New Books

L.A. Witting, Book Review Editor

Handbook of Derivatives for Chromatography, Edited by K. Blau and G.S. King (Heyden and Son, Inc., Bellmawr, NJ, 1977, 560 p., $48).

This volume includes derivatives for gas, thin layer and liquid chromatography. Topics covered include: Esterification by A. Darbie; Acylation by K. Blau and G.S. King; Silylation by C.F. Poole; Protective Alkylation by P. Kovac and D. Anderle; Ketone Base Condensation by R.H. Brandenberger and H. Brandenberger; Cyclization by A. Darbre; Microreaction by M.N. Inscoe, G.S. King, and K. Blau; Fluorescent Derivatives by N. Seiler and L. Demisch; Nitrophenylderivatives by D.J. Edwards; Inorganic Anions by W.C. Butts; Metal Ions by P. Mushak; Optically Active Compounds by B. Halpern and Ion-Pair Extraction and Chromatography by G. Schill, R. Modin, K.O. Borg, and B.A. Persson.

The introductory chapter contains a series of tables including various oxygenated groupings, nitrogen-containing groupings, miscellaneous groupings, and amino acids with potential derivatives, chapters where details are to be found and general comments on use. Coverage varies somewhat from chapter to chapter, but in general the area is described in terms of available chemical reactions, derivative reagents (frequently this is followed by extensive tables), specific applications, and other helpful information. This other information includes such topics as preparation of reagents, purification of solvents, tabulations of relative electron-capture, response for selected derivatives of model compounds, or a theoretical discussion of ion pair equilibrium. Illustrative examples are given in sufficient detail to permit the interested reader to apply the various techniques to his own applications with a reasonable expectation of success. The text is well illustrated with structural formulas and includes occasional chromatograms and pictures or diagrams of helpful equipment. A fairly extensive subject index, 45 pages, provides easy access to the text. Considering the somewhat encyclopedic coverage, the number of literature citations (approximately 2,200) hopefully represents careful discriminating selection. Citations in some chapters extend into 1976, but mid-1975 is probably a better estimate of the average cut-off date.

This book is an absolute essential in laboratories called upon to do a variety of chromatographic analyses. The breadth and depth of coverage will be a source of new ideas even to investigators with extensive experience in gas chromatography. Those readers whom have gone into HPLC will find this book a particularly valuable source of ideas for pre- or post-column derivatization. While the publisher, Heyden, may not be too familiar to American book buyers it is safe to say that this particular handbook will be a very familiar sight around chromatography laboratories for years to come.

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Hydrogenation Catalysts, Robert J. Peterson (Noyes Data Corp., Park Ridge, NJ, 1977, 322 p., $36).

This book is a collection of information from U.S. patents dealing with hydrogenation catalysts, their preparation, and applications to petroleum fractions, hydrorefining, aromatic compounds, olefins, dienes, and trienes, acetylenes, polymeric materials, nitriles, nitro compounds, oxygen-containing compounds, and other materials including fats and oils, unsaturated carbonyls, carbon, sulfolenes, cyclic and halogenated compounds. As noted in the foreword, the book presents descriptive information serving as a guide to the U.S. patent literature issued since 1970 in this field. However, contrary to the claims in the foreword, only some of the "legal jargon and juristic phraseology" is eliminated, and the technical information presented is not always "extremely reliable and comprehensive." Many segments of patents are presented in the same ambiguous language that dissuades many from the patent literature.

Among 15 reasons given for the importance of the U.S. patent literature, at least two are either misleading or disputable. Reason 5: Though not by definition, papers in the periodical literature are just as bound as patents to contain new information and ideas. Reason 12: That innovations derived from research are first disclosed in the patent literature, is not necessarily true. This is usually true for industrial research, but untrue of the patented research originating from government and universities laboratories.

Within this book information from U.S. patents is collected and republished in part, in hard cover, with selected background and detailed examples. Only limited editing is done, and the patenteese language used is essentially untouched. The subject matter of each patent is written in the same broad coverage aimed at maximum protection. For this reason the reader has difficulty determining how much subject matter the inventor really investigated. The presentation is descriptive, and the discussion is the same as the original patents, which are in most cases written by legal advisors.

In the field of hydrogenation of fats and oils only three patents are described. In at least one of them, the language is reproduced almost verbatim from the original patent.

This patent literature documentation is invaluable to the industrial chemist and chemical engineer for researching recent prior art and for finding leads to future patent developments. For scientists more oriented toward basic research, this book is also helpful in obtaining some insight in the "art" of hydrogenation catalysts. For guidance in present and future research areas, this book is a good supplement but not a substitute for the periodical literature.

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Food and Your Well-Being, Theodore P. Labuza (Food and Nutrition Press, Westport, CT, 1977, 426 p., $10).

In this book, the author has assembled the basics of nutrition, food preservation, and food regulation. The presentation is intended for the nonspecialist.

The first eight chapters cover the questions of nutritional adequacy and nutrient requirements as well as basic information on fats, proteins, carbohydrates, vitamins, minerals, and trace elements. The next few chapters deal with the process of digestion, heart disease, and obesity.

One chapter is devoted to a discussion of "organic" versus "natural foods." The final twelve chapters cover the principles of food preservation, food-borne diseases, food additives, and food regulation and legislation. Special chapters treat the questions of nutritional labeling, the testing of food additives, and the controversy surrounding additives.

On the whole, this book is better than the average food and nutritional text written for the nonscientist. The treatments of heart disease, obesity and weight control, reducing diets, and "organic" foods all contain a lot of sensible advice. The sections on food preservation are sound and contain information not usually found in books of this type. The author does at times tend to overstate his case, and this is particularly noticeable in the sections dealing with food additives. The impression received is that Professor Labuza decided to take the opposite side to the anti-food additive group and in so doing he fell into the trap of failing to back up with facts some fairly strong statements in favor of additives. However, perhaps detailed arguments pro- and con- food additives and the testing and banning of them do not belong in a book meant primarily for the curious layman. Essentially, Professor Labuza has done what he set out to do, namely, to write about food preservation and basic nutrition in such a way that it can be understood by the average person.

This book will be of limited interest to the majority of readers of *JAOCS*. They may, however, wish to recommend it to nonscientist acquaintances as an above average book in its class and, considering the wealth of information it contains, published at a fair price.

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Molecular Spectroscopy, Edited by A.R. West (Heyden and Son, Inc., Bellmawr, NJ, 1977, 608 p., $60).

This volume, which contains the contributions of 27 participants at the Sixth Conference on Molecular Spectroscopy organized by the Institute of Petroleum, Hydrocarbon Research Group, covers the gambit of spectroscopy methods from the basic fundamental level to the most applied. Although most of the chapters on the average are only 20 pages in length, they are well organized and presented, with a minimum of overlap, emphasizing the most pertinent points of each topic. Chapters 2 through 5 are especially well written and do an excellent job of introducing the reader to the new and future methodology of NMR spectroscopy. Treatment of the exciting new areas of NMR of solids and NMR spin mapping are most interesting in that they point to new NMR applications not considered practical until a few years ago. The remaining chapters on NMR are concerned with highly specialized application to the petroleum industry. Each of the other sections, covering infrared, Raman, and electron spectroscopy follow the same format as above and are all written equally well. The last two sections contain four chapters on applied spectroscopy in which multispectroscopic approaches are brought to bear on problems in such areas as forensic science, polymer science, and atmospheric reactions.

Although this compendium is aimed to a great extent on applications in the petroleum industry, the basic information contained therein is still generally applicable to studies of the lipid and fatty acid fields. In general, this book should appeal to people engaged in the field of spectroscopy as well as those desiring basic knowledge since both introductory and advanced aspects of the subject are treated equally throughout. However, at the price of $60, it is obvious that purchase of this book will be, for the most part, restricted to industrial and academic libraries. This is not to say that the contents of the volume are not worth the price, but few chemists will be able to afford it.

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Understanding Nutrition, Eleanor N. Whitney and Eva M.N. Hamilton (Food and Nutrition Press, Westport, CT, 1977, 607 p., $15).

This is a well written and attractively illustrated introductory textbook on nutrition. The text is divided into two main parts, one dealing with carbohydrate, fat, and protein, and the other with vitamins, minerals, and water. There are nine appendices which cover the basic facts of nutritional science including basic chemistry concepts, aids to calculations, tables of food composition, and the recommended daily dietary allowances. Speculative material and recent research results are treated in separate sections called "Highlights," fourteen of which are scattered throughout the text. These sections include discussions on the controversies surrounding vitamin C and the common cold, and vitamin E as a "cure-all," alcohol and the liver, diet fads, and other areas of current concern. The "Highlights" like the whole text make easy reading and are replete with up-to-date anecdotes which aid in teaching.

The author's insistence that one has to learn chemistry and physiology in order to understand nutrition is commendable. Although the chemistry and physiology presented is not in depth, it is there, if not in the body of the text then in an appendix. In this regard, part one of the text dealing with carbohydrate, fat, and protein and their metabolism is exceptionally well done. It is a little disappointing to find that the biochemical roles of the vitamins and minerals receive a more cursory treatment. Here the treatment is more classical with emphasis on deficiency symptoms, food sources, and possible toxicities.

This text is highly recommended for use in high schools and in college introductory courses in the nutritional sciences. It can be recommended not only for nutrition majors, but also for a general course in nutrition for those majoring in other fields (providing they are willing to make an effort with the chemistry and physiology). For courses above the introductory level in nutrition, it should serve as a basic text but, because of the shortcomings of the chapters on vitamins and minerals, it would be necessary to supply some supplementary material in these areas.

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Agricultural Statistics, 1977, U.S. Department of Agriculture, Washington, DC, 600+ p., $5.75, order from Supt. of Documents, U.S. Government Printing Office, Washington, DC 20402.