

is far from clear. On account of the large amount of detail, the work is not suitable for the elementary student, who requires a clear set of tables, but the advanced student, the teacher and the practising analyst will find it of interest and value. With so much detail, some mistakes are almost inevitable, as when dithionic acid is said to be obtained (p. 511) by the action of carbon dioxide on barium dithionate, and the product of the action of stannite on bismuth salts is given as bismuth oxide (BiO) on p. 244 and (correctly) as bismuth on p. 224. The long section on balancing equations (pp. 629-656) is of doubtful value, and that on solubility product (pp. 44-137) is, as the authors recognise at the end, too far removed from practice to serve as a safe guide in the laboratory. The book is one which every chemical laboratory could usefully have available for reference.

A Short Organic Chemistry. By Dr. F. Sherwood Taylor. Pp. viii+378. (London: William Heinemann, Ltd., 1933.) 5s.

THE present book is an abridged form of the larger work by the same author and contains those parts of the subject required by the first year student. The theoretical parts are almost as full as in the longer book and the treatment of the simplest and most important compounds remains almost unaltered. Experiments are described, so that the book gives a complete course in elementary organic chemistry. There are also questions and numerical and other problems, with answers. The text is clear and accurate and the brief descriptions of large-scale operations are much more up-to-date than is usual in such books. The modern formulæ of the carbohydrates are given. The discussions of theoretical matters, such as stereoisomerism and the structure of benzene deserve special commendation. Dr. Taylor's book is a very satisfactory course of elementary organic chemistry and can be recommended both for schools and for junior students in universities.

Laboratory Tables for Qualitative Analysis. Drawn up by the Demonstrators in Chemistry, University of Manchester. Fourth edition, revised and rewritten by Dr. Colin Campbell and J. B. M. Herbert. 17 cards. (Manchester: Manchester University Press, 1933.) 3s. 6d. net.

THESE tables have been familiar to several generations of students passing through the Chemistry Department at Manchester and their excellence has been amply demonstrated over a long period of time. In their new form an alternative scheme for the separation of phosphoric acid in Groups III-IV is given, and two sheets on the less common metals, Be, Mo, Ti, V and W, provided. The explanatory notes, a very valuable feature of the tables, remain, but have been revised when necessary in the light of modern theory. These tables provide a scheme of qualitative analysis which has been thoroughly tested and their use can be recommended in all chemical laboratories.

Chemical Calculations: their Theory and Practice.

By A. King and Dr. J. S. Anderson. Pp. x+181. (London: Thomas Murby and Co.; New York: D. Van Nostrand Co., Inc., 1933.) 4s. 6d. net.

THE present collection of examples is accompanied by explanatory matter which is found in all the usual textbooks and could quite well have been omitted. Whilst brief summaries of the theory are desirable in the case of books of calculations on physical chemistry, they take up space and add to expense in elementary works. The examples given are very suitable for students taking the Intermediate Science and Higher School Certificate examinations. Answers are provided to alternate problems only. The calculations in volumetric analysis are all based on the use of normalities, and an insistence on this will remove the habit acquired by some students of working out such results by unnecessarily long and unscientific methods. The book is a good and straightforward collection of problems which should fulfil the purpose for which it was written.

Mathematics

(1) *Logarithmetica Britannica: being a Standard Table of Logarithms to Twenty Decimal Places.* Part 6: Numbers 60,000 to 70,000. By Dr. Alexander John Thompson. Issued by the Biometric Laboratory, University of London, to commemorate the Tercentenary of Henry Briggs' publication of the *Arithmetica Logarithmica*, 1624. (Tracts for Computers, No. 18.) Pp. v+100. (Cambridge: At the University Press, 1933.) 15s. net.

(2) *Tables for the Development of the Disturbing Function: with Schedules for Harmonic Analysis.* By Ernest W. Brown and Dirk Brouwer. Pp. v+73-157. (Cambridge: At the University Press, 1933.) 10s. 6d. net.

(3) *Vierstellige Tafeln der Kreis- und Hyperbelfunktionen, sowie ihrer Umkehrfunktionen im Komplexen.* Berechnet und erläutert von Robert Hawelka. Im Auftrag des Elektrotechnischen Vereins E.V. in Berlin, herausgegeben von Prof. Dr. Fritz Emde. Pp. v+109. (Braunschweig: Friedr. Vieweg und Sohn A.-G., 1931.) 10 gold marks.

(1) THIS, the fifth part published, contains a frontispiece photographic reproduction of a letter from Henry Briggs to John Pell. Dr. Thompson hopes to produce another part containing the logarithms of numbers from 10,000 to 20,000 some time this year.

(2) These tables give coefficients designed to facilitate the numerical development of the disturbing function in planetary perturbations. Writing

$$(1-\alpha^2)^s(1+\alpha^2-2x\cos S)^{-s} = \frac{1}{2}G_s^{(0)} + \sum_{i=1}^{\infty} G_s^{(i)}\alpha^i \cos iS,$$

Tables I-IV give eight place logarithms of the G_s^i for $s = \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, \frac{7}{2}, i = 0, 1, 2, \dots, 11$, with the argument $p = \alpha^2 \div (1-\alpha^2)$ in the interval 0.00-2.50. Table V gives coefficients of the expansion of $G_s^{(i)}$ in powers