

REVIEWS AND ABSTRACTS

AIRPLANE APPLICATION OF DDT LARVICIDES. By C. C. Deonier and R. W. Burrell. *Journal of Economic Entomology*, Vol. 38, No. 4, pp. 425-427, Aug., 1945. Field tests were conducted by the authors to determine the feasibility of applying DDT as a larvicide for mosquito control by airplane. At first, DDT dust was applied, since airplanes equipped for dusting were available. Later, due to the development of a portable spray unit by Husman and Longcoy, DDT sprays were used in the tests. The spray unit is made up of a supply tank, propeller-driven pump, and an adjustable nozzle mounted on a venturi tube suspended beneath the plane at the center of gravity.

The experiments with DDT dusts were conducted in the rice-growing section of Arkansas and at certain areas in Florida. All the tests made with DDT sprays were conducted in Florida, and a cub airplane was used for all the experiments.

Results of the tests indicated that DDT dust could not be recommended for application by airplane because of undesirable physical properties of the dust. The particles of the dust tend to cling together. Due to the high toxicity of DDT, it was found feasible to apply the material as a spray. Results indicated that as little as one quart of 5 per cent DDT could be applied per acre by the use of the cub spray unit. Further work is being done on the minimum dosage of DDT necessary for satisfactory larval kills. Advantages of applying the DDT as a spray are: a greater pay load can be carried, greater accuracy of application accomplished, and application under more adverse weather conditions.

—C. A. Wilson,
Malaria Control in War
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LARVICIDAL AEROSOLS CONTAINING DDT. By Howard A. Jones, C. C. Deonier, R. W. Burrell and E. F. Knipling. *Journal of Economic Entomology*, Vol. 38, No. 4, pp. 432-433, Aug., 1945. Entomologists at the Orlando, Florida, Laboratory of the Bureau of Entomology and Plant Quarantine, U.S.D.A., formulated several types of liquefied-gas aerosols containing DDT, for testing as anopheline larvicides. Preliminary results are promising, and further experiments are being conducted to develop methods of applying them from the ground and from aircraft. Methyl chloride was substituted for Freon-12 (dichlorodifluoromethane) in some of the tests, since it is a better solvent for DDT. Use was also made of fatty acids in certain experiments to increase the nonwettability of the particles.

Three series of laboratory tests were run before field experiments were attempted. For the indoor tests a room of 40,000 cubic feet capacity was used, and the aerosol dispenser nozzle was placed about one foot from the floor level and directed toward the pans used. *Anopheles quadrimaculatus*

Say larvae were used in all the laboratory experiments. In the first test three pans filled with water were placed 10, 20, and 30 feet from the cylinder containing the aerosol and 7.5 grams of DDT was released. Two hours later the pans were removed and 20 larvae were placed in each pan. All the larvae were dead 24 hours later. The second test was conducted the same as the first, except that 4 pans placed 30, 40, 50, and 60 feet from the cylinder were used. The dosage of DDT was reduced to 4.05 grams and the exposure time cut to one hour. Twenty-four hours later the larval mortality was 100 per cent.

Another indoor test was conducted to determine the resistance of the DDT aerosol deposit to artificial rain. A dosage of 6.0 grams of DDT was used and allowed to settle for one hour. Some of the jars were immediately given an artificial rain of 6 inches in 3 minutes, and two later rains. Other jars were subjected to one six-inch rain, in three minutes, after 3 days. Mosquito larvae were introduced at intervals after the aerosol treatment and mortality was determined 48 hours after introduction of the larvae. A dosage of 6.0 grams of DDT was adequate to give complete mortality at 60 feet without rain. One hundred per cent mortality after 8 days was noted in pans located 40 feet from the dispenser following the second rain. One jar 30 feet away showed 100 per cent mortality after a rain after 17 days and again 10 days later.

Field tests were conducted under natural field conditions in Florida. The DDT aerosols were applied from the ground and almost complete kills of *Anopheles crucians* Wied. larvae were obtained. The dosage used was 0.1 pound of DDT per acre, and it was applied to two ponds of 1500 and 9750 square feet in area.

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LA INGENIERIA ANTIMALARICA EN VENEZUELA. [Antimalarial engineering in Venezuela.] By Arturo Luis Berti, 1945. 34 pp., 12 illus., 3 graphs, 3 maps. A rather compact booklet, which gives the control by engineering methods of *Anopheles darlingi* Root and *A. albimanus* Wied., has been published recently in Venezuela. A most important phase of the work is the construction of canals. During a period of 8 years, 180 kilometers of canals were built in Venezuela. It was found to be more expedient to use portable equipment for the building of the concrete canals than to establish centers for such work. Antimalarial engineering methods are of much importance in this country where optimum conditions prevail for the breeding of mosquitoes. Engineers must be extremely cautious since excavations left unused soon become filled with water in which anophelines abound.

As a result of antimalaria engineering efforts in Venezuela, against *Anopheles darlingi*, the number of malaria cases in Cabudare dropped from 835 in 1939 to 5 in 1941; in Acarigua from 288 in 1940 to 5 in 1944; and in Maturin from 536 in 1940 to 23 in 1944. These cases are well summarized in a series of graphs at the end of the paper.

Antimalarial engineering methods were carried out also against *Anopheles albimanus* and in Maracay, prior to the control project, the cases of malaria numbered 930 a year. By 1940, however, this number was reduced to 0.—Helen Sollers, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, U. S. Department of Agriculture, Washington, D. C.

LABORATORY REARING OF *Aedes atropalpus*. By Helen Louise Trembley, *Journal of Economic Entomology*, Vol. 38, No. 3, pp. 408-409, June, 1945. Larvae of this species were collected from pot holes in rocks at Washington, D. C. and have been reared continuously since October, 1944. Standard rearing techniques previously described by the author for use with *Aedes aegypti* were generally followed in rearing *Aedes atropalpus*.

It was found that high humidity favors the longevity of adult *Aedes atropalpus*. Emergence, mating, feeding, and oviposition was accomplished in cages varying in size from 10 x 10 x 10 inches to 2 x 2 x 2 feet. Foods used with success were, ground dog food, powdered dog food, and whole oats cut in half for larvae. Tap water was used for the larval rearing. Adults were fed on sliced apple or dextrose solution. Oviposition was observed as early as two days after a blood meal, and approximately 100 eggs were deposited by each female. Eggs hatch in about 24 hours, pupation occurs at from 9 days to 2 weeks, and adults begin to emerge in about 30 hours. Man, chick and white rat are all about equally acceptable for a blood meal. These were the only hosts tried.

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QUIETING MOSQUITO LARVAE. By John B. Gerberich, *Journal of Economic Entomology*, Vol. 38, No. 3, pp. 393-394, June, 1945. Good results in quieting mosquito larvae for study was obtained by the use of a 10 per cent solution of methylcellulose ("Methocel", trade name, made by Dow Chemical Company). Experiments for its use on mosquito larvae were suggested by reports of its quieting effects on *Paramoecium*. *Aedes aegypti* larvae were reared and used in all the tests. The larvae in the test groups were placed in dishes containing "Methocel" for 3 hours each day during their development. All the larvae survived the treatment, pupated, and produced normal adults. From the results of his work, the author concludes that "Methocel" is non-toxic and has no effect on the normal development, and that it is recommended as a suitable agent for use in quieting mosquito larvae.

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OCCURRENCE AND DISTRIBUTION OF MOSQUITOES IN MISSISSIPPI. By A. G. Peterson and W. W. Smith, *Journal of Economic Entomology*, Vol. 38, No. 3, pp. 378-383, June, 1945. The authors report the results of 3 years of intensive mosquito collecting at 22 war areas comprising 67 war establishments throughout the state. The collecting was done as an adjunct to U. S. Public Health Service, Malaria Control in War Areas activities. Mosquitoes were collected by the use of standard procedures including larval, light trap, biting and natural and artificial resting place collections. The paper reports that a total of 52 species are now known from the state, and one new record, *Aedes cinereus* Meig., was included. Notes are given on the larval habitats, abundance and distribution of each species.

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