cides. What sets this book apart is its frank assessment of the contributions likely to be made by various lines of research and its concern with the international aspects of pest control.

The authors recognize that special efforts will have to be made to bring into use chemicals that would not be developed by traditional commercial means. Clearly, a highly selective insecticide has a smaller market than a broad-spectrum chemical. Also, Roelofs discusses the difficulty of patenting natural products such as pheromones.

The Future for Insecticides reminds us that we cannot as yet do without insecticides; that new biodegradable, selective chemicals are needed; that industry should be assisted in the development of a new generation of insecticides; and, finally, that international coordination of university, governmental, and industrial efforts to improve chemical control is highly desirable—even essential.

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Proteins and Nucleotides

Structure and Conformation of Nucleic Acids and Protein-Nucleic Acid Interactions. Proceedings of a symposium, Madison, Wis., June 1974. M. SUNDARALINGAM and S. T. RAO, Eds. University Park Press, Baltimore, 1975. xxiv, 752 pp., illus. $44.50.

During the past decade enormous strides have been made in research on nucleic acid conformation and protein-nucleic acid interactions, owing in large part to the development of excellent systems and methodology for high-resolution x-ray diffraction and nuclear magnetic resonance studies and also to the improvement of theoretical procedures for analyzing preferred conformations of nucleic acids. These developments and the excitement of this field are well captured in the book under review, which comprises 44 articles contributed by investigators from around the world who met at the fourth annual Harry Steenbock symposium.

Some of the most exciting advances in the study of nucleic acid structure have centered around transfer RNA. High-resolution structures of yeast-phenylalanine-specific transfer RNA have been obtained by Kim and Rich and collaborators at the Massachusetts Institute of Technology and by Klug and co-workers at the Medical Research Council Laboratories in England. Simultaneously, intensive physical studies of transfer RNA in solution have been conducted by many groups. Particularly prominent among these studies have been high-resolution nuclear magnetic resonance investigations, although relaxation kinetics and laser Raman spectroscopy have also played an important role. The volume provides a good overview of many of these important approaches and of some of the major conclusions obtained from such studies.

Another section of the volume contains an unusually attractive integration of crystallographic studies on a number of different protein-nucleotide or protein-nucleotide-coenzyme complexes. One of the major developments in biological crystallography during the past few years has been the discovery of homologous structural elements in a diversity of nucleotide-binding enzymes. This subject is nicely reviewed by Rossmann, a leader in this field. In addition to Rossmann's contribution, there are a variety of other articles dealing with various complexes in which important structural information has emerged. This section, summarizing the exciting work on complexes, is an outstanding feature of the book.

Another major portion deals with conformational features of nucleic acids. This is a broad treatment of principles and general features and is not restricted to a particular system such as transfer RNA. In this case the articles span a wide range of related topics. Much of the material has to do with stereochemical and other factors that are determinants of nucleic acid conformation. Also included are experimental results on simple systems that can be subjected to detailed theoretical analysis. Thus, this section may be viewed as a summary of the foundation that currently exists for a rational understanding of nucleic acid conformation. Some of this material should be of long-lasting value.

The book clearly provides good coverage of some of the most exciting work on nucleic acid conformation and interactions. The quality of the contributions of course varies. However, throughout the book the emphasis is on key results, with experimental details generally omitted, and the reader can quickly extract the crucial ideas. Unfortunately, much of the work on transfer RNA's that is summarized is out of date. This is due in part to the fact that high-resolution structures for transfer RNA were not announced until after the meeting. Also, the volume omits consideration of many of the most important protein-nucleic acid systems. For example, detailed discussions of the interactions of aminoacyl transfer RNA synthetases with transfer RNA's, of *lac* repressor with *lac* operator, and of ribosomal proteins with ribosomal RNA are lacking. However, the excellent and broad coverage given to many other areas offsets some of these omissions, and the value of some of the material makes up for that which has been outdated.

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The Conservation Response. Strategies for the Design and Operation of Energy-Using Systems. Lloyd J. Dumas. Lexington (Heath), Lexington, Mass., 1976. xviii, 290 pp. $14.

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