Book Reviews

Biochemistry and Human Disease

Advances in Metabolic Disorders. vol. 1. Rachmiel Levine and Rolf Luft, Eds. Academic Press, New York, 1964. xiv + 366 pp. Illus. $12.

This volume introduces a new international serial publication addressed to physicians, investigators, and graduate students interested in metabolic disorders. The editors plan in this and future volumes to present authoritative reviews, written by experienced workers, of one major subject or problem. The term *metabolic disorders* is interpreted broadly. The topics discussed in volume 1 have in common the application of biochemistry to the pathogenesis and course of human disease, but within this general definition great heterogeneity exists. This first volume contains 8 papers by 12 authors.

The series is launched by a paper entitled "Glycogen storage disease," by H. G. Hers, which may well serve as a model of concise, lucid, scientific writing for future contributors to the series. It is selective in the material included, but unbiased. Biochemical techniques for investigating tissues from patients with glycogen storage disease are discussed in this chapter. In the ensuing chapter, "The parathyroids," G. D. Aurbach and J. T. Potts, Jr., consider the physiology and biochemistry of parathyroid hormone and the syndromes of hyperparathyroidism and hypoparathyroidism. This chapter ranges more widely than the first and includes a review of early development of concepts of parathormone action and more data on treatment and on patterns of hereditary transmission. Next there is the discussion "Mitochondrial respiratory control" in which L. Ernster and R. Luft review in some detail the historical developments of the biochemical concepts of coupling of respiration and phosphorylation. The chapter is organized to provide a biochemical basis for the discussion of a remarkable patient with hypermetabolism of nonthyroid origin, attributed to a defect in the maintenance of mitochondrial respiratory control. In his paper "Osteoporosis" B. E. C. Nordin marshals the argument, based on his own data and those of others, that osteoporosis is a result of increased bone resorption, perhaps due to prolonged negative external calcium balance or to degenerative changes in the bone itself. Osteoporosis may be an end result of various processes. In "Basal metabolic rate and thyroid hormones," J. R. Tata discusses the various existing theories of the calorigenic action of thyroid hormones and points out their inadequacies. He expresses the conclusion, in the final pages of the chapter, that the influence of thyroid hormones on informational mechanisms which regulate biosynthetic activities may constitute a field for fruitful future studies. His own more recent investigations in this field are not covered in this chapter.

In "Insulin antagonists and inhibitors," J. Vallance-Owen suggests that the primary abnormality in idiopathic diabetes mellitus is increased antagonism to insulin, an exaggeration of the normal which the diabetic subject presumably inherits. The type and time of onset of the diabetic state depend on the degree of antagonism and on the resilience of the beta cells of the pancreas to withstand the challenge. Impaired glucose tolerance is considered a late event in a condition that has been present from birth. Insulin antagonism is mediated through the pituitary-adrenal system. The association of diabetes with the growth spurt, pregnancy, infection, menopause, and mental stress may then be integrated within this concept. "Aldosterone: Its biochemistry and physiology," by J. H. Laragh and W. C. Kelly, contains, in the first part, a discussion of biosynthesis and measurement of aldosterone and, in the second part, a consideration of the physiological effects of aldosterone, including its normal control and abnormalities of secretion in disease. The chapter concludes with a discussion of angiotensin as a possible major regulator of aldosterone secretion.

The final chapter, by A. L. Luhby and J. M. Cooperman, "Folic acid deficiency in man and its interrelationship with vitamin B_{12} metabolism," is a long and carefully written chapter. The metabolic interrelationships between folic acid and vitamin B_{12} are considered in detail, but a molecular explanation of these interrelationships must await further studies. Many of the methods used in the study of folic acid deficiency in man are examined analytically and stress is placed on their applications, values, and limitations.

The editors, who have not encouraged neutrality, have given the contributors considerable freedom in developing their topics, and some chapters—for example, those by Nordin and Vallance-Owen—express a more individual viewpoint than others. The style is that of the other reviews published by Academic Press, with liberal use of outline subheadings and extensive citations in which the titles of articles are omitted. Both an author and subject index are included.

This series is a welcome addition to the growing list of *Advances*. Its prime function will be to integrate basic science and clinical knowledge in selected areas. The series will be particularly valuable to medically oriented investigators, both the physician who is interested in disease mechanisms and the biochemist and physiologist who are interested in the larger application of their work. The editors are to be congratulated on their selection of contributors to the first volume, for all of them have provided authoritative reviews. Additional volumes of this series will be awaited with interest.

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Dynamics of Viscous Fluids

Incompressible Fluid Dynamics. J. N. Hunt. Wiley, New York, 1964. viii + 127 pp. Illus. Paper, $4.

As the title of this little book surely does not imply, the author seeks specifically to bridge the gap between elementary texts "concerned largely with clas-

sical perfect fluids" and advanced research monographs. That a better title might have been "Fundamental Topics from the Dynamics of Viscous Fluids" is illustrated by the following abbreviated headings of the chapters: Navier-Stokes equations, steady and unsteady laminar boundary layers, instability, turbulence, and turbulent shear flows. Although the book is based on lectures originally presented at Georgia Institute of Technology and only thereafter at the author's own Imperial College, London, its manner of presentation reflects British rather than American pedagogy, emphasizes analysis rather than application, and is slanted toward aeronautics rather than toward oceanography (the author's field) or any of the many other professions that now use such material. Much of the subject matter necessarily stems from semiempirical findings that have subsequently been subjected to more formal analysis; however, although the physical aspects of the present derivations are usually discussed, not only are illustrations a rarity but, the reader is referred for substantiating experimental data to the source material. Because roughly half of the references cited are books (Schlichting, Townsend, Hinze, and so on), the volume under review is in large measure a digest of digests—as most educational material perforce is. When viewed solely in this light, the book does have its obvious merits. They become the more apparent as one ponders his own ability to select and present with comparable skill material of equal significance in as little space. The chapter on turbulence, for example, seems to be an especially effective condensation.

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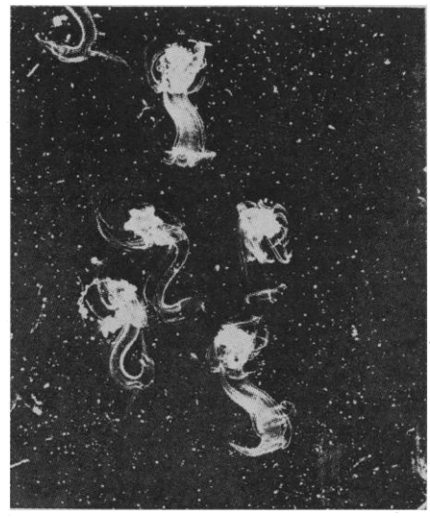
Plankton and Protozoa

Life in the Sea. Photography by Lennart Nilsson; text by Gösta Jägersten. Basic Books, New York, [1964]. 184 pp. Illus. $10.

There are many picture books about life in the sea, and there will be many more. Very few of them, however, have been prepared by zoologists of the highest competence, who can provide interesting and accurately written commentaries for the pictures. This book



Larvae of *Luidia*. [Basic Books]

is an ideal example of a happy union of photographer and zoologist. The competence of the photographer, who has taken all but one or two of the photographs from living material, is attested to by the quality of the illustrations. There are many unusual views of familiar subjects and some startling close-ups, at fairly high magnification, of subjects not usually found in books of this type. The attempt has been made to illustrate in a comprehensive and orderly manner the representatives of the invertebrate groups found in Swedish waters. Most of the subjects were photographed at the Biological Station at Fiskebäcksil, of which Gösta Jägersten is the director.

Although the book has no index, it can be consulted as a supplement to a standard zoology text since the arrangement is an orderly sequence from plankton and protozoa to fish. Among the unique or seldom photographed subjects are *Noctiluca* (enlarged), a Tintinnid, a tremotode infesting *Sagitta*, a myzostomid, *Tomopteris* (unfortunately somewhat obscured across the fold of the page), *Protodrilus* (Jägersten's favorite research animal), and a group of metamorphosing *Luidia* larvae. A number of photographs have been made with phase contrast, and while they make spectacular patterns, the bright halo around the subject conceals details or conveys an erroneous impression in some cases. There are eight color photos—but there should be more.

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Lipid Chemistry

Analysis and Characterization of Oils, Fats, and Fat Products. vol. 1. H. A. Boekenoogen, Ed. Interscience (Wiley), New York, 1964. xiv + 421 pp. Illus. $12.75.

The series, *Analysis and Characterization of Oils, Fats, and Fat Products*, is designed to publish from time to time, in collected form, a number of chapters on subjects of an analytical nature for the benefit of those research groups who are, in the widest possible sense, engaged in the investigation of lipids. This breadth of interest is fully borne out in the nine chapters of volume 1—"Classical chemical methods in fat analysis" by J. Baltes; "The assay of essential fatty acids" by R. Reiser and M. C. Williams; "The application of urea inclusion compounds in fat analysis" by J. M. M. Moreno and P. W. Hendrikse; "The analysis of butter and cheese" by J. G. Van Ginkel; "The analysis of monoglyceride and related emulsifiers" by G. F. Longman; "The determination of fats in oils, especially in linseed oils" by E. L. Delvaux and J. E. Bertrand; "Nuclear magnetic resonance spectroscopy in fat chemistry" by R. Keuning; and "The use of ion-exchangers for the analysis of detergents" by P. Voogt.

The first three chapters were of major interest to me, and they will perhaps be of widest interest to readers. Particularly timely is the one on methods of assaying the essential fatty acids, in view of the current interest in these compounds in relation to their importance in the diet in human health. The chapter on classical methods of analysis is decidedly European in its flavor and leaves out many advances based on the work of lipid chemists in America. The general discussion of the theory and practical applications of urea inclusion compounds is good, although I do not believe this analytical procedure has found wide usage. The chapters on dilatometry and nuclear magnetic resonance spectroscopy are high-level discussions of these physical procedures which are presently useful in relatively few laboratories. The remaining four chapters appear to be very limited in use, each to specific industries or control laboratories.

The format of the chapters is excellent, with a table of contents, an introduction, theoretical explanation of terms, and finally descriptions of meth-