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-

neses ha sido inaccessible a cuantos no dominaban el idioma japonés. Este estudio por Hsiao y Bohart sintetiza en inglés para el uso de los entomólogos los importantes conocimientos disponibles sobre los mosquitos de estas regiones.

Presentan claves a las hembras adultas y a las larvas de la cuarta etapa. Los autores lograron examinar 35 de las 44 especies japonesas, tomándose de la literatura los datos referentes a las demás especies. A continuación de las claves, se da una lista de las especies, con anotaciones sobre su taxonomía, difusión, biología y relación a las enfermedades. El *Anopheles sinensis* Wiedemann lo consideran como una especie en lugar de mera subespecie del *hyracanus*. Se presentan indicaciones de que el *Anopheles edwardsi* Yamada, 1924, es un sinónimo del *A. koreicus* Yamada y Watanabe, 1918, o cuando más, una variedad de esta especie. Se cree que el *A. edwardsi* es una variedad que habita las regiones de las aguas frías.

Se presentan la difusión y la incidencia de infección de las cuatro enfermedades transmitidas por mosquitos en el Japón, como también los datos incriminatorios de las especies vectoras. La filariasis predomina sobre todo en las islas más meridionales y en las islas Riu-Kiu. Los autores se refieren a las conclusiones de Yamada al efecto de que los *Aëdes togoi, Culex pipiens pallens, C. vagans* y *C. whitmorei* son sumamente susceptibles a la infección, mientras que los *C. sinensis, C. tritaeniorhynchus* y *Anopheles sinensis* lo son en menor grado.

La encefalitis "B" japonesa se ha difundido por todo el Japón, con epidemias que ocurren generalmente durante el tiempo cálido del verano. Investigadores japoneses han demostrado que los *Culex pipiens pallens, C. tritaeniorhynchus* y *Aëdes togoi* son susceptibles a la infección, y hasta se dice que en el *C. pipiens pallens* el virus es capaz de pasar de generación en generación.

El paludismo no constituye un problema serio en el Japón, aunque es más común en la parte sur de las islas Riu-Kiu. El vector es el *Anopheles sinensis*.

El dengue es transmitido por los *Aëdes aegypti* y *A. albopictus* en las islas japonesas. No se ha podido encontrar el *A. aegypti* en las islas principales, en las cuales el transmisor de la enfermedad parece ser el *A. albopictus*.

Los autores hacen mención de tres casos de fiebre amarilla que habían sido denunciados en el Japón, pero señalan que éstos probablemente no sean autóctonas.

(Translation of a review by Lloyd E. Rozeboom, Johns Hopkins University.)

12724

WINTER SURVIVAL OF *Aedes Aegypti* (L.) IN HOUSTON, TEX. Stephen P. Hatchett, United States Public Health, Service Reports 61(34): 1234–1244, 1946.

The study was inaugurated in order to learn the winter habits of *Aedes aegypti* (L.) in an area where the winter weather consists of warm days alternating with cold ones. The winter of 1944–45, during which the investigations were conducted, was an unusually mild one with only one day of freezing weather and a minimum temperature of 30° F. Approximately 10,000 eggs from laboratory-reared females were deposited on the sides of containers, on the water surface and on filter paper, and placed outdoors under various conditions during the period of study.

A 43.5 per cent hatch resulted from the group of eggs which was kept immersed throughout the winter. In a second group where the eggs were attached to the inner surface of the containers and water was supplied only by normal rainfall, the hatch was 28.4 per cent. In a third group the eggs were allowed to incubate 72 hours and then kept dry for several months. In this group a 21.4 per cent hatch was obtained. In all three groups the hatch was lower in fully exposed containers than in ones in partially protected areas. The number of eggs hatching at any one time was markedly affected by temperature. When the mean temperature was 70° F. or above, there was an acceleration in the hatching rate. Few eggs hatched when the temperature dropped below 50° F. A small number of eggs hatched 48 hours after being placed outdoors, while some did not hatch until 90 to 95 days of immersion had elapsed. The mean period of immersion before hatching was about 32 days. The period between hatching and emergence of adults ranged from 7 to 59 days, with most specimens taking 2 to 3 weeks. Larvae which had just hatched and mature larvae about to pupate, were particularly susceptible to low temperatures. Larvae were better able to survive cold weather where there was a layer of organic matter on the bottom of the container. In general, temperature had little effect on the duration of the pupal period which averaged about four days. During the entire season about half of the larvae under observation became adults. The majority of adults that emerged prior to February 15 died soon after emergence while most of the females appearing after this date lived at least long enough to mate, feed and oviposit.

A series of experiments was also performed to learn the effects of artificial cold on *A. aegypti* eggs. It was found that eggs that had been continuously wet since time of deposition, did not survive artificial cold of 26° F. when it lasted 24 hours or longer. However, 10 per cent of the eggs hatched that previously had been dry and were then immersed in cold water and frozen at this temperature for 24 hours. Approximately half of all eggs hatched that were previously exposed to artificial cold of 34° F. for 24 hours. (Ralph C. Barnes, S. A. Sanitarian (R), Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga.)