standard WHO procedure was followed throughout the tests.

The mortalities obtained at the two concentrations are shown in Table 1.

At the 0.02 p.p.m. concentration, the percentage kill in none of the containers differed significantly at the 1 percent level, although used polytheylene showed a difference at the 5 percent level. At the 0.004 p.p.m. dilution the glass, enamel, and aluminum containers were significantly superior to the others but did not differ markedly from each other. In the used polyethylene set there was some indication of the effect of accumulated DDT, though not at a statistically significant level. It would appear, therefore that glass is definitely the material of choice. Schmidt and Weidhaas (2) have shown that an increased ratio of surface to volume markedly reduces the rate of kill. This factor should be considered in the case of the enamel dishes. However, due to its weight and chipping propensity, enamel offers no material advantage in portability over glass.

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Culiseta melanura (COQ.) BREEDING ON LONG ISLAND, N. Y.

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The isolation of eastern encephalitis (EE) virus from Pekin ducks on Long Island by Dr. E. Daugherty III and co-workers at the Duck Disease Research Laboratory in 1959 (Collins, 1960), suggested the advisability of locating areas where *C. melanura* was breeding, since this mosquito is the chief suspect in bird to bird transmission of the disease.

This species breeds in restricted habitats often overlooked in routine mosquito control work. Typically, these habitats are located in cold water, especially sphagnum bogs, either in depressions in the sphagnum or in the holes left when trees are knocked down or blown over (stump holes). Although these breeding sites may contain large amounts of water, the openings at ground level are often rather small so that they are difficult to locate.

Figure 1 shows all of the *Culiseta melanura* breeding areas found up to April 1961 and also sites from which EE has been isolated. These include records of larval collections by the personnel of the N. Y. State Museum and Science Service, Suffolk County Mosquito Control Commission and Nassau County Mosquito Control Commission. Records of virus isolations were ob-

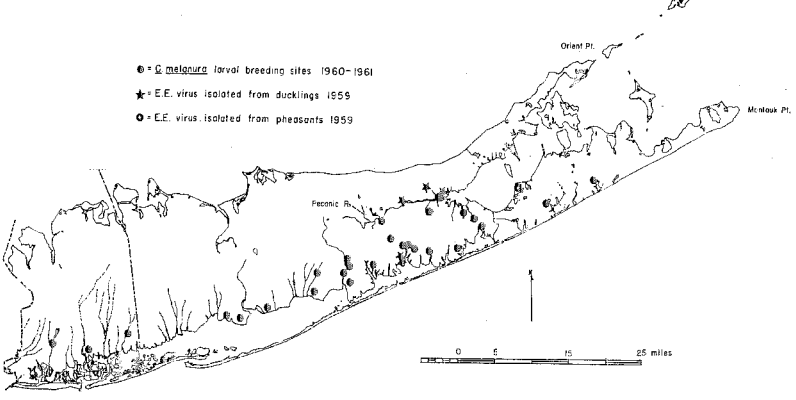

FIG. 1.—Outline map of Long Island, New York showing *Culiseta melanura* breeding locations and sites from which EE was isolated.

tained from the Duck Disease Research Laboratory (Eastport, N. Y.) and the Division of Laboratories and Research, N. Y. State Health Department.

Most of the *C. melanura* breeding sites were found in the Peconic River drainage system and near the cool, spring-fed streams flowing into the bays along the south shore. It was interesting to note that the breeding sites in densely populated areas of Nassau and Suffolk counties were restricted to undisturbed parks and large estates. No breeding was found along the north shore of Long Island, which has few undisturbed cold streams or bogs due, in part, to the dense population in the western part and extensive potato farms in the eastern part.

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OPERATIONAL NOTES

IMPROVED URBAN ADULT CONTROL OPERATIONS WITH AN ELECTRIC CLUTCH

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In 1958 the Jefferson County (Texas) Mosquito Control District redesigned their eight Buffalo Turbines so that they could be operated by one man, rather than the two men previously used. There were numerous technical difficulties that needed solving. One of the more annoying was the deposition of dust in the turbine funnel and on the ground while the operator was loading the hopper. Unless the engine was stopped while loading, enough dust fed into the blower to deposit sufficient dust on the ground to burn grass and other vegetation. This resulted in a few complaints.

The regular mechanical clutch was provided with a control so that it could be operated from the driver's seat. The early attempts used an iron rod from the clutch arm, through the back of the cab of the truck and into the cab next to the driver. Although the design worked, it was very noisy and necessitated constant maintenance to keep the clutch adjusted. A second design involved the use of flexible cables, such as are used on boats to control the engine from a position at the wheel. These cables are capable of transmitting up to a thirty-pound thrust. The flexible cables were an improvement but were not the answer to the problem.

A search for a device to disengage the engine from the turbine and agitator led to the installation of an electric clutch. It is recommended that a "coupling-clutch" be used. A simple clutch requires a much greater degree of shaft alignment than is necessary with the coupling-clutch. The latter costs but little more, and installation is rather simple. In the normal construction of a Buffalo turbine, the drive pulley for the agitator is located on the engine side of the coupling to the turbine. This drive pulley should be relocated on the turbine side of the new coupling-clutch, completely disengaging the engine from the dusting mechanism. In the event that the modification is made to the small Buffalo that is simply a duster, the old mechanical clutch can be inactivated and remain in place as a pulley. We have had no experience with the electric clutch on the sprayer-duster models.

The ratings as published by the electric clutch manufacturer show that a 6" clutch should transmit the torque of an 8.25 horsepower engine, the normal power supply for the small turbine. However, to be on the safe side, we installed the 8" clutch. We do not recommend the smaller clutch as there is considerable slippage when the 8" clutch is engaged. We were unable to secure satisfactory performance with the one six-volt clutch we bought for installation on an old truck. A twelve-volt system seems to provide ample magnetic force to keep the clutch engaged. Once the clutch is adjusted properly there is little maintenance to the mechanical parts. However, the slightest weakness in any of the electrical connections will result in malfunction of the clutch. The electricity is carried to the electromagnet through a paired, double brush arrangement on commutator rings, very similar to the collector rings of an alternator. The positioning of the brush hanger is critical. Too little pressure results in poor contact and too much contact results in excessive brush wear. The brush assembly must be shielded as much as possible from dust to prevent excessive wear of the brushes and collector rings. Dust can also pack in the brush hanger and inactivate the brushes. We have found it advisable to maintain a good supply of brushes and brush hangers to avoid lengthy shut-downs.

We have found the electric clutch an efficient tool, improving public relations in our dusting program in urban areas. The complete shut-down of the dusting apparatus provides for dust-free cross streets, parked cars and areas inhabited by persons allergic to B.H.C. dust.