in the great depths. In all cases of such special features acquired by animals to enable them to cope with the special circumstances of their environment, in this case the deep sea, we speak of adaptation of the animals to their environment. It is better, however, not to associate with this conception the ideas of necessity and of the appropriateness of such adaptations, as was done in the past, for, as we have said, many animals manage without such adaptations, and of two closely allied species of the same genus, both living in the same way, in one the adaptations may be well developed and in the other entirely absent. Thus these adaptations are often not necessary changes, but merely changes made possible by the ecological system of the species or family concerned, changes which at a more advanced stage of development of the species or family may become biologically important and have an influence on natural selection."

The style of writing is excellent in spite of the difficulties of translation from the German. The illustrations are numerous and adequate, including both borrowed, adapted, and original ones. There is, unfortunately, no list of illustrations, nor is there any mention of them in the brief index. Since the book was originally published in 1950, there is understandably no mention of recent notable dives such as those of Piccard, Cousteau, and others. These recent dives have been characterized, however, by depth records rather than by additions to the sum of scientific knowledge. Clarity and compactness are the major advantages of the present volume.

WILLIAM BEEBE
New York Zoological Park

Advances in Enzymology and Related Subjects of Biochemistry. vol. 17. F. F. Nord, Ed., Interscience, New York, 1956. 556 pp. Illus. $11.

This annual publication needs no introduction to biochemists, and laudatory comments are superfluous. For certain of the chapters a listing of the title and author is sufficient indication of subject matter and quality. Such chapters are "Enzyme kinetics" by R. A. Alberty; "The respiratory chain and oxidative phosphorylation" by Britton Chance and G. R. Williams; "Enzymatic phosphate transfer" by Bernard Axelrod; "Formation of oligosaccharides by enzymic transglycosylation" by Jeffrey Edelman; "Nature and function of metalloflavoproteins" by H. R. Mahler; and "Chemistry and biochemistry of xanthine oxidase" by E. C. De Renzo.

"Solubilization, migration and utilization of insoluble matter in nature" is the strange title of an even stranger article by I. Mandl and C. Neuberg. This chapter is a cursory survey of soluble metal complexes of such substances as nucleic acid, ATP, uronic acids, amino acids, and proteins. The significance of much of this to biology is not clear in spite of the authors' conclusion that "All solubilizing agents are of the utmost biochemical importance."

Wainio and Cooperstein in discussing "Some controversial aspects of the mammalian cytochromes" have uncovered plenty of controversy in 367 references and deliberately leave both the field and the reader in an unsettled condition. "Metabolic aspects of chemical genetics" by A. G. De Busk is a superficial summary of a much reviewed subject. This chapter might have been improved by restricting the field of coverage and by careful editing. The last chapter on "Ribonucleic acids and virus multiplication" by R. Jeener is a timely review of the significance of RNA in plant virus growth. The editor has made a worth-while selection in eight of ten chapters, far more than enough to justify publication of this volume.

MARK H. ADAMS
Department of Microbiology, New York University College of Medicine

Anatomy of the Honey Bee. R. E. Snodgrass. Comstock (Cornell University Press), Ithaca, N.Y., 1956. xiv + 334 pp. $6.

This book gives a detailed analysis of the gross structure of the adult bee. Most of the topics have a brief comparative introduction, and there is adequate consideration of development, histology, and the functional aspects of anatomy. The writing is clear and well organized.

Although essentially a new book, this is well based on the author's earlier publications, which extend back to 1910. His *Anatomy and Physiology of the Honeybee* (1925) was about the same size as the present book, but Snodgrass now leaves most of the physiology to specialists and has omitted most of the biology and behavior, with bows to the recent books of von Frisch, Ribbands, and Butler. Since 1925 our knowledge of the anatomy of the honeybee has had major additions (many of them by Snodgrass himself) and some subtractions. The most obvious additions to this book are in musculature and endocrine organs. Two-thirds of the references given are to material published since 1925, and the early ones have been carefully winnowed.

Illustrations are the most significant feature of any treatise on anatomy, and here one must admire the precision and elegance of the pen work. Few of the many figures are completely new in this volume, but whether they are well redrawn from recent publications, diagrammatized, or borrowed from the author's early publications, they give constant evidence of Snodgrass' critical judgment. Even excellent drawings have been slightly reworked; figures have been regrouped; and the labels have been punctiliously revised to conform to changed concepts of homology. The ample letter labels are abbreviations probably recognizable to an entomologist. However, the key to these letters comes at the end of the chapter, and this makes it difficult for a beginner who may want to study a figure before the text.

The index is awkwardly analytic rather than primarily alphabetic; it does little more than the table of contents.

This will be a fundamental reference book, and an excellent textbook and manual for advanced students.

ROLAND WALKER
Department of Biology, Rensselaer Polytechnic Institute

New Books

Learning and Instinct in Animals. W. H. Thorpe. Harvard University Press, Cambridge, Mass., 1956. 493 pp. $10.

Aquatic Insects of California. With keys to North American genera and California species. Robert L. Usinger. University of California Press, Berkeley, 1956. 508 pp. $10.

Coal-Mining. I. C. F. Statham. Philosophical Library, New York, 1956. 564 pp. $15.

A Life of Sir William Ramsay. Morris W. Travers. Arnold, London, 1956. 308 pp. $12.50.

Modern Views on the Secretion of Urine. Cushny Memorial Lectures. F. R. Winton, Ed. Little, Brown, Boston, 1956. 292 pp. $8.50.

Mathematics for Electronics, with Applications. Henry M. Nodelman and Frederick W. Smith. McGraw-Hill, New York, 1956. 391 pp. $7.

Fine Structure of Cells. A symposium held at the 8th Congress of Cell Biology, Leiden, 1954. Union Internationale des Sciences Biologiques; Interscience, New York, 1956. 321 pp. $8.50.

Scientific Serials. Characteristics and lists of most cited publications in mathematics, physics, chemistry, geology, physiology, botany, zoology, and entomology. ACRL Monogr. No. 16. Charles Harvey Brown. Association of College and Reference Libraries, Chicago, 1956. 189 pp. $4.25.

Family Medical Costs and Voluntary Health Insurance: A Nationwide Survey. Odin W. Anderson with Jacob J. Feldman. Blakiston Div., McGraw-Hill, New York, 1956. 251 pp. $6.50.

Theory and Dynamics of Grassland Agriculture. Jack R. Harlan, Van Nostrand, Princeton, N.J., 1956. 281 pp. $6.75.