NEW BOOKS

Edited by C.W. Hoerr

OFFICIAL METHODS OF ANALYSIS OF THE ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS, Edited by William Horwitz (Association of Official Analytical Chemists, Washington, D.C., 1970, 1015 p., $30.00).

The purpose of this book is to provide both research and regulatory chemists with current reliable methods of analysis for determining composition of commodities subject to legal control. Methods in this book were developed and collaboratively tested in federal, state, industrial and university laboratories.

General categories covered, by chapter, are: 1, Agricultural Lining Materials; 2, Fertilizers; 3, Plants; 4, Disinfectants; 5, Hazardous Substances; 6, Pesticide Formulations; 7, Animal Feed; 8, Baking Powder and Baking Chemicals; 9, Beverages: Distilled Liquors; 10, Beverages: Malt Beverages and Brewing Materials; 11, Beverages: Wines; 12, Beverages: Nonalcoholic and concentrates; 13, Cocoa Bean and its Products; 14, Cereal Foods; 15, Coffee and Tea; 16, Dairy Products; 17, Eggs and Egg Products; 18, Fish and Other Marine Products; 19, Flavors; 20, Food Additives: Direct; 21, Food Additives: Indirect; 22, Fruits and Fruit Products; 23, Gelatin Dessert Preparations and Mixes; 24, Meat and Meat Products; 25, Metals and Other Elements as Residues in Foods; 26, Natural Poisons; 27, Nut and Nut Products; 28, Oils and Fats; 29, Pesticide Residues; 30, Spices and Other Condiments; 31, Sugar and Sugar Products; 32, Vegetable Products, Processed; 33, Waters, Mineral and Salt; 34, Color Additives; 35, Cosmetics; 36, Drugs; 37, Drugs and Feed Additives in Animal Tissues; 38, Drugs in Feeds; 39, Vitamins and Other Nutrients; 40, Extraneous Materials: Isolation; 41, Microbiological Methods; 42, Microchemical Methods; 43, Radioactivity; 44, Spectroscopic Methods; 45, Standard Solutions and Materials; 46, Laboratory Safety; and 47, Reference Tables.

The current volume has been expanded with 249 new methods. Two new methods of special significance are in the area of pesticide residues on crops. One method has been validated for 12 chlorinated pesticides on 33 crops, dairy products and vegetable oils and for seven phosphated pesticides on two crops. The other method is applicable to the determination of six phosphated pesticides on seven crops. A third new area of concern to food analysts was unfolded by the discovery of the aflatoxins only a decade ago. The field has been the subject of such intensive research during the past five years that a new and integrated chapter has been incorporated. It is noteworthy for its extensive treatment of sample preparation, calibration of standards, applications to specific susceptible commodities and confirmation by derivative and bioassay techniques.

Increased use of instrumentation is seen throughout the book. Examples of this instrumentation emphasis are polarographic determination of fumaric acid and organophosphorus pesticide residues and gas chromatographic methods having extended applications in "Beverages: Distilled Liquors," "Coffee and Tea," "Eggs and Egg Products," "Pesticide Formulations," "Flavors," "Food Additives," Pesticide Residues," "Drugs in Feeds," "Vitamins," and "Cosmetics."

This book is a must in an industrial laboratory. The methods are complete and the scope is extensive. However, the format of the book, both in this volume and previous editions, is not the most desirable. In an effort to be concise, repetition of procedures and reagents is kept to an absolute minimum by extensive cross-referencing. This results in the need for constant referral from section to section, making use of the methods very difficult at times. The majority of my colleagues also find this format objectionable.

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FORMULATION AND FUNCTION OF COSMETICS, J.S. Jellinek (John Wiley & Sons, Inc., New York, 1970, 586 p., $27.50).

This is the English translation of the second edition of a German text on cosmetology. It has a foreign flavor in attitude, organization and references. Because it is different, the experienced cosmetic chemist can expect to find new (to him) solutions to old problems. As in any text, there is also the old, the historic. For example, chlorophyll is forgotten now as an essential ingredient for new cosmetics.

Formulas in the book seem only historic, yet the word today is "natural." In this age of antichemical, pro-ecology, back-to-nature youth movement, it is useful to re-examine some of the old ways to beauty for they may be the most saleable today. The formulas in the book are not necessarily old, but basic beginning formulas and principles are presented. Then alternatives, elaborations and substitutions are added.

This volume is a useful addition to any library on cosmetics because it has been authored in Europe. It should not be the first choice for a small reference shelf for the same reason. Raw materials and literature references may be hard to find locally. The book is most useful to the person actually compounding cosmetics on the bench. Others will find only minor coverage of their specialty. The physiology of skin, hair, teeth, etc. is merely outlined. Microbiology is a single chapter subject. Chemistry and laboratory analysis is hardly mentioned. Hundreds of formulations may be useful to raw material suppliers. It is a fine reference source for basic cosmetic-compounding use.

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• *Referee Certificates*

First Notice

James E. Williams, Woodson-Tenent Laboratories, P.O. Box 845, Clarksdale, Miss., has applied for a Referee Certificate on Oil Cake and Meal and Protein Concentrates.

Richard W. Martin, Chas. V. Bacon Labs., Inc., 34 Exchange Place, Jersey City, N.J. 07302, has applied for a Referee Certificate on Cottonseed Oil, Soybean Oil, Other Fatty Oils and Tallow and Grease.

Robert L. Shelton, Southern Testing Labs., 824 Marengo St., New Orleans, La. 70115, has applied for a Referee Certificate on Oil Cake and Meal, Cottonseed Oil, Soybean Oil, Other Fatty Oils and Tallow and Grease.

John F. Peden, Woodson-Tenent Laboratories, Box 1097, Atlas Circle, Gainesville, Ga. 30501, has applied for a Referee Certificate on Oil Cake and Meal.

B. Lee Keating, K-Testing Laboratory, Inc., 1693 Lamar Ave., P.O. Box 2081, Memphis, Tenn. 38102, has applied for a Referee Certificate on Cottonseed, Oil Cake and Meal, Cottonseed Oil, Soybean Oil and Other Fatty Oils.

Charles R. Jenkins, Deep South Laboratory, P.O. Box 4133, Montgomery, Ala. 36104, has applied for a Referee Certificate on Cottonseed, Peanuts, Soybeans, Oil Cake and Meal.

Boyce H. Butler, South Louisiana Labs., Inc., P.O. Box 128, Destrehan, La. 70047, has applied for a Referee Certificate on Oil Cake and Meal and Protein Concentrates.

The Chairman of the Examination Board should be contacted by interested parties wishing to comment on the above certifications. Please write to Edward R. Hahn, Chairman of the Examination Board, Hahn Laboratories, P.O. Box 1177, Columbia, S.C. 29202.

COMPOSITION OF HUMAN CEREBROSPINAL FLUID CEREBOSIDE. Y. Nagai and J. N. Kanfer (Neurology Res. and J. P. Kennedy, Jr. Mem. Lab., Mass. General Hosp., Boston, Mass. 02114). *J. Lipid Res.* 12, 143–48 (1971). A technique was developed to isolate sufficient material for compositional analysis of cerebroside from pooled human cerebrospinal fluid. The carbohydrate moiety was principally galactose. The sphinogosine base and fatty acid compositions were found to be similar to that of brain cerebroside. The presence of a contaminant in commercial silica gel which chromatographed like the trimethylsilyl derivative of glucose is described.

THE APPARENT TRANSFER OF FATTY ACID FROM PHOSPHATIDYLCHOLINE TO PHOSPHATIDYLETHANOLAMINE IN HUMAN ERYTHROCYTES. S. B. Shohet (Div. of Hematology, Children's Hosp. Med. Cen., and Dept. of Pediatrics, Harvard Med. School, Boston, Mass. 02115). *J. Lipid Res.* 12, 139–42 (1971). In previous studies an apparent transfer of ^{14}C-labeled fatty acid from phosphatidylcholine to phosphatidylethanolamine was observed in prelabeled human erythrocytes reincubated in fresh serum. These data could have been explained by direct fatty acid transfer from phosphatidylcholine to phosphatidylethanolamine or by an apparent transfer simulated by either demethylation of labeled phosphatidylcholine to phosphatidylethanolamine or base-exchange of phosphatidylcholine with ethanolamine. To explore these possibilities, RBC containing phosphatidylcholine doubly labeled with palmitic acid-9,10-^{3}H and with choline-1,2-^{14}C were prepared. Upon reincubation in fresh serum, incorporation of ^{3}H (fatty acid) into phosphatidylethanolamine was observed without incorporation of ^{14}C (choline). In similar experiments in which RBC labeled fatty acid alone were used, ^{14}C-ethanolamine added to the incubation was not incorporated into the isolated phosphatidylethanolamine which again showed incorporation of the fatty acid-^{3}H. The data indicate that direct transfer of fatty acid from phosphatidylcholine to phosphatidylethanolamine can occur in human erythrocytes incubated in fresh serum.

THE SYNTHESIS OF HIGHER GLYCERIDES VIA THE MONOGLYCERIDE PATHWAY IN HAMSTER ADIPOSE TISSUE. F. M. Schultz and J. M. Johnston (Dept. of Biochem., The Univ. of Texas (Southwestern) Med. School, Dallas, Texas 75235). *J. Lipid Res.* 12, 132–38 (1971). The monoglyceride pathway for the synthesis of triglycerides has been investigated employing subcellular fractions and whole cell preparations of white and brown adipose tissue. Conclusive evidence has been obtained for the monoglyceride pathway in these tissues by employing the 2-monoether analogue of 2-monoolein as the substrate. The monoglyceride and α-glycerophosphate pathways were primarily found in the microsomal fraction. In these in vitro systems the activity of the monoglyceride pathway compared with the α-glycerophosphate pathway was of the same order of magnitude in whole cell preparations and was approximately one-half the activity of the α-glycerophosphate pathway when the microsomal fraction was employed.

ISOLATION AND IDENTIFICATION OF BOUND, MONO-UNSATURATED FATTY ACIDS IN LIPIDS ON THE SURFACE OF HUMAN SKIN. T. Shinohara (Lab. of Biochem., Medico-Legal Section, Nat'l Res. Inst. of Police Science, Tokyo). *J. Biochem.* 68, 125–28 (1970). The chemical structures of the mono-unsaturated fatty acids in the saponifiable fraction of lipids from the skin surface after separation of free fatty acids were investigated. From the results, it is concluded that the 14:1 and the 16:1 acids are 6-tetradecenoic and 6-hexadecenoic acids, and the 18:1 is mainly composed of 9-, and 8-octadecenoic acids. These monoenoic fatty acids are probably cis-isomers, like most naturally occurring fatty acids.

EFFECT OF HIGH CHOLESTEROL AND CHOLINE ON HEPATIC PHOSPHOLIPID PARTITION IN RATS. B. Banerjee, D. Roychoudhury and C. H. Chakrabarti (Univ. Dept. of Biochem., Nagpur, India). *Indian J. Nutr. Dietetics* 7, 10–12 (1970). The effect of high cholesterol and choline diets on hepatic phospholipid partition in albino rats was studied. Animals receiving high cholesterol diet for 12 weeks showed a depletion of phospholipid in liver. A lowering of lecithin with a concomitant increase of phosphatidyl serine, phosphatidyl ethanolamine and ethanolamine plasmalogen fraction was observed. Animals receiving high doses of choline along with high cholesterol diet showed more or less normal levels of total phospholipid, lecithin, phosphatidyl serine, phosphatidyl ethanolamine and ethanolamine plasmalogen.

EFFECTS OF DIETARY CHOLESTEROL ON THE REGULATION OF TOTAL BODY CHOLESTEROL IN MAN. E. Quintao, S. M. Grundy and E. H. Ahrens, Jr. (The Rockefeller Univ., New York, N.Y. 10021). *J. Lipid Res.* 12, 233–47 (1971). Studies on the interaction of cholesterol absorption, synthesis, and excretion were carried out in eight patients using sterol balance techniques. Absorption of dietary cholesterol was found to increase with intake; up to 1 g of cholesterol was absorbed in patients fed as much as 3 g per day. In most patients, increased absorption of cholesterol evoked two compensatory mechanisms: (a) increased reexcretion of cholesterol (but not of bile acids), and (b) decrease in total body synthesis. However, the amount of suppression in synthesis was extremely variable from one patient to another; one patient had no decrease in synthesis despite a large increment in absorption of dietary cholesterol, and two patients showed a complete suppression of synthesis. In the majority of cases the accumulation of cholesterol in body pools was small because of adequate compensation by reexcretion plus reduced synthesis, but in few patients large accumulations occurred on high cholesterol diets when absorption exceeded the compensatory mechanisms. These accumulations were not necessarily reflected in plasma cholesterol levels; these increased only slightly or not at all.

TEMPERATURE CONTROL OF PHOSPHOLIPID BIOSYNTHESIS IN ESCHERICHIA COLI. M. Sinensky (Conant Labs., Harvard Univ., Cambridge, Mass. 02138). *J. Bacteriol.* 106, 449–55 (1971). The higher the growth temperature of *E. coli* cultures the greater is the proportion of saturated fatty acids in the bacterial phospholipids. When fatty acids are exogenously supplied to *E. coli*, higher growth temperatures will likewise increase the relative incorporation of saturated fatty acids into phospholipids. One of the steps in the utilization of fatty acids for phospholipid biosynthesis is, therefore, temperature controlled. The temperature effect observed in vivo with mixtures of ^{3}H-oleate and ^{14}C-palmitate is demonstrable in vitro by using mixtures of the coenzyme A derivative of these fatty acids for the acylation of α-glycerolphosphate to lysophosphatidic and phosphatidic acids. In *E. coli* extracts,

• *New Books . . .*

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CARBON MONOXIDE IN ORGANIC SYNTHESIS, Jurgen Falbe, Translated by C.R. Adams (Springer-Verlag New York, Heidelberg, Berlin, 219 p., 1970).

This monograph deals with important reactions of carbon monoxide. Four chapters review: hydroformylation (oxo reaction), carbonylation with metal carbonyls (Reppe reactions), carbonylation with acid catalysts (Koch reactions), and ring closures with carbon monoxide. The author has succeeded in describing in detail published information on a very important area of industrial chemistry. The field of carbon monoxide chemistry has been extensively developed in Germany. Since much of this information is described in German patents, this book is particularly useful to American researchers who have little access to foreign patent literature. The German edition of this book which appeared in 1967 was translated, updated and revised in a concise and very readable style by C.R. Adams, Shell Development Co., Emeryville, California.

Each chapter reviews theoretical and practical aspects of organic syntheses with carbon monoxide. Particularly useful descriptions of industrial process operations are provided in the chapters on hydroformylation and carbonylations. Brief summaries of industrial applications and economics are also included. Theoretical discussions of mechanisms are mostly descriptive and do not indicate some of the important problems which need further research. Over 1000 references are provided at the end of the book. Many citations are as late as 1969.

Oil chemists will find in this book several areas of catalytic chemistry which have remained largely untouched for development of useful fatty acid derivatives. Many potentially fruitful areas for further research are suggested. Although highly specialized, this book is recommended to the industrially-oriented fatty acid chemist.

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