and Plainfield Dept. of Health	Plainfield, N. J.
Wardlaw School	Plainfield, N. J.
Town Hall	Mountainside, N. J.
Parent Teachers Association, High School	Westfield, N. J.
Columbia School	Berkeley Heights, N. J.
Village Improvement Association	Cranford, N. J.
High School	Springfield, N. J.
Upsala College	Kenilworth, N. J.
Summit Medical Society	Summit, N. J.
Greater Elizabeth Improvement Association	Linden, N. J.
High School	Linden, N. J.
Citizens League	Roselle Park, N. J.
Civic Club, High School	Rahway, N. J.
East End Civic Association	Plainfield, N. J.

Respectfully submitted,

RUSSELL W. GIES,
Superintendent.

The Standard Press



Westfield N. J.

