

be made easily from a piece of copper, with the aid of a soldering iron. A plunger (i) approximately $\frac{1}{8}$ " in diameter, which is inserted through the cap hole, should be of such a length that one end of it rests on the release valve (j) and the other protrudes above the cap (h).

For simplicity of construction, an electric cord could be attached permanently to the bands (f and g), the apparatus being plugged into an electric outlet as needed. We found a permanently attached cord inconvenient, however, because of the interference of the cord during operation.

The apparatus in use in our laboratory plugs into a stand made of acrylic (see Fig. 2) in which are embedded two pairs of contact brackets (A) made of thick brass plate and shaped to fit snugly around the bands (f and g, Fig. 1). Each bracket consists of two halves. One end of each half is attached on a pivot to a small plate (a) which is stationary, and both halves are connected by a small spring (b) a short distance from the plate. The spring ensures a better contact between the brackets and

the bands and also keeps the apparatus in place when it is plugged in. The bracket plates are connected to an electric cord. The cord (c) passes through a metal tube (d), which serves as the stem of the stand, and through the back of the base (f) and is connected to an electric plug. The base is made of plaster of Paris.

The brackets could be embedded between layers of Bakelite or some other insulating material, instead of acrylic.

The pencil is filled with melted paraffin through the free end of the copper tube after removing the cap (h). The capacity of the pencil of these dimensions is about 20 cc.

Before using, the pencil is plugged in for 2 or 3 min, which time is sufficient to melt the paraffin inside. Then, by pressing with the finger on the plunger, a drop is released through the opening (k, Fig. 1). The paraffin remains liquid for approximately 10 min, thus enabling an operator to seal a considerable number of inoculated eggs with a single heating.

Book Reviews

Comparative physiology. Bradley T. Scheer. New York: John Wiley; London: Chapman & Hall, 1948. Pp. x+563. (Illustrated.) \$6.00.

While this useful textbook may be considered as a variation of the general physiology type, it was written from a somewhat different approach. The title emphasizes the fact that the objective is comparative physiology, and the treatment is more on a phylogenetic basis. In order to fulfill the difficult task of distinguishing analogy of function from homology of function, the author considered it necessary "to compare functions in organisms which are reasonably closely related." The chapters in the book, therefore, are divided not according to organ or functional systems but according to phyla. In the treatment of each major phylum as a unit, an attempt is made to trace evolution of function in that unit. In each chapter there is also a concluding summary which discusses the relations of the phylum considered with other phyla. It may be added that the vertebrates receive a good third of the total space devoted to all the major phyla.

Since the comparative method is emphasized throughout the book, the author utilizes the first chapter (56 pp.) for a general statement. This should be particularly helpful to the student. In this chapter are summarized the general physiological processes common to most animals. A good portion of the chapter is devoted to metabolism and nutrition, particularly carbohydrate metabolism. The succeeding chapters are "concerned with the deviations from the picture—and with the elaboration of new processes to meet particular circumstances."

A good deal of the material and fairly extensive references have been brought up to date. An increase in the number of illustrations and an author index would add to the usefulness of the book to the student. In addition to a subject index there is one of species mentioned in the text and an appendix of classification of animals.

This is not a handbook of comparative physiology but a textbook of moderate size. The objective and method of this type of comparative physiology, as the author states, are analogous to the fundamental methods of comparative anatomy. The book should thus be useful for students in zoology and general physiology.

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Astronomy: a textbook for colleges. William Lee Kennon. Boston: Ginn, 1948. Pp. vii+737. (Illustrated.) \$5.50.

With the appearance of this volume, another member has been added to the group of elementary college astronomy textbooks. The author has been professor of physics and astronomy at the University of Mississippi since 1911, and this is the outgrowth of his long teaching experience. The book is characterized mainly by the simple and explicit style in which it is written. It is also extensively illustrated with pictures, astronomical photographs, and drawings. The author emphasizes that he has tried to "preserve the sequence of observation, application, and interpretation." This produces a somewhat disjointed result, because the same subject matter is treated in

more than one place. But the author has spared no effort to maintain the student's interest.

The book is marred by a number of minor errors and defects which should not have been permitted to occur. For example, Fig. 3.6 employs the poor choice of notation, α for altitude and λ for latitude, and then mislabels the complement of α for α . Fig. 16.9 illustrates the diameter of Mars and the orbits of its satellites to scale, but the text states, "diameter of the orbit of Mars." On page 306 the expression for the Fitzgerald contraction contains a + sign instead of a - sign under the radical. On the date of the Siberian meteor shower of 1908, the earth is said to be within 0.03 a.u. of the comet, instead of the orbit of the comet. Such blunders are confusing to the beginning student, who has not yet enough background to be discerning.

No mention is made of the splendid pioneering meteor researches of Whipple, but the work is attributed to "the Blue Hills Meteorological Observatory (connected with Harvard University)." On page 233 there is a confused statement concerning the "Trogan Group." Adonis is omitted from the list of minor planets approaching very close to the earth. The brilliant success of Struve and his associates in explaining the observed phenomena of β Lyrae is not even mentioned.

The reviewer would make one other criticism of a general nature. The number of pages allotted to each of the various topics from classical Newtonian gravitational astronomy down to the most recent astrophysical developments is apportioned so as to give a prospectus of the whole field of astronomy that was valid about a quarter of a century ago. It is high time for a textbook of this kind to appear which presents the current status of astronomy in its true light, with the theoretical developments and interpretations of observations during the last three decades about on a par with that of the preceding three centuries.

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Synthetische Methoden der organischen Chemie. (Vol. II.)

W. Theilheimer. Basel, Switzerland: S. Karger, 1948. Pp. viii + 309. Sfr. 35.

Volume 2 of *Synthetische Methoden* follows the plan of the first volume. It presents brief directions for organic syntheses and degradations arranged in an original, formal system wherein reactions are grouped according to the new bonds that are formed and with no consideration of the mechanism or intermediate stages involved. The literature of 1945-46 is covered with the exception of American periodicals, which will be taken up in a forthcoming issue.

Any discussion of Theilheimer inevitably brings up the merits of the coded arrangement. In the opinion of the reviewer, it is simple, reasonable, and well worth the short time necessary to master it. For example, if one should wish to find information on the amination of a pyridine nucleus, through the code he could find it in a moment

under the entry NC $\uparrow\uparrow$ H, which groups those reactions in which a carbon-nitrogen bond is formed by replacement of hydrogen. Consultation of the generous alphabetical index, on the other hand, reveals a profusion of references under "amines" and "amino-," not one of which leads immediately to the right reference. Furthermore, it cannot be located as a named reaction unless one recalls that the eponymic *Chichibabin* appears in a German index under the T's. The code, however, is not infallible, for placements are occasionally arbitrary, and it is fair to say that the alphabetical index will suffice in a large proportion of cases.

This book has a place in the library of the organic chemist who is concerned mainly with synthesis. In addition to classical material, it contains a wealth of reactions developed primarily in the steroid and carbohydrate fields and hence not generally familiar. Derivatives for characterization are included in their proper places according to the reactions by which they are formed.

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Scientific Book Register

DENNIS, WAYNE. (Ed.) *Readings in the history of psychology.* New York: Appleton-Century-Crofts, 1948. Pp. xi + 587. \$4.75.

DUKES, H. H. *The physiology of domestic animals.* (6th ed.) Ithaca, N. Y.: Comstock Publishing, 1947. Pp. xii + 817. (Illustrated.) \$7.00.

HILDITCH, T. P. *The chemical constitution of natural fats.* (2nd ed., rev.) New York: John Wiley, 1947. Pp. xiii + 554. \$9.00.

LAWRENCE, JOHN H., and HAMILTON, J. G. (Eds.) *Advances in biological and medical physics.* (Vol. I.) New York: Academic Press, 1948. Pp. xi + 484. \$8.60.

MCCOY, NEAL H. *Rings and ideals.* (Carus Mathematical Monographs of Mathematical Association of America, No. 8.) LaSalle, Ill.: Open Court Publishing Co., 1948. Pp. xii + 216. \$2.00.

TURNER, C. DONNELL. *General endocrinology.* Philadelphia-London: W. B. Saunders, 1948. Pp. xii + 604. (Illustrated.) \$6.75.

VAUGHAN, WARREN T. (rev. by J. Harvey Black). *Practice of allergy.* (2nd ed.) St. Louis, Mo.: C. V. Mosby, 1948. Pp. xx + 1132. (Illustrated.) \$15.00.

WATERS, W. A. *The chemistry of free radicals.* (2nd ed.) New York: Oxford Univ. Press; Oxford, Engl.: Clarendon Press, 1948. Pp. viii + 295. \$6.50.

———. *Industrial electronics reference book.* (Contributions of Electronics Engineers of the Westinghouse Electric Corp.) New York: John Wiley; London: Chapman & Hall, 1948. Pp. x + 680. (Illustrated.) \$7.50.