
NEW BOOKS

Physics of the Twentieth Century. By PASCUAL JORDAN. Translated by ELEANOR OSHRY. Philosophical Library, Inc., 15 East 40th St., New York, N. Y., 1944. xii + 185 pp. 14 × 22 cm. Price, \$4.00.

This is a translation of a book first published in 1937 by Julius Springer in Berlin under the title "Physik des Zwanzigsten Jahrhunderts."

There have been multitudes of books summarizing the achievements of this century in physics for the layman in non-technical language, but this is not just another such a book. The author's primary concern is with ideas, with new points of view, with the reasons which make these points of view inevitable, and with the repercussion of these ideas on our whole intellectual outlook. The special competence of the author to undertake a task of this kind must be universally conceded. He is one of the small coterie of men who had a decisive influence on the direction of development of quantum theory in the years of its most rapid unfolding. Not only is the author unusually qualified by his own contributions to the technical developments that he describes, but his exposition displays an unusual ability to strip off the irrelevant details of experiment or argument and deal directly with the essentials.

Many readers, especially those who already have a degree of familiarity with the subject matter, will find an entirely extraneous source of interest in their reading of this book. Jordan is probably unique among physicists of a comparable degree of competence in being a professed Nazi. It is natural that the reader should endeavor to find some reflection of Jordan's political philosophy in his physical philosophy, or perhaps some peculiarity in his attitude toward physics which might incline him to accept the Nazi political philosophy. But on this score the reader will be disappointed. Jordan seldom gives himself away; even a reference to Einstein is noncommittal and correct: "Whereupon they usually conclude that the challenging position taken by the third Reich toward Einstein personally with respect to his political views must necessarily result in a challenge of the theory of relativity," page 43. Jordan certainly lets it be known, however, that he believes the points of view of modern physics have important implications for politics; it is only that he does not believe this book is the place for an exposition of these implications. In the last chapter, however, Jordan does permit himself to speculate on the general bearing on questions of religion, without committing himself to any specific conclusions.

It is unfortunate that the translation is no better. Nearly every page bristles with blatant Germanicisms, so that at least this reader was kept in a chronic state of irritation. Even worse, the translator in places betrays such an unfamiliarity with the subject matter that the reader is hard put to reconstruct what must have been the meaning of the original. Witness the following sentence describing the Foucault pendulum on page 17, "A weight swinging on a very long thread transferred into an elliptical form of vibration under the influence of the earth's rotation."

P. W. BRIDGMAN

Vitamins and Hormones. Edited by ROBERT S. HARRIS and KENNETH V. THIMANN. Volume II. Academic Press, Inc., 125 East 23rd Street, New York, N. Y., 1944. xv + 514 pp. Illustrated. 15.5 × 23.5 cm. Price, \$6.80.

Volume II of "Vitamins and Hormones" has been published with this comment by the Editors: "The success of Volume I of Vitamins and Hormones, in spite of the difficulties imposed by war conditions, has shown the need that exists for critical and intelligent reviews of this field.

The scattering of the literature through a wide variety of journals, the inevitable variation in the quality of the work, and the variety of interests represented, ranging through physics and chemistry to pathology and clinical medicine, make the task of the reviewer a difficult one and the value of the review correspondingly greater."

It is interesting to note that of the sixteen authors, seven are from the United States, two are from Canada and seven are from England. That these investigators should complete their assignments at this time is a clear indication of the importance which they attach to this series of reviews. The eleven articles have been carefully written and the high standards set by volume I have been maintained.

Volume II has 461 pages followed by an author index and a subject index. The subjects reviewed are: The Role of Vitamins in the Anabolism of Fats; The Chemistry of Biotin; The Nutritional Requirements of Primates Other than Man; Physiological Action of Vitamin E and Its Homologues; The Chemistry and Physiology of Vitamin A; Para-Aminobenzoic Acid—Experimental and Clinical Studies; A Critique of the Etiology of Dental Caries; Vitamins and Cancer; Effect of Androgens and Estrogens on Birds; Hormones in Cancer; X-Ray Crystallography and Sterol Structure.

Although it is apparent that no one can have an intimate knowledge of two such subjects as nutritional requirements of primates other than man and X-ray crystallography, the reader can approach both of these chapters without fear of being confronted with a mass of details in the former and data which are too technical to understand in the latter. The same comment applies equally well to each of the other chapters.

In volume I a majority of the references of the bibliography were to articles published within the last five years and but few were dated before 1930. In Volume II the work reviewed in the chapter on chemistry of biotin is of necessity of recent date since investigations on this subject in the United States were not begun until 1940. Several other chapters, however, include an historical review of the work which covers a much longer period of time. These chapters have been prepared with proper consideration of the entire course of the investigation, even including work completed 140 years ago. A Critique of the Etiology of Dental Caries refers to work reported in 1804, 1805 and 1806 and Miller's work following the year 1880 is discussed in detail. This extensive background serves to emphasize the devious path which has been followed and how elusive have been the few definite factors which have slowly been associated with the etiology of dental caries.

More than passing reference should be made to the chapter on chemistry of biotin. The work is well summarized and presented with a stimulating vigor, clearness of insight and directness of purpose which elicit a feeling of satisfaction.

The elucidation of the chemical nature of carotene and vitamin A was accomplished several years ago and the chapter which deals with these and related compounds cannot have the "news" interest associated with biotin. This chapter is a closely integrated and well-written review of both the chemistry and physiologic action of this family of compounds. Except for a practical synthesis of vitamin A there are but few details to be added by the organic chemist, but as with so many of the vitamins and hormones, our knowledge of the physiologic action of this vitamin leaves much to be desired.

The chapters on the role of vitamins in the anabolism of fats, the nutritional requirements of primates other than man, the physiologic action of vitamin E, para-aminobenzoic acid, the effect of androgens and estrogens on birds and hormones in cancer are all excellent reviews of the respective fields. The chapter on vitamins in cancer is a compilation of some eighty to ninety-five per cent. of the

papers which have been published on this subject. The authors state, however, that investigation in this field has not yet passed beyond the descriptive stage and cannot be critically evaluated. The work selected from 276 references is well presented and will serve as a basis for further contributions to this important field.

The chapter on X-ray crystallography is a concise statement of the work as it has been applied to the steroid field. Although much remains to be done, the information which has been secured is a substantial confirmation of the contributions made by chemists and the structure assigned for the steroid nucleus has been shown to be correct through the use of projections of electron density obtained from X-ray oscillation photographs of the crystalline steroids. The value of X-ray crystallography which has been developed during recent years may be judged from the statement: "In the analysis of cholesteryl iodide the position of every atom in this particular molecule has been fixed with a considerable degree of certainty."

E. C. KENDALL

Organic Chemistry. By LOUIS F. FIESER and MARY FIESER. Abridged Edition. D. C. Heath and Company, Boston, Mass. xi + 698 pp. Illustrated. 16 X 24 cm. Price, \$4.00.

At first sight the abridged edition of the Fieser and Fieser "Organic Chemistry" seems to differ but little from the larger text. As one compares the two, however, it becomes clear that the abridgment has been carried out with great care. The seven chapters for optional reading in the larger text have been cut down to four in which is assembled as much of the material as could be understood by a beginning student. The study of aliphatic compounds is practically the same in both texts except for the excision of certain paragraphs; those on amine oxides; the Walden Inversion; *cis* and *trans* addition and tables of resolving agents, optically active salts and methods of experimentation with optically active compounds. The chapters on aromatic chemistry have been very much abridged bringing this part of the subject in better proportion, perhaps, to the rest than in the larger text. Most of the cut of nearly four hundred pages comes in this latter half of the book.

Since the difference in size of the two books is thus a real abridgment and nowhere a rewriting one finds here the incomparable easy narrative style of the larger text which would make almost any subject interesting. From simple beginnings the student is introduced to an increasing body of fact and accompanying theory interestingly arranged and copiously illustrated from different fields of the science, commercial, physiological and "pure." As every teacher knows it is his part to sift, to emphasize and to illuminate. The wealth of material in this book makes his task a bit more difficult than usual but the rewards are great. The best students are stimulated and work with enthusiasm, the not so good are interested and work well, the very poor are prone to drop by the wayside, which is probably where they belong.

The emphasis on the development of the science is particularly valuable, bits of early history and more complete descriptions of discovery are interspersed throughout the book. The dramatic story of Pasteur's work loses nothing in the telling and van't Hoff and LeBel share the honors with him. The work of Emil Fischer and of other illustrious experimenters is given in sufficient detail so that the student shares in the excitement of discovery and through the description of the work of individuals from Scheele to du Vigneaud, from oxygen to biotin, learns perhaps for the first time of the thrills to be found in the laboratory and the reason why the scientist stays there.

This same awakening of the student follows from what is to this reviewer the outstanding characteristic of the book, the fact that, throughout, the authors themselves are in the laboratory. A person knowing for many hours a day the appearance, the smell, the "feel," the habit and the not infrequent temperamental behavior of organic compounds is in a position to make them real substances and not the mere skeletal forms which drag their tortuous way across so many a textbook page. Here the reactions come alive. The student sees quite clearly the yellow color of the diazomethane solution, the rapid evolution of nitrogen as the reaction proceeds and the equally rapid fading of the yellow color. He realizes for himself that this reagent is its own indicator and that it would be fun to use it. He knows what is meant by the "sluggish" esterification of tertiary butyl alcohol and is interested in the simple and convincing explanation. Even extraction with ether becomes interesting when the detailed description is followed by a study of the ways of ethers in general and the student is led on to a study of the manner in which those reactions and others of the chapter can be "distinctly serviceable" in the synthetic preparation of pure compounds and to the clear description of the process of working out an original plan for synthesis of a desired compound.

This book teaches then clearly and interestingly the usual facts of elementary organic chemistry and many unusual and new and illuminating facts as well. It also teaches how chemists are made.

MARIE REIMER

BOOKS RECEIVED

December 10, 1944-January 10, 1945

- PIERRE AUGER. "What are Cosmic Rays?" University of Chicago Press, 5750 Ellis Avenue, Chicago, Ill. 128 pp. \$2.00.
- S. C. BROOKS AND MATILDA MOLDENHAUER BROOKS. "The Permeability of Living Cells." ("Protoplasma-Monographien," Bd. 19, Berlin-Zehlendorf, Verlag von Gebrüder Borntraeger, 1941). J. W. Edwards, Publishers, Ann Arbor, Michigan. 395 pp. \$5.00.
- H. W. CHATFIELD. "Varnish Constituents." Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N. Y. 496 pp. \$7.00.
- GESSNER G. HAWLEY. "Seeing the Invisible. The Story of the Electron Microscope." Alfred A. Knopf, Inc., 501 Madison Avenue, New York 22, N. Y. 195 pp. \$2.50.
- MORRIS B. JACOBS, Editor. "The Chemistry and Technology of Food and Food Products." Volume II. Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N. Y. 890 pp. \$10.50, individual; set of two volumes, \$19.00.
- M. MERLUB-SOBEL. "Metals and Alloys Dictionary." Chemical Publishing Company, Inc., 26 Court Street, Brooklyn, N. Y. 238 pp. \$4.50.
- CARL F. PRUTTON and SAMUEL H. MARON. "Fundamental Principles of Physical Chemistry." The Macmillan Company, 60 Fifth Avenue, New York, N. Y. 780 pp. \$4.50.
- "Proceedings of a Conference on Problems in the Utilization of Small Coals, held at the Institution of Civil Engineers, November 10th and 11th, 1943." The British Coal Utilization Research Association, 13 Grosvenor Gardens, London S. W. 1, England. 294 pp.