SCIENTIFIC BOOKS

The Epidemiology and Control of Malaria in Palestine. By ISRAEL J. KLIGLER, director, department of hygiene, Hebrew University, Jerusalem. The University of Chicago Press, 1930.

DR. ISRAEL J. KLIGLER, formerly of the American Museum of Natural History, later of the Rockefeller Institute and since 1921 working in Palestine, first as director of laboratories of the Hadassah Medical Unit, later with the Malaria Research Unit and since 1926 professor of hygiene in the Hebrew University, Jerusalem, has written an excellent book.

He thinks that the static condition of Palestine during the last several centuries is due almost entirely to malaria. While some antimalaria work was done in Egypt before the World War, nothing seems to have been done in Palestine until after the close of the great struggle. In 1921, however, Dr. Kligler took up such a study under the auspices of the Hadassah Medical Organization, then the American Zionist Medical Unit. The present book gives the results of the work since that time. Dr. Kligler is a broad medical investigator, but he is not a trained entomologist. Fortunately, in 1923 Dr. P. A. Buxton held the position of medical entomologist to the British government of Palestine and submitted a report published in the *Bulletin of Entomological Research* for March, 1924, the bulk of which was devoted to entomological matters of medical or veterinary interest. I imagine that the mosquito material collected by Dr. Buxton must have passed through the hands of the entirely competent culicidologist, F. W. Edwards, of the British Museum of Natural History. Therefore Dr. Kligler in his work is without doubt sound when he refers to the different species of Anopheles by name. He considers eight species of Anopheles, and his keys are based upon those of Buxton. The book is well planned and well illustrated, and the author shows a thorough familiarity with recently published work in different parts of the world. His chapters include: I. Topography and Climate; II. Social, Economic and Health Conditions; III. Actual and Potential Breeding Places of Anopheline Mosquitoes; IV. Bionomics of the Anopheles of Palestine; V. Incidence and Etiology of Malaria; VI. General Considerations of the Epidemiology; VII. Methods of Control; VIII. Results of Control Work; IX. Experiments with Various Control Measures in Districts where Antilarval Control was Unsuccessful. There is an appendix on typical drainage work of a permanent character. The book is therefore the result of a broad study, and all important facts have been considered carefully and at some length.

The methods of control are in the main those that have been used in other parts of the world, but there have been in Dr. Kligler's work some interesting variations. The brothers Sergent in Algeria were probably the first to suggest as a mechanical method the frequent changing of irrigating streams from one canal to another, bringing about the drying up of anopheline larvae. Dr. Kligler found it simple, with the breeding places caused by springs, to deflect the flow in a different direction from the natural course every five or six days, or, by damming the stream, storing the water behind the dam for two or more days and then releasing it, excellent results could be reached. Several variations of this general plan were tried with good effect. He insists, however, upon thorough drying, since he has found that the older larvae may remain alive for a considerable time in moist earth. Variations in the oiling method are described, and these experiments showed that the addition of 1 per cent. by volume of castor oil to a kerosene film is very advisable. Paris green was used in the proportion of one part to one hundred parts of fine sifted road dust or ashes.

The native cyprinodont fish are not effective as destroyers of larvae. They are not top-feeders. Imported Gambusias, however, were much more satisfactory, and they now occur in fairly large numbers in the open drainage canals and pools.

The volume contains much original and useful matter and should be very useful to antimalaria workers everywhere.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

ELECTRODYNAMIC RECORDER

UNDER ordinary circumstances the kymograph upon which the responses of a stimulated muscle are recorded must be placed at no great distance from the muscle. With the device herein described, an attempt has been made to provide a means whereby kymograph records can be made at any convenient distance from the stimulated tissue.

The apparatus (Fig. 1.) is actuated like the direct, kymograph recording equipment now in use, *i.e.*, the muscle is hooked to a thread which, passing over a

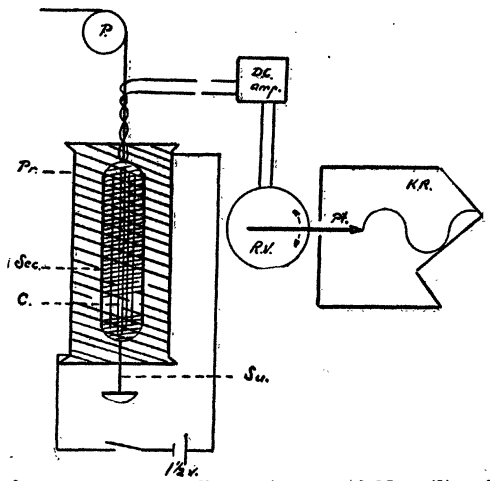

FIG. 1. *P.*, pulley; *Pr.*, primary (field coil); *Sec.*, secondary (moving coil); *C.*, soft iron core; *Su.*, weight support, or spring substitute; *D.C. amp.*, direct current amplifier; *R.V.*, recording voltmeter; *Pt.*, pointer; *K.R.*, kymograph record.

pulley, raises and lowers a specified weight or pulls against a spring of given substitute-weight. In this case, instead of the thread activating a pointer, a soft iron core around which is wound many turns of fine wire is raised and lowered in the magnetic field of a helix of heavy wire through which a small current passes. The core together with its secondary winding cuts the magnetic lines of force in the field, and a current is set up which operates a dead-beat, zero-center, recording voltmeter equipped with a light pointer and so adjusted as to record on a moving kymograph drum. A one or two-step D. C. amplifier in the secondary circuit provides a means of controlling the amplitude of the pointer-arc.

By varying the length of the wires between the movable iron core and the voltmeter it is possible to make records at any convenient distance from the research laboratory in which the activated muscle may be placed, *e.g.*, records may be made before a large class in the lecture room.

A detailed description of the electrodynamic recorder has been omitted because it is assumed that laboratory research means the fitting of fundamental apparatus to specific uses. (For certain uses, the recorder may be wired in such a manner that the movable core carries the energizing current, while the outer helix becomes a part of the secondary circuit.) It is felt, however, that the extreme sensitivity of the device, the simplicity of construction and the advantage of remote recording will recommend the apparatus to experimenters in physiology and psychology.

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A SIMPLE AQUEOUS ELECTRODE

IN threshold studies of sensitivity to high frequency E.M.F. stimulation the writer has devised a simple aqueous electrode which has proved very satisfactory in laboratory experimentation.

The complete electrode, schematized in Fig. 1, is a modified Mandler diatomaceous bacteriological candle

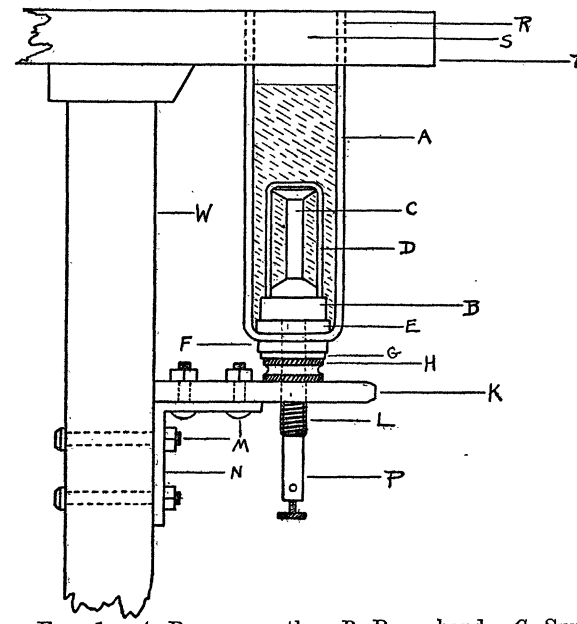

FIG. 1. *A.* Pyrex mantle. *B.* Base band. *C.* Supporting electrode. *D.* Inverted glass tube serving as finger rest. *E. F.* Soft rubber washers. *G.* Fiber washer. *H.* Brass lock-nut. *K.* Wooden base supported by right-angle iron. *L.* Threaded nipple. *M.N.* Fastening bolts. *P.* Binding post. *R.* Mantle protruding through writing ledge, *T.* *S.* Hole in writing ledge through which subject inserts finger. *W.* Fore leg of chair.

enclosed in a pyrex mantle. After the filter is removed, the base band, the concave drainage and the nipple are sealed, thus rendering the mantle liquid tight. By means of interposed cushion-rubber washers, the nipple lock-nut fastens the base band securely against the bottom of the pyrex mantle. A brass binding post is soldered to the lower end of the sealed nipple.

In place of the diatomaceous candle, a T-electrode is substituted which supports an inverted glass tube acting as finger rest. Filtered water is used as the liquid conductor. The electrode is not reliable when used in connection with psychogalvanic direct current circuits. It is quite effective, however, when used in connection with an inductorium as source. Since alternating current of relatively high frequency is employed as the stimulus, danger of polarization is eliminated.

The complete electrode is supported at the lock-nut