NEW BOOKS

TOPICS IN STEREOCHEMISTRY, Vol. 5, Edited by E. L. Eliel and N. L. Allinger (Wiley-Interscience, John Wiley & Sons, Inc., New York, 1970, 336 p., $18.50).

In continuation to the renaissance taking place in the field of stereochemistry alluded to in H. S. Mosher's review of Volume 4 [*J. Amer. Chem. Soc. 92:* 5292 (1970)], the editors have added this annual publication to the series and, in fact, expanded it to include six chapters.

The first chapter reiterates the Wittig reaction, discussed in Volume 3. This rapidly expanding stereospecific synthesis needed updating, and now we have it. This discussion may be valuable to anyone preparing pure *cis* or *trans* olefins. The greater part deals with stereoselective carbonyl olefination procedures.

Chapter 2 is more classical in that absolute configurations of planal and axially dissymmetric molecules are determined. Molecules with chiral centers can be as simple as biaryls or as complicated as adamantanes. Although a thoroughly professional chapter, it has little direct pertinence to fat and oil chemists unless they are working with spiro compounds or allenes.

Possibly the highlight of the book for AOCS members resides in the third chapter dealing with polypeptide stereochemistry. In this lengthy chapter (some 90 pages) helical polypeptides are characterized, and their conformation transformations are discussed in detail. Anyone interested in knowing how man is unraveling proteins would surely find this worth reading.

Rotational isomerization about single bonds in allylic-type systems is excellently reviewed in Chapter 5. More to our purposes is the discussion of rotation about the α-position in carbonyl compounds. For synthetic chemists studying substitution at the α-carbonyl position or unsaturation isomerization, this chapter would be of some help.

The last chapter reviews the use of ultrasonic absorption and vibrational spectroscopy to determine the energies associated with conformational changes. Rotational isomers have distinct energy minima-maxima which can be characterized by ultrasonic absorption in 10^8 to 10^9 sec^{-1} region. The chapter presents an excellent account merging the theory to instrumentation, but it is specific to quaternized piperidines.

An academically produced text, this volume in both format and approach goes well on the shelf next to *Organic Reactions,* although its need may not be so critical on the general industrial chemist's desk. It is a fine book for any library in that it will fulfill the specialized interests of many members of the Society.

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SURFACE ACTIVE ETHYLENE OXIDE ADDUCTS, First English Edition, by N. Schonfeldt (Pergamon Press, New York, 940 p., 1969).

This book is an updated English edition of Schonfeldt's *Oberflachenaktive Unlagerungsprodukts des Athylenoxyds,* published in 1959.

It was intended primarily for the laboratory chemist who wants to be informed of the properties of ethylene oxide adducts in order to develop new products. The author has accomplished this goal exceedingly well.

This edition has six chapters. It begins with a description of the physical, chemical and physiological properties of ethylene oxide followed by commercial processes used for its manufacture.

Chapter 2 has a brief but thorough discussion of the reaction mechanisms of ethylene oxide, followed by a brief discussion of the types of ethylene oxide adducts of commercial importance. The adducts were divided into six classes on the basis of the bond between the ethylene oxide and the reactive species. General patent references are given after each subsection.

Chapter 3 contains a critical description of the physical, chemical, functional and biological properties of ethylene oxide adducts. It also briefly indicates some of the various applications for the adducts. The chapter is well subdivided so that information on a particular property can be found easily. A total of 857 references are included in the chapter.

Chapter 4 deals extensively with the uses of ethylene oxide adducts. It is well divided according to industry and subdivided within each industry. The patent literature, both domestic and foreign, is well documented. Of exceptional value is the listing of patents and a brief description of the patent at the end of each subsection. The nonpatent references are listed at the end of the chapter.

Chapter 5 deals with modified ethylene oxide adducts. The methods by which the various ethylene adducts have been modified and the resulting change in functional properties is discussed. As before, patent references with a brief description of the patent are given.

Chapter 6 contains a comprehensive survey of the methods being used for the qualitative and quantitative analysis of ethylene oxide adducts.

At the end of the book, a Table gives an alphabetical listing of brand names, including manufacturer, type of adduct, per cent active material, and potential uses for the product.

This book has an excellent Table of contents and is well indexed according to authors, firms and subjects. A separate register of patents arranged according to country and patent number is given. A total of about 3500 references covers the literature to the end of 1965.

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GAS CHROMATOGRAPHY, C. Simpson, Consultant Editors: M. M. Breuer, A. D. Jenkins (Barnes and Noble, New York, 1970, 140 p.).

The general purpose of this book is twofold, providing the potential user of gas chromatographic techniques with an understanding of basic concepts and listing commercially available equipment on the market today. Both purposes are achieved with clarity.

The first chapter deals with a limited, but theoretical, description of gas chromatographic technique. Factors influencing optimization of column performance, as related to the van Deemter equation, are discussed and illustrated.

Chapter 2 briefly describes the various parts of a gas chromatograph, their basic function and effect on the analysis. Components considered are flow controllers, sample inlet systems, column ovens, detection systems, power supplies and amplifiers.

Chapter 3 discusses carrier gas choice as it relates to the detection system used. A brief discussion of the sample introduction systems for various sample types (gases, liquids, etc.) is presented. Detailed discussion follows on factors relating to column size and type (packed vs. capillary vs. support-coated). Considerations determining choice of support and stationary phase are also presented. Other factors, briefly described, relate to detector performance parameters such as response speed, sensitivity, linearity of response and ruggedness. Theory of operation for the more common detectors is given individual, quick examination. Detectors covered are gas density balance, mass detector, katharmeter, flame thermocouple, flame ionization, thermionic, stacked thermionic, β-

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Francisco Med. Cen., San Francisco, Calif. 94122). *Circulation Res.* 27, 595–600 (1970). Lipoprotein lipase forms an enzyme-substrate complex with fat emulsions in the presence of serum lipoproteins. Lipoproteins of very low density and high density have this property, but the former are much more active per unit weight of protein. In this investigation, the activity, expressed as quantity giving half-maximal rate of production of free fatty acids, of specific glycopeptides isolated from very low density and high density lipoproteins was tested in an incubation mixture containing lipoprotein lipase from cows' milk and 1.8 mg triglyceride per ml. The two major polypeptides of high density lipoproteins were virtually inactive in amounts up to 100 μg per ml. Activity of the unfractionated apoproteins of very low density lipoprotein was similar to that of the native lipoprotein (about 4 μg/ml). These studies indicate that specific glycopeptides are required for the action of lipoprotein lipase on emulsified triglycerides and suggest that they are important components of the mechanism for extra-hepatic utilization of plasma triglycerides.

HEAT INCREMENTS OF STEAM-VOLATILE FATTY ACIDS INFUSED SEPARATELY AND IN A MIXTURE INTO FASTING COWS. J. B. Holter, C. W. Heald and N. F. Colovos (Dept. of Animal Sci., Ritzman Lab., Univ. of New Hampshire, Durham 03824). *J. Dairy Sci.* 53, 1241–47 (1970). Heat increments for equicaloric amounts of acetic, propionic and butyric acids and a 52A:31P:17B molar mixture of acids were determined in mature, fasted dairy cows. Acids were infused continuously into the rumen at 32 kcal per kilogram body wt daily. A number of rumen fluid and blood traits were measured daily during each of 10 experiments. No acidosis was indicated by the CO_2-combining capacity of whole venous blood. Mean heat increments were acetic acid, 40; propionic acid, 18; butyric acid, 18; and acid mixture, 32 kcal per 100 kcal metabolizable energy.

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ray, helium, micro cross-section and electron capture detectors.

Both qualitative and quantitative treatment of data is considered in Chapter 4. Relationships between component retention times and carbon number or boiling point are discussed and illustrated. Quantitation of data is viewed with regard to possible sources of error from numerous possibilities. Sampling, sample storage, adsorption or decomposition of sample, detector performance and peak area measurement are all studied. Methods for quantitating peak area (triangulation, planimetry, cut and weight, mechanical and electronic integrators) are briefly discussed

Chapter 5 deals with ancillary techniques in gas chromatography. Topics include sample collection, spectrophotometric analysis of eluted fractions, thin layer chromatographic treatment, reaction gas chromatography as related to hydrogenation, elemental analysis, radio chromatography, pyrolysis and derivative formation of eluted fractions. Process control chromatography is also briefly discussed with regard to detectors, sampling technique and availability of process analyzers.

Chapter 6 presents a concise review of chromatography publications and a comprehensive review of gas chromatography instrumentation available today. Additional listings include suppliers of associated materials such as syringes, support phases and stationary phases with suitable solvents for coating. Safe upper temperature limits for usage with the various stationary phases are tabulated for easy reference.

The brief, but informative nature of this book makes it an excellent primer for anyone contemplating purchase or use of a gas chromatograph. It is well illustrated and current in its references.

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THE ABSORPTION AND METABOLISM OF ORALLY ADMINISTERED TRITIUM LABELED SODIUM STEARYL FUMARATE IN THE RAT AND DOG. S. K. Figdor and R. Pinson (Dept. of Pharmacol., Med. Res. Lab., Chas. Pfizer & Co., Inc., Groton, Conn. 06430). *J. Agr. Food Chem.* 18, 872–80 (1970). Sodium stearyl fumarate labeled with tritium at carbon atom 1 of the stearyl alcohol moiety was administered by stomach tube to rats and dogs. Examination of excreta and body fluids indicated that in the rat approximately 80% of the dose was absorbed. The major portion of absorbed sodium stearyl fumarate was metabolized within 2 hr following administration, and was completely metabolized in less than 8 hr. Tritium water was the source of the only significant radioactivity found in body fluids. The sodium stearyl fumarate that was not absorbed, approximately 20% of the administered dose, was excreted in the feces as a mixture of stearyl fumarate and stearyl alcohol. When the experiment was repeated with rats which had received 300 mg/kg unlabeled sodium stearyl fumarate daily for 90 days (stressed rats), the absorption and metabolism of sodium stearyl fumarate was indistinguishable from results obtained with control untreated rats. In the dog, approximately 35% of the administered dose of sodium stearyl fumarate was absorbed and rapidly metabolized. Tritium water was the only source of significant radioactivity found in body fluids within 8 hr after administration. Sodium stearyl fumarate not absorbed, approximately 65% of the dose, was excreted unchanged in the feces within the first 24 hr. The metabolism of sodium stearyl fumarate is qualitatively the same in the rat and dog.

CITRUS JUICE CHARACTERIZATION. IDENTIFICATION AND ESTIMATION OF THE MAJOR PHOSPHOLIPIDS. C. E. Vandercook, H. C. Guerrero and Ruth L. Price (Fruit and Vegetable Chem. Lab., Agr. Res. Ser., USDA, Pasadena, Calif. 91106). *J. Agr. Food Chem.* 18, 905–7 (1970). The major phospholipids in orange, lemon and grapefruit juices were identified as phosphatidylethanolamine (PE), phosphatidylcholine (PC), phosphatidic acid (PA), phosphatidylserine (PS) and phosphatidylinositol (PI). The individual phospholipids were separated by thin-layer chromatography and estimated by their phosphorus content. The average values (mg per 100 ml) for orange, lemon, and grapefruit juices were: PE, 13, 11, 6; PC, 14, 12, 8; PA, 2, 0.7, 0.2; PS, 1, 1, 0.2; and PI, 3, 5, 3, respectively. An unidentified phospholipid was observed in commercial orange juice and several lemon and grapefruit juices, but not in any of the fresh hand-reamed juices.

THE PENETRATION OF SERUM ALBUMIN INTO PHOSPHOLIPID MONOLAYERS OF DIFFERENT FATTY ACID CHAIN LENGTH AND INTERFACIAL CHARGE. P. Quinn and R. M. C. Dawson (Dept. of Biochem., Agr. Res. Council Inst. of Animal Physiol., Babraham, Cambridge CB2 4AT, U.K.). *Biochem. J.* 119, 21–25 (1970). The highest surface pressure of phosphatidylcholine monolayers allowing penetration of delipidated serum albumin decreased in the order dibehenoyl > distearoyl > dipalmitoyl = dimyristoyl. This pressure was not related to the area occupied or to the space available between the phospholipid molecules at the interface. Penetration of albumin into yeast phosphatidylcholine monolayers was increased by adding a small percentage of long-chain anions (phosphatidic acid, dicetylphosphoric acid) to the film but only when the protein was below its isoelectric point (i.e. positively charged). Stearylamine added to phosphatidylcholine monolayers had no effect on albumin penetration even when the protein was oppositely charged to that of the phospholipid/water interface. The results are discussed in relation to the activation of certain phospholipases by anionic amphipathic substances.

THE USE OF CONVENTIONAL AND ZONAL CENTRIFUGATION TO STUDY THE LIFE CYCLE OF MAMMALIAN CELLS. PHOSPHOLIPID AND MACROMOLECULAR SYNTHESIS IN NEOPLASTIC MAST CELLS. A. M. H. Warmsley and C. A. Pasternak (Dept. of Biochem., Univ. of Oxford, Oxford OX1 3QU, U.K.). *Biochem. J.* 119, 493–99 (1970). Conventional gradient centrifugation has been used to separate cells according to their position in the cell cycle, and to obtain synchronously growing cells. Analysis of prelabelled cells by gradient centrifugation confirms that phospholipid, protein and RNA synthesis begins to increase already during the G_1 phase. The pattern of phospholipid degradation follows that of synthesis. The limitations of conventional gradient centrifugation have been overcome by use of a zonal rotor. Analysis of prelabelled cells confirms the results obtained by conventional centrifugation and in

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