

As a concise and comprehensive *résumé* of the results obtained from a wide range of experimental work, combined with a striking revision of their mathematical expression, the volume is a welcome and valuable addition to the literature on the subject. B. C.

SERUM REACTIONS AND BACTERIAL THERAPY.

Applied Immunology: The Practical Application of Sera and Bacterins Prophylactically, Diagnostically, and Therapeutically. By Prof. B. A. Thomas and Dr. R. H. Ivy. Pp. xv+359. (Philadelphia and London: J. B. Lippincott Co., 1915.) Price 16s. net.

THIS book gives an account of those "reactions" employed in the diagnosis of disease which are based upon alterations in the body-fluids resulting from the action of micro-organisms or from the introduction of foreign proteins, and of the treatment of morbid conditions with serums, bacterial vaccines, etc. These reactions and treatment may be classed under the term "immunology," since they are based upon processes which commonly result in the living body in a state of immunity or resistance to the material—micro-organism or protein—which produces them. This material is named the *antigen*, and the substances which are the outcome of its action are known as *anti-bodies*.

The opening chapter of the book deals with the subject of immunity, its kinds and mode of production, and with the history and development of immunology; the second and third chapters give an account of antigens and anti-bodies and of Ehrlich's side-chain theory. These subjects are treated simply and briefly, but fully enough for the object of the book, which the authors state has been "to crystallise and detail the practical phases of serum and bacterin applications in medicine, thereby enabling the student and general practitioner, with even a slight laboratory experience, to appreciate the significance of, and more competently apply the principles underlying, immunology." In chap. iv. anaphylaxis or hypersusceptibility is described, but we miss any reference to Bordet's theory of its mode of production. The preparation and properties of the various anti-toxins and anti-sera are then described, together with certain miscellaneous sera and extracts, and their use in treatment. While usually full enough, some sections appear to be too brief; thus, anti-tuberculosis sera are dismissed in four lines, and no mention is made of Spengler's I.K. serum.

The subject of agglutination and its use in diagnosis are next considered. Dilution of the serum by means of a Wright's pipette is described, but no mention is made of the "throttled" pipette which is so convenient for this kind of work, nor is the subject of "zones of no reaction" alluded to—an omission of some moment.

In chaps. x. and xi. the precipitin reaction and its application for the recognition of blood-stains, etc., and lysis or solvent action are described.

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The important subject of complement fixation is next dealt with, and the employment of this reaction for the diagnosis of syphilis (the Wassermann reaction) naturally occupies the premier place. Full details are given of the method of carrying out this reaction, but we should have liked fuller information on the meaning of the phenomenon of fixation in the absence of antigen and on the reaction with cerebro-spinal fluid.

Miscellaneous biochemical reactions, including the Abderhalden reaction, have a few pages devoted to them; and the important subjects of the tuberculin and similar reactions and tuberculin therapy are next considered at some length, following on conventional lines.

The subjects of phagocytosis and recovery from bacterial infections are then dealt with, leading up naturally to a consideration of bacterial inoculations, the opsonic index, and vaccine therapy. This section is somewhat slipshod, for the authors have not clearly distinguished between *preventive* and *therapeutic* inoculations. Thus it is stated that "treatment" of bubonic plague with bacterial suspensions has been extensively practised, and that "therapeutic" inoculation greatly reduces the severity of attacks; in both cases *preventive* treatment or inoculation is really meant.

In an appendix the serum treatment of hæmorrhage, organotherapy, and chemotherapy with salvarsan, etc., are briefly but sufficiently considered.

The book is illustrated with a number of figures, charts, and plates, some of the last-named being coloured. We notice an error occurring throughout the chart illustrating the Wassermann reaction, the incubation temperature being stated to be 56° C. instead of 37° C.

The book, while capable of improvement in many directions, may be recommended as giving a useful survey, free from too much detail and technicalities, of the subject of immunology.

R. T. HEWLETT.

SCHOOL MATHEMATICS.

- (1) *Analytic Geometry.* By Prof. H. B. Phillips. Pp. vii+197. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1915.) Price 6s. 6d. net.
- (2) *Problems in the Calculus, with Formulas and Suggestions.* By Dr. D. B. Leib. Pp. xi+224. (Boston, Mass., and London: Ginn and Co., 1915.) Price 4s. 6d.
- (3) *Mathematical Tables for Class-room Use.* By M. Merriman. Pp. 67. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1915.) Price 2s. 6d. net.
- (4) *Rural Arithmetic.* By A. G. Ruston. Pp. xi+431. (London: University Tutorial Press, Ltd., 1916.) Price 3s. 6d.

(1) PROF. H. B. PHILLIPS believes that the differential calculus should be given to the student in college at the earliest possible moment, and that to accomplish this a short course in analytic geometry is essential. He