

materials, etc., are the subjects of the remainder of the papers.

The book suffers from the lack of continuity and the variation in style common to works of its kind, but these minor faults are more than compensated for by the generally high quality of the material. The diversity of topics covered should make it of interest not only to people active in research on gas chromatography, but also to those for whom this technique is chiefly a valuable new analytical method. Most of the articles give sufficient experimental detail to enable the reader who wishes to build his own apparatus to select the features most desirable for his purpose. All readers should benefit from a study of the theoretical papers. The report of the lively and informative discussion at the symposium adds to the value of the book. The recommendations of the committee on nomenclature seem reasonable; they would perhaps carry more weight had the editor, himself a member of the committee, chosen the title of the book in accordance with them. The contributors, the editor and the publishers are to be congratulated for the speed with which they have made this useful work available.

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**Chemie der Zucker und Polysaccharide.** Second Edition.

By FRITZ MICHEEL, Dr. phil., o. Professor der Chemie an der Universität Münster (Westfalen) and ALMUTH KLEMER, Dr. rer. nat., Wissenschaftliche Assistentin am Organisch-chemischen Institut der Universität Münster (Westfalen). Akademische Verlagsgesellschaft, Geest and Portig K.-G., Sternwartenstrasse 8, Leipzig C 1, Germany. 1956. xix + 512 pp. 16 × 23 cm. Price, 36.—DM.

The first edition of Fritz Micheel's "Chemie der Zucker und Polysaccharide" appeared in 1939 and was at the time, easily the best introductory monograph for this field. An English translation, by R. C. Hockett, was published in this country in 1945. There now appears a second revised and augmented edition in the compilation of which Professor Micheel has been assisted by Fräulein Dr. Almuth Klemer. The text is, nevertheless, essentially singly authored and accordingly does not suffer from the repetitions and contradictions characteristic of multiply authored monographs. The book does not profess to be complete but the extent of its coverage is astounding and the essential points in the chemistry and biochemistry of the monosaccharides, oligosaccharides and polysaccharides are well selected and thoroughly covered. Emphasis is placed upon the organic structural chemistry involved. The writing and editing is thorough and is free of those obvious errors, gross omissions, and misinterpretations of published work, which have been so characteristic of most of the carbohydrate monographs appearing in recent years in English. The German language exposition is simple and direct and is highly recommended for students preparing for the American university German reading examinations.

Professor Micheel, a student of Kurt Hess and a former associate of Adolf Windaus, the latter being the one outstanding student of Heinrich Kiliani, writes in the classical German tradition and is no votary of modern mechanistic interpretations of organic reactions. The troublesome problems of ring conformation are never mentioned. What is well grounded in established fact, however, is all there. The nomenclature employed is that of Emil Fischer. The extensive changes and modernizations of this nomenclature which have been developed by the joint efforts of the American and British chemists, has not been translated into the German idiom by the present authors. The one concession is the adoption of the Roman small capital letter for the configurational symbol. While the language barrier is a factor here, some better common ground would be desirable. Professor Micheel favors the Fischer projection formula for the depiction of sugar structures. From this he proceeds occasionally to an "eigentlich" orientation of the Haworth perspective formula which he is later forced to change to the accepted orientation when he discusses oligosaccharide and polysaccharide structures.

This revision was effected under great difficulties. The institute of Professor Micheel was demolished by the aerial bombing of World War II and although he now has a newly

built institute, he still lacks a complete library. In the revision he was forced to depend largely upon reprints sent by authors and upon *Chemical Abstracts*. In spite of these formidable obstacles, the text has been thoroughly modernized and augmented by approximately 120 pages. Eighty-three pages of well documented tables of sugars and sugar derivatives have been collected at the end of the book. The indexes have been about doubled in size from the first edition. The section on the biochemistry of the sugars has been revised completely and new sections on chromatographic separations, isotopic labeling and antibiotics have been added. Cross references are frequent and are well selected. Coverage in the rapidly expanding field of oligosaccharide and polysaccharide structure lags, in part, a little behind the true research front. That of the starches is well delineated. The sections on the seaweed polysaccharides, stachyose and the tissue polysaccharides, stand in need of attention. This undoubtedly reflects in part the "behindness" of *Chemical Abstracts* in the period following the end of World War II. Strange omissions in the reference book listing are the American monographs on cellulose and starch: those of Ott (two editions), of Kerr (two editions), and of Wise. In spite of these few shortcomings, not unexpected in view of the difficulties presented to the authors in their revisionary efforts, this text stands as the best introductory monograph in its field and probably will maintain this position for some time to come.

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**Electrochemistry. Principles and Applications.** By EDMUND C. POTTER, B.Sc., Ph.D., F.R.I.C., D.I.C., Research Branch, Central Electricity Authority for England and Wales. The Macmillan Company, 60 Fifth Avenue, New York 11, New York. 1957. xii + 418 pp. 16 × 25.5 cm. Price \$10.00.

In recent years relatively few texts on electrochemistry have been published. Potter's new book represents one of the first to present both basic and applied aspects of electrochemistry in a concise, well integrated fashion in a single volume.

Primary emphasis is placed on electrode processes in the early chapters which discuss the theoretical aspects of electrochemistry. Reversible electrode systems are treated on a thermodynamic basis as well as in terms of experimental aspects. A description of the factors contributing to the irreversibility of various electrode processes is presented with particular attention on hydrogen overvoltage as is traditional among electrochemists. A separate chapter is used for the discussion of the electrical double layer and electrokinetic phenomena. The treatment of electrolytes is brief and hardly more detailed than is standard undergraduate texts on physical chemistry. Newcomers to the field of electrochemistry as well as chemical analysts will find the concise chapters on electrochemical measurements particularly useful. The applied phases of electrochemistry which are considered by Potter include corrosion mechanisms and prevention, electrodeposition, batteries, and industrial electrolysis.

Throughout this book, the sign conventions for electrode potentials advocated by the International Union of Pure and Applied Chemistry are employed in contrast to the system generally in use in most American texts and publications of the American Chemical Society. The author discusses the problem of sign conventions, however, in a simple but effective fashion; hence, the student who is accustomed to the so-called American system is not likely to be confused.

This text is conspicuous for its excellent organization and concise presentation. The many illustrations and tables are very effective. The text contains a number of problems which are completely worked and integrated within the chapters. The bibliography at the end of the book lists other texts and publications for collateral reading. No specific references are given for the work or data presented in this book.

Many of the contemporary explanations for various electrochemical phenomena are far from well established and in a state of flux. As a result, authors of textbooks on electrochemistry must exercise more than the usual care to indicate fully the status of the various proposed explanations. Un-