spray is more economical than other larvicides used, both as to the material cost and man-hours required to treat a given area.—W. V. MATHIS.

17983 Ca

THE CONTROL OF RAT ECTOPARASITES WITH DDT. Russell G. Ludwig and H. Page Nicholson. (U.S.P.H.S., Communicable Disease Center, Technical Development Division, Savannah, Ga.) Pub. Health Rep. 62(3):77–84. 8 fig. 1947. (Abstract.)

Field studies to determine the effectiveness of a 10 per cent DDT, 90 per cent pyrophyllite dust mixture for rat ectoparasite control and to develop equipment and methods for its application were undertaken at Savannah, Georgia, in 1945. Extensive inspections were made and representative establishments having heavy infestations of rats and their ectoparasites were chosen for check and treatment, previous care being used to have similar types of buildings in each group. Live trapping was carried out in all buildings before treatment and at intervals after treatment to establish ectoparasite indices and the normal variation of ectoparasite populations so the results of treatment could be evaluated. Treatment was effected by blowing the 10 per cent DDT dust into burrows and enclosed harborages with a cyanogas foot pump duster, and by applying a layer of dust, with hand shaker dusters, along runways and around holes where it would be picked up by the rats and carried to nests and harborage areas. An average of 8 pounds of dust was used for each establishment. Of the 10 species of ectoparasites found on rats in Savannah, only *X. cheopis* was found in sufficient numbers and uniformity of distribution to permit an analysis of seasonal population variations. Consistent control of *X. cheopis* was obtained in all establishments with control percentages dropping off from an initial of 99.3 per cent by approximately 5 per cent per month for 4 months following treatment.—C. M. TARZWELL.

0737 Ca

THE CONTROL OF HOUSE FLIES BY DDT SPRAYS. W. C. Baker, H. I. Scudder, and E. L. Guy. (U.S.P.H.S., Communicable Disease Center, Technical Development Division, Savannah, Ga.) Pub. Health Rep., Vol. 62(17):597–612. 1947. (Abstract.)

Effective control of *Musca domestica* for a period of 3 months was obtained in dairies by spraying both barns and outbuildings with a xylene-*Triton X–100* emulsion containing 2½ per cent DDT applied at the rate of 200 mg. DDT per square foot. A suspension of water-wettable DDT powder gave comparable results. Under poor sanitary conditions treatment of barn or outbuildings only was unsatisfactory. In restaurants effective control for 3 months or more was obtained by spraying ceilings and walls of dining room and kitchen with an emulsion containing 7½ per cent DDT and applied at the rate of 200 mg. DDT per square foot. In small food and ice-cream shops, 40–60 ft. of DDT-impregnated cord was hung as a replacement for electric light pull cords, along the chains of suspended display shelves, and from the kitchen ceiling at locations where the string would not interfere with the employees. Good control was obtained when the fly influx was not excessive. Emulsions containing ½ per cent DDT when applied at the rate of 300 and 200 mg. per square foot as a cover spray gave effective control for 3 weeks of adults emerging from grain wastes and from garbage washings in an alley. When nearby adult resting places were also treated, the control period was lengthened considerably.—W. C. BAKER.

9413 Ca

EXTENDED LABORATORY INVESTIGATIONS OF THE TOXICITY OF DDT RESIDUES TO ADULTS OF *Anopheles quadrimaculatus*. R. W. Fay, S. W. Simmons, and J. M. Clapp. (U.S.P.H.S., Communicable Disease Center, Technical Development Division, Savannah, Ga.) Pub. Health Rep. 62(5):149–158. 1947. (Abstract.)

The residual toxicity of DDT to adult female *A. quadrimaculatus* mosquitoes is lost more rapidly at short exposure periods, i.e. 30 minutes, than at long exposure periods, i.e. 180 minutes. The loss of residual toxicity does not follow a single straight line relationship, but occurs more rapidly during the first 16 weeks and then shows little change for the next 6 months. Direct comparisons of mortalities show the 200 mg. DDT per sq. ft. deposits after 16 weeks to be about equal to the 100 mg. DDT per sq. ft. deposits after 12 weeks. The knock-down rate at the end of 60 min. exposures was a good indication of the 48 hr. mortality. There are indications that DDT in slow volatilizing solvents does not show as marked loss of residual in the first 12 weeks of aging as it does in fast volatilizing solvents. The male mosquitoes are more susceptible to DDT than the female adults.—R. W. FAY.

5788

NOTES ON THE ANOPHELINES OF VENEZUELA AND THEIR IDENTIFICATION. By Pablo Cova Garcia. XII. Conferencia Sanitaria Panamericana, Cuadernos Amarillos No. 1. Publicacion de la Comision Organizadora. 208 pp., 52 unnumbered plates, 42 figs. Editorial Grafolit, Caracas, Venezuela. 1946.

Of the several regional treatments of the Anopheline mosquitoes that have appeared in the past few years, this is one of the best. It combines the best features of a taxonomic and faunistic treatise on the 30 species of Anophelini of Venezuela, with a well-conceived laboratory manual to train public health personnel and students of medical entomology in the identification and handling of these mosquitoes.

The book is very well organized. The eggs, larvae, pupae, adults, and male genitalia are each treated in separate sections, in this order. For the larvae and adults there is a discussion of the morphology and of the biology, followed by a laboratory guide to show students the essential characters necessary for the determina-

tion of each species in each of these stages. The morphology of the male genitalia and a similar laboratory guide is given for the males. The eggs and pupae are discussed more briefly with no laboratory guide. Excellent keys as well as a summary of characters in tabular form are given for the adults, the larvae, and the male genitalia. All of the stages are well-illustrated, and, while there is no key given for eggs, there are 11 plates showing the eggs of the known species and the variations within the species. The only stage not thoroughly covered is the pupal, and it is probable that too little is known about the specific characters in the species treated to permit complete descriptions and a key.

Following the first section, which permits the identification and assists the training for identification of the Anophelini of Venezuela in most of the stages, are 3 smaller sections. The first of these defines the tribes Megarhinini and Culicini and shows how they may be distinguished from the Anophelini. The second is a general discussion of the Anophelini including the history of the study of the tribe in Venezuela, distribution by state of the Venezuelan species, the position of the tribe in the animal kingdom, and of the Venezuelan species in the tribe, and a section on classification, nomenclature, and the preparation and use of keys. The last section deals with the internal anatomy and with the techniques of preparation, preservation, and the handling of living material in the laboratory.

Any person wishing to identify *Anopheles* from northern South America should find this book of immense value, and a student, knowing the Spanish language, wishing to train for laboratory work on these *Anopheles* can find here an invaluable study manual.—ALAN STONE, Bureau of Entomology and Plant Quarantine, U. S. Dept. of Agriculture, Washington, D. C.

5188

NOTAS SOBRE LOS ANOFELINOS DE VENEZUELA Y SU IDENTIFICACION. Por Pablo Cova García. XII Conferencia Sanitaria Panamericana, Cuadernos Amarillos No. 1. Publicación de la Comisión Organizadora. 208 páginas, 52 láminas sin numerar, 42 figuras. Editorial Grafolit. Caracas, Venezuela. 1946.

De las varias consideraciones a base regional de los mosquitos anofelinos, que han visto la luz durante los últimos años, es ésta una de las mejores. Combina en sí los mejores factores de una tesis sobre la taxonomía y las características fáunicas de 30 especies de anofelinos en Venezuela, con un bien concebido manual de laboratorio para la formación de personal de salubridad pública y estudiantes de la entomología médica en la identificación y el manejo de estos mosquitos.

El libro está bien ordenado. Los huevos, las larvas, la ninfas, los adultos y las genitalias masculinas han sido consideradas en secciones por separado, en el orden dado a continuación. Respecto a las larvas y los adultos, hay una discusión de su morfología y biología, seguido de un guía de laboratorio para demonstrar a los estudiantes los caracteres esenciales que se requiéren en la determinación de cada especie en estas etapas. Se presenta la morfología de las genitalias masculinas y un guía de laboratorio parecido sobre los machos. Se discute más brevemente los huevos y las ninfas, sin guía de laboratorio. Hay excelentes claves, como también un resumen de caracteres en forma de tabla sobre los adultos, las larvas y las genitalias masculinas. Vienen bien ilustradas todas las etapas y, aun que non se presenta clave para los huevos, hay 11 láminas dando a conocer los huevos de las especies conocidas, con sus variaciones dentro de la especie. La única etapa a la cual no se da un trato completo, es la ninfal y es probable que tan poco se sabe respecto a los caracteres específicos de las especies tratadas que no fueron posibles descripciones completas y de una clave.

A continuación de la primera sección, la cual hace posible la identificación de los anofelinos de Venezuela y es una ayuda en el entrenamiento para su identificación en la mayoría de sus etapas, hay 3 secciones más reducidas. La primera de éstas define los tribus Megarhinini y Culicini en indica cómo se pueden distinguir de los Anophelini. La segunda es una discusión generalizada de los Anophelini, incluso una historia del estudio del tribu en Venezuela, distribución por estados de las especies venczolanas, el lugar que ocupa el tribu en el reino animaly las especies venczolanas dentro del tribu, y una parte dedicada a la clasificación, la nomenclatura, y la preparación y la aplicación de claves. La última sección trata de la anatomía interna y de las técnicas para la preparación, conservación y manejo de material viviente en el laboratorio.

Para cualquiera persona que se interese en identificar los *Anopheles* de la parte norte de Sur América, este libro debe ser de inestimable valor, y un estudiante quien domina la lengua castellana y desea especializarse para trabajos de laboratorio sobre estos *Anopheles,* hallará aquí un manual de estudio de inapreciable útilidad.—Translation of a review in English by Alan Stone, Bureau of Entomology and Plant Quarantine, U. S. Dept. of Agriculture, Washington, D. C.

3556

A STUDY OF THE MIGRATORY HABITS OF SALT MARSH AND ANOPHELINE MOSQUITOES. Frank Brescia, Irwin D. Wilson, John Rowell, and Kenneth C. Hodges. Ann Ent. Soc. Am. 40(1):69–74, March, 1947.

Field use of the Insecticidal Aerosol Generator necessitated the study of migratory habits of the natural mosquito population in the test area. Daily migratory habits of *Aëdes sollicitans* and *A. taeniorhynchus* were determined by recording the number of mosquitoes landing per minute in various locations about an open