

USE OF INSECT REPELLENTS AND MITICIDES. By B. V. Travis and F. A. Morton. Circular E 698, August, 1946, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

This circular gives information on the availability, use, and effectiveness of the few new repellents and killing agents which, from among many thousands of chemicals tested, appear to give some measure of protection from the bites of mosquitoes, punkies, blackflies and other biting flies, chiggers, and mites. Five "safe" formulae are given. Two of these are mixtures of dimethyl phthalate, indalone and Rutgers 612 (2-ethyl-1, 3-hexanediol); the third is a mixture of dimethyl phthalate, indalone and dimethyl carbate; the fourth is dimethyl phthalate and Rutgers 612; and the fifth is dimethyl phthalate and dimethyl carbate. The directions for using these materials and various characteristics and results that may be expected are given in detail. A list of firms which can supply the chemicals completes the circular.

D. L. C.

ESTUDIO ECOLOGICO DE LOS "CRIADEROS" DE *Anopheles pseudopunctipennis*, THEOB. By G. Dennen de la Tour. Revista Argentina de Zoogeografia, Vol. IV, No. 3, 1944, pp. 145-154. 5 plates. (Ecological Study of the Breeding Places of *A. pseudopunctipennis*.) Paraphrase of English summary:

Ecological studies of the breeding places of *Anopheles pseudopunctipennis* have not only a scientific interest but also a practical side. The species is the host of the plasmodium which is the agent of endemic malaria in northwest Argentina. It does not breed in pools and stagnant waters as many other anopheline species do. On the contrary, *A. pseudopunctipennis* breeds on the borders of running waters (rivers, etc.). The water must be clear and continually renewed, needing also the presence of filiform green algae (*Spirogyra* and the like), typically present in mountain rivers and rivulets. The zoogeogram shows that *A. pseudopunctipennis* is limited to the zone comprising the eastern hillsides of the "Cordilleras" up to a height of 1,350 meters above sea level and down to the plains where water currents cease in winter.

D. L. C.

FIELD BULLETIN OF MALARIA CONTROL IN WAR AREAS, U. S. PUBLIC HEALTH SERVICE, FEDERAL SECURITY AGENCY. January, February, March, 1946.

Included in this issue of the Bulletin are two papers of interest to mosquito control workers.

1. Malaria Education in Arkansas. By Asst. San. (R) Robert H. McCauley, Jr. This report is a very informative description of the malaria education program carried out in Arkansas by the MCWA beginning in 1944. Photographs of methods and typical situations, although they represent standard procedures already known to every mosquito control worker, add greatly to the interest for a lay reader.

2. Some Unusual Breeding Places of *Anopheles quadrimaculatus*, by San. (R) T. E. McNeel. The list of so called "unusual breeding places" mentioned in the title has been obtained from both the literature and the experience of MCWA entomologists. It includes artificial containers, saline water, bilge water in a houseboat, fire barrels, armadillo holes, tin cans in a dump almost completely filled in with and covered by dirt, airplane wheel ruts on muddy landing fields, a flooded concrete room, sewers and septic tanks, and flowers of the Nassau Lily.

In conclusion the author remarks that "quads" will apparently breed almost anywhere unless the water is extremely foul; but, as he cautions in the introduction, the observation of limited breeding in a few unusual places should not upset the established conception of quad ecology. Oviposition in unusual places usually occurs only when the adult population is unusually high or when available water is very scarce.

D. L. C.

MALARIA CONTROL IN A NON-ENDEMIC AREA. By Herman L. Felton, Ralph C. Barnes and Arlie Wilson. The Journal of The National Malaria Society, Vol. IV, No. 3, Sept., 1945.

The consensus of opinion of the majority of recognized authorities on malaria is that there is no danger of the re-establishment of the disease on an endemic basis in non-endemic areas in the United States as a result of the return of military service personnel. While the danger of severe epidemics is also not great, it would be wise to undertake certain precautionary measures, in areas where malaria mosquitoes occur, but which have been free from infection for many years.

To carry out these precautions in the Northeastern United States a Malaria Control in War Areas Sub Office was established in the U. S. Public Health Service District No. 1 with Headquarters in New York City. Anti-malarial measures in the area included the establishment of mobile malaria control units; extensive anopheline surveys at possible danger points; anopheline control measures where concentrations of human carriers and the mosquito vector are found; and educational measures. Each mobile unit consisted of a station wagon and a 1½ ton truck for equipment and supplies necessary for entomological surveys, larviciding, minor drainage, clearing, cleaning and spray killing of adults. The anopheline surveys in 1943 and 1944 are also described, together with the anopheline control procedures and educational measures that were employed.

D. L. C.

MALARIA CONTROL IN THE NORTHEASTERN STATES. By Herman L. Felton, Ralph C. Barnes, C. Arlie Wilson and Miriam Boyers. Proceedings of the Thirty-Second Annual Meeting of the New Jersey Mosquito Extermination Association, March 28, 29 and 30, 1946.

During 1943 and 1944 anopheline surveys were conducted around certain military installations in all the states of U. S. Public Health

Service District No. 1, except Vermont. *A. quadrimaculatus* was found in 32 of the 57 zones surveyed, and in a majority of these stations was the predominant species. It was found that the breeding season began somewhat earlier than previously supposed in these areas, as early as the first part of May as far north as Framingham, Mass. Significant hibernation records were obtained, and it was planned to continue the observations in greater detail.

Anopheles bradleyi King also occurred in some of the collections made in 1944, in New Jersey and Delaware, and at Orangeburg and New York City.

Control measures were restricted largely to larviciding the *A. quadrimaculatus* breeding places, with clearing and cleaning where feasible, and a limited amount of minor drainage. At Fort DuPont, Delaware, airplane dusting with paris green was employed to treat certain extensive muskrat marshes.

Educational measures were also undertaken, including the direct instruction of state health department employees, district sanitary engineers and others.

Included in the paper is a valuable list of *A. quadrimaculatus* locality records, as established by the collections of the Malaria Control in War Areas group, the literature and from personal communications with other workers. D. L. C.

AN OLD CHEMICAL COMPOUND REVEALED AS AN EXCEEDINGLY POTENT INSECTICIDE. By J. G. Sanders. The Scientific Monthly, Vol. LXII, No. 5, May, 1946; pp. 465-466.

The chemical compound currently known as "benzene hexachloride," or "666," but more accurately designated as "1,2,3,4,5,6-hexachloro-cyclohexane," has achieved far less publicity than DDT, but appears actually to be several times more toxic to many insects than DDT. As

pointed out by Mr. Sanders, it has been known for over 100 years, having been discovered by Faraday in 1825; but the knowledge of its potency as an insecticide has been comparatively recent. Of especial interest to persons concerned with mosquito control is the effectiveness of "benzene hexachloride" against mosquitoes and other insects annoying or dangerous to man. The following excerpts from the paper cited are given here in order to bring this interesting compound to the attention of mosquito control workers who may not be aware of its possibilities. "In the control of mosquitoes and flies under varied field conditions as well as in human habitations, the *gamma* isomer has shown amazing toxicity, with a killing power 8 or 9 times that of DDT and about 18 times that of pyrethrins. In field tests, including some in Western Africa and Ceylon, one-half pound per acre of the crude material in the form of dust produced 100 per cent kill of mosquito larvae in 24 hours—an indication of the usefulness of benzene hexachloride in controlling these disease-bearing pests over large areas with applications from airplanes. . . . Benzene hexachloride apparently does not have the long residual effect in controlling houseflies and mosquitoes that is characteristic of DDT. . . . The excellent and informative lecture by R. E. Slade, published and illustrated in *Chemistry and Industry*, October 13, 1945, should be carefully studied by everyone who proposes to carry on studies and experimental work with this promising insecticide. The article is replete with useful information on the chemical and physical properties of the compound. Reported results of early tests on a fairly wide range of injurious insects point to a broad field of usefulness in the control of insect pests of agricultural and horticultural products, domestic animals, and mankind."

D. L. C.