

A fuller, more comprehensive review of courtship could be written, then. Such a work from Bastock's pen would be a boon to the science of animal behavior.

In the meantime we should be grateful for what she has given us. The prose style may not be the most sparkling we have encountered in recent books on animal behavior; and most of the drawing for the illustrations is embarrassingly bad. But this book is thoroughly sound. Indeed, although it was not the author's intention, one wishes that the book might reach the wide audience that more popularly written books on animal behavior have discovered. Would that all the books written about behavior for nonspecialists were as reliable and scholarly as this one.

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Structural Analysis

Mass Spectrometry of Organic Compounds. HERBERT BUDZIKIEWICZ, CARL DJERASSI, and DUDLEY H. WILLIAMS. Holden-Day, San Francisco, 1967. xviii + 690 pp., illus. \$17.95.

Within the past ten years mass spectrometry has rapidly developed into a powerful and widely accepted technique for dealing with structural problems of organic compounds. Interest in the subject has been accompanied by a bewildering increase in the literature and in the number of journals reporting studies of fragmentation pathways of organic ions in the mass spectrometer. The present volume addresses itself largely to this problem by offering what is undoubtedly the most up-to-date (through early 1967) and comprehensive collection of facts concerning the mass spectrometric behavior of organic compounds.

The book consists of 27 chapters, each devoted to a specific functional group and its related fragmentation reactions. This organization is based on the view—generally justified—that knowledge of the fragmentation behavior of a simple compound can frequently be extrapolated in a predictive sense to other and more complex molecules. No attempt has been made to include the more complex natural products, which were covered in two ear-

lier volumes by the same authors.

Although not central to the basic purpose of the book, the 44-page introduction is important for several reasons. It provides a much-needed, up-to-date outline of a number of ancillary techniques and concepts, including element mapping and the uses of metastable peaks. Also, the convincing discussion of charge localization and prediction of bond breakage is essential to proper understanding of the "mechanistic" rationale, of which the authors are the primary and most influential proponents. This concept, used throughout the text and frequently in the literature, attempts to describe fragmentation reactions in "ground-state" mechanistic terms familiar to the organic chemist.

The present volume was published within three months of the completion of the manuscript and in spite of its size is remarkably free of errors, an attribute of considerable importance in a rapidly growing field. It should be accessible in every laboratory concerned with organic mass spectrometry.

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Describing Particle Systems

Developments in Transport Theory. A NATO Advanced Study Institute, Ankara, Turkey, Aug. 1965. E. İNÖNÜ and P. F. ZWEIFEL, Eds. Academic Press, New York, 1967. xiv + 381 pp., illus. \$19.50.

Transport theory, here meaning the description, by means of an appropriate equation for the one-particle distribution function, of systems of many particles which interact with each other and their environment, is a ubiquitous and proven tool in physics and engineering. The classical example of this technique is the kinetic theory of gases as initiated by Boltzmann with the introduction of his celebrated equation in the latter half of the last century. Since that time, the same notions have been extended to radiative transport, neutron transport, traffic theory, and other physical problems. The governing equation, be it partial differential or integrodifferential, is usually very difficult to solve, even in the simplest geometries with the most simplified of cross sections, especially in

bounded media. Hence recourse is conventionally had to the study of idealized models, and to a variety of perturbation techniques.

The volume here reviewed collects the lectures and seminars given at the NATO Advanced Study Institute on Transport Theory held at Ankara, Turkey, in 1965. It comprises six major contributions from those who lectured, as well as summaries of eight seminars. It has the virtue of any collection of such a nature, namely that there is much material of current interest by leaders in the field; but it also suffers from the vices of disjointedness and of nonuniformity of notation and depth inherent in an undertaking where speed of publication has been deemed more important than the thankless task of coordination and protracted editing.

Two-thirds of the book is devoted to neutron diffusions. Of this fraction a considerable part is concerned with the method of singular normal modes appropriate to a class of linearized problems. Variations on this theme are provided by sections on radiative transport and on plasmas. The emphasis of the book is formal and mathematical, and it is clearly of greatest interest to theorists, for whom it provides a useful halfway house between appropriate original papers scattered through the literature on the one hand, and a balanced, digested, well-integrated, definitive treatise on the other. It has the virtues of the lecture notes of a course, presented by a variety of teachers, for those who are not privy to the lectures.

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Developmental Biology

Calcium in Reproductive Physiology. A Comparative Study of Vertebrates. K. SIMKISS. Chapman and Hall, London; Reinhold, New York, 1967. xiv + 264 pp., illus. \$11. Modern Biological Studies.

Advanced students and research investigators in the emerging discipline of reproductive physiology will find this excellent monograph by Kenneth Simkiss rewarding and refreshing. Simkiss focuses attention principally on two crucial problems in the study of the reproductive capacity of higher vertebrates: rates of calcium metabolism and utilization, and calcium pools and

storage systems to fulfill the requirements of mother and embryo. The book is a model of clear, well-documented, and provocative writing and constitutes both a limited comparative review of mineral metabolism and a study of reproductive adaptation in amphibia, reptiles, birds, and mammals. It should prove useful to the developmental biologist interested in comparative embryogenesis.

The first section of this monograph summarizes much basic information related to the organ systems involved in calcium dynamics: among the topics treated are bone formation, turnover and kinetics of calcium, distribution and regulation of calcium in plasma and tissue, its distribution in the ovarian yolk, yolk composition and vitellogenesis, and the role of the endolymphatic calcium-storage sacs in amphibia. The major portion of the volume concerns reproductive and developmental processes: calcium balance and its regulation during gestation and lactation and in the neonatal mammal, placental transfer, calcium balance and metabolism in the adult and in the embryonic chick, reptile, and anuran, eggshell formation, and the dynamics and significance to the hen of medullary bone as a mineral storage depot. No *ex cathedra* presentation, the discussion suggests many unanswered questions for the inquisitive student. The book is well illustrated, referenced, and indexed. More monographs of this caliber may be hoped for from the Modern Biological Studies series.

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Polymerization

Organic Chemistry of Synthetic High Polymers. ROBERT W. LENZ. Interscience (Wiley), New York, 1967. xvi + 837 pp., illus. \$15.

This book by R. W. Lenz, with contributions by D. C. Feay and N. S. Schneider, represents one of the most recent additions to the subject of the organic chemistry of synthetic macromolecules. It is intended to serve as a textbook which will interest and assist both the undergraduate teacher and the graduate student in courses dealing with the organic aspects of polymer chemistry and as a reference book for those interested in the polymer field. We be-

lieve that the authors have been modestly successful.

The organization of the book is based on the reactions involved in the formation of high polymers. After a brief introduction which concentrates on the approach to the subject material and the relationship of structure to properties of polymers, a comprehensive discussion of many types of step-growth polymerization and homogeneous and heterogeneous chain-growth polymerization is presented. The book is concluded with a section concerned with the reactions of polymers.

Although this text is characterized by a different approach to the presentation of the organic chemistry of synthetic macromolecules, this approach requires that the reader refer to various chapters in order to obtain information on a specific monomer. This drawback becomes significant if a certain monomer polymerizes by several

different mechanisms. Moreover, it is to be noted that the broad range of topics covered prevents detailed discussion of each one. This is particularly noticeable in the section entitled Step-Growth Polymerization.

The author is to be commended for his coverage of many different reactions and monomers involved in the syntheses of high polymers and for the inclusion of pertinent illustrations and compilations of kinetic data, which these readers find very useful as reference material. If used in conjunction with texts dealing with the physical aspects of synthetic polymers, this book could provide a comprehensive background to the rapidly growing field of macromolecular science.

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A 17th-Century News-Gatherer

The Correspondence of Henry Oldenburg. Vol. 4, 1667–1668. Edited and translated by A. RUPERT HALL and MARIE BOAS HALL. University of Wisconsin Press, Madison, 1967. xxvi + 601 pp., illus. \$12.50.

As the Halls' meticulous edition of the correspondence of the Royal Society's secretary proceeds through 1667 and 1668, the volume of letters reaching and leaving Oldenburg grows steadily larger. He was now in touch with natural philosophers from Danzig to Portugal and to Bermuda, and he had a regular exchange with France. Unfortunately, Boyle moved to London, and so a major source of news ceased, but we can still follow the major concerns of the period—transfusions, with their dubious results, and the ensuing quarrel over priority; tides; Wallis's dispute with Dulaurens (which descended to the complaint that the latter spelled *Ellypsis* with a *y*); dissections undertaken by the French; and various physical wonders. Monstrous births, witchcraft, stones which attracted poisons, and similar matters were still the subject of earnest discussion, but amid the welter of ideas, both serious and far-fetched, a definite shift in interest toward continental biology can be perceived. Oldenburg first approached Malpighi in December 1667, thus starting a famous relationship; and the French transfusions and dissections of

the eyes of birds occupied much attention.

It could be said that Oldenburg was glad to be able to whip up this new business. Meetings of the Royal Society appear to have been rather poor fare during these months, for their enthusiasm seems to have centered on plans for a new building. The meatiest news was coming from abroad; and, though one can see Oldenburg as the honest pursuer of a wider intercourse among scientists, his requests for word of discoveries—and even descriptions of the terrain of foreign lands—sometimes took on a plaintive note. He needed them, of course, as self-justification, to show cause why his services were needed, to have something to disseminate. Yet he slipped easily into a strident, imperialistic tone in behalf of his adopted country, notwithstanding his wish to extend the range of his correspondence. His worst ingratiating manner is revealed in patronizing attitudes toward foreigners, fierce claims of English priority, and smug comments about the need for careful examination before the Royal Society (still in its first decade!) could give its august approval to some discovery.

Nonetheless, there is no denying that Oldenburg was the great clearinghouse of information of his day, a vital catalyst in the creation of a genuine scientific community—though the obsession