shows how a variety of measurements, infrared spectra, Raman spectra, dielectric constant, x-ray diffraction, electron diffraction, and specific heat, may be used to obtain information concerning internal rotation and, thereby, molecular configuration. Particular attention is given to the determination of the difference in energy of rotational isomers and to the character and magnitude of the potential barrier to internal rotation. The second three chapters of Part I discuss internal rotation in other molecules having C—C axes, in cyclic compounds, and in compounds having C—O, O—O, S—S, and Si—Si bonds as axes of rotation; internal rotation in long chain, paraffinic molecules; and the application of the methods already discussed to complicated molecules of biological interest—polypeptides and related compounds. Each of the six chapters of Part I contains a concise, excellent summary.

Part II of the monograph may be best described as an experimental and mathematical appendix. It contains two chapters, of which the first is a summary of the applicable experimental methods of infrared and Raman spectroscopy, of dielectric constant measurements, and electron diffraction. The second chapter is a detailed introduction to normal coordinate analysis, and treats specifically the normal vibrations of the 1,2-dihalogenoethanes and of normal paraffins.

The book is written in a clear, straightforward manner and is well organized. It should be of interest to those physicists and chemists who are personally active in research in the broad field of molecular structure as well as those who would like an authoritative introduction to problems of internal rotation.

Atomic and Nuclear Physics. By Robert S. Shankland. 529 pp. The Macmillan Co., New York, 1955. $7.75. *Reviewed by S. F. Singer, University of Maryland.*

The refreshing thing about this book is that it deals with so many topics that form the subject of current research.

The volume covers a very large range of topics in the fields of atomic and nuclear physics. It starts with a discussion of the atomic concept in kinetic theory, the electron and its picture in quantum theory; electron spin and exclusion principle then leads into a discussion of atomic structure and spectra. This is treated very lightly, the main emphasis being on hydrogen, helium, and alkali spectra. Molecular structure and spectra are discussed next, followed by a chapter on x-rays which also includes an account of positronium and electron-photon cascades. Then follows a chapter on the solid state of matter which deals with most of the important topics currently of interest to physicists, including a brief mention of the important phenomena of semiconductors and applications. Next comes a discussion of isotopes and nuclear structure with a mention of the shell model and nuclear models in general; nuclear spins and magnetic moments are described in more detail in-

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cluding some of the modern experiments in magnetic resonance. Next follows a chapter on natural radioactivity and a discussion of various nuclear radiations; nuclear states are discussed in connection with the emission of gamma rays. Induced nuclear transformations are taken up and a brief account is given of the important nuclear accelerators in current use and of important discoveries in transuranic elements. A whole chapter is devoted to nuclear energy sources which describes mainly reactors and reactor theory. A fairly up-to-date account is given of high-energy nuclear processes, mesons, and finally cosmic rays.

Of necessity the large amount of material which is touched upon demands that it is treated rather briefly, at times even sketchily. This should be no handicap for the teacher but may make the book difficult for self-study. It is gratifying to see that so many up-to-date topics and current problems are included. The Lamb shift is discussed, hyperons are mentioned; there is very little actually left out. The book demands some knowledge of the special theory of relativity and of electricity and magnetism. There are no problems.

Books Received

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