thousands of lethal doses, a fact which proves the efficacy of the vaccine. For three months the Laboratories of Veterinary Bacteriology and Parasitology have been supplying the Ministry of Agriculture and Animal Husbandry of Venezuela weekly with considerable quantities of this autochthonous vaccine in order to combat the disease in rural areas.

(8) To determine the immunobiological characteristics of encephalomyelitic virus isolated in this country, the following has been employed:

(a) U. S. eastern strain virus;
(b) U. S. western strain virus;
(c) vaccine made in this country from the virus under observation (autochthonous);
(d) bivalent vaccine made from U. S. eastern and western strain viruses;
(e) encephalomyelitic serum made from autochthonous virus;
(f) U. S. bivalent encephalomyelitic serum made from both eastern and western strain viruses;
(g) U. S. monovalent encephalomyelitis serum made from western strain virus;
(h) Argentine encephalomyelitic serum made from Argentine virus.

From these comparative researches, carried out both *in vivo* and *in vitro*, it is to be inferred: (1) That the Venezuelan encephalomyelitic virus is wholly different both from the American western virus and from the Argentine virus, with which it has no immunobiological connection. (2) That it also differs immunobiologically from the American eastern strain virus, with which, however, it has some connection on account of its high virulence, pathogenicity, etc. (3) That the immunizing power of the protective vaccine made from autochthonous virus surpasses by far that of the American bivalent vaccine, prepared from both eastern and western viruses. (4) That the Venezuelan encephalomyelitic serum neutralizes the corresponding specific virus, not only *in vivo*, but also *in vitro*.

(9) As a result of these studies, the causative agent of infectious equine encephalomyelitis has been isolated for the first time in Venezuela. It is assumed that the agent in question constitutes a *sui generis* strain, different from the encephalomyelitis viruses described up to now.

(10) Venezuela should be given full credit for being perhaps the first South American country where the production of encephalomyelitic vaccine from embryo-cultured virus has been undertaken.

(11) The writers are about to finish a complete report on these researches which will be published in due course.[1]

VLADIMIR KUBES
FRANCISCO A. RÍOS
LABORATORIES OF VETERINARY BACTERIOLOGY AND PARASITOLOGY, MINISTRY OF AGRICULTURE AND ANIMAL HUSBANDRY OF VENEZUELA, CARACAS

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A METHOD FOR STUDYING LIVING MOSQUITO LARVAE AND OTHER SMALL AQUATIC INVERTEBRATES

A VERY real problem in attempting to study small, living, aquatic animals under the microscope is to keep them in the field of vision without continual change of focus. The usual practices of entangling the animal in cotton threads or of treating the preparation with various drugs are generally undesirable, since the question naturally arises as to whether one is still dealing with a "normal" animal. There are, likewise, numerous objections to imprisoning the animal beneath a coverslip, because of the possible crushing of the preparation and the equally serious matter of cutting off its oxygen supply.

After numerous attempts to remedy this situation, the following very simple solution was found: A piece of thin copper wire (about No. 22 B. and S. gauge), six inches long, was bent at one end into a small circle one quarter inch in diameter, the ring of wire thus formed being made secure by several turns of the end of the wire around the stem of the loop. The other end of the wire was twisted around a small, square block of lead, such as is commonly used by histologists. The lead served as support for the wire pedicel and ring, as shown in Fig. 1.

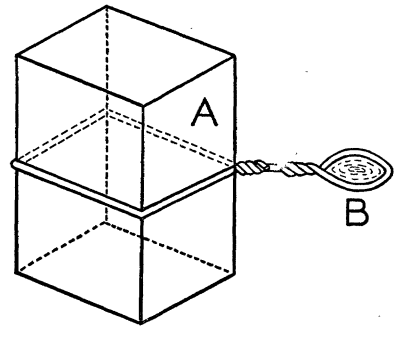

FIG. 1. Device for studying small, living, aquatic animals. *A*, lead block; *B*, wire loop with inclosed film of water.

[1] An already studied stock culture of our virus, with its virulence increased by consecutive passages through susceptible animals, has been supplied, for the sake of cooperation, to Lederle Laboratories, Pearl River, N. Y. C. E. Beck and Ralph W. G. Wyckoff, of these laboratories, published a communication on the subject in SCIENCE, 88: 2292, 530.

Now to use the device the wire ring is simply dipped into water momentarily and a film of liquid imprisoned across the ring. The animal is then placed in this film and is automatically retained therein by the action of the surface tension on the two sides. The lead weight serves to hold the ring on the stage of the compound or dissecting microscope in any position desired.

The device has the advantage of confining the animal to a small area and, essentially, to a single plane so as to eliminate the necessity of continual change of focus. The animals so far studied by this method show surprisingly little tendency to struggle, but, to the contrary, go about their feeding and regular body movements within the fluid layer in what appears to be a normal manner. Furthermore, the large area for gaseous diffusion eliminates any respiratory difficulties.

The method has proved of exceptional value in studying mosquito larvae and their relations to the surface, but, presumably, is to be recommended for vital preparations of other aquatic invertebrates. The films last for considerable lengths of time, depending, of course, upon the relative humidity of the laboratory air. A number of them were timed at over an hour. Loss of thickness due to evaporation, however, may be readily remedied from time to time by addition of a drop of water to the film without disturbing the preparation.

The film may be varied in thickness to accommodate animals of different sizes by adding more or less water with an eye-dropper or by using various sizes of wire in the loop.

A further advantage is the ability thus offered to study the ventral side of the animal by simply turning the lead block over on its other end.

CARROLL M. WILLIAMS

HARVARD UNIVERSITY

A PRACTICAL OPERATING STAND

THE operating stand described herewith was especially constructed for use in experimental surgery. The advantages of this type of stand are: (1) Low cost and ease of construction. (2) Interchangeable operating table tops for various sizes of animals. (3) The operating table top may be tilted through 180 degrees. (4) The operating table top may be rotated through 360 degrees. (5) The operating table top may be elevated from 29 inches to 45 inches allowing a sitting or standing operating position. (6) The single column allows maximum leg room and the entire stand occupies little laboratory space.

The entire column (1) is constructed of pipe and pipe rail fittings. A is a 2-inch pipe rail base, B is a piece of 2-inch pipe 20 inches long drilled and tapped at C for the locking bolt, D is a piece of 1½-inch pipe 20 inches long and E is a 1½-inch pipe rail adjustable base. The brace F and H is of strap iron and is attached to the operating table top by means of an awning bracket G.

The operating table top is of the size that will accommodate the animal being studied and is made mainly of wood, held together by strap iron. The cross section (2) shows the manner of construction. A ready means of interchanging table tops is provided by threaded lead sockets in the wood base of the top; thumb screws in these hold the top securely to the column. In use the stand is securely bolted to the floor.

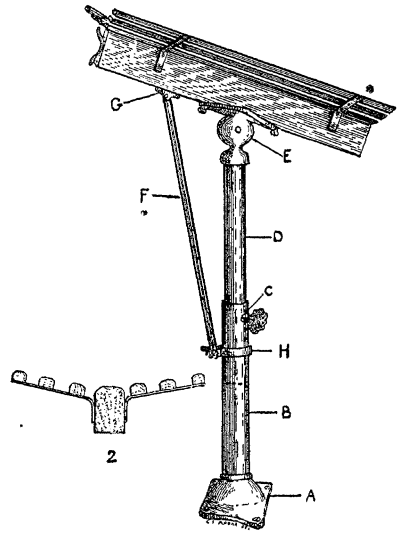

FIG. 1

CHARLES S. APGAR, JR.

CORNELL UNIVERSITY MEDICAL COLLEGE,
NEW YORK, N. Y.

BOOKS RECEIVED

Annual Review of Biochemical and Allied Research in India, Vol. IX, 1938. Pp. 165. Society of Biological Chemists, Bangalore. Rs. 3, or 6 sh.

BALAREW, D. *Der Disperse Bau der Festen Systeme; Allgemeine Theorie der Verunreinigung Fester Systeme.* Pp. vi + 240. 45 figures. Steinkopff, Dresden. RM 8.62.

Bollettino del Centro Volpi di Elettrologia; October, November, December, 1938, XVII, No. 4. English edition. Pp. 124. 7 figures. Volpi Centre of Electrology, Venice. L. 30.

BORING, EDWIN G., HERBERT S. LANGFELD, HARRY P. WELD and others. *Introduction to Psychology.* Pp. xxii + 652. 128 figures. Wiley. $3.00.

BRUNT, DAVID. *Physical and Dynamical Meteorology.* Second edition, revised. Pp. xxiv + 428. 119 figures. Macmillan. $6.75.

COWDRY, E. V., Editor. *Problems of Ageing; Biological and Medical Aspects.* Pp. xxx + 758. 121 figures. Williams and Wilkins. $10.00.

DUBOIS, H. M. *Monographie des Betsileo (Madagascar); Travaux et Mémoires de L'Institut D'Ethnologie, University of Paris, XXXIV.* Pp. xvi + 1510. 191 figures. 10 plates. The Institute, Paris. 275 fr.

GRIAULE, M. *Masques Dogons. Travaux et Mémoires de L'Institut D'Ethnologie, University of Paris, XXXIII.* Pp. viii + 896. 261 figures. 32 plates. The Institute, Paris. 275 fr.