NEW BOOKS

A Handbook of Elementary Chemistry for Students of Medicine, Dentistry and Pharmacy. By J. C. ATTIX, M.D., Professor of Chemistry and Toxicology, Temple University. Second edition, thoroughly revised. Lea and Febiger, South Washington Square, Philadelphia, Pennsylvania, 1926. xiv + 278 pp. 23 figs. 21 × 14 cm. Price $3.00.

Any textbook of chemistry must give a fairly comprehensive view, either of descriptive chemistry or of theoretical chemistry. It may do both if large enough, but the author of this text, being anxious to make a small handbook, has cut both the theoretical and descriptive parts until neither can be of very much value to the student. For example, about half a page is given to ions and ionization, and apparently no mention has been made of chemical equilibrium. How a student of physiology or physiological chemistry could be expected to comprehend modern ideas in those subjects with the sort of preparation here indicated is difficult to understand.

The book is well gotten up typographically. Laboratory experiments and a brief qualitative analysis are included in the text.

P. A. BOND

Tables Annuelles de Constantes et Données Numériques de Chimie, de Physique et de Technologie. (Annual Tables of Constants and Numerical Data, Chemical, Physical and Technological.) By the International Committee, Professor ERNST COHEN (Utrecht); Professor P. DUTOIT (Lausanne); A. EGERTON (Oxford); Dr. CH. MARIE (Paris); Professor O. SCARPA (Turin); Dr. E. W. WASHBURN (Washington). Secrétaire général: Dr. CH. MARIE. Vol. V, Years 1917–1918–1919–1920–1921–1922. Second Part. Gauthier-Villars and Co., Paris; The Cambridge University Press, Cambridge, England; McGraw-Hill Book Company, 370 Seventh Avenue, New York City; 1926. lii + 1130 pp. 28 × 22 cm.

With this second part of volume V, the publication of the constants and numerical data contained in the literature of 1917–1922 has been completed. Gradually the Editors of "Annual Tables" are regaining the lost ground of 1914–1918. Volume VI, covering 1923–1924, is now in the press and should appear early in 1927. Volume VII will cover both 1925 and 1926 and is to appear at the beginning of 1928. Starting with volume VIII, covering 1927 and due to appear in 1929, the regular annual publication will have been reëstablished.

The second part of volume V contains a large share of the data of physical chemistry, also of radioactivity, organic chemistry, physiology, engineering and metallurgy.

ARTHUR B. LAMB

Données Numériques D'Électricité, Magnétisme et Électrochimie. (Numerical Data of Electricity, Magnetism and Electrochemistry.) Edited by Dr. A. BUFFAT (Paris); Dr. G. I. HIGSON AND K. GORDON (London); M. MALAPERT, Engineer

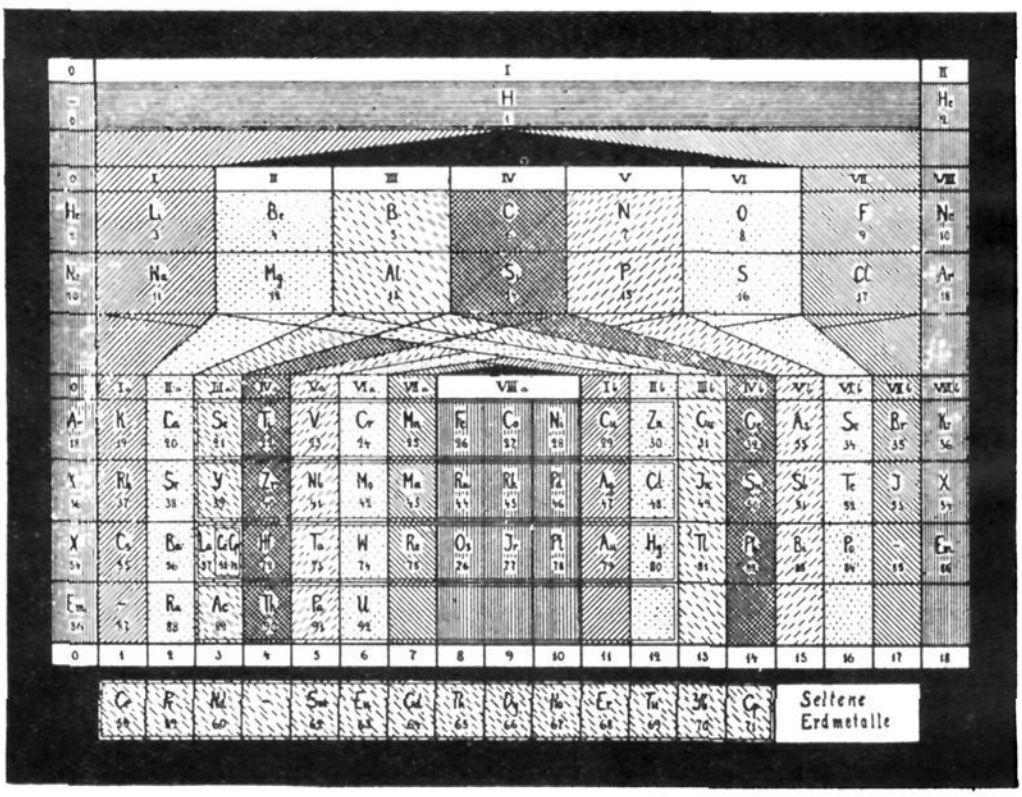
(Paris). Preface by G. SEMENZA, President of the International Electrotechnical Commission. Extract from Vol. V, Years 1917–1922. x + 145 pp. Price, *unbound*, 56 Fr.; bound, 77 Fr.

Art de L'Ingénieur et Métallurgie. (**Art of the Engineer and Metallurgy.**) Edited by L. DESCROIX, Engineer. Preface by Sir ROBERT HADFIELD, Bt. F.R.S. Extract from Vol. V, Years 1917–1922. x + 250 pp. Price, unbound, 105 Fr.; bound, 126 Fr.

Both of these volumes are convenient extracts from volume V of the "Annual Tables of Constants," reviewed above. They should be of great value to the specialists in these fields who do not care to incur the expense of the entire "Annual Tables."

ARTHUR B. LAMB

Eine neue Form des Periodischen Systems der Elemente. (**A New Form of the Periodic System of the Elements.**) By Dr. A. v. ANTROPOFF. Koehler and Volckmar A.-G. & Co., Leipzig. Price, small size (36 × 30 cm.), postpaid, in sheets, M. 2.80; mounted on card, M. 4.50. Large size in sheets, M. 15.50.



These charts are unique in bringing out, by means of colored strips, the relations between the elements of the short periods and those of the longer periods: for example, black strips to show the relations, carbon, silicon, thorium, zirconium, hafnium, thorium, and carbon, silicon, germanium, tin, lead.

Hydrogen is placed in the center at the top, as the element from which all others are formed, and the noble gases are given on both sides, indicating that these would be brought together if the chart is placed on a cylinder.

The arrangement is easily understood from the cut, taken from *Z. angew. Chem.*, **39,** 722, 725 (1926), where many of the details are discussed. Blank charts, useful for recording and studying periodic properties of the elements and their compounds are also published.

W. A. NOYES

Photosynthesis. By H. A. SPOEHR, Laboratory for Plant Physiology, Carnegie Institution of Washington. American Chemical Society Monograph Series. The Chemical Catalog Company, Inc., 19 East 24th Street, New York, N. Y., 1926. 393 pp. 16 figs. 23.5 × 15.5 cm. Price $6.50.

The 29th monograph of the American Chemical Society is another fine example of the high standard maintained by this useful series. Dealing with a subject, the utilization of solar energy, that has aroused the interest of scientists and engineers for many years, Doctor Spoehr has brought together the latest information from several different angles. As he remarks in the preface, the sciences of chemistry, plant physiology, physics, geology, oceanography and others have offered a view of the phenomenon of photosynthesis. Thus we have chapters dealing with the origin of organic matter and the cosmical function of green plants; the gaseous interchange and factors affecting it; the products of photosynthesis; methods of measuring photosynthetic activity; the chemistry of photosynthesis; the energy relations in photosynthesis; chlorophyll and the chloroplasts. This monograph is no mere discussion of the photochemical decomposition of carbon dioxide but a critical analysis of the whole mechanism by which plants have been able to build up compounds rich in energy on a practical scale, involving a study not only of the primary photochemical reaction but the means of bringing carbon dioxide to photosynthetic surfaces, removal of oxygen and reaction products from the sphere of reaction, regulating mechanism for protection against too intense illumination, etc.

Photosynthesis in this sense is to be compared with respiration in its broadest meaning, not only the production of carbon dioxide but the physiology of breathing movements, circulation of the blood and chemical conditions of transport of the respiratory gases in the blood. Photosynthesis and respiration represent the same reaction in its two directions. Photosynthesis is as fundamental to the botanist as is respiration to the zoölogist, and the plant physiologist will find a wealth of material dealing with matters accessory to the chemical problem proper.

The chemist will be especially concerned with the last three chapters. It is interesting to note that after many years of experimentation there seems to be no clear-cut demonstration of the chemical reduction of carbon dioxide and water *in vitro* (perhaps one should say, *in silice*). In all the latest work, tests for formaldehyde after ultraviolet illumination of moist carbon dioxide in the presence or absence of "catalysts" have been nega-

tive. To read of the contradictory results of various investigators in this field of "artificial photosynthesis" is certainly depressing. It is as if some malign influence were at work. No doubt this influence will in time be traced to a minute amount of some unknown and unsuspected substance. Contradictions often lead to important discoveries. We may hope that in the very near future the whole matter will be cleared up and photosynthesis *in vitro* reproduce in all details the process which takes place so beautifully *in vivo*.

Dr. Spoehr cannot be accused of presenting only one side of a controversy or looking at a subject from a narrow viewpoint. Indeed one gains the impression from reading "Photosynthesis" that the last word has been said on very few phases of the problem. Perhaps this is a healthy attitude since it stimulates further investigation. With its numerous references to literature, the student will find "Photosynthesis" an admirable guide and storehouse of information. We need more monographs of just this type, dealing with subjects common to biology, chemistry and physics.

E. NEWTON HARVEY

Beiträge zur Chemie der Platinmetalle. (**Contribution to the Chemistry of the Platinum Metals.**) By Professor Dr. CARL CLAUS at Dorpat, formerly at Kasan, Dorpat, 1854. Reprinted by the Chemischen Fabrik Braunschweig, G. M. B. H. Braunschweig, 1926. 102 pp. Price, Goldmark 9.50.

Claus was the discoverer of ruthenium and unquestionably the greatest among the comparatively few workers on the metals of the platinum group. He was fortunate in having at his disposal more material than has been the lot of any other investigator; on the other hand, his isolation in a frontier university of eastern Russia, with no one to consult and few students to assist him, was a handicap that only a master could have overcome. Yet much of his work is valid today, and a service has been rendered the chemical world by the Chemischen Fabrik Braunschweig in bringing out a mimeographic reproduction of Claus' *Beiträge*, which includes all that was known of the metals of the platinum group at that time, edited by the only authority on the subject, and the larger part of it made up of his own researches. The material in the *Beiträge* is the foundation of all later work on the platinum metals, but copies of the original have long since been all but unobtainable. The mimeographing is well done and the paging is that of the original.

JAS. LEWIS HOWE