tosynthesis, glycolysis, the trichloracetic acid cycle, and several enzymic reactions of particular importance are discussed and well integrated, and polysaccharides are discussed effectively. Other attractive features of the book include abridged rules for carbohydrate nomenclature, useful general and specific references, and numerous summaries of important topics.

Along with these many strong points, there are a number of aspects which seriously detract from the book's usefulness. The theoretical discussions of optical rotatory power and NMR are inadequate for the advanced reader and too involved for the beginning student. The structure of D-glucose is developed fully. Although the structures of the monosaccharides may be gleaned through the illustrative examples, the author nowhere compares the structures of the pentoses, hexoses, or hexuloses. Many of the figures appear to have been drawn carelessly—Fig. 6.31 presents a conformationally inaccurate representation of 1,6-anhydro formation, for example—and few of the figures and tables are conveniently placed with respect to the applicable portions of the text. Although the author is aware of good carbohydrate nomenclature, a great many of the names used are inaccurate. Finally, the index is inadequate.

This book is basically a good book in carbohydrate chemistry, but its usefulness is somewhat decreased by the many errors, most of which are not of concept but of execution.

ROY L. WHISTLER
Department of Biochemistry,
Purdue University,
Lafayette, Indiana

Mammalian Behavior

Play, Exploration and Territory in Mammals. Proceedings of a symposium, London, Nov. 1965. P. A. JEWELL and CAROLINE LOIZOS, Eds. Published for the Zoological Society of London by Academic Press, New York, 1966. 294 pp., illus. $11.50.

Recent reports of many field studies of nonhuman primates have led to renewed efforts to examine systematically the naturalistic behavior of a wide range of other mammals. The proceedings of this symposium importantly advance these efforts. The contributors describe play in mammals; play, exploration, and territory in wild lions; aggressive play in polecats; exploration and fear in rats; exploration and play in children; home range in mammals; movements in small mammals; territory in carnivores; scent marking in Canidae; grouping and range in feral Soay sheep; dispersal of red deer; home range and agonistic behavior in the gray squirrel; group structure and movement of gelada baboons; and spatial organization of nutria. Most of the observations reported were made in the natural habitats of the animals, but some observations of behavior in captivity are included.

The symposium describes many other kinds of related behavior in addition to those suggested by the title; extensive observations of nutrition and feedings, aggressive and reproductive behavior, marking and signaling, population organization, and selective adaptations are reported. There are significant contributions to the subjects of population organization and control and the composition and structure of families, colonies, and groups of animals. Aggressive and defensive behavior and their associated functions are described for many of the species.

Each paper adds new observations to the general literature on free-ranging mammalian behavior. New problems are defined, and a few new methods and techniques are briefly described. For example, lemmings do not plunge blindly into lakes, but they, and nutria too, cross lakes when silhouettes of the opposite shore can be seen. Telemetry, radio transmission, and radioisotopic tracers are described as standard techniques for both tracing and recording the movements of small mammals.

The collected papers for the symposium do not develop a coherent theme. The contributions are somewhat irregular in scope and quality of treatment of the wide variety of subjects. Although new and extended information and new variations of patterns of movements of animals *in-space-over-time* are described, old definitions of "home range" are repeated too often. The relative exclusivity of mammalian home ranges and the existence of more than one focus of activity in definable ranges should be generally accepted. In contrast, the attention given to community and group ranges, life ranges, the effects of varied ecological contexts, and the evolutionary significance of behavior represents an important contribution of the book. Learning and conditioning mechanisms as possible explanatory concepts for territoriality are seriously neglected. The issue of defensive behavior as a criterion of territoriality continues in this symposium to receive too much attention relative to its importance in animal economy.

Play, exploration, and territoriality are kinds of behavior that are basic and general, but neglected, subjects of study. This well-designed book, with good abstracts and summaries for each chapter, emphasizes the importance of these activities, advances analysis and understanding of them, and once again calls attention to their biological significance.

C. R. CARPENTER
Departments of Psychology and Anthropology, Pennsylvania State University, University Park

Organisms in Environments

Pollution and Marine Ecology. Proceedings of a conference, Galveston, Texas, March 1966. THEODORE A. OLSON and FREDRICK J. BURGESS, Eds. Interscience (Wiley), New York, 1967. 382 pp., illus. $12.

Other than the suggestion, by the author of the welcoming remarks, that support of pollution studies may be one of the largest categories of federal expenditure in the future, the problem presented by the increase in our capacity to influence our environment adversely was not examined in this conference. The implication of the proceedings, with several papers that are essentially basic ecology, is that studies of whole plants and animals in their settings are indeed returning to favor and that studies of unpolluted or natural conditions are desirable. Thus we find in this book the only recent essays on intertidal ecology on the Oregon coast and on subtidal ecology at Anacapa Island, and a 50-page summary by H. T. Odum of biological circuits and marine systems in Texas, together with the usual sorts of papers about indicators, trace substances, "parameters of pollution," and so on. The book is not a complete treatment for ecologists or pollution engineers, but it will be essential for both.

JOEL W. HEDGPETH
Marine Science Laboratory,
Oregon State University, Newport