

beautifully developed large prisms, which were not hygroscopic and were devoid of action toward Fehling's solution. The compound was found to be stable in neutral and alkaline solutions, but it suffered rapid decomposition at room temperature in acidic media. Experiments carried out in fermentation saccharimeters showed that while yeast was capable of fermenting fructosedimethyl-acetal in distilled water to give carbon dioxide, methyl and ethyl alcohols in almost quantitative yield, it was without any effect on the acetal in a citric acid-disodium phosphate buffer solution of pH 7. The action of different invertase samples on the acetal at pH 4.5 and pH 7 was found to be

completely negative, although the same samples were very active on sucrose under identical conditions.

In view of the extreme sensitiveness of the acetal toward acid, the action of yeast in an unbuffered solution might be due to the fermentation of fructose liberated from the acetal by a trace of the acid of the yeast, rather than to a genuine enzymatic effect. This problem is now being investigated. A detailed account of the work will be published shortly.

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NEW BOOKS

Modern Theories of Organic Chemistry. By H. B. WATSON, D.Sc. (Wales), F.I.C., Head of the Department of Chemistry at the City of Cardiff Technical College. Oxford University Press, 114 Fifth Avenue, New York, N. Y., 1937. vii + 218 pp. 21 figs. 16.5 × 25 cm. Price, \$4.50.

"Professor G. N. Lewis's conception of the sharing of one or more electron pairs by two atoms gave a new and illuminating picture of the bonds which link carbon atoms into chains and rings, and set organic chemists the task of interpreting the reactions of carbon compounds of various types in terms of the electronic structures of the molecules.

"In this volume an attempt is made to present the modern viewpoint in a concise and simple form, and to show how the new conceptions have followed logically from the earlier views." As is evident from its size, the book does not undertake to be complete in detail, nor to provide an exhaustive bibliography. The chapters deal with: Theories of Chemical Combination; The New Physical Methods of Investigation; Applications of the Electronic Theory in Organic Chemistry, Strengths of Acids and Bases, The Inductive Effect; Substitution Reactions; General Discussion of the Application of the Electronic Theory in Organic Chemistry; Free Radicals; Compounds of Divalent Carbon and Allied Problems; Addition to Unsaturated Compounds; Tautomeric Change; Migrations from Side-Chain to Nucleus and Other Rearrangements; The Factors Determining Reaction Velocity; A Review of Some Stereochemical Problems.

The author has an exceptionally clear and logical style. This is at its best in the introductory chapters, which can be recommended not only to students, but to every organic chemist who wishes to consider what modern physics has done for the understanding of his science. Briefly Professor Watson has put the last fifteen years into their

place in chemical history, and in this placing has built a vigorous viewpoint for the present.

In the electronic interpretation of organic reactions, certain English chemists have been pioneers. Their views might originally have been more cordially received in this country if presented inductively and in terms whose meanings are well known. Professor Watson has accomplished this. He has placed the horse consistently before the cart and has shown the necessity of each concept introduced. Proceeding on this basis, he uses fewer ultimate variables than have appeared in some discussions in this field.

Chapters 6 to 10 and 12 make a less unique contribution, for in their brevity they contain little material not usually included in courses in advanced organic chemistry. Even the consideration of evidence on specific problems is far from complete. Nevertheless, the clear and discriminating presentations of some of the problems are likely to be a better introduction for students than a more exhaustive descriptive treatment.

The printing of the book is up to the usual good standard of the Oxford University Press. The publishers have done well to put the price within the reach of most students and teachers.

PAUL D. BARTLETT

The Chemistry of the Steroids. By HARRY SOBOTKA, Chemist to the Mount Sinai Hospital, New York. The Williams and Wilkins Company, Mt. Royal and Guilford Avenues, Baltimore, Maryland, 1938. xiii + 634 pp. 15 × 23.5 cm. Price, \$8.50.

The word "Steroids" is a newcomer to the terminology of the organic chemist. According to the author it "is meant to comprise sterols and steroids, *i. e.*, sterol-like

substances." The introduction of this new term seems rather unfortunate. It might lead to some confusion, since the term "steroid," introduced only a few years ago, refers already to the derivatives of cyclopentenophenanthrene in general.

"The Chemistry of the Sterids" is not a textbook, but a handbook; it is a combination of a "Houben-Weyl," "Landolt-Börnstein" and "Beilstein" of steroid chemistry. The author has undertaken the laborious task of selecting from almost countless papers all the facts concerning the chemistry of steroids, and presenting them in a logical and readable form.

After an introductory chapter on the history of the chemistry of "sterids," the author deals with the various methods of structural research, steric considerations, the chemical properties of naturally occurring steroids and of carcinogens, and molecular compounds. Over 400 structural formulas, which have been brought together on 46 separate pages, serve to illustrate the text.

Then follows a compilation of the physical properties of steroids. This includes much invaluable and interesting information, such as, for instance, a complete list of the known absorption spectra of steroids and references to steroid crystallography.

The bulk of the book, 336 pages, is taken up by the "Beilstein" section, "a classified catalog of sterids and their derivatives recorded before January 1, 1937." Here over 3000 substances have been arranged according to a very ingenious system which should appeal to all investigators in this field. A very fine bibliography, covering over 60 pages, has been added.

Because it is essentially a handbook, this work cannot be recommended to serve as an introductory text to a student possessing only a scant knowledge of the complexities of steroid chemistry. However, it will be welcomed as an invaluable source of information by those investigators who have more than a passing interest for this field of research. The author deserves their gratitude for this compilation, which will save them many hours of search through an endless literature.

WERNER BERGMANN

Perspectives in Biochemistry. Thirty-one Essays Presented to Sir Frederick Gowland Hopkins by Past and Present Members of his Laboratory. Edited by JOSEPH NEEDHAM and DAVID E. GREEN. Cambridge University Press: The Macmillan Company, 60 Fifth Avenue, New York, N. Y., 1937. ix + 361 pp. Illustrated. 14.5 × 22.5 cm. Price, \$4.75.

Scientific writing for the most part finds its way into journals whose reputations depend increasingly upon the size of their circulation and speed of publication. The exigencies of price curtail space and individual literary style is perforce sacrificed to a crisp staccato manner, highly satisfactory to enable large numbers of people rapidly to digest the contents of an article. Excellent from this point of view, there is little room for historical perspective, for philosophical rumination, or for guarded speculation. Although journals given over to reviews take care of the first need, rumination often becomes a private feast, and speculation is left for those who, having eschewed science

for journalism, can assure the eager and expectant public precisely what kind of a world this will be fifty years hence.

Among the amenities left to men of science is the pleasant habit of dedicating volumes to those they revere, especially their old teachers. But the Festschrift, or jubilee volume, has tended, with the rest of scientific writing, to be a collection of papers written by colleagues or students in the same style, and often in the same journals to which they normally contribute. The book which we are reviewing is not in this tradition. It is not a collection of reprints from scientific journals. It is a series of essays in which each author has taken time "to speculate a little on the likely paths of future thought and discovery."

The value of this volume depends upon the backgrounds and scientific insight of the contributors. All have at one time or other been students of, or associated with, Sir Frederick Gowland Hopkins. Of the thirty-one essayists many have international reputations gained from important experimental studies. Writing in this book to honor Sir Frederick they are in festive mood. Instead of dedicating to their great teacher their last paper they have sent him their most far reaching thoughts regarding the significance of their work. The result is arresting. It is good to know what R. A. Peters thinks of "Proteins and Cell-Organization." J. D. Bernal contributes "A Speculation on Muscle." Szent-Györgyi writes on "Oxidation and Fermentation," and N. K. Adam on "Molecular Forces, Orientation and Surface Films." Sir Edward Mellanby writes on "Toxamins in Food," and A. J. Clark on "Drugs and Mankind." The remainder of the thirty-one essays are no less varied in subject matter or treatment. Although this would be a break with the practice of exempting those honored from contributions, one cannot help wishing that this very catholic volume also contained an essay by Sir Frederick Gowland Hopkins on "Perspectives in Biochemistry."

EDWIN J. COHN

The Chemistry and Technology of Rubber Latex. By C. FALCONER FLINT, Ph.D., D.I.C., A.I.C., A.R.C.S., B. Sc., Imperial Chemical Industries, Ltd. Foreword by Lt. Colonel B. J. EATON. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y., 1938. xx + 715 pp. Illustrated. 16 × 24 cm. Price, \$14.00.

There are few people who by actual training are so well equipped to write a book on the chemistry and technology of rubber latex as is Dr. C. Falconer Flint. For many years a staff member of the Rubber Research Institute, of Malaya and now in charge of latex research and development with the Imperial Chemical Industries, Ltd., he combines personal experience of the raw material and its technical application. Although in the preface the author states that he used G. Génin's book "Chimie et Technologie du Latex de Caoutchouc" as a framework, he has not only brought this compilation up to date but has added freely to it, which justifies the reviewer to consider Flint's book as the outstanding contribution to the science and technology of rubber latex which has been written in English.

The first parts of the book present a short historical survey of the development of rubber plantations and earlier work on latex research. Then follows a discussion of the