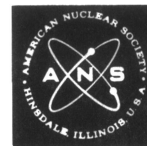


BOOK REVIEWS

Selection of books for review is based on the editors' opinions regarding possible reader interest and on the availability of the book to the editors. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



Physical Problems in Biological Systems

Editors Cecile DeWitt and Jean Matricon

Publishers Gordon and Breach Science Publishers, Inc. (1969)

Pages 430

Price \$19.50

Reviewer Donald J. Hanahan

This book contains lectures delivered at the Summer School of Theoretical Physics at the University of Grenoble at Les Houches during an eight-week session in the summer of 1969. Originally intended at its beginning in 1951 as a theoretical physics study program, this conference has now developed toward an understanding of the roles that physics can play in biology and vice versa. There are 14 chapters in this book, 5 of which are in French and 9 of which are in English. If a person is fluent in French scientific language then they would encounter no difficulty with this book. Basically, there are seven major contributions with several short papers included. In an introductory chapter, Chantrenne outlines the fundamental concepts of molecular biology and biochemistry covering such topics as conservation of energy, respiration, photosynthesis, genetic information, the genetic code, etc. all in quite a workman-like manner and in a very readable style. Even though presented in French, this contribution

by Chantrenne is easily followed and well constructed. Changeux presents an excellent chapter entitled "Allosteric Interactions in Proteins and Membranes," which spans two major areas: (a) the Control of Biochemical Reactions and (b) Remarks on the Symmetry and Cooperative Properties of Biological Membranes. In his usual able manner, Luzzati describes in a contribution entitled "Lipids and Membranes" the current status of this difficult area of study. In particular, he is concerned with the physical state of lipid-water systems, as revealed by x-ray diffraction patterns, and how these observations may interrelate with what one sees in membranes. A brief discussion centers on the interactions of proteins and lipids. Feher presents a lengthy and detailed description of the application of electron paramagnetic resonance (EPR) to selected problems in biology. He first discusses the basic principles of EPR and then outlines in some detail EPR in heme-proteins and photosynthesis and lastly the use of spin labeled biomolecules. This material should have provided the conferees a sound basis for appreciation of the use of EPR in biological systems. In another chapter, Weill discusses the optical properties of biopolymers. His contribution, in French, outlines in considerable mathematical detail the optical behavior of polypeptides and nucleic acids. Other chapters of short length and which obviously cover only a lecture or two of this conference are: Bimolecular Phospholipid Membranes by Lia, NMR Studies on Lipids, by Rigny and Charvolin, Regulation of Gene Expression by Hoffnung, Genetics of

Lambda Bacteriophage by Pereira De Silva and by Eisen, and a short essay by Lifson on Intramolecular Forces in Protein Structure, essentially a statistical mechanical treatment.

If this book were meant as an introduction for the initiated to the complex topics under discussion, this goal was not achieved. Perhaps given in the setting of individual lectures at Les Houches where intimate and detailed discussion could be fostered, then it could be of obvious value. Certainly, the chapters of Changeux, Feher, Weill, and Chantrenne are of high quality and merit. Nonetheless, the book is poorly edited with little or no inter-tie between presentations, and for some odd reason the table of contents is placed at the end of the book and is terse to a fault. As a final injustice, there is no subject index. In general, one can conclude that this would have been an interesting conference to have attended but to consider this book as important to one's own library is at the present time questionable.

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