

THE MOSQUITO CONTROL INSPECTION TRIP

SPONSORED BY THE AMERICAN MOSQUITO CONTROL ASSOCIATION, OCTOBER 31st AND NOVEMBER 1st, 1944

EDITOR'S NOTE: It was a practice of the former Eastern Association of Mosquito Control Workers at least once each year to arrange a field inspection trip and conference to be held in the territory of some other regional Association. This was designed to provide for the exchange of ideas and experiences with groups of mosquito control workers beyond the boundaries of our own regional area. Among others, extremely profitable trips were made to the Canal Zone; to the Tennessee Valley region; and to different parts of the southern and southeastern coastal areas. Plans for trips to the central west, the southwest, and the far west were temporarily abandoned when travel became difficult.

When travel is no longer restricted, it is hoped that the American Mosquito Control Association may be instrumental in arranging or in encouraging such trips again, in the interest of promoting acquaintance and the exchange of ideas and experience more widely among the mosquito control workers of different regional areas.

Owing to travel limitations, an extended trip could not be arranged for 1944; so the trip described below was planned instead. Great credit is due to our Secretary, Thomas D. Mulhern, and to those who have worked with him, for planning and making arrangements for this, and former very profitable field inspection trips. Usually the planned itinerary has been carefully gone over in advance, to assure that every minute of the trip will be worth while.

In the report that follows, each local leader has been asked to tell about that part of the trip which lay in his own territory.

THE TRIP IN PHILADELPHIA, AND DELAWARE COUNTY, PENNSYLVANIA

By MAJOR RUSSELL W. GIES

The trip started with a luncheon in the private dining room of the Pennsylvania Railroad Thirtieth Street Station, Philadelphia, where the Association had as guests the Hon. Frederick G. Garman, Chairman of the City Council of Philadelphia, Dr. Rufus S. Reeves, Director of Public Health of Philadelphia, and Hon. Clarence L. Conner, Chairman of the Delaware County Board of Commissioners. Thirty-six persons were present.

After luncheon, the party left the station in cars provided. The first stop made was in south Philadelphia, just west of 20th and Pattison Avenue, about $\frac{1}{4}$ of a mile from the Philadelphia Naval Hospital. At this point, the work being done in filling in a swampy area by the new digging, loading and bull-dozing machine, known as the Traxcavator recently purchased by

the City of Philadelphia for Mosquito Control, was shown. This traxcavator is mounted on a D-4 Caterpillar tractor and costs complete approximately \$5,000.00 delivered, including a bulldozer blade attachment to be used alternately with a $\frac{3}{4}$ yd. bucket. The Navy Department has a large number of men passing through Philadelphia for treatment at the Naval Hospital, who have been infected with malaria in the tropics; and special efforts are being made to prevent the breeding of malaria transmitting mosquitoes in the area around the Naval Hospital as well as the branch hospital at Swarthmore, Delaware County, Pa. The Navy is cooperating with the City of Philadelphia and Delaware County by supplying several medical corpsmen during the breeding season for supplementing the inspection work of locating mosquito breeding places in the vicinity of the hospital installations. This gives the City additional inspection personnel; and at the same time, the Navy secures good field training for its personnel on mosquito control. In the vicinity of the Naval Hospital and in fact throughout south and southwest Philadelphia, there is much low ground — some of it at or below sea level. This is being filled in as rapidly as possible. About one mile east of the Navy Hospital, the Pennsylvania Railroad has filled in over a million yards of fill in such low ground and the City of Philadelphia is also doing extensive filling in the same vicinity.

The next stop was outside of the west gate of the U. S. Navy Yard where a demonstration of a smoke producing machine, which produces smoke and acts as a vehicle for distributing various chemicals both as a protection against adult mosquitoes and as a larvicide, was given. The machine has been in use in the Navy Yard under the general supervision of Captain E. C. Carr, Senior Medical Officer, Medical Corps of the U. S. Navy, and was under the direction of Lt. Richard T. Holweg, U.S.N.R., Ensign Blackhurst, Entomologist, U. S. Naval Hospital, and Ensign D. A. Bowling, U.S.N.R. The demonstration may furnish some ideas for use under various conditions in other parts of the country.

The party then proceeded past the rear of Fort Mifflin after crossing the Penrose Ferry Bridge over the Schuylkill River. From here on, most of the area is at or below sea level and the extensive system of canals which have been placed for drainage amounting to approximately 70 miles was shown. These canals require constant maintenance. Some of the area is also under pump control while other portions are handled through tide gates.

Passing the edge of Hog Island, which is now used for a shipping point, and the City Airport, recently placed under Army Control, a stop was made at the city line between Philadelphia and Delaware County. From here on a general view of the two-mile long hydraulic fill just being completed by the United States Army Engineers between the Delaware River and Tinicum Island Road was viewed. This area, which has just been filled south of Hog Island, was formerly a very bad mosquito breeding source; and the work done will help to cut down such breeding.

Just beyond this point, along the new Industrial Highway in Delaware

County, a new hydraulic fill was visited which is just being started. Two cranes were at work building the dike to confine a new fill which will cover nearly 500 additional acres of the Tinicum marshes. The area on the opposite side of the Industrial Highway is being placed under pumping control by the Delaware County Mosquito Extermination Commission, the contract for the pumping station having already been let and work is just being started. A visit was made to the site of the pumping plant, which is being placed on an old concrete foundation used as a site for a similar station during the last world war. The pump to be installed is a 12" Fairbanks Morse tube type pump with automatic flood controls. The pump will pump approximately 3,800 gallons per minute over the dike and into Darby Creek. These fresh water marshes which are at or below sea level are extremely heavy mosquito breeding places after rains. New ditching will be placed after the pumps are installed, the ditches averaging 8 ft. wide at the top and 4 ft. deep, with a V-shaped cross-section. The ditches will be blasted with dynamite as the quickest and cheapest way to provide this necessary drainage. The cost will approximate not over 30¢ per foot of ditch and approximately 4 miles will be dug. The Philadelphia and Delaware County area with 2½ million people is the second largest war production area in the United States; and mosquitoes produced in enormous numbers on the marshes have reduced war production in many of the large plants, including Westinghouse Electric and Manufacturing Company, Baldwin Locomotive Works, a plant which covers 550 acres, Sun Shipbuilding, General Steel Castings Co., etc. The large industries in the area are cooperating effectively with the work being carried on by the local authorities.

FLOODING OF BRIDGEPORT MARSH REDUCES MOSQUITO BREEDING

By THOMAS D. MULHERN

A stop was made on New Jersey Highway No. 44, which divides the marsh of several hundred acres area lying south of Raccoon Creek into two sections, one west of the road and the other lying to the east. This marsh was diked for many years, and shrinkage had reduced its surface elevation to a point below the level of mean tide in Raccoon Creek, which has a tide range of approximately five feet.

In 1942 the dikes were in good condition, but the tide gates were operating imperfectly and there was water standing almost continuously on the surface of the marsh and in the ditches. Vegetation was rank, and it was suspected that mosquito breeding was prolific. Accordingly a trap, which we refer to as the Bridgeport Trap, was set up on the southern edge of the marsh. The average catch was 615 mosquitoes per night, females only being counted. Of the total catch of 29,496, 14,527 were *C. pipiens*, 11,038 were *An. walkeri*, and 604 were *An. quadrimaculatus*. Anopheles larvae were taken in both sections of the marsh.

Before the summer of 1943 began, the dike west of the highway was breached by a storm, allowing the tides of Raccoon Creek to pour through the breach, thereby causing the water level on the marsh to oscillate with the tides. Most of the original vegetation was dead during 1943, and most of the marsh was covered with open water. No larvae could be found in the course of several inspections, although the marsh on the east side of the road, where the dikes had not been breached, was found breeding. The tidal action had apparently eliminated most if not all of the breeding on the western section of the marsh. The Bridgeport Trap for 1943 caught an average of only 99 female mosquitoes per night, while the total catch was 4574, of which 2833 were *C. pipiens*, 584 were *An. walkeri*, and 76 were *An. quadrimaculatus*.

During 1943 the dikes on the east side of the road were breached, flooding the eastern portion of the marsh, and allowing tidal action to take place. Both sections of the marsh are now covered continuously with water to a depth of several feet, most of the original vegetation is gone leaving open water areas, and the reduction in mosquito breeding is reflected by the Bridgeport Trap records for 1944: an average catch of only 86, a total catch of only 1503, including 548 *C. pipiens*, 0 *An. walkeri*, and 2 *An. quadrimaculatus*.

Assembling at the Seaview Country Club at Absecon, New Jersey, for the night, after an excellent dinner those present held an informal meeting to discuss plans for making the American Mosquito Control Association an over-all service agency which would not encroach upon the functions of any regional association, and for making MOSQUITO NEWS universally representative in its field.

On Wednesday morning, the party left Absecon shortly after 8:00 o'clock.

THE TRIP IN ATLANTIC COUNTY, NEW JERSEY

By FRED A. REILEY, Superintendent

It has been a long time since the Atlantic County Mosquito Extermination Commission has had the honor of entertaining an inspection party. On November 1st, 1944 we led thirty-two members of The American Mosquito Control Association through Atlantic County.

Hurricane damage seemed to interest most, and our first stop was made in the northeast part of Atlantic City where considerable damage was still in evidence. Boardwalk gone, pier partly destroyed, houses completely destroyed and street ends washed away.

We then drove south on Atlantic Avenue and saw the damage at street ends in the residential districts of Atlantic City, Ventnor, Margate and Longport.

Next stop was on the east side of the Great Egg Harbor River to see the Mosquito Commission's No. 6 salt marsh ditch cleaning machine.

Unfortunately the tide was over the marshes and the delegates could not follow the machine. Orders had been given the driver to clean two hundred feet and run the machine to high ground where we would have a chance to

note the details and discuss the performance. Some must have misunderstood the plans and waded out to the machine in spite of the fact that they did not have boots.

The machine was finally brought to dry land where all could see it and the details were explained. This machine was built in 1929 and we were surprised at the interest displayed by all.

Mr. Mulhern asked for some description of salt marsh drainage; particularly of the area on the west side of the river. So we attempted to do so.

The area contains about eight million unit feet of drainage ditches installed about 1919 and last cleaned in 1929, 14 years ago.

The ditches at this time, average 50% or less efficient. Such would usually result in mosquito breeding. But when drainage was installed we decided that a complete drainage system should be done at once. Usually we dig main ditches and return the following year to note results and add supplementary ditching if necessary. Here every hole and depression, except deep salt holes, was connected to main ditches or natural outlets by hand dug spur ditches.

The result is that we are getting adequate drainage for mosquito breeding control in spite of lack of ditch maintenance.

We believe that ditches should be cleaned every three or four years. However, the above experience does show complete initial drainage will continue to function much longer than one partly drained. Dependence placed in the theory that breeding control can be accomplished by seepage into main ditches is likely to result in breeding.

We had nothing else planned to show and started for Cape May County to see more salt marsh problems.

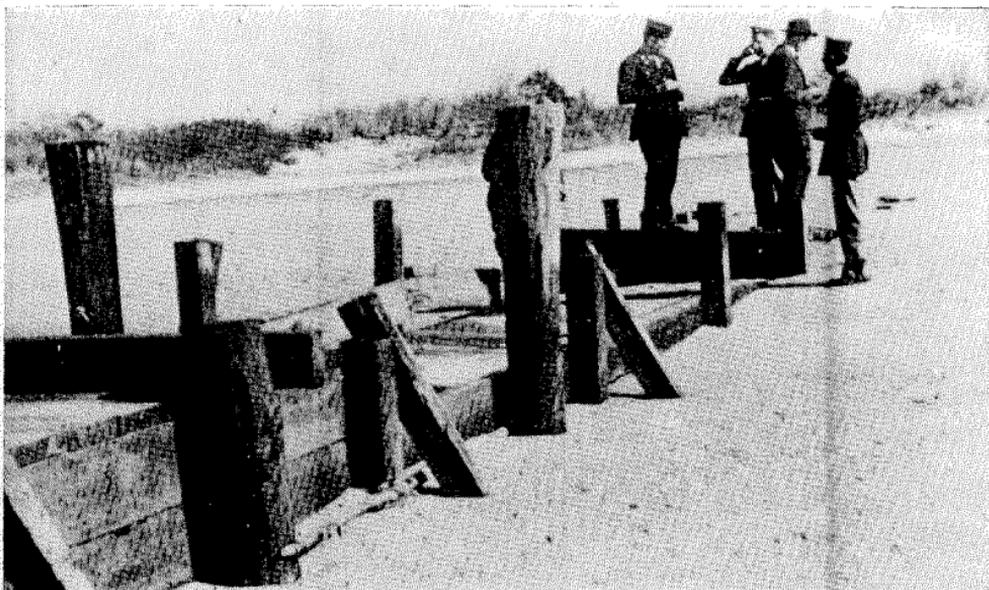
INSPECTIONS IN CAPE MAY COUNTY, N. J.

By O. W. LAFFERTY, Superintendent and THOMAS D. MULHERN

The Fishing Creek Marsh in Cape May County, New Jersey, has an area of about 1200 acres, the elevation of which is approximately that of mean out tide. Drainage from this area is blocked by a storm bluff of shifting sand, such that neither ditches nor even the natural creek channel can be kept open. Special outlet structures also are exposed to direct wave action from Delaware Bay.

To meet this situation, two special outlet structures have been provided, each with a tide gate in a well at the inner end, set to prevent tide water from entering the marsh at high tide, and to allow drainage from the marsh at low tide.

One of these is a wood box culvert, 6 feet wide by two and one-half feet high and about 300 feet long. Its flow line elevation is approximately that of mean tide in Delaware Bay. This outlet was built by the county road department, to drain off water which threatened a road crossing the Fishing Creek Marsh, and its elevation is considerably above the desirable elevation for



Exposed Auxiliary Outlet, Fishing Creek Marsh, Cape May County, New Jersey. Shown at low tide, during inspection by American Mosquito Control Association. Member at left of group is standing on top of structure, which has been badly damaged by hurricane and plugged with sand.—Photo by T. D. Mulhern.

mosquito control purposes. The outer portion of the structure is above the surface of the beach and completely exposed to the action of the waves in Delaware Bay. It was severely damaged during the hurricane of September 14, and will require a great deal of repair work. Experience has shown that exposed structures on this beach are frequently damaged by storms, floating debris, or in the winter by ice which freezes to the structure at low tide and is lifted by the rising tide, carrying the structure with it.

The other outlet is an experimental unit, of corrugated galvanized iron pipe, 36 inches in diameter and 360 feet long, installed nine years ago by the Commission. It is in the form of an inverted siphon, and the outer end is completely submerged in the sand of the beach to a point at the level of mean low tide, where an upturned elbow discharges the outflowing water a few inches above the sand of the beach. Since the pipe is completely submerged in the sand of the beach between the low tide and the high tide limits, there is no interference with the movement of sand up and down the beach by the waves and a more stable shore line is maintained than with exposed structures on the beach which may act as jetties. This outlet has never been damaged by storms, nor has it ever become plugged with sand, for the water flows out at a sufficient velocity to sweep the pipe clear of any sand that may be deposited in it by waves.



Subterranean, "inverted siphon" outlet, Fishing Creek Marsh, Cape May County, New Jersey. Discharging at extreme low tide. Exposed to direct wave action from Delaware Bay, but not damaged by the recent hurricane. Type two outlet is used here because bay is very shallow and at low tide, sand bars (dark areas in background of photo) are exposed for a distance of more than 1,000 feet and length of pipe for a type one outlet would be excessive.

Photo by T. D. Mulhern.

At Shaw's Marsh, south of the Fishing Creek area a third sluice, smaller than the others and built of wood, was seen. This unit incorporated many construction features designed for strength which were worked out during the long experience of the Commission in building outlets through sandy beaches. This unit also withstood the battering of the seas during the hurricane.

The preferred type of tide gate for use with all of these outlets is the "pendulum" type, with the gate suspended on long arms and the hinge pin five feet or more above the top of the gate.

On Shaw's Marsh a demonstration was given of an amphibious jeep by Navy and U. S. Public Health Service personnel. The machine was driven down the road, over the sand dunes through brush, and out onto the salt marsh where it maneuvered with great facility, crossing wide and narrow ditches with ease. It was used during the past summer on the Fishing Creek Marsh, at the head of which is located a navy airport, for pulling out stumps

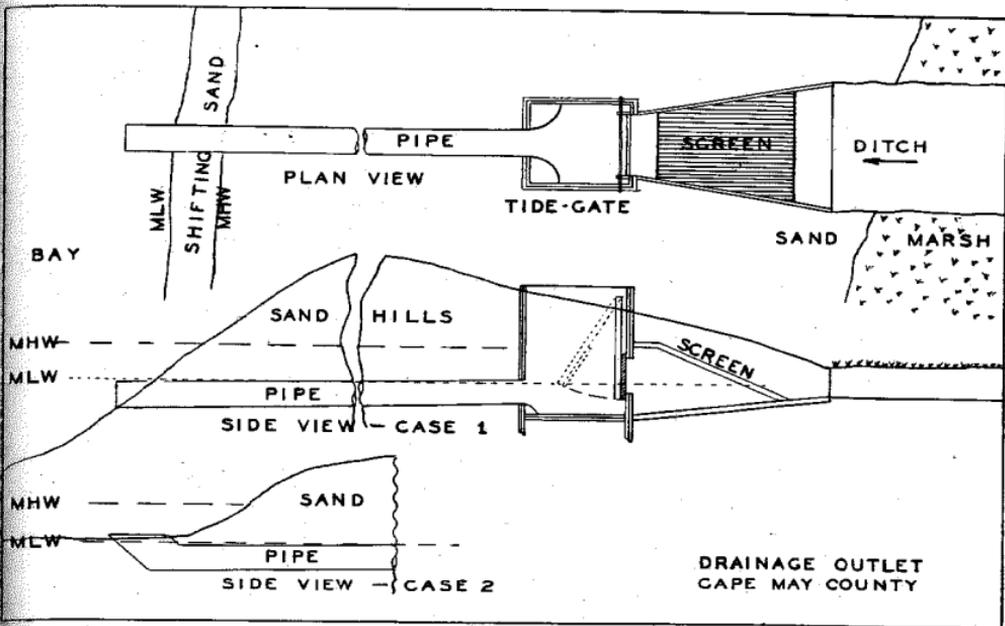


Diagram of drainage outlet developed in Cape May County, New Jersey, for use where shifting beach sand prevents the satisfactory operation of open ditches. Case 2 illustrates the "Inverted Siphon" type which has given such satisfactory service at Fishing Creek Marsh; where the outlet must discharge into a very shallow part of Delaware Bay. From Article by O. W. Lafferty, Proceedings 31st Annual Meeting of the New Jersey Mosquito Extermination Association, March, 1944.

and wreckage from ditches, for spraying, and for transporting men. Such machines should be very useful to civilian mosquito control agencies after the war if they can be secured.

The new canal across Cape May County near its southern end was visited. It connects the Inland Waterway with Delaware Bay, and eliminates a dangerous passage for small vessels about the infamous "Rips" at the confluence of the waters of Delaware Bay with those of the Atlantic Ocean. It is a sea level canal, without locks, and has a minimum channel width of 100 feet and a 12 foot controlling depth. It is three miles long and was constructed by hydraulic dredge in approximately 90 days. Unfortunately the spoil was placed in areas where it interfered with drainage. Examples of this were seen at the Delaware Bay end of the canal. Some work has been done to correct the condition, but the improvement is incomplete.

In the course of the development of the City of Cape May, an open creek was inclosed in a five-foot diameter pipe, extending for a distance of more than a half mile under the city. The pipe is at an elevation too high to drain a 400 acre enclosed marsh, formerly a typical salt marsh, which now receives principally fresh water and is somewhat polluted. At the upper or west end

of this marsh are located Army, Navy and Coast Guard Units, and here a mechanical mosquito trap has taken catches of over 100 *An. quadrimaculatus* female mosquitoes in a single night. To aid the Commission in providing protection for the nearby residents and various units of the armed forces, the County Board of Chosen Freeholders is constructing a tide gate and pumping station at the inner end of the pipe to elevate the water from the marsh so that it may drain by gravity through the pipe into the tide water. The concrete sump and supporting structure has been completed, and was inspected. The two tide gates and a 12" vertical propeller pump for low-head service will be placed in position and will begin operation in the spring of 1945.

At the conclusion of the observations described, the inspection party dispersed; some leaving by train from the city of Cape May, others by automobile. All pronounced the trip a very profitable experience.

IN MEMORIAM

A TRIBUTE TO JOHN P. PETERSON

By JESSE B. LESLIE, *Executive Secretary*

The Bergen County Mosquito Extermination Commission

Back in 1915 I first met John P. Peterson. At that time I had just come into Bergen County from Camden County to take charge of the mosquito work then being started in Bergen. One of my first jobs was to recruit a field force. I interviewed a number of young men at the Court House who had applied for jobs. Among them was a ruddy faced youngster with a ready smile who bubbled over with enthusiasm. He had become interested in mosquito control as one of the original survey party in Haworth in 1914 and he thoroughly believed that the work was practical and could accomplish great results. His faith and enthusiasm appealed to me so I hired him.

In the fall of that year the working force necessarily had to be cut down. On the salt marsh I had the old "Meadow Horse" Otto Vogler. On the upland, I could keep but one inspector. I chose John Peterson. Others had more formal education, perhaps could write more flowery reports, but when it came to straight from the shoulder results, I would back "Pete" every time.

And so our association began; an association that continued uninterrupted for nearly thirty years, except for 1917-1918, when we were separated while in service in the Army of the United States. Gradually more responsibility was placed on "Pete's" shoulders, and when I went on a part time basis, he became the Superintendent, in full charge of the field work of the Commission.

If there ever was a harder worker or a more conscientious one, I've never met him. Hours meant nothing, and Saturday afternoons and Sundays were like any other day if there was mosquito work that needed to be done. During the early days of the Commission when the ground-work was being done, and ridicule of the work and prejudice against it had to be overcome, Peterson did yeoman missionary service. His personality put the work across, time and time again. Pete was known from one end of the County to the other. Known and liked. And because people liked Pete they were friendly toward the work. Mayors, Councilmen, Engineers, Health Officers, Freeholders—all knew John Peterson—knew him as a mosquito man; knew him as a conscientious, honest, hard-working public officer; knew him and trusted him.

And Peterson never betrayed that trust; nor did he ever lose his faith in the work, nor his enthusiasm for it. He had ability and good judgment and he built the Bergen County Commission to a place in the sun, and was justly proud of the position taken by this Commission under his leadership.

He was faithful to the end. The day before he died, when many a less determined man would have given up, he was at his desk. It was a privilege to have been associated with such a man, and I feel that the work that he gave his life to made definite progress because of his untiring efforts.