interest he has shown in my work, as well as for his detailed and careful criticism of it.

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NEW BOOKS

Müller-Pouillets Lehrbuch der Physik. Lehre von der strahlenden Energie. (Müller-Pouillet's Textbook of Physics. The Science of Radiant Energy.) Vol. II, first half. Edited by Dr. OTTO LUMMER, with H. ERGGELET, F. JÜTTNER, A. KÖNIG, M. v. ROHR, E. SCHRÖDINGER. Friedrich Vieweg and Son, Braunschweig, 1926. xviii + 928 pp. 624 figs. and 7 plates. 24.5 × 16 cm. Price, unbound, R. M. 50; bound, R. M. 54.

Although Otto Lummer died before the publication of this book, his work had been so thorough, so the preface states, that no subsequent changes were required. His mastery of the subject, evident throughout, becomes most conspicuous in his discussion of interference. Associated with him in the preparation of certain sections were the collaborators mentioned above.

First comes a concise and stimulating review of theories of light and ether. Each main division following is similarly prefaced. The subjects include velocity of light, reflection, refraction, dispersion, geometrical optics, images, the structure and defects of the eye, optical instruments, interference and diffraction, spectrometry and microscopy. The other topics treated in the corresponding volume of the tenth edition are reserved for a second part. This shows the extent of the additions made to bring the treatment up to date.

The sections of spectroscopy, interferometry, refractometry, the camera and the ultramicroscope bear the most directly upon the chemist's problems, and are invaluable for reference. But he will find it hard to pass over the highly readable accounts of such subjects as color sensation and color blindness (by the versatile Schrödinger!), spectacles, photographic lenses, range finders and periscopes. The mathematical treatment, while apparently adequate, will seldom be beyond his comprehension. The bibliography is extensive and includes a reasonable proportion of non-German publications. A greater profusion of cuts depicting modern optical instruments would doubtless add to the value of the book.

Appearing at a time of exceptional activity in the publication of large works on physics, this book maintains and adds to the prestige of the Müller-Pouillet Lehrbuch. By its frequent use the chemist can improve his own experimentation and also add to his appreciation of a vast domain which overlaps his own at many points.

G. S. FORBES

Müller-Pouillets Lehrbuch der Physik. Physikalische, chemische und technische Thermodynamik, einschl. Wärmeleitung. (Textbook of Physics. Physical, Chemical and Technical Thermodynamics, Including Conduction of Heat.) Vol. III, first half. Edited by ARNOLD EUCKEN, with U. EBBECKE, M. JAKOB, A. MAGNUS, F. POLLITZER, F. SAUERWALD, R. SUHRMANN, G. ZERKOWITZ. Friedr. Vieweg and Son, Braunschweig, 1926. xviii + 1185 pp. 575 figs. 24.5 × 16 cm. Price, unbound, R. M. 63; bound, R. M. 68.

Extraordinary advances, experimental and theoretical, made since the last edition was issued, necessitated a division of the third volume. In the first half the phenomena of matter are treated thermodynamically, while the kinetic theory is reserved for the second.

The mere chemist, justly apprehensive at the prospect of 1200 pages of thermodynamics, is pleasantly surprised to find what is for the most part a treatise on physical chemistry. One might have to go back to the sun-worship of Akhnaton to find a more single-minded devotion (to its modern equivalent). Very properly, every topic included is approached and treated as a problem in energetics.

The "general part" includes thermometry, calorimetry, and the two laws of thermodynamics, the Nernst heat theorem being made a corollary under the second law. The "special part" begins with systems uniform in temperature. These are subdivided according to components and phases, respectively. Thermal and caloric equations of state, phases inclusive of interfaces, equilibria, transformations with the corresponding velocities and energy changes, are developed logically and systematically. The discussion is so full and clear that the mathematical discussion is comparatively easy to follow. Different thermodynamic notations and methods are compared until the inexpert have visions of being at home throughout the thermodynamic world.

Systems having temperature gradients are introduced by discussion of the corresponding equilibria, and of combustions, detonations and heat conduction. Heat engines, including modern turbines and internal combustion types, compressors, refrigerating machines and "heat pumps" follow. The physiology of heat is outlined in conclusion. As stated in the preface, the aim is to make engineering thermodynamics intelligible to the physicist and physical chemist, and the degree of success has been considerable.

Of course one must be prepared for a few minor disappointments, as for instance treatment of osmotic pressure of non-electrolytes according to van't Hoff and a modified van der Waals equation. But such exceptions only bring into clearer relief the modernity and thoroughness of the book as a whole. The collaborators and publishers make this notable work a tribute to Dr. Eucken on his eightieth birthday. One suspects that such a birthday observance is unique in the annals of science.

G. S. FORBES

A Comprehensive Treatise on Inorganic and Theoretical Chemistry. Vol. VII. Titanium, Zirconium, Hafnium, Thorium, Germanium, Tin, Lead, Inert Gases. By J. W. MELLOR, D.Sc. Longmans, Green and Company, 55 Fifth Avenue, New York, 1926. x + 977 pp. 255 figs. 25 × 16 cm. Price $20.00.

Volume VII of this excellent Treatise contains eight chapters (41–48) devoted to the remaining elements of the fourth group and to the inert gases.

The virtues of the earlier volumes persist undiminished here. The historical and mineralogical aspects have been presented with especial skill. There are a great many illuminating tables and diagrams. The only flaws which the reviewer has been able to detect are the rather inadequate discussion of the metallurgy of lead and the four-page essay on "Accumulators" which seems hardly worth the space it occupies. These are minor blemishes.

These volumes not only fulfil excellently their main function as an encyclopedic reference work but are, in addition, interesting to the casual reader.

ARTHUR B. LAMB

Organic Derivatives of Antimony. By WALTER G. CHRISTIANSEN, Instructor in the Harvard Medical School. American Chemical Society Monograph Series. The Chemical Catalog Company, Inc., 19 East 24th St., New York City, 1925. 229 pp. 23.5 × 15 cm. Price $3.00.

The book contains a very complete survey of the literature both of true organic compounds of antimony, that is, those containing a carbon-antimony linkage, and of the very numerous compounds in which the antimony is linked to a more or less complex organic molecule through oxygen. Part I contains chapters on aliphatic antimonials, including stibines and the corresponding stibinic oxides, aromatic stibines, aromatic stibinic acids and stibino compounds, antimonyl compounds of hydroxyl derivatives and mercapto derivatives, and on antimonials as therapeutic agents, by Dr. George C. Shattuck. Part II contains chapters on trivalent antimony compounds, pentavalent antimony compounds, antimonyl compounds, and on the analysis for antimony of these compounds. There is also included a bibliography containing references to about 300 articles on organic compounds of antimony. Although the indexing of the chemical material is fairly good, the chapter on antimonials as therapeutic agents apparently was neglected when the index was prepared.

The present book is the only one available from which it is possible to obtain, in a reasonable length of time, a conception of this very important field.

FRANK C. WHITMORE