

NEW BOOKS

J. F. GERECHT, BOOK REVIEW EDITOR

Biochemical Spectroscopy, Richard Alan Morton (Halsted Press, John Wiley and Sons, Inc., New York, NY, 1975, 873 p., \$197.50).

This book, as indicated by its title, is written for biochemists. Coming, as it does, from an author who has pioneered in applications of spectroscopy to biochemistry over a period of four decades, this text will be invaluable to the newcomer to the field or equally to those who consider themselves proficient in their specialty. The broad range of biochemical topics covered is made even more useful by lists of significant references at the close of each chapter.

The first part of this two-volume work, and specifically its first three chapters, 1) orients the reader as to spectroscopic literature and notation, 2) gives a novel perspective of "Water and Sunlight in Biological Context," and 3) introduces "Electronic Absorption Spectra" with examples of polyenes, polyynes, dyes, tetracyclines, and fatty acids. To complete Volume 1 follow nine chapters: 4. Aldehydes, Ketones, and Tautomerism; 5. Polyprenols and Glyceryl Ethers; 6. Aromatic Compounds; 7. Carotenoids and Related Substances; 8. Aminoacids, Proteins, and Enzymes: Fluorescence; 9. Heterocyclic Compounds Including Nucleotides and Nucleic Acids; 10. Porphyrins, Bile Pigments, and Cytochromes; 11. Copper Proteins; and 12. Steroids and Related Substances.

The second volume, consisting of 14 chapters, is reminiscent of the earlier book, for which the author is widely known, and contains: 13. Vitamins and Coenzymes; 14. Quinones and Related Substances; 15. Photosynthesis; 16. Vision Research; 17. Bioluminescence and Chemiluminescence; 18. Flavonoids, Anthocyanins, and Flavylum Salts; 19. Indole, Quinoline, Isoquinoline Families; Malanin, Acridine; 20. Some Phytochemical Topics; 21. Some Aspects of Insect Biochemistry; 22. A Selection of Toxic Substances (Based on Spectroscopic Properties); 23. Some Antibiotics and Medicinal Substances; 24. Some Problems in Food Science; and 25. Illustrative Bio-analytical Examples.

The final chapter, 26. Miscellaneous, has selected experimental tips and insights of a practicing spectroscopist. While the results of the most modern spectroscopic equipment are presented, the reader will need to look elsewhere for theory and practices of advanced instrumentation. Biological scientists, whatever their area of interest or degree of mastery, will agree that *Biological Spectroscopy*, rounded out with author and subject indexes, meets the promise of its title.

HERBERT J. DUTTON
Northern Regional Research Center
Peoria, IL 61604

High Speed Liquid Chromatography, Edited by Peter Rajcsanyi and Elizabeth Rajcsanyi, (Marcel Dekker, Inc., New York, NY, November 1975, 192 p., \$15.50).

Literature in the field of high speed liquid chromatography in the form of research papers is appearing with increasing frequency. Books on the subject are now regularly appearing. All indications are that this form of liquid chromatography is at about the level of gas chromatography in the early 1960s. It is therefore important that up-to-date state-of-the-art books are available which contain complete reference collections. The present

book answers this need with over 1,000 references. Over half of the book is devoted to a textual presentation of the applications of high speed liquid chromatography. Diagrams of separations obtained are presented for selected topics.

The monograph is divided into three discrete chapters which cover 1) theoretical basis for HSLC, 2) instrumentation for HSLC, and 3) applications of HSLC. This chapter is divided into numerous subchapters which organize the references presented into applications of HSLC to alcohols, aldehydes, and acids; alkaloids; amines, amino acids and azo compounds; aromatic; and substituted polynuclear aromatic hydrocarbons; carbohydrates; compounds in biological fluids and extracts; drugs and related compounds; food constituents; metallic ions and compounds; nucleic acid constituents; pesticides; phenols and related compounds; polymer resins; steroids; vitamins; and miscellaneous applications. This last section is very short (3 pages) and shows the separation of nonpolar lipids. This single separation of lipids given illustrates the fact that only a few more recent applications of HSLC have been made to lipid separations. The book contains an author index and an adequate subject index. It is attractively printed and was produced in what appears to be a rapid publication format. It appears to have few errors. The book is relatively inexpensive and will be useful to anyone contemplating work in the high speed liquid chromatography area. It is also a good book to have on the bookshelf for reference for searching for assistance to help one work out a separation problem. Many of the applications shown are applicable to lipid work with some modification.

E.G. PERKINS
Department of Food Science
University of Illinois
Urbana, IL 61801

New Developments in Separation Methods, Edited by Eli Grushka (Marcel Dekker, Inc., New York, NY, 1976, viii + 246 p., \$23.50).

The eleven chapters making up this book are papers delivered at a Symposium on New Methods of Separation, held at the April, 1974, American Chemical Society Meeting. They have also appeared separately in Volumes 9 and 10 of the journal *Separation Science*.

After an introductory chapter on the topic of the selection and sequencing of separation operations, the techniques of separation by liquid membranes, plasma chromatography, clathrate formation, potential-controlled adsorption, electrophoresis (two papers), foam (two papers), and ultracentrifugation (two papers) are described.

The treatments in the individual papers vary from the specific to the general, and from the brief review to very basic treatment, indeed. Thus, for example, the paper on liquid membrane techniques restricts itself to a discussion of the removal of phenol from waste waters, while the first chapter on ultracentrifugation goes quite deeply into the theory of the process, including methods of studying self-associating systems.

Since these papers are already available in journal form, it may well be asked what purpose is served by book publication. The obvious answer is that while it is unlikely that a journal file will be at hand in the laboratory, this volume

might well be. Certainly, anyone concerned with the problem of separating materials will find food for thought herein.

The book is well produced and seems to be satisfactorily free of misprints.

PAUL BECHER
Specialty Chemicals Research Department
ICI United States Inc.
Wilmington, DE 19897

Organic Reactions, Volume 23, Wm. G. Dauben, Editor-in-Chief (John Wiley & Sons, New York, NY, 1976, 520 p., \$27.50).

Organic Reactions is issued annually and should be in any library serving the chemical profession. Volume 23, issued this year, maintains the high standards set by its predecessors and follows the usual arrangement. A discussion of the reaction, sample experimental procedures, and a tabular survey of compounds prepared by the method comprise each of the three chapters.

The first is devoted to reductions of α,β -unsaturated carbonyl compounds with metals in liquid ammonia, and includes reactions such as alkylation, substitution, addition, and elimination accompanying the reductions. A section on experimental conditions is very helpful and could only have been included by one who has repeatedly carried out these reactions.

The chapter on the Acyloin Condensation is an update of a previous chapter in Volume 4 of this series on the same reaction. The introduction interestingly contains a short review of the utility and reactions of acyloins. In addition to the usual sections, this chapter has a section on experimental considerations. It is an excellent discussion of addition of trimethylchlorosilane as an alkoxide scavenger, structure of the ester group, solvent and metals employed, and work-up procedures.

The final chapter, "Alkenes from Tosylhydrazones," treats the Bamford-Stevens Reaction by which a ketone or aldehyde can be converted to an olefin via the tosylhydrazone. It also includes the modification which uses alkyl lithium at room temperature in place of sodium alkoxides at elevated temperatures.

In conformance with previous volumes, this one contains a subject index for itself and subject and author indices for all volumes in this series issued to date.

J. FRED GERECHT
Colgate-Palmolive Company
Piscataway, NJ 08854

Progress in the Chemistry of Fats and Other Lipids, Volume 14, Edited by R.T. Holman (Permagon Press, Oxford, England, 1975, 299 p., \$40.00).

In the best tradition of the 13 preceding volumes of the "Progress" Series, editor Ralph Holman has solicited four chapters in fields of lipid biochemistry, composition, physical chemistry, and metabolism from outstanding authors. Comments on these four chapters follow.

Chapter 1. The Chemistry and Biochemistry of Phytanic, Pristanic, and Related Acids. A.K. Lough

A concise, clearly written chapter covering general properties, analytical techniques, and biological application of data. A considerable portion of the chapter is devoted to stereochemical aspects of these acids and how stereochemistry affects the biological utilization and analytical separation. Specific data on phytanic and pristanic acids is prevalent, but the general nature of the subject matter should make the text appealing to a broad range of workers involved in fatty acid research.

Chapter 2. The Lipids of Fungi. P.J. Brennan, P.F.S. Griffin, D.M. Losel, and D. Tyrrell

This is a more difficult chapter, definitely more appealing to someone with a proper background in the techniques and terminology of microbiology. Information is given on long and short chain fatty acids and their metabolism by fungi. The section on sterols and glycolipids contains biosynthetic and analytical data with a number of structural drawings. This particular section on the chapter perhaps has the broadest appeal and could be of interest to anyone involved in biosynthesis or metabolism of these compounds.

Chapter 3. Infrared Absorption Spectroscopy of Normal and Substituted Long Chain Fatty Acids and Esters in the Solid State. Ingrid Fischmeister

D.H. Wheeler reviewed infrared absorption spectroscopy in fats and oils in Volume 2 of this series (1954). The subject matter was then new, and only general wavelength assignments were given for assorted compounds. More recently, Chapman, in *The Structure of Lipids* (1965), provided a review of lipid IR spectroscopy with emphasis on elucidating crystalline polymorphism. The present author, Fischmeister, with "The Infrared Absorption Spectroscopy of Normal and Substituted Long Chain Fatty Acids and Esters in the Solid State," complements these reviews. Fischmeister has appropriately picked up where the previous examinations terminated, while concentrating on the very characteristic crystalline spectra of lipids and their near-neighbor homologs and positional isomers. Sections III and IV provide the greatest impact. Section III deals with the phase analysis of skeletal modes of the lipid hydrocarbon chains, with emphasis on the dramatic effect created thereon by given end groups. Section IV concerns the effect of position and type of substitution on the vibrations of isomeric long chain compounds, an area in which the author has been involved. Numerous gaps exist in our knowledge of the infrared spectroscopy of lipids and in the crystalline state in general. The apparent dearth of references cited for the past 10 years points up to the need for continued exploration. Any investigator, whether he be engaged in analytical applications or interpretative work, will find the material well presented and useful. The knowledge provided should prove valuable to anyone interested in fats and lipids.

Chapter 4. Lipid Metabolism and Membrane Functions of the Mammary Gland. S. Patton and R.G. Jensen

The format of this monograph consists of five sections. Much of the recent body of information on the role of cell membranes in milk fat secretion is summarized in Sections I-IV as S. Patton deals with the synthetic and secretory functions of the mammary gland. The author shows that not only is the product of synthesis excreted from the lactating cell, but the membranes of these cells are actually transformed by their product and themselves become milk components. The mammary gland is first related to certain aspects of whole body metabolism. Then cell membranes are dealt with at some length, as the structure and function of mammary epithelium and the biochemical pathways in tissue and milk lipid syntheses are discussed. Included are the author's postulates on product vectoring and membrane flow in secretion of milk components. Other concepts dealing with lipid metabolism in this gland, such as membrane aging and atherosclerosis, are well developed, whereas still others, such as cancer of the mammary gland, are not. Most of the 387 references are used in this background section.

Not until the groundwork has been laid does R.G. Jensen give the actual composition of milk lipids. In

Section V he emphasizes lipid classes and class components, especially minor components. These minor constituents may be of marked interest to persons involved in flavor and odor evaluations. Some discussion of lipid separations and identification techniques and of acyl positioning is included.

This work is recommended reading for researchers of lipid metabolism.

NOTE: Chapter 4 was previously reviewed in the August 1975 edition of JAOCS (52:458A).

KENNETH ESKINS
THOMAS SIMPSON
ALAN LANSER
HERBERT J. DUTTON
Northern Regional Research Center
Peoria, IL 61604

The Treatment of Industrial Wastes, 2nd Edition, Edmund B. Besselièvre (deceased) and Max Schwartz (McGraw-Hill Book Co., New York, NY, 1976, 386 p., \$18.95).

In the preface, the author says, "I have included material based on the needs of small industries and have tried to guide plant managers through the phases of any small pollution control installation..." The book also "... deals with implementation of theory." An attempt is made to meet these objectives in 15 chapters on waste water treatment covering selection and coordination with the consulting engineer; defining the problem; study; design; construction, operation, and maintenance; methods of treatment of industrial wastes; federal, state, and local regulation; and other related topics.

The emphasis is indeed on implementation with stress on mechanical and civil aspects of a project. Anyone interested in determining what process to use in treating his waste or in process design will find little help here. Chapter 8 does give a brief description of various treatment methods with a heavy emphasis on inorganic wastes. It is strong on treatment of cyanide wastes, and too much is devoted to treatment of acid mine wastes. It is weak on organic type wastes and biological treatment.

The authors probably try to cover too much ground. A short discussion on project management and scheduling in Chapter 2 is too superficial to do anyone any good. On the other hand, Chapters 6 and 7 contain more information on how to construct a sewer than a plant manager needs to know, and any engineering firm he hires should know a lot more than this.

The chapters on federal regulations and state and local regulations and ordinances do little for the book. The presentation of federal regulations is brief and the discussion tends to get mixed up between pretreatment versus point source discharge. The extended discussion of California's regulations is not too pertinent for residents of the other 49.

Some general comments apply to the entire book. In many places processes, equipment, or instruments are simply presented without any critical comment or analysis. It is equivalent to reading the vendor's brochure. In a number of places where cost data are presented, they cannot be used as a guide to one's own cost because they are too vague. It does little good to know that a family-owned dyeing mill solved its purple hued waste problem for \$36,000 (Chapter 11) without knowing what process is used, what equipment and work is included in the cost, the size of the unit, and the time. A final comment deals with the authors' propensity for dealing in great detail with areas that appear to have limited interest in fulfilling the stated objectives (e.g., California's regulations, ORSANCO, metal plating wastes, mechanical and civil details) and skimming other areas of greater significance. It

From Inception To Completion. Quality Product.

K. C. Joshi



312/525-1557

A Resource Company
345 West Fullerton Avenue
Chicago, IL 60614

appears that the basis of selection was the authors' experience.

The authors' experience seems to be mainly in the area of metal plating wastes and cyanide treatment. Consequently, these are well done, and most of the examples cited are in these areas.

I do not feel that the book adequately meets its objectives, and certainly cannot recommend it to the members of the AOCS.

EMILE F. HARP
Armak Company
Chicago, IL 60606

Toxicology Annual 1974, Edited by Charles L. Winek (Marcel Dekker, Inc., New York, NY, 1975, 323 p., \$29.50).

I read with interest this timely annual of authoritative manuscripts on selected current topics in toxicology. A simple glance at the Table of Contents reveals that the topics covered are current and germane to the spectrum of disciplines that toxicology embraces. This implies that information contained within is applicable to all people dealing in the life sciences and supporting professions. This book is the first volume of a planned series concerned with the various aspects of toxicology.

The preface states that the book is not an annual review of toxicology, but rather an annual publication of selected topics in the field. The contents clearly show this goal was obtained, and in doing so further broadens the audience for which the annual is a valuable source of information. For example, sections on chemical procedures for screening urine and blood for drugs and metabolites are presented and are of interest to toxicologists and chemists, while sections on Veterinary Toxicology and the Current Status of Saccharin are topics of interest to veterinarians and industrial scientists. Research in poisoning and poison control are considered in the annual, as well as drugs of abuse. This reviewer feels that toxicologists, pharmacologists, and biochemists will find the annual a useful adjunct to their regular reading, and chemists will find those sections dealing with the identification and separation of drug components in biological specimens pertinent and of interest. Each manuscript deals with appropriate academic, industrial, and forensic toxicological considerations. Insight into problems associated with the respective topic is provided by the expert authors. Areas in which information is lacking or relevant controversy exists are presented in an orderly fashion with pertinent references such that a reader easily gains knowledge in unfamiliar areas.

A minor criticism of the annual is not in the text or material selected, but in the organization of the topics. Specifically, the sections on poisons and poisoning, drugs of abuse, and chemical determinations could have been considered sequentially as respective units to promote the flow of information rather than scattered through the text as they are.

R. LaROSA
Colgate-Palmolive Company
Piscataway, NJ 08854 ■



NEW PUBLICATIONS

Liquid-in-Glass Thermometry, an NBS Monograph by Jacquelyn A. Wise, Catalog No. C 13.44:150. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 30 pages, 1976, \$0.85.

Directory of United States Standardization Activities, by Sophie J. Chumas, Catalog No. C 13.10:417. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 228 pages, 1975, \$6.75.

Part 20 of the 1976 Annual Book of ASTM Standards on Paper Packaging (Including Aerosol Containers); and Business Copy Products. ASTM, 1916 Race St., Philadelphia, PA 19103, 776 pages, 186 standards, \$25.00.

Part 21 of the 1976 Annual Book of ASTM Standards on Cellulose; Flexible Barrier Materials; and Leather. ASTM, 1916 Race St., Philadelphia, PA 19103, 402 pages, 74 standards, \$14.00.

Galvanic and Pitting Corrosion—Field and Laboratory Studies. ASTM, 1916 Race St., Philadelphia, PA 19103, 300 pages, 1976, \$29.75.

Advances in Instrumentation, Vol. 30 (four hardbound parts). Instrument Society of America, 400 Stanwix St., Pittsburgh, PA 15222, 1975; four-part set—\$75.00, each part—\$20.00

Handbook of Thermodynamic Tables and Charts, Edited by Kuzman Raznjevic. McGraw-Hill Book Co., 1221 Avenue of the Americas, New York, NY 10020, 392 pages, 1976, \$29.50.

Inorganic Syntheses, Vol. XVI, Edited by Dr. Fred Basolo. McGraw-Hill Book Co., 1221 Avenue of the Americas, New York, NY 10020, 256 pages, 1976, \$22.95.

1976 Publications and Educational Aids Catalog. Free upon request from: Instrument Society of America, Publications Department, 400 Stanwix St., Pittsburgh, PA 15222, 40 pages, 1976.

World Guide to Technical Information and Documentation Services, Box 433, New York, NY 10016, 515 pages, 1975, \$19.80.

Computers and Chemistry—A New Quarterly Journal. Pergamon Press Ltd., Headington Hill Hall, Oxford, OX3 0BW, England, \$60.00 per annual volume.

New Study of the Chemicals Industry of the People's Republic of China. National Council for US-China Trade, 1050 Seventeenth St., N.W., Suite 350, Washington, DC 20036, 1976, \$5.00 + \$1.50 postage.

Advances in Cereal Science and Technology, Vol. 1 of a New Series. American Association of Cereal Chemists, 3340 Pilot Knob Rd., St. Paul, MN 55121, 1976, \$30.00.

The Dimer Acids, Edited by Edward C. Leonard. Humko Sheffield Chemical Operation of Kraftco Corporation, Memphis, TN, 112 pages, 1975. ■