

*Fortpflanzung und Befruchtung als Grundlage der Vererbung.* Von Max Hartmann. (Handbuch der Vererbungswissenschaft, herausgegeben von E. Baur und M. Hartmann, Band 1.) Pp. ii + 103. (Berlin: Gebrüder Borntraeger, 1929.) 9.60 gold marks.

*Verteilung, Bestimmung und Vererbung des Geschlechts bei den Protisten und Thallophyten.* Von Max Hartmann. (Handbuch der Vererbungswissenschaft, herausgegeben von E. Baur und M. Hartmann, Band 2.) Pp. ii + 115. (Berlin: Gebrüder Borntraeger, 1929.) 24 gold marks.

BAND 1 gives in compact form, and well illustrated, an account of the main phenomena of reproduction and fertilisation bearing on heredity, in the Protista and other groups of lower plant and animal organisms. Various terms not at present in general use, such as cytogony for cell reproduction, agamogony (gonidia formation), gamogony (gamete formation), gametanogamy and pædogamy are introduced. The chapter on the antithetic alternation of generations gives a useful series of diagrams in which the nuclear phases of *Cutleria*, *Scinaia*, *Phycomyces*, mosses, and other plants are compared.

In Band 2 the determination, inheritance, and distribution of sex in Protista and Thallophytes are described. Four types of sex determination and distribution are recognised, namely, phenotypic and genotypic determination in the haplophase and the diplophase respectively. This volume contains a very serviceable summary of the modern work on sexuality in Algæ and Fungi, much of which has not been brought together elsewhere. Scattered observations bearing on the subject in *Characium*, *Gonium*, *Gregarina*, *Actinophrys*, *Alaria*, Diatoms, and many other organisms are included. Numerous tables and diagrams in which the sexes are distinguished by colour make easy a comparison of conditions in different organisms.

*Inorganic Quantitative Analysis.* By Prof. Harold A. Fales. Pp. xii + 493. (London: G. Bell and Sons, Ltd., 1928.) 12s. 6d. net.

A TEXT-BOOK of inorganic analysis produced at this period which aspires to more than local interest must treat the subject from some new aspect. This object is achieved here by development from the physico-chemical side, somewhat on the lines of Bassett's "Theory of Quantitative Analysis". The scope of the present volume is, however, much wider in order that the whole field of analytical manipulation may be fully covered; for example, chapters are devoted to precision and to the theory and practice of weighing.

The exercises described are largely determinations such as are encountered practically; there are copious explanatory notes and extensive references to original sources. Electrolytic methods are described, but not potentiometric; 'gas analysis' is confined to the absorption of carbon dioxide for gravimetric purposes. The author strongly advocates the use of 'molar' solutions, abandoning the less specific term 'normal' in this connexion, but while admitting that the term 'millilitre' is desir-

able, continues the use of 'c.c.'. No text-book seems anxious to initiate this change.

We have read this book with considerable interest; it contains a large amount of useful information and is commended not only to the student but also to the chemist. B. A. ELLIS.

*The Theory of Determinants, Matrices and Invariants.* By Prof. H. W. Turnbull. Pp. xvi + 338. (London and Glasgow: Blackie and Son, Ltd., 1928.) 25s. net.

THIS excellent book gives a survey of a field which has come into great prominence during the present century for two quite different reasons. First, the theory of relativity has compelled physicists to extend their notions of space with the consequent necessity for formulating physical invariants appertaining to quaternary and higher forms. Secondly, the new mechanics has found a need for numbers obeying a non-commutative law of multiplication. Here the matrix representation was ready to hand. Prof. Turnbull has not made the mistake of attempting to develop the theory with an eye to its applications. Rather he has given a consistent and adequate account from the point of view of pure mathematics. Seven chapters on determinants and matrices are followed by a development of invariant theory mainly of quaternary and higher forms. Naturally in a subject of such vast extent a choice has to be made, but it will be found that the choice is extremely judicious.

The book is written in a delightfully lucid style and is admirably suited to the needs of those who wish to familiarise themselves with the mathematical concepts underlying the physical applications. To the student whose interests are purely mathematical, no better introduction could be desired. L. M. M.-T.

*Jahresbericht über die wissenschaftliche Biologie: zugleich Bibliographisches Jahresregister der Berichte über die wissenschaftliche Biologie.* Herausgegeben von Prof. Dr. Tibor Péterfi. Band 1: Bericht über das Jahr 1926. Pp. xii + 627. (Berlin: Julius Springer, 1928.) 69 gold marks.

THE editor states that the great majority of the titles in this "Jahresbericht" are taken from 1328 periodicals placed at his disposal by the publisher. The titles, each with proper bibliographical data, are arranged in sixteen sections, among which are methods, physical and chemical basis of vital processes, cytology and histology, morphology, metabolism, hormones, physiology of reproduction and development, heredity, ecology and systematics. The great majority of the titles relate to papers on animals. The index of authors and the alphabetical list of the sections of the work facilitate the rapid finding of the references to any author or subject. Some of the 7600 titles are repeated under different sections, so that the total number of titles printed is 11,500. A statistical analysis of the subjects dealt with is appended, which brings out the preponderance of works on comparative physiology (including the chemical and physical basis).