Barber trata de la lucha futura contra el paludismo y los mosquitos, y recomienda una combinación de medidas antipalúdicas con la instrucción del público.

(Translation of a review by H. L. Trembley, National Institute of Health, U. S. Public Health Service, Bethesda, Md.)

15332

EFFECT OF SHORT CONTACT WITH DDT RESIDUES ON *Anopheles Gambiae*. By Leo Kartman and Mario M. da Silveira. Jour. Ec. Entom. 39(3):356–359. June 1946.

Through a series of experiments, the authors have secured a preliminary answer to their questions about the actual length of contact with DDT in relation to its toxic and lethal effects on *Anopheles gambiae*. Experiments were carried out in a laboratory near Dakar, French West Africa. All tests in all groups were conducted on laboratory-bred females, except for four tests in which the mosquitoes were taken from native huts.

Individual mosquitoes were sucked into an aspirator tube (a glass tube 8" long by 10 mm. in diameter, fitted with a rubber bulb) which was coated with residues equal to a dosage of 125 mg. of DDT per square foot. Observations were recorded on 60-second, 30-second, and 5-second contacts. The 60-second contact was tested 17 times in 23 days, with an average of 29.4 mosquitoes per test and an average of 5.5 mosquitoes for check tests with untreated aspirator tubes. The 30-second contact was tested 11 times over a period of 18 days; an average of 46.6 mosquitoes per test and 9.4 per check were used. The 5-second contact was tested 10 times in 12 days, with an average of 50 mosquitoes per test and 9.5 per check. Death was assumed at that moment when prodding with a sharp instrument elicited no observable response in any part of the insect's body.

All mosquitoes were affected at between 80 and 90 minutes; with the majority of individuals showing toxic symptoms at between 10 and 30 minutes after short contact with DDT residues. The 60-second group showed 100 per cent mortality 9 hours after contact, and the 30-second group, 100 per cent mortality at between 10 and 24 hours. The 5-second group showed 97 per cent mortality at between 10 and 24 hours after contact. There was a general correlation between toxicity trends and mortality trends in all groups. The first tremors from contact with DDT were not enough to prevent the mosquitoes from taking a blood meal. However, within 1 to 2 hours, the intensity of syndromes induced by DDT-toxicity had increased quite rapidly causing the mosquitoes to be in no condition to feed. The reaction of the wild mosquitoes was identical with that of the laboratory-bred individuals. The data indicate that an extremely short contact with DDT residues is sufficient to cause the death of most *Anopheles gambiae* females within a period of 24 hours after exposure.

(Louise Goode, National Institute of Health, U. S. Public Health Service, Bethesda, Md.)

15332

EL EFECTO EN LOS *Anopheles Gambiae* DE CONTACTOS CORTOS CON RESIDUOS DE DDT. Por Leo Kartman y Mario da Silveira. Jour. Ec. Entom. 39(3): 356–359. June 1946.

En el curso de una serie de experimentos, los autores han obtenido una contestación preliminar a sus preguntas acerca de la relación entre la duración del contacto con DDT y sus efectos tóxicos y letales en los *Anopheles gambiae*. Los experimentos fueron llevados a cabo en un laboratorio cerca de Dakar, Africa Occidental Francesa. Todos los ensayos en cada uno de los grupos fueron hechos con hembras criadas en el laboratorio, con la excepción de cuatro ensayos en los cuales los mosquitos se capturaron en chozas de indígenas.

Uno por uno los mosquitos fueron sorbidos en un tubo aspirador (tubo de vidrio 8" de largo por 10mm de diámetro, previsto de una pera de goma) las paredes interiores del cual fueron cubiertas con residuos equivalentes a una dosis de 125 mg. de DDT por pie cuadrado. Las observaciones fueron anotadas después de 60, 30, y 5 segundos de contacto. El contacto de 60 segundos fué probado 17 veces en el curso de 23 días, con un promedio de 29.4 mosquitos por prueba y un promedio de 5.5 mosquitos por prueba de control con tubos aspiradores que no habían sido tratados. El contacto de 30 segundos fué ensayado 11 veces durante un período de 18 días; un promedio de 46.6 mosquitos por prueba fueron usados, y 9.4 por prueba de control. El contacto de 5 segundos fué ensayado 10 veces en 12 días, con un promedio de 50 mosquitos por prueba, y 9.5 por prueba de control. Se consideró muerto el mosquito en el momento en que, al punzarlo con un instrumento puntiagudo, ya no se observaba más reacción en ninguna parte del cuerpo del insecto.

Todos los mosquitos sintieron los efectos dentro de 80 a 90 minutos, mostrando la mayoría de ellos síntomas tóxicos dentro de los 10 a 30 minutos después de corto contacto con residuos de DDT. El grupo de 60 segundos mostró una mortalidad de 100 por ciento a las 9 horas después del contacto, y el grupo de 30 segundos, 100 por ciento de mortalidad después del lapso de 10 a 24 horas. El grupo de 5 segundos mostró una mortalidad de 97 por ciento dentro de las 10 a 24 horas después del contacto. Había una correlación general entre las tendencias tóxicas y las mortales en todos los grupos. Los primeros tremores causados por el contacto con DDT no fueron suficientes para impedir que los mosquitos tomaran una ración de sangre. Sin embargo, dentro de una o dos horas, la intensidad de los síndromos producidos por la toxicidad del DDT había aumentado bastante

rápidamente para que los mosquitos ya no estuvieran en condiciones de comer. La reacción de los mosquitos silvestres era idéntica a la de los criados en el laboratorio. Los datos indican que un contacto sumamente corto con residuos de DDT es suficiente para causar la muerte de la mayor parte de las hembras de *Anopheles gambiae* dentro de un período de 24 horas después de estar expuestas a los mismos.

(Translation of a review by Louise Goode, National Institute of Health, U. S. Public Health Service, Bethesda, Md.)

THE TRANSMISSION OF *Plasmodium gallinaceum* BY *Aedes (Ochleratatus) lepidus*. W. Lobato Paraense. Memorias do Oswaldo Cruz 42(1): 81-84. February 1945.

Experimental transmission of *Plasmodium gallinaceum* to chicks in the laboratory of the Division of Endemiology has been carried on with *Aedes aegypti* during the past four years; but, because of the yellow fever danger in that part of Brazil, it was thought advisable to seek a substitute vector. Among the many mosquitoes furnished for study were some larvae from rock-holes. These were reared to the adult stage, found to be a new species, and subsequently described as *Aedes lepidus* Cerqueira and Paraense (Mem. Inst. Osw. Cruz 42(1):11-15).

Rearing procedures for the larvae were similar to those for *A. aegypti*, and immature forms were raised with ease. The adults, however, were reluctant to bite, and success in feeding blood-meals was attained only with individuals isolated in Borrel tubes. Even under these conditions, relatively few took blood, with a resulting small egg production. Six generations were reared before the author's absence led to the loss of the colony. Dr. Paraense, however, expressed the intention of procuring more material to continue biological and morphological investigations.

Transmission was effected with two groups of *A. lepidus*. The lots of the first group fed on highly infected chicks and showed 100 per cent infection in 50 samples. The oöcyst count was low, the highest being only 56. The second group fed on moderately infected chicks; 28 out of 50 mosquitoes dissected were positive. Transmission to chicks was accomplished through the bites of infected mosquitoes and by subcutaneous inoculation of a trituration of infected salivary glands. All chicks exposed were infected, and the course of the infection was similar to that transmitted by *A. aegypti*.—H. L. T.

14092

THE MOSQUITOES OF JAPAN AND THEIR IMPORTANCE. Tsai-Yu Hsiao and Richard M. Bohart. NAVMED 1095, Bureau of Medicine and Surgery, Navy Dept. Washington, D. C. 44 pp., 27 illus., 58 refs.

Entomologists concerned with taxonomic problems of Oriental mosquitoes will welcome this review of the mosquitoes of the main Japanese Islands and the Bonin Islands. The original literature on the Japanese mosquitoes to a large extent has been unavailable to those unfamiliar with the Japanese language. This paper by Hsiao and Bohart summarizes for the English speaking entomologists the important knowledge that is available regarding the mosquitoes of this region.

Keys are presented to the adult females and fourth stage larvae. The authors were able to examine 35 of the 44 Japanese species; information concerning the remaining species was obtained from the literature. Following the keys, the species are listed, with notes on taxonomy, distribution, biology, and relation to disease. *Anopheles sinensis* Wiedemann is considered to be a species instead of a subspecies of *hyrcanus*. Evidence is presented which indicates that *Anopheles edwardsi* Yamada, 1924, is a synonym of *A. koreicus* Yamada and Watanabe, 1918, or at most a variety of this species. *A. edwardsi* is thought to be a cold water form.

The distribution and incidence of infection of the four mosquito-borne diseases of Japan are given, as well as the evidence incriminating the vector species. Filariasis is especially prevalent in the southernmost islands and the Ryukyus. The authors refer to Yamada's conclusions that *Aedes togoi, Culex pipiens pallens, C. vagans,* and *C. whitmorei* are especially susceptible to infection, and that *C. sinensis, C. tritaeniorhynchus* and *Anopheles sinensis* are less so. Japanese "B" encephalitis is widespread in Japan, with epidemics usually occurring during hot summer weather. Japanese workers have shown that *Culex pipiens pallens, C. tritaeniorhynchus,* and *Aedes togoi* can be infected, and the virus is even said to be capable of passing from generation to generation in *C. pipiens pallens*. Malaria is not a serious problem in Japan, although it is more common in the southern Ryukyus. The vector is *Anopheles sinensis*. Dengue is transmitted by *Aedes aegypti* and *A. albopictus* in the Japanese Islands. *A. aegypti* has not been found on the main islands, and here the disease appears to be carried by *A. albopictus*.

The authors refer to three cases of yellow fever which had been reported from Japan, but point out that they were probably not indigenous.

(Lloyd E. Rozeboom, Dept. of Parasitology, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.)

THE MOSQUITOES OF JAPAN AND THEIR MEDICAL IMPORTANCE. (LOS MOSQUITOS DEL JAPÓN Y SU IMPORTANCIA MÉDICA.) Por Tsai-Yu Hsiao y Richard M. Bohart. NAVMED 1095, Bureau of Medicine and Surgery, Navy Department, Washington, D. C., 44 pp., 27 illus., 58 refs.

Los entomólogos que se interesan en los problemas taxonómicos de los mosquitos del Lejano Oriente recibirán con agrado este estudio sobre los mosquitos en las principales islas del Japón y en las islas Bonín. En el original, gran parte de la literatura sobre los mosquitos japo-