social conscience, and will be useful, in addition, for the many courses now arising in response to the students' desire to consider the social relevance of the findings of biology.

ARTHUR W. GALSTON
Department of Biology,
Yale University,
New Haven, Connecticut

Quantitative Approach

Statistical Ecology. Vol. 1, Spatial Patterns and Statistical Distributions. A symposium, New Haven, Conn., Aug. 1969. G. P. PATIL, E. C. PIELOU, and W. E. WATERS, Eds. Pennsylvania State University Press, University Park, 1971. xxviii, 582 pp., illus. $14.50. Penn State Statistics Series.

This is the first of three volumes reporting the papers and discussions at a symposium held at Yale University in 1969. Two subsequent volumes are to deal with "Sampling and Modeling Biological Populations and Population Dynamics" and with "Many Species Populations, Ecosystems and Systems Analysis." Twenty-three specialized papers and some general addresses are featured in the current volume. The application of statistical and mathematical techniques in ecology has rapidly proliferated during recent years, and one of the editors (Pielou) is the author of a successful introductory text. Thus ecologists have generally accepted a quantitative approach. Yet this volume will leave many ecologists, even those with statistical proclivities, seriously perplexed. If this volume faithfully reflects the progress and achievements of statistical ecology, the direction of this science would seem misguided. At least 11 of the papers deal with the properties of various statistical distributions that *might* be of interest to ecologists. Yet the relevance of these distributions to real biological data and the biological significance of their occurrence are not discussed, biological keywords in the titles of articles notwithstanding. Some of these papers will be of interest to statistically minded ecologists, who will have to dig hard to extract for themselves kernels of material useful for their work. Other contributions clearly belong to the statistical literature. The fact that empirical data in ecology often do not permit decisions among alternative distributions is brought out in the discussion. Whether this will inhibit the generation of further distributions in the future is doubtful. The multiplicity of biological interpretations of given distributions is taken up in a paper by Hairston, Hill, and Ritte in this volume.

At least two important contributions to statistical ecology should be singled out. Morisita develops an index of environmental density which is likely to be taken up by ecologists, as were his earlier contributions, and Iwao and Kuno undertake an interesting analysis of aggregation patterns in biological populations and their implications for various theories of population dynamics. There are other papers of specialized interest which will be read with profit by ecologists of various persuasions.

Users of this volume will be seriously impeded in their ability to locate desired information by the editors' omission of any kind of index and by the publisher's unfortunate decision to employ uniform running heads for the entire volume, yielding a Shannon-Weaver diversity index of zero as one thumbs through the pages.

ROBERT R. SOKAL
Department of Ecology and Evolution,
State University of New York,
Stony Brook

Neurochemistry

Recent Advances in Adrenergic Mechanisms. BUDH DEV BHAGAT. Thomas, Springfield, Ill., 1971. x, 134 pp., illus. $13.75.

In this book Bhagat provides an introduction to the concepts of the biochemistry and pharmacology of the sympathetic nervous system. It may well serve the needs of many students, medical scientists, or practicing physicians with an inquiring interest in the field, who must have difficulty in finding a place to begin reading the accumulation of sophisticated and complete reviews, symposia, and monographs dealing with catecholamines and related subjects.

A concise account of any large and rapidly advancing field must necessarily suffer from simplifications, omissions, and personal bias. Bhagat has freely acknowledged and accepted these dangers in his attempt to present clearly and simply an account of adrenergic mechanisms. The result, although a somewhat personal view of the field, does bring to the reader a fair coverage of the major facts and concepts. In the interest of brevity, conclusions are stated with minimal attention to the data from which they were derived. Bhagat has effectively used schematic representation to explain the complex interactions of drugs with the mechanisms for synthesis, storage, release, and action of norepinephrine. The only original data presented are the author's own work, six smoked-drum tracings of cat blood pressure and nictitating membrane contraction; and as might be expected of any active investigator, the citations are skewed toward his own contributions to this field. In some of the references, abstracts rather than the full published work are cited.

It would be quite easy to suggest how this book might have been enlarged, but perhaps only at the expense of the author's objectives. There is little or no discussion of the isotopic or biochemical methodology used in catecholamine research; the cardiovascular system is the only area in which any clinical correlations are considered; the central nervous system is ignored; controversial subjects such as compartmentation or metabolic pools of norepinephrine are avoided; there is nothing about the role of nerve growth factor in the development of the sympathetic nervous system; and some important, relatively new information (for example, the release of dopamine-beta-hydroxylase from sympathetic nerves and its presence in blood) probably was still unpublished when the monograph was sent to the publisher. These omissions will not seriously hamper the reader's gaining an overview of current concepts, but the author might have included a list of other reviews and monographs which could be used to build on the foundation provided by this relatively brief introduction.

IRWIN J. KOPIN
Laboratory of Clinical Science,
National Institute of Mental Health,
Bethesda, Maryland

Chemical Processes

Inorganic Reaction Mechanisms. JOHN O. EDWARDS, Ed. Interscience (Wiley), New York, 1970. x, 350 pp., illus. $15.95. Progress in Inorganic Chemistry, vol. 13.

Those who investigate mechanisms of reactions must always be aware that each specific reaction has its own characteristics; yet they hope the results on a specific system will aid in formulating a general scheme of reactivity for a class of reactions. As a field of investi-