

ENTOMOLOGY

Mosquito Larvae Die

The wigglers get cramps and drown when their breeding pond is treated with DDT. Scientist who made this discovery was killed on Okinawa in June.

► WHEN mosquito breeding ponds are treated with DDT, the wigglers or larvae get cramps and, like many human swimmers similarly afflicted, drown.

The discovery of this effect of DDT on the larvae of malaria mosquitoes was made by John D. Maple, formerly of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture. Mr. Maple was killed while fighting mosquitoes on Okinawa last June.

The symptoms of DDT poisoning of the wigglers of malaria mosquitoes, he reported, are "excessive swimming along the water surfaces and occasional tremors, followed by sinking."

Whether or not the wiggler gets enough DDT poison to kill it outright, it sinks and tries to struggle back to the surface for air but is not able to make it, and so drowns.

The discovery of how the wigglers die when ponds are treated with DDT explains why this potent insecticide gets quicker action against the wigglers than against adult mosquitoes.

Although the best mosquito killer ever

discovered, DDT is not the fastest. In Department of Agriculture studies, microscopic crystals of DDT have been fed to individual mosquitoes. Many of the insects lived for hours, but died in a day or less. Death was sometimes slow but always sure.

From the standpoint of mosquito killing, the cause of death is immaterial; the wiggler that drowns will never be able to carry malaria germs. From the standpoint of control of malaria, yellow fever, dengue, filiarasis and some other diseases, the delay in the action of DDT may, or may not, prove of importance. DDT is still so new that scientists have not been able to make the careful studies required to enable them to say whether a poisoned adult mosquito can attack and infect a person after it has been poisoned but before the poison takes effect. Research programs are working full speed ahead to answer as many as possible of such questions both to improve the immediate protection DDT is giving to the armed forces, and to prepare the way for safe use of DDT by civilians.

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Cattle Ticks Controlled

DDT-rotenone spray checks the pests in the tropics. Length of effectiveness of treatment varies with the climatic conditions.

► SPRAYING with DDT and rotenone mixture provides a practical and economical solution of one of the major problems of cattle raisers in tropical and sub-tropical regions, control of cattle ticks, it was announced at the Third Inter-American Agricultural Conference by Dr. Earl N. Bressman, Director of the Interamerican Institute of Agricultural Sciences at Turrialba, Costa Rica. It is expected that the new method will be applicable from the northern provinces of Argentina to the southern United States.

Cattle-dipping vats, which have been widely successful in tick control in temperate regions, have had considerably

less success in the tropics, for a variety of reasons. Over large areas the necessity of depending on relatively untrained personnel resulted in high mortalities because of poorly designed dipping vats, arsenic poisoning of cattle, mechanical abortion, and other injuries. Furthermore, the intense tropical heat often caused deaths from overheating, especially in the case of animals that had to be driven long distances to the vats—which often cost in the neighborhood of \$4,000 each—and the cattle suffered from decreased milk production and, in the case of the ubiquitous oxen, from lack of rest following dipping.

After 110 experiments over a period



BROWN BEAR—This is one of the paintings by Charles Liedl that are on exhibition in the Education Hall of the American Museum of Natural History in New York from July 20 to August 19. The picture of the white-tailed deer on the front cover of this *SCIENCE NEWS LETTER* is also among those on exhibition.

of three years, Dr. Robert L. Squibb, of the Institute's Division of Animal Industry, developed a new spray solution, specific for use against the cattle tick, a mixture of DDT and rotenone. One hundred cubic centimeters of the solution is sufficient, used as a fine spray, to cover an animal, at a cost of as little as one-half cent, depending on local conditions. A wide variety of spraying equipment, ranging from a hand-operated flit gun to power equipment, secures equally effective results. A tick mortality of 95% has been recorded from animals with an infestation of as high as 40 ticks per square inch.

Length of effectiveness of the treatment varies with climatic conditions, as does cattle dipping, and the solution has continued to give protection against the ticks up to 80 days. Spraying between the animals' legs and in body crevices is not necessary since once engorged ticks have dropped off, the animal is not reinfested during the period of spray effectiveness. More than 7,000 applications have been given over a period of nine months, with no indication of a poisonous tendency.

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