Publications

Book reviews

The Regulation of Membrane Lipid Metabolism, by G.A. Thompson, Jr. (CRC Press, 2000 N.W. 24th St., Boca Raton, FL, 1980, 218 pp., $69.50).

This book covers a broad subject area in examining factors which influence the regulation of membrane lipids. Regulatory steps in the synthesis of fatty acids, phospholipids, sterols, and glycolipids and in the interconversion and modification of various types of lipids are discussed. Chapters also deal with intracellular lipid movements and the effects of exogenous lipids, environmental factors, and protein synthesis on lipid metabolism.

The focus of the book is a timely one and fills a void in this important area of both lipid metabolism and membrane biochemistry. The topics intimately related to regulation of lipids are examined in a thorough fashion. The book provides a good source of relevant information and the discussion of experimental data is interesting and at times stimulating.

The limitations of the book arise from covering such a broad subject matter. The author in some areas has resorted to making generalizations which are not completely accurate. As the author has stated, the book is not a comprehensive review and as such only selected data and viewpoints are presented in some chapters. However, these limitations are minor and the book should prove to be a useful text for advanced students and researchers seeking information on regulation of membrane lipids.

Ross Holmes
Department of Food Science
University of Illinois
Urbana, IL

Lipids in Human Nutrition: An Appraisal of Some Dietary Concepts, by Germain J. Brisson (Jack K. Burgess Inc., Englewood, NJ, 175 pp., 1981, $22.50).

This book is divided into eight chapters with quite a complete Table of Contents. The chapters are entitled: Dietary Fats and Body Lipids: Terms Used; The Technology of Edible Fats and Oils; the Enigma of the *Trans* Fatty Acids; Cholesterophobia; Saturated and Polyunsaturated Fats; Lipoproteins; The Major Intervention Studies; and General Conclusions. The chapters are annotated with selected references and there is a reasonably adequate ten page index.

It is difficult to compare this text to others in the field; it stands alone as to its contents, organization, and inaneness. One could recite an almost endless litany of glaring errors that resulted either from the naivete of the author or perhaps from a poor translation from its original French. From the Foreword by P.R. Grondin to the General Conclusions, this text is replete with fatuous, gratuitous and often fallacious commentary. The concluding paragraphs in the Foreword are classics in this vein and I only hope that Dr. Grondin had his tongue-in-cheek when he wrote them. As for the text itself, much of it may appeal to the uninformed, the biased and the "natural" food faddist; those scientists and health professionals seeking truth and objectivity, however, will be ill-served and misled.

The first two chapters are employed to set the scene for the third entitled: "The Enigma of the *Trans* Fatty Acids". One must suspect Professor Brisson's objectivity when 30 pages (18%) out of a total of 165 pages of total text are devoted to expounding upon the fallacious tenets of the Kummerow and Keeney groups together with other discredited studies. None of the opposing views are mentioned particularly those criticizing the above-mentioned work. The reviewer also is familiar with the Critique on the *trans* fatty acid question prepared in 1981 by Drs. Brisson and Kenney *et al.* (sponsored by the Dairy Bureau of Canada) and the third chapter here appears vaguely similar to that document in tone and content.

One certainly must agree that there is an ongoing difference of opinion in medical and scientific circles regarding the role of dietary cholesterol as well as polyunsaturated and saturated fats (Chapters 4 and 5) with respect to disease. This biased and often gratuitous treatment of these complex subjects does little to clarify the situation; in fact, the over-zealous defense of high cholesterol or saturated fat diets suggests a considerable lack of objectivity. Further to this point, the attack on polyunsaturates as potentially dangerous reflects a lack of the author's appreciation for all of the facts. He should have read Carroll's later work (1979) for it shows that level of fat and not type of fat is important in tumor promotion if some required essential fatty acid level is met.

Conspicuously absent in a book purporting to deal with lipids and human nutrition is any concise discussion of fat digestion, absorption and metabolism. These important topics are scattered piecemeal throughout the text and the interested reader is directed (on p. 20) to other sources of information.

Perhaps the most amusing suggestion in this text is found on p. 114 (Chapter 6) under the heading Chylomicrons. The reviewer has searched his experience and queried colleagues but finds the striking intestinal mucosa saturation-desaturation theory advanced by Dr. Brisson is without precedence. Certainly, if this were true, we could all ingest whatever fats we desired and all conceivably would end up with a "proper" P/S ration. Further, neither this text nor all the dietary lipid-disease research and related polemics would be necessary.

Prof. Brisson suggests: "The book is addressed primarily to physicians,...." If so, the medical community may be as offended as the reviewer was by the elementary-school treatment of technical matters in the chemical structures and figures. Texts purporting to be of value to people with advanced training and experience should strive to avoid cuteness.

From the foregoing, it should be evident that this re-

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viewer cannot recommend the text to physicians, dietitians, nurses and other health professionals nor to those in the field of food science and production. Whatever redeeming features this book may have are far outweighed by the misinformation, bias and subjectivity it brings to many topics in the field of dietary fats and health.

Thomas H. Applewhite
Kraft Inc.
Glenview, IL

Nutrition and Child Health: Perspectives for the 1980's, edited by R.C. Tsang and B.L. Nichols, Jr., Series: Progress in Clinical and Biological Research, Vol. 61 (Alan R. Liss Inc., New York, NY, 224 pp. 1981, $22).

This book contains reports on the Proceedings of the 21st Annual Meeting of the American College of Nutrition. The purpose is to present current information on child development and nutrition in the context of the 1980s.

The book contains eight essays and 70 abstracts of papers presented at the meetings. The essays are selective in nature with only a few of the topics important to childhood nutrition included. The topics are: malnutrition and the intestine, obesity, body composition in adolescence, dietary control of lipid metabolism, vitamin D, the composition of human milk, the immunological properties of human milk, and the dynamics of whole body protein in man.

Readers of *JAOCS* should find the essays on obesity, dietary control of lipid metabolism, vitamin D and the composition of human milk interesting. However, the value of the book is limited because of its selective coverage and because the goals of the title are not placed in the perspectives of the 1980s. Those readers desiring a short, well written overview on the topics listed will find the book to be a valuable source.

Nutritional Pharmacology, edited by G.A. Spiller (Alan R. Liss Inc., New York, NY, 259 pp., $40).

The book is a hardback and has an adequate Table of Contents. It contains a short preface and a chapter by the editor defining nutritional pharmacology. He states that this is a book on pharmacology where the compounds described are of nutrient origin. These are chapters on lecithin and cholinergic transmission by M.H. Fernstrom; plant and marine sterols, Vahouny and Kritchevsky; branched-chain amino acids, Amen and Yoshimura; dietary fiber, Jenkins; vitamin D compounds and bone diseases, Chesney; retinoids and carcinogenesis, Freeman; and lactulose and encephalopathy, Weber.

The names of some of the authors will be familiar to readers of *JAOCS*. Dr. Fernstrom, one of the group who has worked extensively in this area, concisely reviews how and why the availability of choline and lecithin affect the metabolism of acetylcholine in brain neurons and peripheral synapses. In diseases associated with inadequate cholinergic transmission, such as tardive dyskinesia, dietary treatment with lecithin was effective in reducing the involuntary movements of face, etc. This is a useful paper for those wanting an authoritative review on the subject. Many recent papers were listed in the references.

The paper by Vahouny and Kritchevsky provides information on the chemistry and occurrence of sterols, absorption, metabolism, effects on cholesterol absorption and metabolism, mechanism of action and other effects of plant sterols. This is a valuable paper because the information is scattered and the references are pertinent and current. The authors have contributed extensively to our understanding of sterol metabolism. This review is another example.

The remainder of the papers are outside my areas of expertise, but should provide answers to those troubling questions that nutritionists, pharmacologists, etc. are asked.

The book belongs in relevant libraries. In my opinion, the chapters by Fernstrom and Vahouny and Kritchevsky are worth the purchase of the book by those even peripherally interested.

Robert G. Jensen
University of Connecticut
Storis, CT

Poly (N-Vinylcarbazole), Polymer Monographs, Volume 6, by J.M. Pearson and M. Stolka, (Gordon and Breach Science Publishers, 1981, 170 pp., $52).

The authors point out that, in contrast to most of the other polymers covered in this monograph series, poly (N-vinylcarbazole) is a specialty polymer rather than a bulk polymer. Because of its extreme brittleness and poor mechanical and processing characteristics, its usefulness is limited. However, after the discovery of its unique photoelectric properties, it has developed an impressive listing in the patent and scientific literature. It was the first commercially exploited photoconductive polymer. As is the case with the other polymer monographs, this book summarizes all of the important published knowledge of the polymer including the monomer, polymerization, physical and electrical properties, chemical and thermal degradation reactions, charge transfer complexes and optical spectroscopy. Some attention is given to other carbazole containing polymers and copolymers and to miscellaneous applications. A good index and numerous references are also provided. The section on charge transfer complexes is lucid as is the section on optical spectroscopy; however, some background would be helpful. The authors are obviously quite competent in the reporting of the subject material. This reviewer noted that they use the ASTM recommended acronyms NVK and PVK for the monomer and polymer. Polymer chemists and those physicists with interest in energy transfer could use this monograph as a source book.

J.H. Ross Jr.
Supelco Inc.
Bellefonte, PA

Biological Aspects on Long Chain Fatty Acids in Fish Oil and Other Fats, edited by R. Marcuse (Scandinavian Forum for Lipid Research and Technology, Göteborg, 1981, 85 pp., Free).

This volume is a soft cover copy of 12 manuscripts presented at a Lipid Forum seminar in Oslo in October 1980. By American standards the fatty acid content of the Scandinavian diet is unusual and that of one subpopulation,

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Greenland eskimoes, is decidedly strange. Attention focuses on marine fats as a source of $\omega 3$ polyenes, particularly 20:5, and partially hydrogenated marine fats as a source of long chain monoenes, particularly 22:1. As recently as 1960 Norwegian intake of partially hydrogenated marine oils accounted for approximately 30% of total fat intake. By 1977 this had decreased to 15% or approximately 7 kg per capita. Cetoleic acid (22:1$\omega 3$) is stated to produce dose related transient myocardial lipidosis but not the necrosis and fibrosis associated with erucic acid (22:1$\omega 9$) consumption. Some years ago claims arising in Germany regarding the beneficial properties of linseed oil linolenic acid (18:3$\omega 3$) in the management of atherosclerosis were greeted with considerable skepticism. Studies on Greenland eskimoes, however, now seem to support a possible beneficial effect of $\omega 3$ polyenes. In this case the dietary ratio of $\omega 3$ polyenes to $\omega 6$ polyenes may be greater than 2.4 and deaths from ischemic heart disease constitute only 3.5% of all deaths. The effect of diet was seen in platelet fatty acid composition ($\omega 3/\omega 6 \cong 1.1$ vs. controls $\leqslant 0.1$) and increased bleeding time. This antiaggretory phenomenon was attributed to possible formation of small quantities of the prostacyclin PGI_3 from 20:5$\omega 3$ and inhibition by 20:5$\omega 3$ of the conversion of 20:4$\omega 6$ to the thromboxane, TXA_2.

Other papers focus on the effects of *trans* fatty acids on membrane composition and properties. The long chain *trans* monenes appear to be poorly incorporated into rat heart mitochondrial cardiolipin whereas the corresponding *cis* isomers are well incorporated. Many of the papers approach the question of physiological significance of long chain fatty acids at the enzymatic level. This includes enhanced chain shortening by peroxisomal enzymes. Several comparisons are made between the enzyme inducing effects of clofibrate and long chain fatty acids.

This short symposium provides an interesting collection of papers on a specific topic of current interest. As such the book can be recommended to oil chemists interested in the biomedical problems associated with lipids.

Instrumental HPTCL, by W. Bertsch, S. Hara, R.E. Kaiser and A. Zlatkis (A. Hüthig Publisher, New York, NY, 1980, 390 pp., $49).

This volume is the proceedings of the First International Symposium on Instrumentalized HPTLC at Bad Dürkheim, West Germany, May 18–21, 1980, and contains 16 papers. In addition to the various theoretical topics, there is coverage of applications including steroid hormones, trace metal analysis, pesticides, polycyclic aromatic hydrocarbons, antibiotics, amino acids and pharmaceutical preparations. Brinkmann provides some interesting data on Merck, Whatman and Analtech reversed-phase plates and considers ways to overcome the instability of certain plates to even low, 20–40%, concentrations of water. Several books by Touchstone which have been previously reviewed in this column have striven to support the contention that quantitation in TLC has become practical. Going from TLC to HPTLC does much to overcome some of the basic problems but the requirements for good technique and sophisticated equipment remain. Fully half of the chapters are devoted to these points. One has the feeling that when TLC or HPTLC are taken to the point where quantitation may become practical most of the virtues of speed, convenience, flexibility and high through-put are lost. This is perhaps illustrated by the statement (page 55) that "The most time-consuming and also most error-prone step in quantitative in situ evaluation in TLC and HPTLC is the correct positioning of the spot in the measuring slot of the scanner." The solution—let the computer do it—makes this a difficult and expensive procedure. Prošek and Kučan provide comparisons of the Camag, Zeiss, Schoeffel and Shimadzu scanners. Particular attention is called to this book as the first volume of an extended chromatographic method series.

Chromatographic Methods in Inorganic Analysis, by G. Schwedt (A. Hüthig Publishers, New York, NY, 1981, 226 pp., $38).

This book is a part of a series on chromatographic methods which includes "Optimization in HPLC" (Kaiser and Oelrich, 1981), "Instrumental HPTLC" (Bertsch, Hara, Kaiser and Zlatkis, 1980), "Comparisons of Fused Silica and Other Glass Columns in Gas Chromatography" (Jennings, 1981), "Theory and Mathematics of Chromatography" (Said, 1981) and "Recent Advances in Gas Capillary Chromatography" in three volumes (Bertsch, Jennings, and Kaiser, 1981). With 35 figures, 62 tables, 814 references and 2 indices including a cross reference of citations by element it should be apparent that this volume contains relatively little text. Coverage proceeds through the classes of adsorption, partition, reversed-phase and ion exchange chromatography for TLC and column chromatography. This is followed by coverage of GC, detection methods and trace analysis.

In general the subject matter of this book is outside the specific area of interest of most oil chemists. The series of which it is a part, however, should be of broad general interest and this particular volume is an excellent reference source. This series also represents an impressive effort by a publisher who may not be familiar to American readers.

Lloyd A. Witting
Supelco Inc.
Bellefonte, PA

Tensid-Taschenbuch, 2nd Edition, edited by Helmut Stache (Carl Hanser Verlag, Munich 86, W. Germany, 1981, 999 pp., 178 DM).

The second edition of this reference book has been greatly expanded to almost twice the number of pages of the first edition, so that the title Taschenbuch (pocket book) should not be taken literally. The authorship of a number of chapters is different from that of the first edition. The second edition is a great improvement over the first. Of the four major parts of the book, Part I. Basics is the most important. It comprises 521 pages and represents essentially a one volume reference text on surfactant chemistry. Each chapter has been written by experts in the field. There are very brief English abstracts at the beginning of each chapter, but because of their brevity the abstracts will be of very limited use to persons unable to read German. The chapters are clearly and concisely written and well supplied with illustrations, graphs, tables and literature references. Part I covers all major facets of surfactant science and technology.

Section IA, "The Chemistry of Surfactants" contains the following chapters, "Physical Chemistry" by H. Hoffmann

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and W. Ulbricht, "Raw Materials and Intermediates for the Synthesis of Surfactants" by B. Fell, "Preparation and Properties of Surfactants" by H. Maag, "Basis of Emulsifying Ability of Surfactants" by R. Heusch and "Surfactant Analysis" by E. Kunkel and R. Wickbold. Section IB "Surfactant Applications" contains "Surfactants for Textile and Hard Surface Cleaning" by G. Jakobi, "Surfactants for Industrial Cleaning" by H.G. Germscheid, "Applications for Cationic Surfactants" by W.E. Adam and W.T. Hulshof, "Emulsifying Agents and Surfactants for Industry" by R. Heusch, "Surfactants for Petroleum Recovery" by H.J. Neumann, "Compilation of Use Tests for Surfactants" by H. Stache, "The Preservation of Surfactants and Formulated Products" (mostly tables) and "Market Data for Surfactants," by R.V.D. Grun and S. Scholz-Weigl. Section IC is entitled "National and International Organizations in the Surfactant Field" by L. Noll. This chapter describes the types of activities that various organizations are engaged in.

Part II, entitled "Environment and Surfactants" contains two chapters "Environmental Requirements for Surfactants" by L. Dinkloh and "Physiological Effects of Surfactants" by H.P. Fiedler.

Part III contains almost 200 pages of useful tables. IIIA is entitled "Physical Data for Raw Materials and Surfactants." These comprise molecular formula, boiling point, melting point, density and refractive index. IIIB "Typical Data for Starting Materials and some Important Commercial Surfactants" gives a number of specifications and chemical data such as average molecular weight, hydroxyl number, acid number, saponification number, iodine number, moisture content, color, chromatographic data, etc. IIIC contains flow diagrams for fifteen of the most important surfactant intermediates, e.g. oxo alcohols, α-olefins, alkylbenzenes, alkylbenzene sulfonates, morpholine, ethylene oxide, etc. IIID "General Data" contains data for surface tension and wetting properties of various liquids, and solvents for column chromatography. Maximum concentration data for various organic materials acceptable for occupational safety (The German Counterpart of OSHA) are given. Finally the current legal units for time, weight, etc. and proper metric nomenclature are given followed by a conversion table of British and U.S. units into metric ones. Section IIIE is a summary of German laws and regulations pertaining to surfactants, and Section IIIF lists addresses of organizations, societies, trade associations active in the surfactants field. As in the first edition, the old Chicago address for AOCS is still given. This raises the question as to how recently this section has been updated.

Part IV, "Register of Trade Names," is the European counterpart to McCutcheon's "Emulsifiers and Detergents". An alphabetic index of trade names is given first and refers the reader to the manufacturer's name and page number. This is needed since, unlike McCutcheon, this register is arranged alphabetically by manufacturers' names. The register describes briefly the chemical nature of each entry, physical form and principal applications of the product.

Finally, the book supplies a listing of books and periodicals in the surfactants field, a very handy guide. A subject index is provided but no author index. The appendix provides a short buyer's guide to chemicals, equipment and services in Europe.

Overall, this work is extremely useful, well written and thoughtfully compiled. The print is clear and there are very few typographical errors. The only negative aspect for U.S. readers, apart from the high price (about $76) and the language barrier is that the book is slanted toward a European readership. However, this work is unique insofar as it is the only modern and comprehensive one volume reference book on surfactants, and hopefully some day a similar work in English will be published.

Warner M. Linfield
USDA Eastern Regional Research Center
Philadelphia, PA

New publications

Illustrated Glossary of Process Equipment, edited by Bernard H. Paruit, Gulf Publishing Co., P.O. Box 2608, Houston, TX 77001, 1982, 318 pp., $36.95.

Tensid Taschenbuch, edited by Dr. Helmut Stache, Carl Hanser Verlag, Postfach 86 04 20, 8000 München 86, Germany, 1981, 1056 pp., 178 DM.

Electrophilic Additions to Unsaturated Systems (second edition), by P.B.D. de la Mare and R. Bolton, Elsevier Science Publishers, 52 Vanderbilt Ave., New York, NY, 10017, 1981, 378 pp., $91.50.

Cereals, A Renewable Resource: Theory and Practice, edited by Y. Pomeranz and L. Munck, American Association of Cereal Chemists, 3340 Pilot Knob Rd., St. Paul, MN 55121, 1981, 728 pp., $27 member, $30 non-member.

Assessing Changing Food Consumption Patterns, the Committee on Food Consumption Patterns, Food and Nutrition Board, National Research Council, National Academy Press, 2101 Constitution Ave., NW, Washington, DC 20418, 1981, 296 pp., $16.

Comprehensive Analytical Chemistry, Volume III: Analysis of Complex Hydrocarbon Mixtures, Part A: Separation Methods, Part B: Group Analysis and Detailed Analysis, Elsevier Science Publishers, 52 Vanderbilt Ave., New York, NY 10017, 1981, Part A: 382 pp., $85, Part B: 400 pp., $95.75.

New Trends in Nutrition, Lipid Research, and Cardiovascular Diseases, edited by Nicolás G. Bazán, Rodolfo Paoletti, and James Iacono, Alan R. Liss Inc., 150 Fifth Ave., New York, NY 10011, 1981, 332 pp., $30.

Nutrition in Health and Disease and International Development: Symposia from the XII International Congress of Nutrition, edited by Alfred E. Harper and George K. Davis, Alan R. Liss Inc., 150 Fifth Ave., New York, NY 10011, 1981, 1002 pp., $85.

Biosynthesis of Isoprenoid Compounds, Vol. 1, edited by John W. Porter and Sandra L. Spurgeon, John Wiley & Sons Inc., One Wiley Dr., Somerset, NJ 08873, 1981, 350 pp., $59.50.

Reversed-Phase High Performance Liquid Chromatography, by Ante M. Krstulovic and Phyllis R. Brown, John Wiley & Sons, One Wiley Dr., Somerset, NJ 08873, 1981, 187 pp., $35.

Annual Book of ASTM Standards, Part 30 (Soap, Engine Coolants, Polishes, Halogenated Organic Solvents, Activated Carbon, Industrial Chemicals), ASTM, 1916 Race St., Philadelphia, PA 19103, 1981, 1194 pp., $47.