

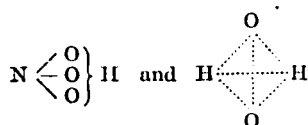
variably prior to 1914; they seem of little value, either immediately or prospectively, and have at most a merely historical interest. The same is true of the statistics of production, which are only of relative importance.

The work, like so many similar undertakings, has suffered to a great extent by the war. Its publication has been much delayed, and much of its subject-matter is already out of date. It is, however, a useful production, and contains, in concise form, a wealth of information, although certain of the data are not very recent or the most authoritative. As is usual in German publications of this kind there is a tendency to restrict the information to German sources, to the exclusion of foreign work, even when this is more recent and more accurate.

T. E. THORPE.

ANORGANISCHE CHEMIE. *Ein Lehrbuch zum Weiterstudium und zum Handgebrauch.* By PROF. FRITZ EPHRAIM. Pp. viii.+727. Dresden and Leipzig: Theodor Steinkopff, 1922. Price 21s. 6d. (bound 24s.)

Prof. Ephraim's textbook differs in many ways from others of the same size. It is more comprehensive, and the author is able by presupposing elementary knowledge, by an unusual arrangement of material, and by an admirable conciseness of style, to cover a surprisingly wide field. Compounds of the "rare" elements are considered in some detail, and the tables of physical properties also make the book valuable for reference. Recent advances, especially German, are included—even the Badische explosion of 1921! The account of Werner's theory is notably clear and detailed, and the theory of iso- and hetero-polyacids of Miolati and Rosenheim receives careful consideration. The introduction of these conceptions lights up some obscure regions—as in the case of the constitution of such compounds as  $18\text{BaO}$ ,  $\text{V}_2\text{O}_5$ ,  $3\text{P}_2\text{O}_5$ ,  $60\text{WO}_3$ ,  $150\text{H}_2\text{O}$ , but in such formulae as



the extension of the valency conception seems almost at its breaking limit.

The arrangement of the material under the *negative* radicals (oxides, sulphides, carbonates, etc.), although permitting of a concise treatment, is less suitable for elementary students, since the facts then become somewhat blurred. The present book, however, is specifically written for more advanced students, and these will find it very attractive and stimulating. The arrangement is not so new as the author seems to think; it was adopted by Sir William Ramsay in the "Systematic" part of his two small volumes on "Modern Chemistry," which are masterpieces of their kind.

Prof. Ephraim has carefully avoided loose generalisation, and although the experimental details are necessarily extremely brief, he makes little use of expressions such as "breaking rings," "splitting off water," and the like, which take the place of genuine descriptive language in some textbooks.

There are several typographical errors, and one or two very questionable statements were noted, but in a book covering so much ground these are surprisingly few. The reviewer can recommend this book to all chemists as both interesting and useful. Advanced students will find it of very great value: they will discover something new on nearly every page.

J. R. PARTINGTON.

CHEMISTRY OF THE NON-BENZENOID HYDROCARBONS AND THEIR SIMPLE DERIVATIVES. By BENJAMIN T. BROOKS. Pp. 612. New York: Chemical Catalog Co., Inc., 1922. Price \$7 net.

Dr. Brooks has done well to assemble, in one volume and in systematic sequence, an orderly presentation of the non-benzenoid hydrocarbons, their properties, relationships and principal derivatives. It is a form of classification seldom adopted owing to the historically somewhat haphazard manner in which the material has been accumulated, and to the more customary, if illogical, practice of discussing the cycloparaffins and essential-oil constituents after a survey of the aromatic series has been made. Thus a wholesome rearrangement of attitude towards organic chemistry is encouraged by a study of the treatise. Moreover, the somewhat monotonous aspect of paraffin hydrocarbons as considered in earlier books is now relieved by the importance of these materials from the standpoint of the rubber, petroleum and essential-oil industries. Accordingly, the opening chapters include interesting sections on the origin of petroleum oils, the details of cracking, and recent results of oxidation. A long chapter entitled "The Ethylene Bond" embraces the modern views of Lewis and of Langmuir as applied to the carbon atom, and of J. F. Thorpe in connexion with *spiro*-compounds, followed by the work of Harries on ozonides. Alicyclic unsaturated hydrocarbons are next assembled, whilst six chapters entitled "Cyclic Non-benzenoid Hydrocarbons" deal respectively with the sub-hexyl, *cyclo*-hexane, *para*-menthane, *ortho*- and *meta*-menthane, bicyclic and tricyclic, and super-hexyl series. The concluding chapters deal with physical and physiological properties, the whole volume being well produced, agreeable to manipulate, and adequately enriched with references to recent literature.

M. O. FORSTER.

A COMPREHENSIVE TREATISE ON INORGANIC AND THEORETICAL CHEMISTRY. By J. W. MELLOR. Vol. II. F, Cl, Br, Li, Na, K, Rb, Cs. Pp. vi.+894. London: Longmans, Green and Co., 1922. Price 63s. net.

The first volume of this treatise has been already reviewed very favourably (1922, 227 R), and there is no doubt that the second volume fulfils all the expectations raised by the first. In Chapter XVII, the history of the halogens, their occurrence, preparation and properties are dealt with very fully. In this and the succeeding chapters an immense mass of data is given. The language is terse, but the treatment is critical, and the author has been successful in writing a book which nowhere simulates a compilation of the dictionary type. In Chapter XVIII, in the same manner, there are described the compounds of the halogens with