ANALYTICAL BIOCHEMISTRY 123, 219–221 (1982)

BOOK REVIEWS

Methods in Enzymology, Vol. 77, Detoxication and Drug Metabolism: Conjugation and Related Systems. Edited by WILLIAM B. JAKOBY, Academic Press, New York, 1981. $45.00.

Volume 77 is a superb addition to the "Methods in Enzymology" series. William B. Jakoby has assimilated an unusually high caliber and consistently excellent group of contributors. This volume greatly exceeds the initial expectations derived from its title.

The book is divided into four sections: (I) Animal Organ and Cell Preparations, (II) Enzyme Preparations, (III) Assay Systems, and (IV) Synthesis. Most notable and long overdue in the "Methods in Enzymology" series is Section I on Animal Organ and Cell Preparation which is divided into three distinct subsections: (A) General Methods, (B) Organ Perfusion, and (C) Cells. The chapters comprising these three classes are, almost without exception, painstakingly detailed, excellently written, and present the most complete work of this treatise to date. The details incorporated in a majority of these chapters allow any dedicated investigator the ability to establish and perform the techniques described. Section I clearly establishes the requirement of this book for all libraries and laboratories associated with drug metabolism research/education.

Section II, Enzyme Preparations, presents methodology and purification procedures for all major enzymes of detoxication that catalyze the hydrolysis and conjugation of endogenous and xenobiotic compounds. Excellent detail of all standard enzyme purification procedures as well as the formulation/preparation of specialty items required are included in virtually all chapters. Generally, only a very brief introduction on each enzyme is provided. Therefore, I strongly recommend that "Enzymatic Basis of Detoxication," Vols. 1 and 2, Edited by William B. Jakoby, Academic Press, 1980, be acquired as companion texts to afford investigators the current biochemical, pharmacological, and toxicological overviews of each detoxication process.

Section III, Assay Systems, and Section IV, Synthesis, contain relatively few subjects. This is due to the limited availability of complete subject material. Again, as is the standard for this volume, sections are complete and well organized.

In summary, this book contains a graphic account of most enzymes and associated techniques useful to investigators interested in detoxication processes. The overall quality of information and advice offered in this volume is excellent. Section I, which deals with the techniques required for studying detoxication pathways with higher levels of biological organization, will be an invaluable asset and reference text for both beginning and advanced investigators.

CHARLES N. STATHAM

Laboratory of Experimental Therapeutics and Metabolism
National Cancer Institute
Received February 1, 1982

Methods in Enzymology. Edited by J. M. LOWENSTEIN, Vol. 71, **Lipids,** Part C, 896 pp., and Vol. 72, **Lipids,** Part D, 864 pp. Academic Press, New York, 1981. $65.00 each.

Dr. Lowenstein's third and fourth volumes in the lipid series illustrate the many new advances in lipid biochemistry and the growing interest in this field on the part of other biochemists. There are 160 articles in the two books, as well as a list of most of the previously published volumes in the "Methods" series. Both books have generous subject indexes and lists of cited authors. The author citations are shown even for pages that do not mention them by name, only by reference number. This kind idea helps make the books a particularly useful key to the methodological literature.

The articles in Vol. 71 are on specific enzymes, particularly their purification and assay. The lipid enzymes cover a wide area—many are on fatty acid synthesis and metabolism, five are on hydroxymethylglutaryl-CoA, and a considerable number are on enzymes dealing with phospholipids. The glycolipid enzymes are definitely underrepresented (but see Vol. 28 on Complex Carbohydrates). Sterols and terpenoids (Vol. 15), lipid immunology, and lipid transport proteins have not been included in this set.

Volume 72 describes lipid methodology—methods of preparing naturally occurring lipids and inhibitors of lipid enzymes, separation and analytical techniques, and some enzyme assays. The uses and modes of action of the lipid inhibitors are given. It is impressive to see the

0003-2697/82/090219-03$02.00/0

advances in this aspect of lipid biochemistry: there are 18 sections, listing several inhibitors in some sections. The new field of tagged membrane probes is represented by articles on pyrene and parinaric acid derivatives. Another section describes methods for handling cells or tissues for lipid studies.

All in all, Dr. Lowenstein's volumes comprise a useful collection that belongs in all biochemistry libraries and in many laboratory libraries.

NORMAN RADIN

The University of Michigan
Ann Arbor, Michigan 48109
Received March 12, 1982

Readings in Mammalian Cell Culture, 2nd ed. Edited by ROBERT POLLACK. Cold Spring Harbor Laboratory, Cold Spring Harbor, N. Y., 1981. 720 pp. $26.00.

Like its predecessor, the second edition of *Readings in Mammalian Cell Culture* is a collection of papers from the original literature, organized into topics such as "Mechanisms of Growth Control," "Cytoplasmic Organization," and "Somatic Cell Genetics." Each topic is provided with a three-page introduction by the editor. The previous volume has been thoroughly revised, with the addition of many new papers; teratocarcinoma cells, splicing of mRNA, identification of the *src* gene product as a protein kinase, and transformation of mammalian cells with cellular DNA are among the new entries.

Dr. Pollack's brief introductions to the topics are useful to students assigned readings in this text. He first defines the major question(s) addressed by the papers gathered in a section, then gives a summary of each paper, including descriptions of techniques utilized but not explained. In these summary paragraphs the reader is directed to relevant papers in other sections of the book. Following each chapter is a list of Supplementary Readings, organized according to decade of publication. While these lists are not expected to be all-encompassing, they are disappointing in some areas. For example, readers of the chapter on "Somatic Cell Genetics" should be made aware of existing methodology for replica plating mammalian cells, a technique essential for biochemical genetics. Mutagenesis of cells in culture and teratocarcinoma cells are both represented in this collection, yet no reference is given to the creation of mosaic mice containing cells derived from a teratocarcinoma cell mutant isolated in cell culture.

The major failing of this book is the portrayal of the mammalian cell without its organelles. The only form of cellular organization presented is the cytoskeleton. No consideration is given to the structure or function of the endoplasmic reticulum, Golgi apparatus, mitochondria, or lysosomes. *Readings in Mammalian Cell Culture* would most likely be employed in graduate or advanced undergraduate courses in cell biology. Because of this deficiency, extensive supplementary material would have to be provided.

APRIL R. ROBBINS

NIADDK, National Institutes of Health
Bethesda, Maryland 20205
Received March 19, 1982

Chemiosmotic Proton Circuits in Biological Membranes (in honor of Peter Mitchell). Edited by V. P. SKULACHEV AND PETER C. HINKLE, Addison-Wesley, Reading, Mass., 1982. 633 pp. $29.50.

This monograph is comprised of 39 short reviews of various facets of bioenergetics that have been profoundly influenced by Mitchell's chemiosmotic hypothesis. Experimentation over some 25 years was guided by the dogma that biochemical energy transfer proceeds exclusively through the formation of a succession of "energy-rich" covalent bonds. Slater, in this volume, dates "the last kick" of this hypothesis as an event of 1972, but spasms could be detected even later. The strength of Mitchell's hypothesis derives from its successes in unifying the massive accumulated data.

The editors state that they "have chosen . . . to deemphasize general controversies . . . or recent arguments [and] authors were asked to review their subject and encouraged to speculate. . . ." In the field of bioenergetics, the first of these goals is impossible and the second, inevitable.

In "an appreciative response to the chemiosmotic good wishes contained in this book," Mitchell states certain of his concerns about the course of evolution of the hypothesis: "the . . . proposition that . . . osmoenzymes . . . are equipped with indirectly coupled proton pumping accessories . . . has seemed to [him] like a kind of reincarnation of the energy-rich chemical intermediates."

Thus, he favors schemes such as the "Q-cycle," which explicitly associate the vectorially transferred protons with particular mechanistic steps to those proposals for pumps which might snatch protons willy-nilly out of the aqueous milieu. However, this volume contains evidence to the contrary: for example, Rydstrom *et al.* conclude that nicotinamide nucleotide transhydrogenase directly transfers hydrogen from NADH to NADP on the same