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NATIONAL RESEARCH FELLOWSHIPS IN THE BIOLOGICAL SCIENCES

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NATIONAL research fellowships in the biological sciences were established in 1923, supported by grants from the Rockefeller Foundation and administered, under the auspices of the National Research Council, by a National Fellowship Board in the Biological Sciences. The National Research Fellowships in the physical and biological sciences will be administered in the future by a single National Research Fellowship Board in the Natural Sciences. In view of the merging of the two fellowship boards, one in the biological sciences and one in the physical sciences, it seems appropriate at this time to make a report on certain aspects of the activities of the Fellowship Board in the Biological Sciences.

In the fourteen years from 1923 to 1937 the board administered the expenditure of $1,280,580.74, distributed as follows:

For fellowships:	
Domestic stipends	$ 982,325.25
Foreign stipends	183,165.92
Domestic travel	10,408.59
Foreign travel	31,247.92
Tuition and laboratory fees	4,800.89
Total	**1,211,948.57**
For administration:	
Travel, board members	15,035.01
Travel, applicants	4,072.81
Office expense	49,524.35
Total	**68,632.17**
Grand total	**1,280,580.74**

As may be noted from these figures, the amount devoted to tuition and laboratory fees was small. This is because the fellowships were regarded as a cooperative program between the universities and the National Research Council, in which the universities supplied the place of work and equipment and the council the stipends of the fellows. It is not possible to estimate accurately the value of the services and material supplied in this way by the institutions at which the fel-

hour meters may be used to denote scale indications, or, if run for time T, to specify the average load. Thus may be calculated the location of the projected center of weight at any instant or its average position for time T.

A compound watt oscillograph was developed to expedite the location of successive instantaneous positions of the center of weight. It consists essentially of two slow speed watt units perpendicular to and facing each other. Each is composed of a laminated field made of transformer iron bent into a rectangle with an air gap on one side, and a shuttle wound vibrator. The vibrator and its field are so mounted on an aluminum base that their physical relations remain constant. The field coil consists of two spirals in parallel, excited from the auto-transformer that powers the slotted core transformers and the potential coils of the watt hour meters. Its voltage may be changed to allow for differences in the body weight of subjects. A shuttle is used to increase the inertia of the vibrating system, which thus indicates average, not instantaneous watts. It also increases the torque for the same current and provides a mirror base well out of line of the field, allowing good immersion in oil for damping. A beam of light falling on the mirror of watt unit No. 1 is reflected to the mirror of watt unit No. 2 and thence to a viewing screen or film. The current in the vibrator reacting against the flux due to the field sets up an instantaneous force which tends to rotate the vibrator from its no-current position. Since the field is constant, the vibrators occupy positions dependent upon distances of the secondaries in the slots, and hence, scale loads. Thus the projection of a light on a screen or film may be made to reproduce the oscillations of the center of gravity of a swaying subject. The unique feature of the oscillograph is its ability to compound two rectilinear motions, the resultant spot of light tracing concurrent shifts in the center of gravity occurring in the two cardinal vertical orientation planes.

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A METHOD FOR RAPIDLY EXCYSTING METACERCARIAE

STUDENTS of Trematodes commonly resort to the use of digestive enzymes to induce excystment of metacercariae. By this means the cyst wall may be broken down and the larva freed. This method, however, does not succeed at all times, nor in all forms; and usually requires the control of temperature within rather definite limits for several hours or longer. It is possible by a comparatively simple and rapid technique to dissect away the cyst wall and free undamaged metacercariae from cysts as small as those of Cryptocotyle (length *ca.* 0.35 mm, width *ca.* 0.26 mm).

The points of sewing needles (No. 9 or smaller), driven eye first into small, soft wooden handles, may be ground on a stone to flat cutting blades. At least two such needles are necessary. The cysts to be opened are placed with an appropriate fluid in a watch glass, and rolled onto the surface of a small piece of lens paper or cleansing tissue, either of which will serve as a convenient substratum to prevent rolling of the cyst. The cyst is held with one needle, while an opening in the wall is made with the other. The metacercaria immediately begins to emerge, and in so doing leaves a clear space in the cyst opposite the puncture. By pressing gently on this clear space, while the cyst is still anchored by the needle with which the opening was made, one may free the larva quickly and easily. The actual operation is carried out under an ordinary dissecting microscope and, with practice, should require little more than a minute.

Metacercariae so liberated may be mounted, covered and studied immediately.

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BOOKS RECEIVED

BARRETT, CHARLES. *Koala, the Story of Australia's Native Bear.* Pp. 31. Illustrated. 2/–. *Australia's Entail.* Pp. 205. Illustrated. 6/–. Robertson & Mullens, Melbourne.

DAVID, M. E. *Professor David, the Life of Sir Edgeworth David.* Pp. 320. Illustrated. Longmans, Green. $5.00.

FENTON, CARROLL L. *Life Long Ago, the Story of Fossils.* Pp. x + 287. Illustrated. Reynal and Hitchcock. $3.50.

GROVER, FREDERICK W. *The Pageant of the Heavens.* Pp. xix + 157. Illustrated. Longmans, Green. $3.00.

HOGG, JOHN C. and CHARLES L. BICKEL. *Elementary Experimental Chemistry.* Pp. xvi + 287. Illustrated. Oxford University Press. $2.00.

JEANS, SIR JAMES. *Science and Music.* Pp. x + 258. 64 figures. Macmillan. $2.75.

JOHNSON, FRANCIS R. *Astronomical Thought in Renaissance England.* Pp. xv + 357. 4 figures. Johns Hopkins Press. $3.25.

KEMBLE, EDWIN C. *The Fundamental Principles of Quantum Mechanics with Elementary Applications.* Pp. xviii + 611. 27 figures. McGraw-Hill. $6.00.

KUHLER, OTTO, and ROBERT S. HENRY. *Portraits of the Iron Horse; the American Locomotive in Pictures and Story.* Pp. 80. Illustrated. Rand, McNally. $2.00.

MONK, GEORGE S. *Light; Principles and Experiments.* Pp. xi + 477. Illustrated. McGraw-Hill. $5.00.

PRATT, AMBROSE. *The Call of the Koala.* Pp. 120. Illustrated. Robertson and Mullens, Melbourne. 6/–.

RIES, H. *Economic Geology.* Seventh edition, revised. Pp. vii + 720. 267 figures. Wiley. $5.00.

SCHUCHERT, CHARLES and CARL O. DUNBAR. *Outlines of Historical Geology.* Third edition, revised. Pp. v + 241. 151 figures. Wiley. $2.50.