College, a MS degree from the University of Tennessee, and a PhD from Brown University. He joined the staff at ORNL in 1951 and is now a senior research physicist and group leader in the Solid State Division of the Laboratory. His research interests have been in the areas of dielectric, optical, and magnetic properties of solids, and the alteration of these properties by radiation. He has authored many papers on these topics and has contributed to several national and international symposia. In 1968 he was appointed Distinquished Visiting Professor at The American University in Cairo, Cairo, Egypt, UAR. At the present time he is a principal investigator in the Lunar Material Analysis Program sponsored by the National Aeronautics and Space Administration. Currently he is an associate editor of the Journal of Geophysical Research *and a member of the Editorial Committee of the* Journal of the American Ceramic Society. *He is in a year's leave of absence from Oak Ridge National Laboratory.*

Title Molecular Quantum Mechanics

Author P. W. Atkins

Publisher Oxford University Press

Pages 471

Price $17.75

Reviewer F. A. Matsen

Molecular Quantum Mechanics is written for advanced undergraduate students in chemistry. Dr. Atkins tries very hard and on the whole succeeds in making quantum mechanics reasonable. To this end he introduces many skillfully drawn illustrations. It compares very favorably with other books in the field and should be quite widely adopted.

The following remarks will exhibit a personal prejudice. I feel that the book is not tough enough philosophically; it tends to stress the reasonableness and pictorial aspects of quantum chemistry. This approach, it is true, delights the student. But the student may in his later years pay for his delight by the difficulty he may encounter in accepting any idea that is not reasonable or pictorial. The author's desire to be reasonable occasionally leads him into making statements that can be misleading to the student. As an example, the footnote on p. 242 concerning the Thomas Precession, and his remark on p. 257 that parallel spins tend to avoid each other.

F. A. Matsen received his PhD from Princeton University in 1940. He became a member of the faculty of the University of Texas at Austin in 1940, becoming a full professor in 1951. That year he also became a Guggenheim Fellow at the University of London and Oxford. In 1961 he was an NSF senior postdoctoral fellow at the Institut de Henri Poincaire, Paris. In 1954 he established and staffed the first computation center at the University of Texas. Since then he has served on the computation center committee and has played an important role in computer selection and financing by the National Science Foundation.

Title Thermal Neutron Diffraction

Editor B. T. M. Willis

Publisher Oxford University Press 1970

Pages xiii + 229

Price $10.40

Reviewer Hugh F. Henry

Since this volume presents papers given at an international summer school on neutron diffraction, its primary audience will be the practitioner in the field who is looking for an up-to-date summary of current activities; for him, it is most valuable as it covers remarkably well the current developments in the field. On the other hand, the beginner or a specialist in another field will probably not find this as helpful as he might wish. Although the respective articles in the book are obviously the work of several authors, its style and notation are remarkably consistent, thus indicating a very competent editing effort, and the book is as readable as might be expected. There appeared to be no obvious bias in the topics covered or in the presentation of any particular viewpoint or model. Overall, the book is heavily theoretical in treatment.

The three basic divisions of the book are identified as Experimental, Nuclear Scattering, and Magnetic Scattering. The first of these, Experimental, appears to be the weakest in the entire volume, since it is here that the non-specialist might reasonably expect to become acquainted with experimental techniques, equipment, and perhaps results. Unfortunately, this is not the case, even though someone did consider it necessary to define the units of the "barn" and the "fermi." Thus, it is particularly in this section that an individual must be knowledgeable in the field to appreciate its coverage which appears to be much more heavily theoretical than experimental. It also seems that considerably more attention is given to such perturbing effects as thermal diffuse scattering than is given to the basic phenomena which they tend to mask or even the precision with which actual results are obtainable. Perhaps this merely reflects the interests and current problems of the authors themselves as they warn other experimenters of difficulties to be expected.

Perhaps more valuable to the non-specialist are the sections on nuclear and magnetic scattering wherein there are indications of the types of problems amenable to investigation by neutron diffraction, comparisons of the respective results obtainable by neutron and x-ray diffraction, and hints of the specific results obtained in certain cases. The implications of the experimental results obtainable were indicated in many instances, such as in determining covalency parameters, structures of certain magnetic materials, charge density distribution in molecules, and the accurate location of hydrogen atoms in solid-state studies. However, such clear-cut treatment was not universally available and it was frequently difficult to distinguish between factors and quantities that had been observed experimentally, those that had been theoretically determined, and some that might wishfully be observed. For the audience to which this book is particularly directed, prior knowledge will provide the necessary evaluative distinctions.