BOOK REVIEWS

Lipide Chemistry. By DONALD J. HANAHAN, Department of Biochemistry, University of Washington, Seattle, Washington. With contributing chapters by Frank R. N. Gurd, Bureau of Medical Research, Equitable Life Assurance Society of the United States and Department of Biochemistry, Cornell University Medical College, New York, and Irving Zabin, Department of Physiological Chemistry, University of California, Los Angeles. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1960. ix + 330 pp. 15.5 × 23.5 cm. Price, $10.00.

The study of the lipids has lagged behind that of the carbohydrates and proteins largely because of the difficulties of approach—peculiar solubilities and the habit of forming more or less stable combinations with many substances. Modern development has been made possible by the development of means of separation, especially by the chromatographic methods. Not less important are the improved methods of synthesis resulting in the formation of key compounds which can be used as a basis for comparison with the natural products. The apparently hopeless lipid combinations have now yielded to the modern treatment and there has resulted a startlingly rapid increase of relatively exact information. This book consists of an examination of the progress made during the last ten years in this fast-growing field. It covers in briefer form much of the material in Deuel's monumental work, but gives special attention to the organic structure of the lipids, their nature and synthesis. Very little attention has been given to the sterols, vitamins and other substances ordinarily classed with the lipids.

Each major class of lipids is discussed with special reference to its connection with the lipoproteins which constitute the form in which these substances occur in nature.

There are contributing chapters by Frank R. N. Gurd on the association of the lipids with proteins and with the naturally occurring lipoprotein systems; the sphingomyelins are given special consideration by Irving Zabin.

A companion volume—"Lipide Metabolism," edited by Konrad Bloch—is to be published soon.

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Theory of Detonation. By IA. B. ZELDOVICH and A. S. KOMPANEETS. Academic Press Inc., 111 Fifth Avenue New York 3, N. Y. 1960. 284 pp. 16 × 23.5 cm. Prices, $10.00.

This book is a translation from the original Russian edition published in Moscow in 1955. It is an excellent presentation of classical detonation theory which includes the important part of the theory for which the senior author shares honors with J. von Neumann and W. Doering, although the latter two great contributors to detonation theory are not mentioned in this volume. Failure to acknowledge the work even of the foremost of the many contributors to the theory of detonation outside Russia is unfortunate because, aside from the contribution of Zeldovich himself, the basic parts of the theory were not contributed by Russian scientists. For example, the thermohydrodynamic theory of detonation which forms the foundation of much of the theory discussed in this volume is largely the work of renowned British, French and German scientists of the late nineteenth and early twentieth centuries.

The first chapter is a concise but lucid presentation of conventional shock wave theory including the powerful method of characteristics. The second and third chapters deal with detonation waves with special emphasis on gaseous detonations. The approach is that of a shock wave followed by chemical reaction without coupling between them in which effects of diffusion, viscosity and conductivity in the reaction zone are neglected. This treatment has lately been referred to as the "zeroth-order" approximation. The case of strong intimate coupling of the shock wave with chemical reaction in the detonation wave associated with high thermal conductivity, maintained for some time by the reviewer, seems now to be well-justified by the experimental facts. Hirschfelder and co-workers have considered such coupling in an elegant, general theory of detonation that includes the influence of transport phenomena. Still the great contribution of the zeroth-order solution of Zeldovich, von Neumann and Doering should not be discounted. Indeed, without it, bringing out so clearly as it does the consequences of negligible heat transport on the nature of the pressure–time contour in detonation, progression in the science of detonation waves would no doubt have been greatly retarded. Failure to observe the type of pressure–time curves predicted by the zeroth-order approximation is therefore no reflection on the magnitude of the contribution of these authors. In fact, it was the definitive character of their solution that pointed clearly the way to the more general theory including transport phenomena which more accurately accounts for the experimental facts.

Chapter 4 treats detonation in condensed explosives. It gives a number of brief, somewhat categorical, statements considered by the authors as most pertinent to detonation in condensed phase, and then presents a discussion of the equation of state applicable in condensed explosives. The discussion pertaining to condensed explosives, however, leaves very much to be desired, both regarding the real nature of the detonation in condensed phase and the equation of state. But it is nevertheless of considerable interest.

The final chapter discusses the motions of the products of detonation inside a detonation wave and the expansion characteristics of the waves propagated outside a charge. Within the limitations of the basic facts and concepts considered this section is also an excellent presentation. Unfortunately, the matters discussed are complicated by phenomena not considered in this volume. One of these is the "triangular region" or "detonation head" observed by flash radiography and clearly elucidated in shaped charge studies. Another is the influence of strong ionization in detonation on the motions of the products both inside and outside the original charge. However, the "dilute plasmas" associated with detonation waves were not recognized until after the original publication of this volume in 1955. It is now evident from the experimental facts that the highly luminous clouds ejected into surrounding media from free surfaces by detonation waves in condensed explosives are actually comprised to a large extent of highly ionized (intermediate) products of detonation that have apparently sieved through the otherwise distinct shock wave and practically obliterated it, the shock connected with the front of these brilliantly luminous clouds being merely a relatively weak bow wave. Any treatment of the luminous clouds ejected from free surfaces of detonating explosives as shock waves is thus clearly incorrect.

Despite limitations imposed on the theory by the most recent experimental observations, this volume represents a significant contribution to the theory of detonation with which all concerned with this complicated but fascinating field of science should become familiar.

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Aids to Biochemistry. Fifth Edition. By S. P. DATTA, B.Sc., M.B., B.S., Reader in Biochemistry in the University of London, and J. H. OTTAWAY, B.Sc., Ph.D., A.R.I.C., Senior Lecturer in Biochemistry, University of Edinburgh. The Williams and Wilkins Co., Baltimore 2, Maryland. 1960. viii + 266 pp. 10.5 × 16.5 × 1.6 cm. Price, $3.75.

This pocket-size volume is stated by the authors to have been prepared primarily for the instruction of preclinical students of medicine and secondarily for the use of advanced students of medicine who need to refresh their biochemical knowledge. This reviewer doubts that either of these ends has been satisfactorily achieved.

In so small a text, comprising (apart from diagrams, tables and formulas) not much more than sixty thousand words, it would be practically impossible to present all the factual and