

Gmelin's 'Handbook.'

Gmelin's Handbuch der anorganischen Chemie.

Achte völlig neu bearbeitete Auflage. Herausgegeben von der Deutschen Chemischen Gesellschaft. Bearbeitet von R. J. Meyer. Unter beratender Mitwirkung von Franz Peters. (1) System-Number 13: Bor. Pp. xix + 142. n.p. (2) System-Number 5: Fluor. Pp. xvi + 86. n.p. (Leipzig und Berlin: Verlag Chemie, G.m.b.H., 1926.)

INORGANIC chemistry has been so completely transformed within recent years that long before the completion of the seventh edition of Gmelin's well-known treatise, an entirely re-fashioned and comprehensive work, showing but little resemblance to the older editions, has been undertaken by the German Chemical Society. Except for the non-valent gases, which are all grouped into the first section, each element is being issued as a separate part under a specific 'system-number' (not identical with its atomic number), and it is expected that seventy separate parts will ultimately be issued within a decade and that the whole will form twenty-two volumes. Compounds of two elements will be found under the element of the higher serial number. Thus a particular subject will often be divided, e.g. boron carbide falls under carbon, whilst boron sulphide falls under boron, but an alphabetical index of subject matter becomes unnecessary. At the beginning of each section on one element there is a full table of contents, a list of abbreviations, an alphabetical register of journals to which reference is made, and also a complete list of system-numbers to facilitate the location of a compound in the complete work.

(1) In order to adhere to the general plan and at the same time to impart to the section on boron a certain independence, it has been found advisable to include condensed but freely annotated accounts of certain topics, which will be discussed in fuller detail at a later stage, e.g. several pages are devoted to a description of metallic borides in general, to heteropolyboric acids and organic complexes, and to perborates. The literature has been exhaustively studied—not merely transferred from earlier editions—to the end of 1925, but an addendum of seven pages includes some later material. Several diagrams are inserted in illustration of the relation between electrical conductivity and temperature, the influence of alcohols on the solubility of boric acid, etc.

(2) The section on fluorine is illustrated with excellent diagrams of the apparatus used by Moissan in 1887 in isolating the element, and of

the modifications used later by Argo, Meyer, and Sandow, and by Simons. The history of the element, the general and physical properties, electrochemical behaviour and preparation of its compounds, are all dealt with in detail and a considerable amount of attention is given to analytical methods. A comprehensive survey of the results of atomic weight determinations from 1814 to 1925 is included. Amongst optical properties are found values of atomic refraction, wave-lengths in the arc and spark spectra, and even quite recent direct measurements of the $K\alpha$ line obtained by X-ray analysis. The literature has been revised to the middle of 1926. Complex fluorides are catalogued in eight (periodic) groups, with formulæ and a full list of references.

Each part is bound in stiff-paper covers and clearly printed. When complete the 'Handbuch' will be an indispensable work of reference to the specialists in both pure and applied inorganic chemistry, and it will assuredly lighten the tedious labour involved in searching the literature.

Electrometric Methods.

(1) *Hydrogen Ion Concentration: its Significance in the Biological Sciences and Methods for its Determinations.* By Prof. Leonor Michaelis. Vol. 1: *Principles of the Theory.* Authorised translation from the second revised and enlarged German edition by Dr. William A. Perlzweig. Pp. xiv + 299. (Baltimore, Md.: Williams and Wilkins Co.; London: Baillière, Tindall and Cox, 1926.) 22s. 6d. net.

(2) *Potentiometric Titrations: a Theoretical and Practical Treatise.* By Dr. I. M. Kolthoff and Dr. N. Howell Furman. Pp. xii + 345. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1926.) 22s. 6d. net.

(3) *Les ions d'hydrogène: signification, mesure, applications, données numériques.* Par W. Kopaczewski. Pp. ix + 322. (Paris: Gauthier-Villars et Cie, 1926.) 70 francs.

(1) OF recent years the application of potentiometric methods to the determination of conditions of equilibria in aqueous solutions as well as to quantitative analysis has assumed proportions of no inconsiderable magnitude, and has thus created a demand for text-books on the subjects. To English readers the appearance of the second edition in English of Michaelis's well-known volume will prove a welcome addition to the text-books, few in number, which are universally appreciated. It is unfortunate that in this edition the