

NEW BOOKS

A. A. S. Research Conference on Cancer. Edited by FOREST RAY MOULTON. American Association for the Advancement of Science, Smithsonian Institution Bldg., Washington 25, D. C., 1945. 333 pp. 65 figs. 19 X 26 cm. Price \$4.50.

In addition to the formal papers presented at the summer meeting of the Section on Chemistry of the American Association for the Advancement of Science at Gibson Island, Maryland, July 31 to August 4, 1944, this publication includes discussions of the papers as recorded by stenotypic means. Prior to publication, all discussions were edited by the contributors who had the privilege of deletion or amplification of their remarks.

The subject matter is divided into five topics, the virus approach, carcinogenesis, enzymes, diet and chemotherapy. Five papers and four notes (107 pp.) contributed by sixteen authors are concerned mainly with the possibility of viruses as etiological agents of mammalian tumors. The discussions range from outright opposition through skepticism to support of theories which present viruses as either a sole or a partial cause of certain mammalian tumors. A considerable amount of criticism in the discussions is directed toward experimental techniques. More recent papers by some of the same authors have answered many of these criticisms.

The second section contains articles on hydrocarbon carcinogenesis, pyrrole compounds and carcinogenesis, production of malignancy *in vitro*, the leukemic cell, dependent and autonomous phases in the development of cancer, and a theory of a mitochondrial origin of cancer. The section on enzymes deals with various enzymes found in normal and neoplastic animal tissues, reducing properties of sera from patients with tumors, and biochemical studies on derivatives of metabolic products of aminoazobenzene. B vitamins and cancer, dietary influence on experimental liver tumors due to azo dyes, and a general note on diet and cancer are the subjects of the fourth section. The final section on chemotherapy deals with methods of treatment of leukemia and with the action of various compounds on normal and malignant tissues.

The book serves as a good review of the 1944 status of many specialized topics. Inclusion of the discussions of the papers stimulates particular interest in the various theories and results because of the critical and often controversial nature of the comments. It is probable that the book may become an interesting historical document because the papers were presented at a time of active development, expansion and modification of theories held by capable investigators. The book undoubtedly will be perused by those predominantly interested in or engaged in cancer research; any person with a reasonably broad scientific training and a casual interest in cancer research will find many of the articles to be well worth reading.

An adequate list of references follows most of the main subjects. There are two columns of print per page; the types used both for the main article and for the discussions are beyond reproach; illustrations and tables are well reproduced. The whole publication has been edited carefully.

HUGH J. CREECH

Synthetische Methoden der organischen Chemie. (Synthetic Methods of Organic Chemistry). Volume I. By Dr. W. THEILHEIMER, University of Basel, Switzerland. 1946, S. Karger, Basel, Switzerland; New York, N. Y. viii + 224 pp. 15 X 23 cm. Price, 25 Swiss francs.

The present system of recording chemical information does not enable the man in the laboratory to inform himself rapidly and conveniently with regard to the practical de-

tails of specific procedures described in the literature; he looks for advice to such collections as the somewhat outdated work of Houben and Weyl or to highly specialized, and therefore limited, series like "Organic Reactions." The volume at hand is the first of a projected series of books in which Dr. Theilheimer intends to catalog recent applications of established synthetic methods as well as basically new approaches. The years 1942 to 1944 are covered, and a second volume for the years 1945 to 1946 is in progress; supplementary volumes are to appear annually from then on.

In his endeavour to organize the unwieldy subject matter in a comprehensive and expansible system, Theilheimer has adopted Weyland's scheme of classifying reactions according to the nature of the bonds formed. The bond type together with the mode of bond formation, *i. e.*, by addition, rearrangement, exchange, or elimination, is expressed in a novel symbol, the "reaction sign" (*Reaktionszeichen*). The various procedures possessing the same reaction sign are subclassified further according to the nature of the "additional reagents" (*Hilfsstoffe*) used. For instance, the symbol CC \downarrow Hal means: formation of a carbon to carbon bond by exchange involving a compound with a carbon to halogen bond. This heading includes, among others, reactions of acid chlorides with diazomethane, syntheses with metal-organic compounds, alkylation of active methylene groups, formation of nitriles from halides, Friedel-Crafts reactions. Owing to the skillful setting-up of the pages in a semi-tabular fashion the reader may locate a desired piece of information almost at a glance.

Sufficient details are included in the citations to be of immediate value in actual laboratory applications. The literature references given include not only the location of the particular paper referred to, but frequently also that of the original publication of a general method as well as advice concerning the location of additional examples. Sometimes a reaction may be assigned more than one symbol; rather than to devise a less equivocal but more cumbersome symbolism the author has provided cross references whenever necessary. In a few cases, however, the rationale of the classification seemed obscure; example 519, *e. g.*, lists the Friedel-Crafts reaction of acenaphthene and succinic anhydride as formation of a CC bond by addition to a CO bond, and likewise in example 689 the bimolecular reduction of an aromatic aldehyde with magnesium subiodide is classified as formation of a CC bond by exchange with halogen.

The success of the collection depends to a large degree on the author's judgment in selecting the material to be included. Although on the whole the examples seem to be well chosen, a few omissions were noted; thus there is no mention of the desulfuration technique with Raney nickel, nor is there a description of the recent improvement of the Willgerodt reaction by the use of morpholine and sulfur.

In anticipation of the intuitive objection many readers will raise against a new system of classification, which lumps together concepts hitherto considered separate and *vice versa*, the author has provided an alphabetical index in the traditional fashion, but it is likely that the reader who has adapted himself to Theilheimer's symbolism will prefer it over the conventional index. A more explicit exposé of the underlying principles, amplified by a few detailed examples illustrating the conventions set up, may aid in preparing the reader for efficient use of the book. The wealth of practical information placed at the disposal of the laboratory worker obviates tedious literature searches and may often help to shorten the laborious trial-and-error period connected with every adaptation of a general procedure to a particular task.

A number of typographical errors were noted and called to the author's attention.

HANS HEYMANN

Industrial Oil and Fat Products. By ALTON E. BAILEY, Senior Chemical Technologist, Southern Regional Research Laboratory, U. S. Department of Agriculture, New Orleans, La. Interscience Publishers, Inc., New York, N. Y., 1945. x + 735 pp. 111 illustrations. 16 × 24 cm. Price, \$10.00.

The book opens (Section A, 82 pages) with a detailed description of the chemical composition, chemical reactions and physical properties of the fats, fatty oils and fatty acids. Laboratory techniques for the determination of these properties are omitted but the technical significance of the numerous tests are discussed. This section ends with a brief chapter on the "Role of Fats in the Diet of Man" which belongs logically later in the book.

Section B (97 pages) on "Raw Materials of Oil and Fat Products" gives a detailed discussion of the individual oils and fats which are of industrial importance, but omits description of many hundreds of such oils which are not yet used industrially. This discussion includes extracts from the available statistics regarding production in the United States and in other countries and international trade and prices of oils and of the seeds from which they are derived.

Section C (247 pages) on the "Industrial Utilization of Fats and Oils" is the most significant and important part of the book. It contains much detailed authoritative information not available in book form elsewhere, especially in regard to the use of fats and oils in food products. The chapter on "Soap and other Surface Active Agents" gives a discussion of the theory of wetting, emulsification, foaming and detergency; an explanation of phase diagrams applicable to the soap kettle; a description of the many varieties of soap; and a description of many of the modern surface active agents other than soap. But the discussion of the processes for manufacturing soap is postponed for more than 300 pages. The chapter on "Paints, Varnishes and Related Processes" discusses drying oils and the chemistry of drying, but says very little about the other ingredients in paints or the problems of formulation of surface coatings in general.

Section D (270 pages) on "Unit Processes in Oil and Fat Technology" discusses rendering, solvent extraction, pressing, refining, deodorization, winterizing, hydrogenation, soap making, fat splitting, and other processes.

It seems apparent that it would have been better to have reversed the order of Sections C and D. There are in Section C many statements which would be puzzling or unintelligible to any reader not already familiar with the subject matter of Section D. By reversing the order the text could have been made clearer, more logical and briefer.

One feature of the book which the reviewer regards as undesirable is the very sparing use of personal names of inventors and the almost complete exclusion of brand names and of the names of industrial companies. Personal names are used freely as authority for factual statements, or when giving credit for theoretical views, or for suggesting methods of testing, but seem to be avoided when discussing the invention and development of industrial processes. Thus, for example, the name of Paul Sabatier appears in the Name Index only once with a reference to a page where Sabatier is mentioned in a footnote as the author of the famous book "Catalysis in Organic Chemistry." But the detailed chapter on Hydrogenation which is 64 pages long and which opens with the statement, "It is difficult to exaggerate the importance of the hydrogenation process in modern oil and fat technology," does not have Sabatier's name in the text and carefully refrains from giving credit to any inventor or company for the development. Similarly, the name of David Wesson in the Name Index has only one reference which is to a page where Wesson is credited with having proposed an analytical procedure. But although the importance of refined

cottonseed oil as a salad oil on the American market is emphasized, "Wesson Oil" is not mentioned nor is any credit given to David Wesson by name for his leadership in making refined cottonseed oil so popular and economical that it outsells olive oil in the United States by many fold.

The names of manufacturing companies scarcely appear at all except in footnotes as assignees of patents. In his discussion of the manufacture of soap the author says, "a number of continuous saponification processes have been devised, and at least two of them are now in large scale commercial operation." However, he does give the location of these plants or the names of the companies which built and are operating them. The ensuing brief description sounds very much like an abbreviation of a patent specification rather than an eyewitness account of an actual factory. The reviewer has had the privilege of visiting one of the factories and obtained the conviction that the old way of making soap in batches in the conventional kettles is obsolete.

The use of trade names is avoided so scrupulously that it is obviously a settled policy. However, there is one case in which the author forgot his general policy. In his discussion of dehydrated castor oil he says, "It is marketed under the names of Isoline, Synthenol, Dehydrol, Castung, Kastolene, etc." The reviewer believes that this statement makes the whole discussion more informative and useful for any reader not already so familiar with the industry that he has no need to read the book anyway.

However, these are minor criticisms. The book can be recommended as the best and most up-to-date book on the technology of fats and oils, especially for edible products.

GRINNELL JONES

BOOKS RECEIVED

May 10, 1946—June 10, 1946

- JOSEPH E. FARADAY. "Encyclopedia of Hydrocarbon Compounds." Volume I: C₁ to C₈. Chemical Publishing Company, Inc., 26 Court Street, Dept. EB, Brooklyn 2, N. Y. \$15.00.
- H. MARK AND G. S. WHITBY, Editors. "Scientific Progress in the Field of Rubber and Synthetic Elastomers." (Advances in Colloid Science, Vol. II.) Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N. Y. 453 pp. \$7.00.
- JEROME NATHANSON, Editor. "Science for Democracy." King's Crown Press, Morningside Heights, New York, N. Y. 170 pp. \$2.50.
- WENDELL H. POWERS, Editor. "Chemotherapy." (Advancing Fronts in Chemistry, Vol. II.) Reinhold Publishing Corporation, 330 West 42nd St., New York, N. Y. 156 pp. \$3.25.
- E. G. PRINGSHEIM. "Pure Cultures of Algae, their Preparation and Maintenance." Cambridge University Press (The Macmillan Company), 60 Fifth Avenue, New York 11, N. Y. 119 pp. \$1.75.
- GEORGE *M. SUTHEIM. "Introduction to Emulsions." Chemical Publishing Company, Inc., 234 King Street, Brooklyn 31, N. Y. 260 pp. \$4.75.
- A. WEISSBERGER. "Physical Methods of Organic Chemistry." Vol. II. Interscience Publishers, Inc., 215 Fourth Avenue, New York, N. Y. 631 pp. \$8.50.
- PETER F. WIENER. "German for the Scientist." (First American Edition.) Chemical Publishing Company, Inc., 26 Court Street, Brooklyn 2, N. Y. 238 pp. \$3.50.