

# New Books

J. F. Gerech, Book Review Editor

*Biochemical Applications of Mass Spectrometry*, Edited by George R. Waller (Wiley-Interscience Publishers, New York, April 1972, XIV + 872 p., \$49.95).

The magnitude of this undertaking is indeed a challenge. In an area of mass spectrometry that currently sees 50 or more publications per month, it must be recognized that this treatise could not help but fall short in current awareness. Still, and despite this, there is a tremendous wealth of information, made up of salient historical background blended with significant progress through the years 1969, 1970 and even late 1971 in several chapters. The physical dimensions of this work (8 1/2 x 11 x 1 7/8 in.) place it in the category of a bonafide textbook. It possesses a rare quality of being quite legible, both in type-size and content. The book is divided into three main sections: Instrumentation, Interpretation of Mass Spectra, and Applications (111, 76 and 624 pages, respectively). A brief introduction and a historical survey (Chapter 1) precedes the first section. The clarity here pervades the whole text.

Section I, Instrumentation, consists of the two chapters "Mass Spectrometry Instrumentation," and "Mass Spectrometer Data Acquisition and Processing Systems" (Chapters 2 and 3, respectively). Chapter 3 specifically details 17 different mass spectrometer laboratories automated with varying computer arrays and capabilities.

Section II, Interpretation of Mass Spectra, is composed of the following chapters: Chapter 4, "Origin of Mass Spectra"; Chapter 5, "Metastable Ions as an Aid in the

Interpretation of Mass Spectra"; Chapter 6, "Compound Identification by Computer Matching Mass Spectra"; and Chapter 7, "Use of a Computer to Identify Unknown Compounds; The Automation of Scientific Inference."

Chapters 8-31 make up Section III, Applications. In order, they are: "Fatty Acids," "Complex Lipids," "Steroids," "Bile Acids," "Carbohydrates," "Terpenes and Terpenoids," "Amino Acids," "Amino Acid Sequence in Oligopeptides," "Nucleic Acids and Derivatives," "Antibiotics," "Vitamins and Cofactors," "Hormones," "Drug Metabolism," "Tetrapyrroles," "Clinical Uses of Mass Spectrometry," "Pesticides," "Alkaloids," "Flavor Components," "Semiocemicals," "Use of Stable Isotopes," "Negative Ions," "Use of Mass Spectrometry in the Detection of Life on Other Planets," "Determination of the Structures of Organic Molecules and Quantitative Analyses with the Field Ionization Mass Spectrometer," and "Chemical Ionization Mass Spectrometry."

A fourth section is of 20 pages, composed of four Appendices describing briefly the services of the Aldermaston Mass Spectrometry Data Centre, The NIH Regional Biomedical Mass Spectrometry Resources Program, Mass Spectral Computer Program Exchange, and List of Mass Spectrometer Manufacturers and their models.

One has but to read the listing of chapter headings to recognize the all-emcompassing scope of this coordinated effort by Waller and his world-wide contributors. Over 65 experts in this field drew upon their knowledge and experience and transmitted it in a generally readable manner. As would be expected with 872 pages, over 2300 references and perhaps 10,000 illustrations, charts and structural representations, the book does contain some errors; but very few were found for a work of this size. For instance, structure "aq" on page 525 calculates  $m/e$  241, and not the indicated  $m/e$  321. An errant decimal for a comma on page 196 could (but really shouldn't) lead one to believe that there is an incredibly small number of structural variations for eicosanols. On page 821 one finds a trivial misprint of "Clinical Ionization." Figures 4-2 on page 138 has the misfortune of having two parts, *a* and *b*, and *a* and *v* symbols within the parts, making the legend for Figure 4-2 an unnecessary challenge. Figures *j* and *k* on page 300 are missing the C-10-methyls required for the indicated  $m/e$ 's. This was most noticeable since Scheme A on the facing page (p. 301) shows the corresponding dehydro equivalent of *j* correctly.

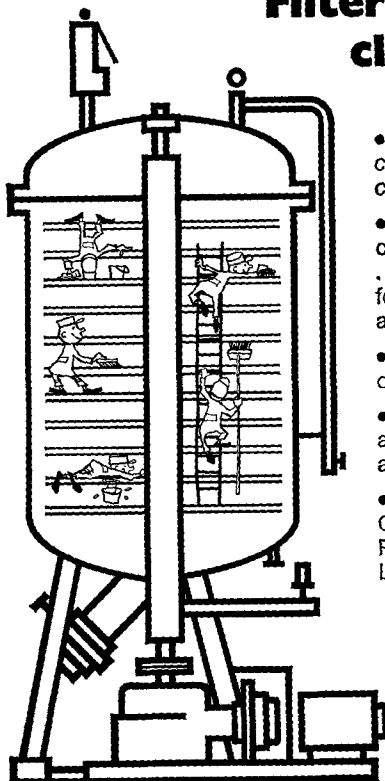
It is considered most unfortunate that two of the vitally important and extremely active areas, hormones and drug metabolism, should be devoid of any more recent references than late 1969. As counterpoint, those areas of antibiotics and vitamins are current into 1971. This variability results from the recognized difficulties in compiling so much information for publication. Over 22% of all references are for 1969 or later, making practically all of the coverage relevant through that year. This appears to be about average, based on a number of mass spectrometry texts on hand.

This book represents a first with regard to the whole field of biochemical mass spectrometry. Two recent publications, *Mass Spectrometry, Techniques and Applications*, edited by G.W.A. Milne, and *Topics in Organic Mass Spectrometry* (Vol. 8, in *Advances in Analytical Chemistry and Instrumentation*), edited by A.L. Burlingame, are perhaps the only other parallel efforts.

To quote the book jacket, "The careful organization, systematic approach, and comprehensiveness of this volume will make it particularly valuable to graduate students and



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*McCutcheon's Detergents and Emulsifiers, 1972 Annual* (McCutcheon's Div., Allured Publishing Corp., Ridgewood, N.J., 1972, 245 p., \$10.00).

This paperback represents the 1972 edition of the compilation of detergents and emulsifiers that has been published for over 20 years.

This book is divided into seven sections, the format resembling the 1971 edition. The bulk of information is given in the tabulation of both U.S. and foreign detergents and emulsifiers which are arranged alphabetically by trade name. Each material listed contains information on the manufacturer, class and formula, form and concentration, type of surfactant and remarks, which consists mainly of usage information. The table also includes information on hydrophile-lipophile balance (HLB) values where available. In addition to the main listing, a useful cross index of trade names and manufacturers listed by chemical class is given. An important addition to this edition is the listing of telephone numbers of U.S. manufacturers of the products listed. A separate index of HLB values for materials, where data is available, is also included. An excellent survey of various aspects of the detergent industry including up to date information on ecological problems and a discussion of the various raw materials used in syndets, prepared by J.C. Harris, is a well written review of the current status of the industry. The volume contains several pages of advertisements which are arranged so that they do not detract from the technical content.

The volume will be most valuable to chemists engaged in formulation work involving the use of detergents and emulsifiers. It provides the user with basic, concentrated information on the large number of raw materials available to the industry in an easy-to-follow handbook form. Anyone interested in obtaining quick and up-to-date information on currently available detergents and emulsifiers will find this volume a useful reference work.

*Principles of Enzymology for the Food Sciences*, J.R. Whitaker, (Marcel Dekker, Inc., New York, May 1972, 636 p.).

This book was designed to encourage food scientists to become acquainted with the fundamental principles of enzymology and is intended to serve as a text for the teaching of enzymology in the food sciences. The subject

matter presented can be divided into two sections. The first section, representing 14 chapters and 427 of the 617 pages, deals with the basic properties of enzyme-catalyzed reactions. These include an introductory chapter, which emphasizes the importance of enzymology in food science, and chapters covering protein structure, purification, active sites, reaction rates, substrate concentration effects, enzyme concentration effects, inhibitor effects, temperature effects, cofactors and nomenclature. The second section contains discussion of specific enzymes-hydrolases (glycosidases, pectic enzymes, esterases, nucleic acid hydrolases, proteases) and oxidoreductases (lactic dehydrogenase, glucose oxidase, polyphenol oxidase, xanthine oxidase, catalase, peroxidase and lipoxidase).

The book is a fine enzymology text in itself and should be especially useful to people interested in research of enzyme systems. The reading is lightly flavored with specific points of information pertinent to food scientists and technologists. The biomedical approach or such things as "*E. coli* chauvinism" in similar texts is minimized, and it is refreshing to see a book which provides relevance to the food scientist. Each chapter contains a series of review questions along with general and specific references. The review questions add much to the potency of this text and effectively challenge a person's understanding of the principles outlined in any given chapter.

The text is quite expensive, and one must question the usefulness of the latter section which is a sort of incomplete "Enzyme Handbook." Furthermore, in this reviewer's opinion, the author might have given more extensive coverage to certain areas such as: the response of enzymes to stress encountered during food storage or processing, e.g., temperature extremities, variations in water activity, ionizing irradiation, additives, etc.); the anabolic and catabolic role of enzymes in development of quality indices, e.g., flavor, color, texture, nutrition; and the use of enzymes as processing adjuncts or additives with the important implications of immobilization techniques. These topics are rather hollow if an individual has not been previously primed to the fundamentals.

In summary, *Principles of Enzymology for the Food Sciences* is highly recommended as a text that emphasizes the basic properties of enzymes for people in the applied sciences.

NORMAN HAARD

*Progress in Thin Layer Chromatography and Related Methods*, Vol. II., Edited by A. Niederwieser and G. Pataki (Ann Arbor Science Publishers, Inc., 1971, 259 p.).

This volume is a collection of seven chapters concerned with thin layer chromatography (TLC) authored by scientists.  
(Continued on page 398A)

# CALL FOR PAPERS

AOCS 64TH ANNUAL SPRING MEETING

The Technical Program Committee has issued a call for papers to be presented at the AOCS Spring Meeting, April 29-May 3, 1973, in the Jung Hotel, New Orleans, La. Papers on lipids, fats and oils, and all related areas are welcome.

Submit three copies of a 100-300 word abstract with

title, authors and speaker to Robert L. Ory and Harold P. Dupuy, Southern Regional Research Lab., P.O. Box 19687, New Orleans, La. 70179. The deadline for submitting papers is December 1, 1972.

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## Northern California Section to hold fall meeting at Davis Campus

The Northern California Section of the AOCS will hold its fall meeting on the Davis, Calif., Campus, Friday, October 27, 1972. Lloyd Smith and Harold Olcott of the Department of Food Science and Technology, U.C. Davis, are taking care of the program, lunch and dinner arrangements.

A full day's program is scheduled. From 10:00 A.M.-1:30 P.M. will be registration and a tour of the campus via elephant train with a buffet luncheon at the Mini Center. Members' spouses not wishing to attend the technical session may tour Old Sacramento and the Crocker Art Gallery in Sacramento.

The Technical Session will cover: current research at U.C. Davis on "Fatty Acid Compositions of Safflower and Sunflower Oil" as reported by Paul Knowles; "Relating Sensory Evaluations to Physical and Chemical Properties of Foods" by Rose Marie Pangborn; "Present Status of Antioxidant Research" by Harold Olcott; and "The Link between Dietary Lipids and Heart Disease" by Robert Hodges.

A cocktail hour and dinner at the U.C. Davis Faculty Club will complete the day. Lloyd Smith will report on highlights of the AOCS Fall Meeting in Ottawa.

Total fee for the above is \$10.00 per person, and will include registration, coffee breaks, luncheon, cocktail hour and dinner. There will be an additional charge of \$1.00 per person for those wishing to participate in the Ladies' Program trip to Sacramento.

All AOCS members are invited to attend and a special invitation is issued to those of the Southern California Section. Separate mailing of program

## Wiedermann appointed Research Manager at Swift & Co.

Lars H. Wiedermann, current president of the AOCS North Central Section and a Society member since 1953, has been appointed Research Manager of the Edible Oil Research for Swift & Co., effective August 28, 1972. In his new position, Wiedermann will direct research activity concerned with edible oils, with major emphasis on those activities derived from Swift Edible Oil Co. Wiedermann joined Swift as a Section Head in 1971 and was formerly with Kraftco Research and Development. ■

and reservation cards will be made to members of the Northern and Southern California Sections. If others wish to attend please contact: Bill Wood, Secretary, Brookside Marketing Div., Safeway Stores, Inc., P.O. Box 12952, Oakland, Calif. 94604. ■

## • New Books. . .

(Continued from page 384A)

tists knowledgeable in their respective areas. In Chapter 1, R.W. Frei discusses the applications and theoretical aspects of reflectance spectroscopy in TLC. In the second chapter, J. Janak has dealt with a novel modification of TLC; that of two dimensional chromatography using gas chromatography as one dimension. The instrumentation required for this is discussed, as is the current applications to lipids and steroids. The next chapter concerns itself with the use of azeotropic mixtures as chromatographic solvents in TLC. This will be welcomed by those who have struggled to find a solvent system that would allow a desired separation of components.

Chapters 4 and 5 will be of primary interest to lipid chemists. F. Snyder has written a comprehensive chapter on the chemistry, physical properties and of NMR, cleavage and enzymatic degradative reactions, removal of substituents, determination of double bond location and preparation of derivatives for gas liquid chromatography (GLC). The application of TLC and high temperature GLC to the separation of intact ether lipids is covered. In the next chapter, O. Renkonen covers comprehensively the thin layer chromatographic analysis of subclasses and molecular species of polar lipids. The application of both argention and reversed phase TLC to the separation of both species of polar lipids (lecithins and other classes) is shown. The last two chapters of the book cover areas of TLC applications in pharmacognosy and the investigation of aminoacidurias. This last chapter has many examples of TLC separation of amino acids. The volume is well illustrated and contains a substantial number of references at the end of each chapter. The index appears to be comprehensive. This book should be especially useful to those persons interested in ether lipids and the analysis and separation of polar lipids. ■

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