Book reviews

The Basics of Industrial Oleochemistry: A Comprehensive Survey of Selected Technologies Based on Natural Oils and Fats, by G. Dieckelmann and H.J. Heinz (Peter Pomp GmbH, PO Box 250113, D-4300 Essen 11, West Germany, 1988, 191 pp., $86).

This book is divided into two parts. Part I is historical and general; Part II is technical.

Part I provides a brief history and description of the oleochemical industry, then discusses various fats and oils that are significant raw materials for the manufacture of oleochemicals. Part II first addresses the pretreatment of fats and oils used in the manufacture of oleochemicals and the hydrolysis of fats and oils to produce fatty acids and glycerine. The authors discuss the recovery and purification of glycerine and follow with a substantial number of pages on the distillation of fatty acids. Subsequently, the subjects of hydrogenation, production of fatty acid esters and fatty alcohols, ethoxylation, sulfation, sulfonation, nitrogen derivatives, epoxidation, ozonization and condensation of alcohols are described. Part II concludes with discussions on dimerization of fatty acids, basic facts regarding hydrogenation and hydrogenolysis catalysts, techniques of vacuum generation, heat transfer, computerized control systems and waste disposal in oleochemical plants.

Although the topics selected by the authors for this publication have been discussed in greater detail in other books, individual publications and oleochemical symposia, this book provides a general and basic understanding for those unfamiliar with the manufacture of oleochemicals. It contains a number of processing diagrams and pictures of operating plants that can be of value to someone entering the oleochemical industry.

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Countercurrent Chromatography: Theory and Practice (Chromatography Science Series Vol. 44), edited by N. Bhusan Mendara and Yoichiro Ito (Marcel Dekker Inc., 270 Madison Ave., New York, NY 10016, 1988, 752 pp., $115).

The title of this book evokes fond memories of a commercial, 200-tube Craig countercurrent distribution apparatus purchased by this reviewer in the early 1960s. It had excellent capacity and recovery, but was a nightmare to dismantle, clean and reassemble because of its potentially leaky joints and the need to avoid emulsions. In later years, the manufacturer would barely acknowledge that at one time it had produced this equipment. This was really unfortunate because the apparatus was unbeatable for certain applications.

Briefly mentioning the ancestral relationship to the Craig-type apparatus, the authors begin this volume with droplet countercurrent chromatography and progress rapidly to higher levels of complexity. Approximately 45% of the volume is devoted to a long chapter by Ito on principles and instrumentation. This should not be surprising because a significant portion of the apparatus development work in this field has been done by Ito. The discussion covers the distinctions between hydrostatic equilibrium systems and hydrodynamic equilibrium systems. A diagram (p. 416) summarizes the various possible approaches and indicates the variations for which commercial apparatuses are available. The list of manufacturers provided indicates that rather limited choices are available within this country. There also are eight chapters on applications using various approaches. These include a chapter on coupling to a mass spectrometer.

This volume is nicely illustrated and contains a series of useful appendices. Although admirably suited to crude natural product extracts, the authors seem to suggest that these systems may not be developed well enough to work with the common lipids. The generally poor acceptance of this type of apparatus, coupled with the relatively high price of the book, results in a rather limited recommendation. This volume is a must for anyone teaching a comprehensive course in chromatography, but not for too many others.

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Encyclopedia of Conditioning Rinse Ingredients, by Anthony L.L. Hunting (Micelle Press Inc., PO Box 653, Cranford, NJ 07016, 1987, 492 pp., $89).

This is a companion volume to the **Encyclopedia of Shampoo Ingredients** published by the same author in 1983. The book is divided into three parts. The first part discusses labeling and preparation of hair condition rinses. The second part lists 259 commercial conditioning rinses together with the ingredients declared on the label. The third, and "working," part of the encyclopedia lists 451 individual ingredients by chemical name, structural formula, CTFA name status and reference, CAS or CI numbers, and the reason for its use. It also provides a brief summary of safety data and current safety status, a list of the products in which a particular ingredient is used and its commercial sources. Helpful tables include a summary of the composition of fatty acid components and especially a summary of the properties and applications of the individual ingredients.

The primary target readers of this encyclopedia will be those involved with the formulation of rinse conditioners. However, because the ingredients used in these products also find application in other cosmetic products and beyond, the book will be helpful to other workers in the cosmetic industry who are in need of a ready reference for the 451 ingredients cov-

ered by this book. A bibliography which lists some 70 reference books on cosmetics and toiletries, emulsion theory and related topics, as well as 511 references to papers and publications on these subjects, completes the encyclopedia.

In addition to information that will have permanent value, the encyclopedia also offers data that is more temporal in nature, such as the commercial status of the types of conditioners available in the market and their market shares. Here the author applies the term "marketing groups" to what is generally understood to be product categories and subcategories. Apart from this rather minor shortcoming, this encyclopedia has been compiled with care in what has obviously been a labor of love for the author.

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Proceedings of the AOCS Short Course on Polyunsaturated Fatty Acids and Eicosanoids, edited by W.E.M. Lands (American Oil Chemists' Society, PO Box 3489, Champaign, IL 61826-3489, 1987, 574 pp., $95).

This book is composed of lectures and poster presentations held during the AOCS Short Course on Polyunsaturated Fatty Acids and Eicosanoids, May 14-17, 1987, in Biloxi, Mississippi. Chapters are arranged according to the six plenary sessions of the meeting. Sessions I and II (Chapters 1-7 and 8-11, respectively) and Poster Session A are concerned with the cardiovascular pathophysiology of n-3/n-6 polyunsaturated fatty acids (PUFA), especially in terms of platelet function and plasma lipid levels. The impact of dietary highly unsaturated fatty acids (HUFA), i.e., 20:5 (n-3), 22:5 (n-3) or 22:6 (n-3)), on parameters associated with cardiovascular pathology (for example, on the progressive onset of atherosclerosis) is discussed. The possible benefits of dietary 18-carbon (n-3) PUFA or the alteration of risk factors by altering the dietary ratios and abundances of the n-3 and n-6 fats also are covered.

Session III (Chapters 12-19 and Poster Session B) focuses on cellular events associated with in flammatory processes such as rheumatoid arthritis and evaluates the impact of dietary fats on these eicosanoid-mediated processes. The elongation/desaturation reactions and the synthesis/hydrolysis of membrane glycerolipids (i.e., the features of membrane turnover) are illustrated in Session IV (Chapters 20-24, Poster Session B). Cancer and the relative impact of dietary n-3 fats on tumor development and metastasis are discussed in Session V (Chapters 25-31, Poster Session C). Session VI (Chapters 32-35, Poster Session C) is concerned with the possible special role of n-3 HUFA in neural function and the duration of pregnancy.

In general, the presented papers are of a high standard. They cover the significance of the uptake of n-3/n-6 PUFA or HUFA for the prevention and even the treatment of various clinically important disorders, a field of eicosanoid research that is usually underrepresented in textbooks or review articles. Although published in 1987, the book still represents a valuable collection of data for the specialist and those generally interested in nutrition and cellular lipid metabolism. Moreover, the experts who contributed to this book tried not only to collect data, but, thanks to the chairmen and the editor, also to give an integrated view of the state of the art on the biochemical and clinical aspects of this field without avoiding controversial questions. Therefore, this book can be warmly recommended to any researcher in the field, although there might be some argument about the specific topics described or whether the book covers all the different aspects of eicosanoid metabolism, nutrition and clinical implications. Due to its conference report character, it cannot be recommended for the nonspecialist or newcomer to the field.

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