

in this volume. He then turned to experimental work on the ventral nerve-cord of the rock-lobster *Palinurus*, and on the reflex mechanism of the chela of the crayfish. He built a private laboratory on the shore of Lake Como, but his scientific work was interrupted by another project—he founded the *Rivista di Scienze biologiche* and wrote for it many critical articles and reviews. The death of his father and of his faithful laboratory assistant caused him to suspend his researches, and he turned largely to philosophy. His friends have decided to reprint a selection of his earlier papers and of his unpublished work, and the present volume, which is excellently produced, forms the first instalment. It consists of eleven original papers—on the subjects noted above and on graft hybrids, their significance in regard to heredity and acquired characters, the transformation of the wild bee into the hive bee, etc.—sixteen reviews and articles, and a reprint of his thesis on progressive heredity.

*Handbuch der Zoologie: eine Naturgeschichte der Stämme des Tierreiches.* Begründet von Prof. Dr. Willy Kükenthal. Herausgegeben von Dr. Thilo Krumbach. Erster Band: Protozoa, Porifera, Cœlenterata, Mesozoa. Erste Lieferung. Pp. 192. (Berlin und Leipzig: Walter de Gruyter und Co., 1923.) 9s.

THIS forms the first part of Vol. I. of a handbook of zoology, to be completed in five volumes, in the preparation of which about forty authors have agreed to take part. An introduction (50 pp.) to the Protozoa by Prof. Rhumbler is followed by an account (60 pp.) of the Rhizopoda by the same author and of the Flagellata by Dr. V. Jollos, and by the first few pages of the section on the Sporozoa by Prof. M. Hartmann. After the general account of each order is given a scheme of classification into sub-orders, groups, families, and, in some cases, genera, with short diagnoses of each. While the treatment of most of the groups is adequate, the very brief account of *Entamoeba* is not consonant with the importance of this genus, of which no figure is given. The latest references in the list of works on Rhizopoda relate to papers published in 1916, and this suggests that publication has been delayed. The section on the flagellates contains a number of good new figures, and the list of references includes papers published in 1921 and 1922, but the account of the collared flagellates is very short and inadequate.

*Plane Geometry for Schools.* By T. A. Beckett and F. E. Robinson. Part II., with Answers. Pp. viii + 241-453 + v. (London: Rivingtons, 1922.) 5s.

MESSRS. Beckett and Robinson's interesting attempt to combine the main propositions of formal geometry with the extensions included in the easier portions of "modern plane geometry" and with the fundamental notions and applications of trigonometry, is continued in the second part of their work. The first part was noticed in these columns on June 10, 1922 (vol. 109, p. 737). The second part consists of three sections. Section iv. deals with areas, extensions of Pythagoras's theorem, and the properties of chords and tangents of circles, with incidental reference to radical axis, graphical solution of quadratic equations, etc. In

section v. we have inequalities, maxima and minima, and regular polygons. Section vi. deals with ratio and proportion: applications to trigonometry are then given, as well as centres of similitude, inversion, pole and polar (with a little on anharmonic ratio). The treatment is pleasant and masterly, and the whole work can be highly recommended. S. B.

*Printing Telegraph Systems and Mechanisms.* By H. H. Harrison. (Manuals of Telegraph and Telephone Engineering.) Pp. xii + 435. (London: Longmans, Green and Co., 1923.) 21s. net.

THIS volume will be most useful as a work of reference to designers of telegraph machinery. It will also be useful as a text-book in telegraph administrations. The book has been very carefully compiled; the diagrams, of which there are 420, are excellent, and the latest modern applications including high frequency multiplex methods, both for land and submarine cables, are fully described. There is now considerable overlapping of the sciences of telephony, telegraphy and radio-communication, many of the same devices being used in each. It must be admitted that at present, development in all branches of the art of communication is taking place most rapidly in the United States. Communication service in that country is such a large undertaking that systematic research can be carried on intensively on a scale that excites the wonder and envy of European engineers. In Britain, the home demand for apparatus is comparatively on a much smaller scale.

*Experimental Physical Chemistry for Students in the Medical and Allied Services.* By Dr. B. S. Neuhausen. Pp. 53. (Philadelphia: H. N. Rudley, 614 Arch Street, 1923.) 1 dollar.

DR. NEUHAUSEN'S work is in the form of a pamphlet rather than of a book. The physio-chemical exercises which he describes are all related directly to bio-chemistry or medicine; thus, measurements of freezing-point depression, electrical conductivity, the concentration of hydrogen, sodium and chlorine ions, viscosity, refractive index, etc., are all carried out with serum rather than with more commonplace solutions; and the rate of inversion of cane-sugar is studied in the form of an inversion by invertase in place of the more familiar inversion by acids. In view of the growing importance of physical measurements in bio-chemistry the appearance of a work of this character may be heartily welcomed.

*A Text-book of Physics.* By Dr. R. S. Willows. Third edition. Pp. viii + 48 + 488. (London: E. Arnold and Co., 1923.) 9s. net.

THE call for the third edition of this useful text-book has given the author an opportunity to add a chapter on the conduction of electricity through gases. The McLeod gauge is first described and a brief account is given of the electric discharge in a vacuum tube. Then follow experiments on cathode rays and positive rays, and paragraphs dealing with X-rays, ionisation in gases and radioactivity. A chapter of a similar kind on electromagnetic waves may be suggested for a future edition.