to $60,000 for mosquito control work within the reservation of Camp Upton, Yaphank, Long Island, New York.

We have a second W.P.A. project pending in Washington at the present time for $125,000 for work on swamp areas adjacent to the reservation at Camp Upton. At the present time, we have every prospect of an early approval of this project.

Suffolk County Mosquito Extermination Commission has been granted a license by the Endowment Foundation, State of New Jersey, for the manufacture and use by us of pyrethrum larvicide under the Ginsburg Formula. So far, very satisfactory results have been obtained from our new plant in handling this material.

Delaware

A total of $33,250 for each year of the coming biennium was appropriated by the Delaware State Legislature at its recent session for the maintenance of mosquito-control structures installed in Sussex and Kent Counties by the C.C.C. between October, 1933 and November, 1938.

MOSQUITO CONTROL AND NATIONAL DEFENSE

Southern States

By Sen. Surg.
L. L. Williams, Jr.
U.S.P.H.S. Liaison Officer,
Fourth Corps Area.

A large number of troops, including infantry, tank corps, and aviators, are in training in the Southern States in portions of which malaria is prevalent. It is obvious that soldiers infected with malaria are not efficient on the drill field, nor do they make good combat units. Trainees on night maneuvers or in bivouac camps would be handicapped by the intense

annoyance of bites from numerous pestiferous mosquitoes, even though they might not be in danger of contracting a disease. Therefore, anti-mosquito work has been initiated within and without the permanent camps, and certain precautions are contemplated during Army maneuvers.

The Medical Corps of the Army has organized ditching and oiling gangs to prevent mosquito emergence from breeding areas within a mile of the camp site inside all military reservations, and thus will control production of Anopheles quadrimaculatus our malaria vector, as well as the more pestiferous species of Aedes, Psorophora and Mansonia. This area is enlarged wherever mosquitoes of long flight range are found breeding within the reservation, especially the fiercely biting salt marsh Aedes. As labor shortage necessarily slows the ditching program, larvicide crews have been organized. They secure temporary control and will continue in full force until ditching operations permit their reduction to a minimum. Fuel oil No. 2 has been selected as the larvicide of choice.

Mosquito breeding in the environs of the military reservations and of the nearby towns, habitually frequented by large numbers of troops, is of equal importance to that within the reservations. Here control operations are a responsibility of local and state health authorities and of the U. S. Public Health Service. Aided by the liaison officers of the Public Health Service to the Corps Areas, the state health departments commenced (during the autumn of 1940) to survey the malaria and mosquito prevalence in the extra-cantonment areas. Subsequently a number of W.P.A. mosquito control drainage project applications were prepared and were certified as National Defense Projects by the Army Corps Area surgeons and the Public Health Service liaison officers. A number of these have been approved, and are now in progress.

Pending completion of drainage works, some of which will take two or more years, larvicides must be used in all areas. Largely financed by appropriations to the U. S. Public Health Service for Emergency Health and Sanitation Activities and working through the state health departments, a larvicide campaign was inaugurated in May. Trucks, spray cans, tools, and fuel oil No. 2 were secured and labor employed. Each larvicide crew is composed of a foreman-driver and four oilers. A truck is assigned to a crew. It transports the men and cans and one or more drums of oil. Arrangements have been made with the oil companies to make daily delivery at filling or bulk storage stations of drums to each truck as needed.

The Army and Navy extra-cantonment areas were rapidly surveyed and the necessary number of oiling crews determined. The minimum radius of each control area was one mile, being the flight range of Anopheles quadrimaculatus, the malaria vector of the South. Some areas have a larger radius where pestiferous mosquito species abound. The extension is determined by the flight range of the locally prevalent species. Where camps are on or near the coast, this radius is five to seven miles if salt marsh species are breeding abundantly. In these cases no attempt is made to oil all of the salt marsh breeding areas, a very large and uneconomical task, but only the nearer areas which permit unusually heavy production. Control in the whole area must await ditching to let the daily tides into the high salt meadows. The W.P.A. has recently authorized larvicide application in and near military and naval stations, and it is expected this activity will commence at an early date.

During summer maneuvers no effort will be made to control mosquito production in the various encampment areas as these will be used for very brief periods and their exact location cannot be pre-determined. The Army will place reliance on the use of tent nets and

head nets (for sentries at night) and the use of prophylactic medication. The Public Health Service is now engaged in adopting the New Jersey pyrethrum larvicide to use in hand spray pumps and in testing other insecticides and repellents for possible use in protecting groups at fixed stations briefly occupied at night, such as anti-aircraft gun crews, and bivouac encampments. This protection is of course against adult mosquitoes.

It is believed that all of these measures will greatly reduce the annoyance from mosquitoes and will hold the malaria rates to a low figure among the trainees.

Camp Raritan
New Jersey

By E. D. Potter

At Camp Raritan a project of large size has been in operation since the first part of June. This calls for 90 laborers and 10 inspectors and oilers. Because of the shortage of labor we have been operating with only 30 laborers and at the present writing only 12½% of the area has been reconditioned. To prevent emergence of mosquitoes we are spraying with New Jersey larvicide both by hand and by power sprayer supplied by the W.P.A. This unit is mounted on a small flat car with a 250 gallon tank in which the emulsion is mixed with water taken from the ditches. Two hoses are run from this pump each one being 150' in length so both sides of the track may be treated at the same time. The entire unit is pulled by a small engine supplied by the U. S. Army and is doing very efficient work.

DEVELOPMENTS IN MOSQUITO CONTROL
Middlesex County Spray Unit

By Wm. Thom

For sometime past, the Middlesex County Mosquito