REVIEWS AND ABSTRACTS


A New York City cardiologist, finding himself unable to answer a patient’s questions about malaria, consulted the libraries of the Academy of Medicine and of the Surgeon General. He became so interested that he continued to delve into malaria literature for a period of some two and a half years. Then another patient, a book publisher, encouraged the preparation of a manuscript and this has become the book under review—an excellent informal sketch of malaria which should prove attractive not only to laymen but to physicians and also to those specializing in any branch of the subject. The author’s style is clear and effective and his account, with a few exceptions, is accurate and well founded. There are no illustrations, but there is a short bibliography and a brief index. The book is well edited, printed, and bound.

The author traces some of the known or presumed effects of malaria on the course of history, from the fatal attack suffered by Alexander the Great in 323 B.C. to the control of malaria in the South Pacific Theater in World War II (under the exceptionally capable direction of Captain J. J. Supercz, USN, who commanded and integrated both Army and Navy units and whose name might well have been mentioned).

The Laveran, Manson, Ross, Grassi, Watson, and Gorgas stories are all included and there are several contributions dealing with cinchona, quinine, and the newer synthetics. Gamelan eradication from Brazil is described (but not the similar project in Egypt) and there are brief accounts of DDT, repellents, arts and other malaria control agents. Finally, there are short chapters on therapeutical malaria and on “Unsolved Problems.”

Dr. Warshaw has obviously given painstaking care to a study of his references and he has produced a very good book. But an author not actively acquainted with his subject may sometimes wonder why the nature and this or that accounts for the totally erroneous picture on page 6 of the present status of malaria in the United States. The author estimates “that throughout the country there is an average of 4,000,000 cases every year.” As a matter of fact, it is doubtful if there were 4,000 indigenous cases of malaria in all the continental U.S.A. in either 1948 or 1949. The situation has changed dramatically in the past 25 years and the author might well have given much attention to this aspect of the malaria story. There is scanty mention of the outstanding malaria control work of the USPHS, in cooperation with state and county health departments, now culminating in the drive of the Communicable Disease Center which aims to eradicate malaria within the next few years as an endemic disease in the U.S.A.

No longer are the current vector eradication projects in Cyprus, Sicily, and Mauritania and the outstanding national malaria control programs of Venezuela and Italy. On page 5, the author refers to “almost universal infection with malaria” in the Roman Campaigns, yet the fact is that malaria has been completely defeated in that area. Thanks to a program of the Allied Military Government in 1944-1945, UNRRA in 1945-1947, and of the Italian Government in 1948 and 1949, malaria is now rare both in the Roman Campagna and the Pontine Marshes, classical homes of the “Marsh Dragon.”

Minor criticism may be directed at the reiteration of Campbell’s thoroughly discredited “bar hotel” (pp. 133-134), the interchangeable use of “larvicide” (p. 143) and “larvicidal” (p. 299), “chloroquinamide” for chloroquamide (p. 284): “me- thacrine” for mepracrine (p. 267), and the implication that DDT kills flies “instantly” (p. 101).

Incidentally, the author makes the interesting statement (p. 307) that during World War II the German High Command sent a “malariaologist” to the Pontine Marsh area to give an opinion “as to how the flooding could be done with the least damage from the malaria standpoint.” In the reviewer’s opinion (based on experience and observation during active service in the area in 1944) the word should be “most,” not “least.” These criticisms should not be given too much weight because the text as a whole is excellent and is remarkably free from mistakes. The reviewer heartily recommends this book as an unusually good account of the story of malaria—“how it has influenced man through the ages and how our present knowledge of it was acquired” (p. 327).—Paul H. Russell, Rockefeller Foundation, New York City.

REPORT ON THE THIRD SESSION, EXPERT COMMITTEE ON MALARIA, HELD 10-17 AUGUST, PALAIS DES-NATIONS, GENEVA, WORLD HEALTH ORGANIZATION, UNITED NATIONS, 47 pp. Processed, Aug. 19, 1949. Members of the Expert Committee on Malaria in attendance at this session were Alfred of Pakistan, Covel of the United Kingdom, Gabaldon of Venezuela, Russell of USA, Singh of India, Swelgenrebel of Holland, Vitucci of France and Wilson of Tunisia, with Pampena of WHO as secretary.

The report outlines the origin of the advisory committee to the WHO and the actions taken to date. It then deals briefly but forcefully with the problem of malaria in underdeveloped areas of the world, pointing out “while each year malaria in one area after another is retreating drastically as a result of the effective use of such new insecticides as DDT, yet the disease still has high
incidence in large areas, causing hundreds of
millions of cases and millions of deaths. Malaria
still holds back, or makes impossible, food pro-
duction in underdeveloped areas; it still inter-
teres seriously with industrial and agricultural
activities in much of the tropics and subtropics;
and it still takes a high toll of victims in infancy
and early childhood.” And continuing, “the com-
mmittee’s first and second ses-
sions stressed the fact that by virtue of insecticides
developed since 1926 it is now possible to
control malaria, accounting in some
cases to actual eradication, formerly unattainable.
In the past year, numerous additional ex-
amples of the successful application of residual
insecticides have abundantly confirmed this fact.
But the great need for effective governmental
antimalarial organizations and for overcoming
the critical shortages of trained personnel, remains
almost unchanged.”

The situation with reference to antimalarial
drugs is reviewed at length with an appraisal of
the value of quinine, napierine, chloroquine and
other 4-aminopyrimidines, proguanil, pamaquin
and other 4-aminopyrimidines in the treatment
and prophylaxis of malaria, with usual dosages.
Procedures are advised for obtaining further ac-
curate information on chemotherapy agents
through field and hospital trials.

In response to an earlier recommendation by
this committee an expert committee on insecticides
was set up to deal with various insecticide prob-
lems. The reports under review give attention to
means of preventing the importation of Anopheles
and deals at length with the relative merits
of residual spraying and species eradication. It is
difficult to understand why the committee should
consider these methods to be contrasted since
in species eradication residual spraying would
appear to be one of the most important pro-
cedures.

The cooperation of the United Nations Inter-
national Children’s Emergency Fund and the
Food and Agriculture Organization in antimalarial
work is recognized and suggestions on organi-
zational and procedural plans are presented in-
cluding the training of malaria teams and the
choosing of fields of operation.

In its recommendations to governments the
committee set forth an excellent and well-balanced
program looking toward the accomplishment of
one of the ultimate objectives of WHO—the
eradication of malaria. In these recommendations
it is stated that “while therapeutic and prophylac-
tic antimalarial drugs should be available to those
who require them (regardless of ability to pay
for such treatment), it must be emphasized
that in numerous rural areas throughout the
world the use of residual sprays has in two
or three seasons made mass chemotherapy and
mass chemoprophylaxis of malaria unnecessary
and obsolete.”

In its summary a recommendation is
placed on residual spraying with insecticides,
and larvicidal control is referred to as follows: “The
Committee recommends that larval control should
be abandoned in rural areas where residual insecti-
cides are found to be effective and are extensively
applied.” In the writer’s opinion this is too
strong a statement even though it may be gen-
erally true.

Despite the great emphasis put on the value of
treatment measures in combating malaria it
is noted that not a single entomologist has a place
among the Expert Committee membership. It is
the opinion of the writer that the committee has
not stressed sufficiently the need for continued
research on the development of additional cheap,
safe and effective insecticides and methods
for obtaining maximum efficiency in their
use. The need for intensifying entomological
and chemical research in the field is emphasized by
the fact that insects, including mosquitoes, tend
to develop resistance to insecticides and we do not
know when substitutes for a given malarial-control
insecticide will be required.—F. C. Bishop.

Contributions to the Knowledge of the
Danish and Peninsular Mosquitoes. Collin
Escula. I. By Lief B. Næsgaard, Norsk Entom-
ologisk Tidsskrift, pp. 148, fig., 13 plates, 1 fold-
ing map. 1938. In English. Available from
12, Oslo, Norway, Price: Norway Kr. 5.00
(U. S. $1.00). This is an exceedingly com-
prehensive taxonomic and biological study of
the Culicin mosquitoes species in Denmark, Norway,
Sweden, and Finland. Included within the volume
are the following: A discussion of the morphology
of all the stages of the mosquito, general notes on
the life histories of the included species, a classi-
fication of the Culicin of northern Europe, a
history of previous investigations, keys and de-
scriptions of the species, the distribution (also
shown on outline maps) and biology of each,
and an important discussion of the zoogeography
of the culicine species of northern Europe and
Asia. Figures of the male genitalia and larva
are included for each species. Extensive quo-
tations from the literature are used throughout and
all of the involved languages except German have
been translated into English. This book will
have much value and interest for the North
American workers because of the Holartic dis-
tribution of much of the included fauna. Of the
two species treated, 10 are definitely known to
occur within the Nearctic region.

The author brings to this very considerable
task the experience of 18 years of field mosquito
investigations in Norway. In addition he has had
the opportunity of studying most of the principal
mosquito collections of northern Europe.

As a compilation of the enormous literature
and as a revision of existing collections, this book
admirably serves as a basic foundation for the
detailed studies that are still so badly needed for most of the northern climates. From the standpoint of the taxonomist it is to be regretted that larval-pupal skin associated adults were not prepared throughout the years of work since it is largely such material that will be needed for the problem of determining whether or not inaspecific populations and races occur. Also the lack of such material made impossible the acquiring of much new data on the separation of the females of the very important sylvine subgenus Diclinotus. However, the use of Peus’ key to the females, with its employment of the pleural scale patches, in naming the material studied has resulted in a valuable confirmation of the value of these characters.

The author is to be congratulated for the accomplishment of such a difficult and important task.—Kenneth L. Knight, Naval Medical Research Institute, Bethesda 14, Maryland.

Additional comments from a review received later than that of Dr. Knight: . . . Of special interest is a chapter reviewing the accounts of explorers and others of their experiences with the very serious mosquito pest in the Far North.

The distribution of the species is given for other parts of the world as well as for Denmark and Peninsula. One list of the species recorded in Scandinavia indicates which of them also occur in Siberia and North America.

The monograph is profusely illustrated, most of the figures depicting points in the anatomy of larvae and adults of taxonomic significance. There are also a number of maps showing the distribution of many of the species, and several plates of photographs showing typical breeding places.

Dr. Natvig's book is an important and valuable contribution to a knowledge of the northern mosquitoes, and should be in the possession of all who are interested in the study of these serious pest insects. The author proposes shortly to take up work on a monograph on the Anophelini of the same region.—C. R. Twinn.

Un caso de eliminación local de Anopheles darlingi por obras de ingeniería sanitaria. By A. L. Berth, Jour. Inter-American Assoc. S. W. Eng. 5(2):119-121, 1948. In Spanish, with additional 3 page summary in English. In this engineering publication, it seems appropriate to describe how drain and fill methods were successfully applied to control A. darlingi within and around the twin towns of Acarigua-Arauca (See Fig. 1, Page 194). In these towns, A. darlingi was the only malaria vector among the 15 anopheline species discovered, and the engineering methods mentioned above were the only control measures applied. We know of local elimination of A. darlingi by such means.

In order to obtain some idea of the malaria picture in Acarigua before the project, communications dating from 1937 and sent by the original senior malaria inspector and the senior engineer were consulted. These records indicated there were 81 malaria cases within the town in 1937 when the project started. Table 1 (see page 193) lists breeding places existing in 1939, including those of A. darlingi. This table as well as Fig. 1 points to the ponds being the chief problem because of their number, extentiveness, the presence of A. darlingi, and cost of their elimination. Therefore, first steps were directed towards their drainage. The control project was initiated in 1939.

Since the population of Acarigua-Arauca is 12,000 the per capita protective measures taken, broken down in terms of volume of the total work performed, were 12 cu. m. of excavation, 7 cu. m. of fill, and 2 linear meters of lined ditch. Cost per capita was $6.42, higher than in any other town where malaria control has been accomplished by the same methods. The cheapest per capita cost was registered in Guanuma (Yaracuy). Other local costs range from $3.50 to $5.12. An area of 13,750 acres was drained at a cost of $661,000,000, or at an average figure of $48.90 per acre for eradication of A. darlingi.

The application of the species sanitation principle by which measures were mainly directed against the troublesome mosquito A. darlingi permitted the preservation of the lakes El Veladero and Los Muetros, which have much importance for their wild life conservation, tourist and historical values. The Los Muetros pond was the Arauca battle field during the War of Independence. Restitution of control measures to the vector species also permitted saving the expense of draining these ponds.

At Acarigua-Arauca the only mosquito control measures applied were drainage, fill and scraping activities. Insecticides were never used. The results pointed to the efficiency of such a program in the permanent protection of localities. From Table 2 (see page 167) 2 striking comparisons can be made between malaria indices before 1940 and those for 1947. Today Acarigua is a prosperous industrial center. The reclamation of 1,000 acres for agricultural and industrial developments is an added benefit. Instead of 2 or 3 sawmills there are over 10 in operation today.

Applied engineering practices in malaria control pay for themselves in reducing the mortality rate, saving man-days lost due to disease, and above all, in increasing the value of land through drainage and fill operations, and roads, bridges, culverts and other structures built.—Excerpts from author's English summary.

Colonización en el laboratorio de Anophelles attexti Hoffman. By W. G. Dowyn, E. Boclas, and A. Azurmendi. Rev. del Inst. de Salud. y Enferm. Trop. 9(3):1-2 pp. Sept. 1945. Mexico, D. F. In Spanish. This report is based on a colony of Anopheles attexti Hoffman 1945, currently maintained in a laboratory in the vicinity of Xochimilco, Mexico. At least 11 generations have been raised since the colony was
started from eggs deposited by locally-caught females.

The larvae were reared in white enamelled pans, 18 x 40 cms. A thin layer of algae and water (not over 1 cm. deep) covered the bottom of the pans. Crushed dog food was fed twice daily, and the algae inhibited excessive fungus growth. The water in the pans was not changed during the larval period. Pupae were removed daily.

Adults were kept in screen-wire cages 60 cm. on a side (or 3 x 3 x 4 feet). They had constant access to sugar or honey solutions, and were offered a blood-meal daily. At first, only human blood was acceptable, but later, guinea pig's could be used if the surface for feeding were first shaved and moistened. For oviposition, the adults preferred open water to wet filter paper.

The temperature range was 22° to 26° C. (approximately 76° to 80° F.) and relative humidity 75% to 95%. The entire life-cycle required 26 to 30 days—egg stage, 3 to 4 days; larvae, 17 to 28 days; pupae, 2 to 3 days; and preoviposition, 5 days.—H. L. T.

AN EPEDEMA OF MALARIA IN THE KENYA HIGHLANDS TRANSMITTED BY ANOPHELES FUNESTUS. By R. B. Hirsch and I. O. Harper. Journ. Trop. Med. and Hyg. 52(1):185-189, 1944. (1) An epidemic of malaria is described which occurred in the Kericho District of Kenya Colony, and was thought to have been transmitted by A. funestus. (2) During the epidemic A. funestus was the predominant anopheline with an infectivity rate of 2.5 per cent. A few A. gambiae were also taken but all were negative for sporozoites. (3) The parasite rate of 300 natives examined in May towards the end of the epidemic was 26 per cent; by August it had dropped to 14.5 per cent. The predominant parasite was P. falciparum and only a few infections with P. malariae and ovum were seen. The crescent rate after the epidemic was 3.6 per cent which is low for an epidemic area. —Authors' summary.

THE ANOPHELINE MOSQUITOES OF TAIWAN (FORMOSA). CHING. By C. Y. Chow. Quarterly Journal of the Taiwan Museum. Vol. II (1):1-8, 1940. Topographical variation of Taiwan, an island of 35,961 sq. km., of which 57.5% is lowland; 21.5% hilly; and 21.0% mountainous, supply habitats for sixteen species of Anopheles. Distribution of the species is summarized by "Horn" (Prefectures). Identification keys to both adult females and larvae are presented with notes on the morphological variations and biology of each species. A. hyrcanus inermis Wied, 1828 is considered to be the most predominant species of the island and is probably the chief vector of malaria in the plains, while A. minima Theob., 1903 is probably the chief malaria vector in the hilly regions. The author has prepared an informative paper in an interesting and concise style.—Ernestine B. Thurman, Bureau of Vector Control, Berkeley, California.