NEW BOOKS

J. F. GERECHT, BOOK REVIEW EDITOR

Biomembranes, Vol. 7, Aharon Katzir Memorial Volume, Edited by H. Eisenberg, E. Katchalski, and L.A. Manson (Plenum Press, New York, NY, 1975, 257 p., $24.50).

This series of handbound books resembles a review journal in its efforts to encompass the whole field of membranology. For a large and affluent library or a research group interested in many aspects of membranes, subscription to the whole series might be a good idea. For the smaller laboratory, the series has an advantage over a journal in that a particularly interesting volume can be bought singly.

Having in mind the readers of *JAOCS* and assuming that it is the lipids in membranes that interest them most, I conclude that Volume 7 of *Biomembranes* is not a book that everyone should try to squeeze into his budget at all costs. The eight chapters offered are more divergent than those in previous volumes, no doubt due to the memorial occasion; consequently, it is not likely that any single reader would be interested in more than one or two chapters.

No adverse criticism is implied by this negative recommendation. The authors are well known and the reviews are excellent, as far as I can judge them. The first, by Chapman, on "Fluidity and Phase Transition of Cell Membranes," might have been of exceptional value for lipid chemists but for its brevity: it occupies only seven pages of text. Chapman has published more comprehensive reviews on very much the same subject elsewhere and is read more profitably there. The second chapter, by Wilbrandt, offers an exposition and concise discussion of diffusion and transport kinetics as criteria of trans-membrane transport. Further chapters discuss carotenoid and merocyanine membrane probes, effects of sulfhydryl reagents on Na^+ transport, chloroplast membranes of *Chlamydomonas,* nerve excitation (Nachmansohn's concepts), peptide transport, and K^+ retention in *Halobacterium.*

HANS BROCKERHOFF
Institute for Basic Research in MR
Staten Island, NY 10314

Methods in Olfactory Research, Edited by D.G. Moulton, A. Turk, and J.W. Johnston, Jr. (Academic Press, New York, NY, 1975, 497 p., $28.50).

As its title implies, this book is principally concentrated on modern methods used in studying the physiology and other areas of olfaction. It contains 14 chapters each written by an expert in his particular specialized area of olfaction research with adequate author and subject indices. Each chapter has an abundant selection of up-to-date references. The book should be especially useful for those beginning a study of olfaction and also for advanced researchers updating their knowledge.

The first chapter by Dravnieks discusses types of olfactometers that have been developed and the techniques used for the different parts of olfactometers as well as the materials used for construction. Dravnieks points out that there is no perfect material for construction of olfactometers but mentions methods of overcoming the limitations of the materials. Other specific animal olfactometers are discussed by Moulton, Stevens, and Dφving.

The chapter on insect pheromones (Young and Silverstein) is an excellent and very thorough review of the methods used in this type of research and contains much useful information for those in other areas of research. They list more than 700 references for this chapter which covers analytical methods and methods of synthesis of pheromones to methods of field testing.

Of the several chapters on the physical structure of the animal olfactory centers and membranes, the technique of scanning electron microscope (chapter by Graziadei) seems to hold the most promise for new knowledge in this area.

Some interesting chapters (by Gesteland, Moulton, Dφving) discuss methods of electrode implantation and recording. In some cases, circuit diagrams for electronic amplifiers used in such studies are given.

In general, although some areas of olfaction are omitted and some chapters are disappointingly short, the book gives good coverage of methods currently used in olfaction research. Parts of this book require much study, such as the thought-provoking chapter by M.G.J. Beets.

R.G. BUTTERY
D.G. GUADAGNI
R. TERANISHI
USDA, ARS, WRRC
800 Buchanan Street
Albany, CA 94710

Protein Nutritional Quality of Foods and Feeds, Vol. 1, Part 1: Assay Methods–Biological, Biochemical, and Chemical, Edited by Mendel Friedman (Marcel Dekker, Inc., New York, NY, 1975, 626 p., $49.50).

This book is the first of two parts containing the Proceedings of the American Chemical Society Symposium on Chemical and Biological Methods for Protein Quality Evaluation held in September 1974. Supplemental invited contributions are also included. In total, 59 authors prepared 29 chapters. Some of the chapters are reviews of previously published data whereas others present previously unpublished data.

The first two papers comment on the techniques employed when human subjects are used in a protein bioassay and present data on the utilization of dietary protein relative to the utilization of a mixture of amino acids found in that protein. Methods used to determine the biological value of proteins in ruminants and lactating sows are discussed next.

Several papers deal with rat bioassays for protein quality. Various methods are compared. Factors which influence the protein efficiency ratio (PER) are discussed in detail. Modifications of the PER assay are also presented.

Evaluations of protein quality by an in vitro protein synthesis assay, by microbiological assays, by enzymatic digestion and subsequent essential amino acid analysis, by postprandial amino acid responses, by chemical determination of critical amino acids in food stuffs, and by estimation of the lysine content in specific protein fractions of food stuffs are discussed. Several of these assay procedures are still in the developmental stage and have rather limited application at present.

The concluding papers comment on methods for tryptophan, lysine, and sulfur amino acid analysis in foods.

Details of procedures and problems encountered are presented.

This book will be a valuable reference for anyone requiring information on assay methods for protein nutritional quality. Comments on the advantages and problems associated with the various methods are especially useful.

DALE R. ROMSOS
Food Science & Human Nutrition Dept.
Michigan State University
East Lansing, MI 48824

Protein Nutritional Quality of Foods and Feeds, Vol. 1, Part 2: Quality Factors–Plant Breeding, Composition, Processing, and Antinutrients, Edited by Mendel Friedman (Marcel Dekker, Inc., New York, NY, 1975, 696 p., $49.50).

The Proceedings of the American Chemical Society's September 1974 Symposium on Chemical and Biological Methods for Protein Quality Evaluation are continued in this second of a two-part work. In the first part (see above review), biological, biochemical, and chemical assay methods for protein were discussed. In Part 2, 55 authors prepared 26 chapters.

The first two papers comment on the protein and amino acid composition of various cereals, including maize, sorghum, barley, oats, and buckwheat, and on the role plant breeding plays in improving the nutritional value of these cereals. The influence of a high-lysine barley on the performance of pigs is discussed next.

Two chapters deal with nitrogen metabolism in ruminants and factors affecting responses to protected amino acids and proteins.

Evaluations of the nutritional quality of rice endosperm, pulse proteins, lima bean protein, meat extenders such as whey and soy proteins, horsemeat, finfish, shellfish, mushrooms, alfalfa leaf protein concentrate, cottonseed protein products, and potato protein are discussed in a series of chapters.

The effects of processing conditions on the quality of leaf protein and of heating on the nutritional value of casein, soy, egg proteins, and wheat flour are presented. The development of a protein-rich mixture called "Fortesan" which can replace milk for infants as well as the optimal processing conditions for this product is discussed.

The effects of enzymes on the nutritional quality and availability of proteins are discussed, as are the antinutritional factors in legume proteins. Compounds associated with the gastrointestinal distress caused by consumption of dry beans have been isolated and are reviewed. The influence of a toxic factor found in gluten on celiac disease and the biological effects of lysinoalanine are discussed next. In the last chapter, the use of protein:energy ratios as guidelines for assessing protein nutritional quality are examined.

This book will be a valuable reference for anyone requiring information on the nutritional quality of various proteins.

DALE R. ROMSOS
Food Science & Human Nutrition Dept.
Michigan State University
East Lansing, MI 48824

The Gangliosidoses, Edited by Bruno W. Volk and Larry Schneck (Plenum Press, New York, NY, 1975, 277 p., $22.50).

Until the mid-60s, the only known ganglioside storage disorder was the classical Tay-Sachs disease. Progress in the fundamental chemistry and biochemistry, aided by develop-

ment of new methodologies, most notably thin layer chromatography, has since radically transformed the field into that of fast-moving and complex activities. Since the subject in inevitably interdisciplinary, involving clinical neurology, genetics, morphology, chemistry, and enzymology, those who are not active in the field and who are more or less confined within the traditional boundaries of their own disciplines often find it difficult to follow the progress. This book represents an attempt to put the diverse information together in a single volume of a reasonable size. The book begins with a historical review of the gangliosidoses followed by chapters on clinical and analytical chemical aspects, enzymology, morphology, epidemiology (genetics), cell culture studies, and animal models. In addition, an appendix provides a compilation of methodologies involved. They include chemical analyses, enzyme assays, morphology, and cell cultures. The authors of all of the chapters are from the same local group of investigators who have been working together for many years.

In this reviewer's judgment, the editors have achieved with considerable success the stated aim of the book: ". . .there seems to be a need for work by clinicians, biochemists, pathologists and geneticists of a more elaborate composite background for the better understanding of these disorders. . . .There are few places where, between the covers of a single volume, an integrated concept of the gangliosidoses has been attempted, to include various avenues of approach to correlate this relatively new information." Each chapter covers its own territory reasonably well with an ample list of references. By reading through the book, the reader can expect to obtain the perspective view of the field. Those who are familiar with some aspects of the subject but not with others can select chapters of interest to them. The strength of the book lies in its practical usefulness; the references are for the most part extensive, and the list of methodologies is a nice addition. Readers of this journal who are primarily chemists and would like to learn what is going on in this borderline area will find this book useful.

There are some factual errors which need to be corrected if the book is revised in the future. The most serious is the apparent confusion of the juvenile G_{M2}-gangliosidosis and the AB variant. Since this problem arises consistently throughout the book, the investigators in this group appear to share this confusion—a disadvantage of this arrangement. The juvenile G_{M2}-gangliosidosis is clinically and analytically a milder form of the classical Tay-Sachs disease. Enzymatically the disease shows partial deficiency of hexosaminidase A. In contrast, the AB variant occurs in infantile and late infantile groups, is as severe as the classical Tay-Sachs disease both clinically and analytically, and shows completely normal hexosaminidase patterns when assayed with artificial substrates. Since additional cases of the AB variant are beginning to appear in the literature, this error creates unnecessary confusion among readers. Also, the chapter on morphology lumps together two clinically, morphologically, and analytically different cases as G_{M3}-gangliosidosis. More critical review would be desirable. An example of less serious but similarly confusing errors is found in the ganglioside structures on page 33. Here, the structures for G_{D1a} and G_{D1b} are reversed, and the same structure is given for both G_{T1} and G_{Q1}.

The book is a handy reference to have for overview of this complicated field. It is a good source for practical information and references.

KUNIHIKO SUZUKI, M.D.
Professor of Neurology and Neuroscience
Albert Einstein College of Medicine
Yeshiva University
New York, NY 10033

Solvent Effects on Chemical Phenomena, Vol. 1, Edward Amis and James Hinton (Academic Press Inc., New York, NY, 1973, x + 474 p., $36.00).

This first volume presents a general and wide ranging review of the influence of solvation effects on chemical phenomena. After a general introduction which includes a discussion of various types of solvation, there is an extensive chapter describing various methods of measuring solvent effects in chemical systems. The methods treated include measurement of solvation number by compressibility and dielectric techniques. There is a short but cogent chapter on structural aspects of mixed aqueous solvent systems.

The last half of the book is completely devoted to the influence of solvent on organic reaction rates and mechanisms, particularly those of substitution reactions. Specifically, there is a detailed treatment of electrostatic effects and a comparison of dipolar aprotic solvents with protic solvents. Also treated are effects of pressure, viscosity, hydrogen bonding, and nucleophilicity on reaction rates.

The primary use of this volume will most certainly be for general reading in the area by advanced graduate students and those active in this field. The book is readable, generally well composed and free of errors. It is well referenced and has an extensive author index. The general index, however, is rather brief.

JOHN T. GROVES
Department of Chemistry
The University of Michigan
Ann Arbor, MI 48109
