BOOK REVIEWS

The Lipids. Their Chemistry and Biochemistry. Volume II: Biochemistry. Digestion, Absorption, Transport and Storage. By HARRY J. DEUEL, JR., Dean, Graduate School, and Professor of Biochemistry, University of Southern California, Los Angeles. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. xxvi + 919 pp. 17 × 23.5 cm. Price, $25.0.

As stated in the preface, the present volume encompasses information on the digestion, absorption, transport and storage of fats and other lipids in the animal body. Because of the great increase of new findings in biosynthesis, metabolism, oxidation and nutritional value it became necessary to present these aspects of the topic in a third volume, to appear later. Some overlapping in the three volumes is necessary for understanding.

A list of Errata in Volume I is included as a separate sheet.

Chapter II. In the digestion and absorption of lipids a great difficulty is that they are mainly insoluble in water while the transport media, the blood and lymph, are largely water and the body tissues are also about three-quarters water. Various devices are employed to overcome this difficulty. Among the devices are the lipases, which are the enzymes hydrolysing the various esters included in the lipids. These are discussed in detail with their properties, their regulating devices—activators and inhibitors—the products of the hydrolysis and the mechanics of the operations. Also included are hydrolytic enzymes for such substances as acetylcholine and chlorophyll-phytol esters which are ordinarily not thought of as lipids.

The history of the theories of fat absorption is given in considerable detail, from the time when fat was believed to be absorbed in particulate undigested form, through the all-hydrolysis theory of Pfluger to the modern system as exemplified in the work of Frazer, which brings the process to almost full circle. Facilities for splitting the fat are present in abundance but complete splitting is apparently not frequent while splitting to the mono-ester phase is common. But much, perhaps most, of the fat is absorbed without splitting as the result of the solvent activity of the mono esters and the bile.

Much attention is understandably given to the action of the bile in fat digestion and absorption and to the structure of the absorbing surface, the intestinal mucous membrane. Finally come factors affecting the rate of absorption of fat, melting point, nature of the fat, emulsifying agents, adrenocortical hormones, etc.

Chapter III. On the digestibility of the fats deals with methods of study and with the characteristics of animal and vegetable fats in man and the lower animals. Included are pathological factors, fecal fat and intestinal mucus.

Chapter IV. Has to do with lipids other than fat—phospholipids, sterols, higher alcohols and hydrocarbons, their digestion, absorption and changes in the gastrointestinal canal. Considerable attention is given to the carotenes and carotenoids and their transformation into vitamin A, also to the other fat soluble vitamins D, K and E.

Chapter V. A long chapter (170 pages), is devoted to blood lipids, their chemical nature, physical properties, normal variations, form of occurrence and manner of entrance into and departure from the blood. The lipoproteins, which are at present much in clinical discussion, are given special attention. The factors are mentioned which influence the lipid levels and the appearance or disappearance of visible lipemia including the endocrine glands. The blood lipids in various diseases, for example, diabetes mellitus, anemia, nephritis and nephrosis, arteriosclerosis are described in detail. The behavior of carotene and carotenoids and vitamin A and the tocopherols is added.

Chapter VI. Lipids in the animal body. The composition of stored fat as influenced by the food, carbohydrate and fat especially, and age and sex. The lipid composition of the cells and its distribution, the lipid content and nature in the mitochondria are given. Fat mobilization and deposition in normal and abnormal conditions, abnormalities—obesity, fatty liver and the role of choline and inositol are discussed.

Chapter VII. Deals with lipid distribution in specific tissues and their secretions. First in order is the liver, with presence of phospholipid, plasmalogens, various unsaponifiables, hydrocarbons and fatty acids, then the effects of age and sex, hormones, diurnal variations and diet. The kidney was found to be almost as active as the liver in the incorporation of ingested fatty acid into the phospholipid.

In the muscle the normal distribution and relations are considered along with the effect of abnormal conditions, atrophy and fasting. The relation between function and lipid composition, in smooth, skeletal and heart muscle is discussed.

Much attention is given to the brain, normal and abnormal. The brain contains more and different kinds of lipids than any other organ and the constituents are more difficult to separate and identify. The presence also of protein combinations—proteolipids is discussed. The effects of species, age, area distribution, various agents, for example, insulin and choline are recorded. There is a shorter discussion of the lipids of nerves in vertebrates and invertebrates. The lipids of the adrenals, reproductive organs, skin are introduced in the following paragraphs, also pancreas and lungs. The chapter and the volume end with a good discussion of milk and egg lipids, their sources and conditions of formation including the synthesis from acetate, based on perfusion of the udder.

In this volume as in Volume I the information is encyclopedic and anyone interested in work on the lipids will save himself much time by consulting this work as a preliminary if not a final step in the study of the lipids.

Printing and arrangement are good and there are provided for help in finding one's way around in this complex field a table of contents of 19 pages, an author index of 47 pages and a subject index of 54 pages.

The price ($25.00) seems high but considering the amount of time spent and the great volume of information, it may not be out of line.

881 BALLANTYNE ROAD
SCOTTSVILLE, N. Y. W. R. BLOOR

BOOKS RECEIVED

June 10, 1955—July 10, 1955

HUGH J. MCDONALD, in collaboration with ROBERT J. LAPPE, EDWARD P. MARBACH, ROBERT H. SPITZER, AND MATTHEW C. URBIN. "Ionography. Electrophoresis in Stabilized Media." The Year Book Publishers, Inc., 200 East Illinois Street, Chicago, Illinois. 1955. 268 pp. $6.50.

CHARLES PHELPS SMYTH. "Dielectric Behavior and Structure. Dielectric Constant and Loss, Dipole Moment and Molecular Structure." International Chemical Series. Louis P. Hammett, Consulting Editor. McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, N. Y. 1955. 441 pp. $9.00.

H. YUKAWA, Y. FUJIOKA, M. KOTANI, AND S. TOMONAGA (Editorial Board). "Proceedings of the International Conference of Theoretical Physics." 1953. Kyoto and Tokyo. The Organizing Committee, International Conference of Theoretical Physics, Science Council of Japan, Ueno Park, Tokyo, Japan. 1954. 942 pp.